

CRANFIELD UNIVERSITY

Thora Thorgeirsdottir

“Now you see them, now you don’t”  
Impact of flexible work arrangements on intra-workgroup relations

School of Management

MRes dissertation  
Academic Year: 2012 - 2013

Supervisor: Clare Kelliher  
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the degree of Master of Research

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## **ABSTRACT**

Interest in flexible work arrangements has proliferated in the last years, fuelled by technological advancements that allow people to work from anywhere at any time. This systematic literature review explores the impact of flexibility in time and place of work on intra-group relations and subsequent effects on group-level outcomes. Findings suggest that flexibility in place of work has positive effects on employee-supervisor relationships but negative effects on co-worker relationships. Although teleworkers remain well connected to their co-workers and overall workgroup communication does not appear to change, informal socialisation processes are affected. Knowledge sharing and creation is subsequently challenged. Furthermore, managers of mixed workgroups face issues of fairness and justice as well as challenges of creating and maintaining group cohesion when some of their employees are not always present. However, little is known of how flexibility in time of work impacts intra-group relations and group outcomes from groups containing flexible workers have not been explored. This paper therefore identifies significant gaps in the literature and presents opportunities for further research.

Keywords:

Flexible work arrangements, telework, flexitime, co-workers, team, workgroups



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# 1 INTRODUCTION

Flexible work arrangements (FWAs) have received considerable attention in both academic and practitioner circles in the last years. This can be traced to workers increased interest in work-life balance issues, increased participation of women in the workforce and consequently an increase in dual-earner households. The interest has further been fuelled by the technological advances of the last 20 years, which allow people to work anywhere at any time. Employers have been forced to adjust their employment practices and research on various issues regarding flexibility and work-life balance practices has proliferated (Baltes, Briggs, Huff, Wright and Neuman 1999; Chang, McDonald and Burton 2010; Glass and Finley 2002).

FWAs have been associated with various beneficial outcomes such as job satisfaction (e.g. Kelliher and Anderson 2009), organisational performance (e.g. Konrad and Mangel 2000), organisational commitment (e.g. Scandura and Lankau 1997) and reduced work-life conflict (e.g. Kelly, Moen and Tranby 2011). However, FWAs are not stand-alone phenomena. They are implemented in a context of social interactions and relationships within a workplace that consists of employees and employers. This social context has been shown to be an important influence on outcomes and attitudes of flexible working employees (e.g. Kossek, Pichler, Bodner and Hammer 2011; Thompson and Prottas 2005). Similarly presence of flexible working employees in a workgroup has also been shown to have an impact on their co-workers (e.g. Golden 2007) and managers (e.g. Lautsch, Kossek and Eaton 2009).

In this paper, the goal is to explore what impact the use of FWAs has on the social environment in which flexible workers are located and how group-level outcomes may or may not be affected from implementation and use of FWAs.

## 1.1 The purpose of the review

The purpose of this review is to answer the primary review question and gain a better understanding of the existing knowledge of how FWAs impact interpersonal exchanges at the workplace. By reviewing the current literature in

a transparent and structured way and analysing the identified evidence, the aim is to detect gaps and identify possible research areas, some of which may be taken forwards into my PhD research.

## **1.2 Structure of the paper**

In chapter 2 I explore the literature domains relevant to the scope of this review in order to identify review questions to take forward.

In chapter 3 I explain the process of how the systematic review was carried out together with the underlying logic for each step.

In chapter 4 I present a descriptive account of the papers identified from the systematic review process.

In chapter 5 I present a synthesis of the findings of the papers identified.

In chapter 6 I present overall observations of the findings described in chapter 4 and 5, discuss whether the aim of the review has been achieved and whether review questions have been answered. I also present possible areas for further research, implications for practice and reflect on limitations and personal learning.

In chapter 7 I conclude the review.

## 2 POSITIONING THE FIELD OF ENQUIRY

### 2.1 Flexible work arrangements defined

There are a number of different types of flexible work practices on the job or in the workplace that are commonly given the label of FWAs (see Figure 1 for an overview of commonly included work practices). FWAs can therefore be regarded as an umbrella term; studies conceptualise FWAs differently using different practices or bundles of them (e.g. shift-work and contract work: (Raghuram, London and Larsen 2001), compressed workweeks: (Baltes et al. 1999) and schedule flexibility: (McNall, Masuda and Nicklin 2010)). Consequently, antecedents, correlates and outcomes may vary depending on the way FWAs are conceptualised in the studies in question.

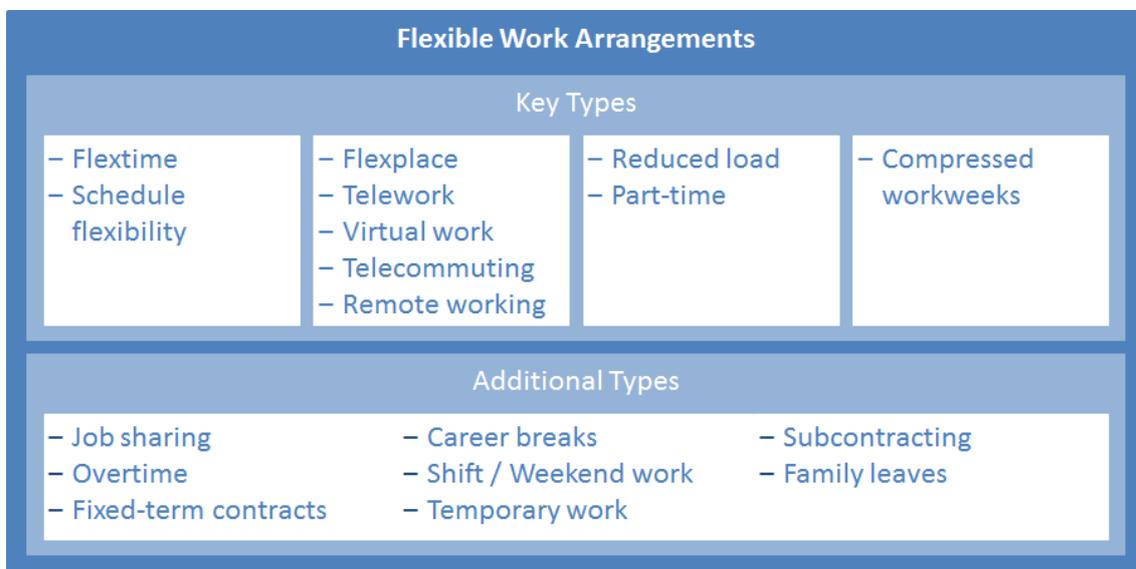


Figure 1 - Types of FWAs

The different ways of conceptualising FWAs commonly do not account for that the amount of time employees work flexibly may vary. As such, part-time work can involve working anywhere from a few hours a week to almost full time. Similarly, teleworkers may work a few hours a week from home or do it full-time and therefore never see their co-workers. It has been argued that the amount of time employees work flexibly has an impact on their experiences (e.g. Golden and Veiga 2005; de Menezes and Kelliher 2011; Virick, DaSilva and Arrington 2009).

Furthermore, the literature is generally not clear whether the FWAs discussed are formally negotiated and part of a formal program, which normally involves pre-set times of work and absence, or irregular arrangements negotiated with one's line manager on an ad hoc basis (de Menezes and Kelliher 2011; Richman, Civian, Shannon, Jeffrey Hill and Brennan 2008; Troup and Rose 2012).

Essentially, workplace flexibility can be seen from two different angles. The first one, flexibility *of* employees, refers to the implementation of flexibility to first and foremost allow an organisation to adapt to changes and reduce costs, by for example reducing hours worked, implementing job rotation, introducing telecommuting to reduce real estate costs etc. Although an employee may benefit from organisational flexibility, this type of flexibility is mostly imposed on them and their interests are not a primary interest (Hill, Grzywacz, Allen, Blanchard, Matz-Costa, Shulkin and Pitt-Catsouphes 2008; de Menezes and Kelliher 2011). The second, flexibility *for* employees, however, refers to flexibility that is implemented to increase the ability of employees to make choices or control their work lives in particular when, where and how long they work. The goal is to provide employees with resources to better manage different spheres of their lives and by doing so organisations will indirectly benefit through improved employee outcomes (Hill et al. 2008; de Menezes and Kelliher 2011; Thompson and Prottas 2005).

The latter perspective implies that employees have some choice or control over their work schedule (e.g. Kelliher and Anderson 2009; Kossek, Barber and Winters 1999). Several studies have identified control over one's own schedule to be a solution to balancing issues between work and private life with potential benefits in both spheres (Kelly and Moen 2007; Kelly et al. 2011) and argued that schedule control is the mechanism through which FWAs lead to beneficial employee outcomes (Berg, Appelbaum, Bailey and Kalleberg 2004; Glass and Finley 2002; Kelly et al. 2011; Thomas and Ganster 1995). By viewing FWAs through the lenses of employee choice or control the focus is brought to specific types of FWAs, in particular those that allow some form of control to the

employee, either over timing of work (flexitime) or location of work (telecommuting or telework) (column 1 and 2 in Figure 1). That said, neither flexitime nor telework necessarily mean that employees have any actual control over their work arrangement and in fact studies are rarely clear on the real choice or control available to employees (de Menezes and Kelliher 2011). However, in general both telework and flexitime allow employees to organise their own time more effectively (Gajendran and Harrison 2007; Parasuraman and Greenhaus 2002). Subsequently, the current paper focuses on flexibility over time and place of work.

The literature is generally in consensus on the definition of flexibility over time of work i.e. flexitime or flexible work schedules and defines it in terms of employees having flexibility in determining their working hours within a given range set by their organisation (Hill et al. 2008). However, the definition of telework is more ambiguous. Commonly it is defined as work conducted outside the workplace for at least a part of the workweek while contact with it is upheld using information technology (Bailey and Kurland 2002; Martin and MacDonnell 2012). This is the definition used in this paper. Nilles (1998) distinguished between telework and telecommuting, which are often used interchangeably in the literature. He defined telework as any work practice in which information technologies are used instead of work-related travel and where work is therefore moved to the worker instead of the worker moving to work. He then defined telecommuting as occasional work outside the main office or workplace for one or more days a week e.g. conducted from home (Nilles 1998). Due to how close these definitions lie, this paper will not make a distinction between telework and telecommuting and refer to them interchangeably.

However, in some cases telework is referred to as virtual work (e.g. Raghuram, Garud, Wiesenfeld and Gupta 2001; Wiesenfeld, Raghuram and Garud 2001). A distinction should be made between telework and virtual work. Virtual work usually entails working in a virtual mode full time and living in another geographical region while maintaining contact with the office via information technology. Virtual workers therefore usually do not have a desk at the office

and may very rarely or never meet with their co-workers, while teleworkers often do have a desk, often telework part-time or in the case of full time telework are called into the office on a regular basis (Golden and Fromen 2011). Furthermore, telework is also sometimes referred to as remote work, in which case employees are considered remote if they are not collocated with their managers and co-workers, which may involve simply being located in another office building (e.g. Staples 2001). Finally, the location in which teleworkers work outside the office may also differ, as they may work from home, from a satellite office or from various different places on the road (Garrett and Danziger 2007).

In addition to flexitime, this paper focuses on full or part time teleworkers, who work away from the office for various amounts of time, have regular contact with their co-workers and managers and are not geographically or temporally dispersed from them. Since the focus here is on the construct of flexibility and FWAs, I therefore assume these groups of employees have some flexibility or control over the location and timing of their work, while virtual workers or remote workers do not.

### **2.1.1 Summary**

To summarise, FWAs is an umbrella term that includes different work practices and can be implemented to suit employer needs or employee needs. Although it is difficult to estimate whether employees have real choice or control over their work flexibility, by focusing on flexibility in time and place of work it can be assumed they have more possibilities to organise their work according to their needs.

## **2.2 Flexible work arrangements and subsequent outcomes**

The literature on FWAs can broadly be divided in two parts: FWA adoption and FWA outcomes. The stream of literature on FWA adoption can be divided into employer versus employee adoption. Research on employer adoption of FWAs discusses organisational reasons and motivations for adopting or offering FWAs, guided in particular by institutional theory (e.g. Dulk, Peters and

Poutsma 2012; Wang and Verma 2012). Research on employee adoption of FWAs discusses individual reasons and motivations for adopting FWAs and is mainly guided by role theories (e.g. Lambert, Marler and Gueutal 2008; McNamara, Pitt-Catsouphes, Brown and Matz-Costa 2012; Shockley and Allen 2012).

The literature on outcomes from FWAs can also be divided in two parts: Employee outcomes, which focuses on work-life balance related notions and individual benefits, and employer outcomes, in which the literature on the business case of FWAs resides. I will discuss each in turn in the following sections.

### **2.2.1 Employee outcomes**

The literature stream looking at employee outcomes focuses on the role of FWA in the interaction of the work and non-work spheres and explores potential antecedents, correlates and outcomes to work-life linkage constructs such as work-life conflict, work-life facilitation or enhancement and family-work conflict or facilitation/enhancement (Özbilgin, Beauregard, Tatli and Bell 2011). These constructs are either regarded as an outcome from FWAs or as mediating or moderating variables to other outcomes (e.g. Kelly et al. 2011; McNall et al. 2010; Thomas and Ganster 1995).

This stream of literature is characterised by the family being the point of reference in examining work and private life linkages. This prevailing assumption has been criticised by a number of scholars (Chang et al. 2010; Özbilgin et al. 2011; Parasuraman and Greenhaus 2002). The literature on work-life linkages has furthermore been predominated by a conflict perspective for the last 25 years, perhaps due to observations of employees struggling to find a balance between their work and family responsibilities and organisations that suffer from employee turnover for the same reasons (Chang et al. 2010; Eby, Casper, Lockwood, Bordeaux and Brinley 2005; Kelly, Kossek, Hammer, Durham, Bray, Chermack, Murphy and Kaskubar 2008; Parasuraman and Greenhaus 2002).

### **2.2.2 Employer outcomes**

The literature stream on employer or organisational outcomes from FWAs is characterised by attempts to make a business case for their use. As such, studies attempt to establish links between FWAs and outcomes relevant to organisations such as job satisfaction, employee performance, turnover, absenteeism and retention (De Menezes and Kelliher 2011). Several reviews have attempted to summarise findings from research on organisational benefits from FWA implementation and use. However, they have not found evidence to support a clear business case (Beauregard and Henry 2009; Glass and Finley 2002; de Menezes and Kelliher 2011).

The problems with current research on employer benefits from FWAs are various. First, the lack of clarity in the conceptualisation of FWAs translates into mixed findings. For example, 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). Given the variety of different FWAs it is questionable whether they can be expected to produce similar outcomes and if they can even be compared (Beauregard and Henry 2009).

Second, measures of FWAs also vary greatly. Some studies look at how availability or perceived availability of FWAs translate into outcomes (e.g. Richman et al. 2008; Scandura and Lankau 1997) while others look at actual use or uptake (e.g. Kelliher and Anderson 2009; Pierce and Newstrom 1983). These measurement issues lead to mixed findings and difficulties in comparison of current research.

Third, methodologically the literature is dispersed especially in terms of samples and methods. A majority of studies are quantitative and cross-sectional in nature and done on professionals or knowledge workers in the US or UK. In contrast, qualitative theory-building studies are few (Beauregard and Henry 2009; Chang et al. 2010; Eby et al. 2005; de Menezes and Kelliher 2011).

Fourth, a majority of studies fail to take the impact of contextual attributes into account, such as the impact of national cultures, which have been shown to play a role in employee perceptions of FWAs (e.g. Masuda et al. 2012; Ollier-Malaterre 2009; Raghuram, London, et al. 2001). Family-supportive work environments, colleague support and supervisor support have also been shown to generate positive employee and employer outcomes (e.g. Allen 2001; Thompson and Prottas 2005).

A final observation of the current literature on employer outcomes is the level of analysis. Studies to date predominantly look at the individual level of analysis, which can be seen through a focus on individual outcomes such as employee productivity, employee performance and employee turnover. A number of studies look at the organisational level and have attempted to establish links between FWAs and organisational performance with mixed findings (Beauregard and Henry 2009). However, there appears to be limited work that looks at the level in between the organisation and the employee, i.e. the group level (e.g. Van Dyne, Kossek and Lobel 2007). The links between FWA use in work groups and subsequent outcomes such as group performance and group productivity therefore does not appear to have been established. This relates to the observation on how studies on FWAs often do not take context into account but in the case of group-level outcomes the social context will be the work group.

### **2.2.3 Summary**

In summary, current research on employee outcomes from FWAs generally look at work-life balance constructs while current research on employer outcomes try 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, a majority studies fail to acknowledge contextual influences e.g. organisational, managerial and from co-workers. 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.

## **2.3 In a context of the workplace**

A number of studies have flagged the importance of acknowledging how perceptions of FWAs are socially constructed and outcomes from FWAs may be dependent upon the interactions between various actors at the workplace (e.g. Allen 2001; Kossek et al. 1999; Ryan and Kossek 2008). Work relationships can be defined as patterns of exchanges and interactions in an organisational context, between individuals, groups or organisations and involve interactions that are generally aimed at the accomplishment of common objectives of the parties involved (Ferris, Liden, Munyon, Summers, Basik and Buckley 2009). The construct of work relationships outlines how choices and behaviours of individuals and groups alike are socially constructed within the context of organisations (Kossek, Baltes and Matthews 2011). Work relationships take different forms and involve different parties. They include mentoring relationships, employee-customer relationships, employee-organisation relationships, employee-supervisor relationships and employee-co-worker relationships (Ferris et al. 2009; Gooty and Yammarino 2011).

Since the most common workplace interactions are either hierarchical, involving employees and supervisors, or lateral, involving co-workers at the same level, I will delimit the focus here on these types of work relationships. Each will be reviewed in turn in the following sections.

### **2.3.1 Hierarchical work relationships**

Hierarchical work relationships are exchange relationships at the workplace that are authority ranked (Gakovic and Tetrick 2003; Shore, Lynch, Tetrick and Barksdale 2006). They have been extensively researched within the field of human resource management, both the employee-organisation relationship (e.g. Coyle-Shapiro and Shore 2007) and the employee-supervisor relationship (e.g. Brunetto, Farr-Wharton and Shacklock 2010; Farr-Wharton, Brunetto and Shacklock 2011; Uhl-Bien and Maslyn 2003). In the context of FWAs, the body

of literature on organisation and supervisor influence on flexible workers has been growing in the last years, specifically with regards to social support (Kossek, Pichler, et al. 2011).

In order to understand the nature and functioning of hierarchical work relationships there are two key exchange theories that provide helpful insights. First, social exchange theory builds on the fact that an individual, group or organisation enter into a relationship in order to maximise their benefits (Aselage and Eisenberger 2003; Blau 1964). According to social exchange theories employment is a trade between an organisation and an individual of effort and commitment for tangible and/or social rewards and benefits (Rhoades and Eisenberger 2002). In the context of FWAs much of the work on employer outcomes can be categorised under this stream, since these studies commonly assume that organisations that allow employees to work flexible will be rewarded by positive outcomes. A few studies have even shown that employees may put forward increased effort in exchange for working flexibly (Kelliher and Anderson 2009; Konrad and Mangel 2000).

Second, organisational support theory argues that employees develop perceptions or beliefs regarding how much the organisation cares about them and values their inputs (Aselage and Eisenberger 2003; Eisenberger, Huntington, Hutchison and Sowa 1986; Rhoades and Eisenberger 2002). Perceived organisational support is then formulated based on employee perceptions of that their employers value them and are committed to them, which then leads to a reciprocation on part of the employee (Aselage and Eisenberger 2003; Eisenberger et al. 1986). A number of studies of FWAs have explored how supervisor support leads to positive employee attitudes and outcomes e.g. lower work-life conflict (e.g. Thomas and Ganster 1995; Thompson, Beauvais and Lyness 1999), better work-life balance (Greenhaus, Ziegert and Allen 2012), increased job satisfaction and a decrease in turnover intentions (Thomas and Ganster 1995; Thompson et al. 1999; Thompson and Prottas 2005).

Additionally, leader-member exchange theory (LMX) describes the quality of employee-manager relationship (Aryee, Budhwar and Chen 2002). LMX theory assumes differentiation of employees, therefore that they are not all treated in the same way, which leads to various levels of relationships (Hu and Liden 2013; Lam and Lau 2012). LMX relationships that are of high-quality are characterised by mutual support, trust and respect between employee and supervisor where employees are seen as “in group” and consequently have better access to information and support which helps them in doing their work better (Brunetto et al. 2010; Masterson, Lewis, Goldman and Taylor 2000). In contrast, low-quality LMX relationships are characterised by only the basic economic exchanges between employees and supervisors (Lam and Lau 2012).

### **2.3.2 Lateral work relationships**

Lateral work relationships are based on the assumption that organisations are composed of individuals that rarely work in complete isolation and employee interpersonal interactions are therefore unavoidable (Six and Skinner 2010). Lateral relationships involve relationships between individuals at the same level, primarily co-workers, and therefore do not have an authority ranking. They can be dyadic, i.e. involve just two people, or be group or team based (Chiaburu and Harrison 2008).

On the whole, co-worker relationships possess similar attributes to hierarchical relationships. They involve social exchange and high-quality co-worker relationships are built on trust, mutuality and reciprocity much like in hierarchical work relationships. Team-member exchange theory is founded in LMX theory and team-member exchange quality measures the perceptions of individual workers of their relationships with the group of co-workers, as members of workgroups all engage in reciprocal interactions (Golden 2006). Moreover, since co-workers are likely to have more frequent and informal contact with each other and lack the authority, co-worker relationships can draw from a greater pool of behavioural and emotional resources (Chiaburu and Harrison 2008).

A small number of studies have drawn upon organisational support theory and shown that co-worker support to flexible workers is negatively related to job distress (Frone, Yardley and Markel 1997), has a positive association to job satisfaction and a negative association to intentions to quit and work-life conflict (Thompson and Prottas 2005). Furthermore, a number of studies have explored how co-worker relationships are affected by use of FWAs. These include relationship deterioration (Gajendran and Harrison 2007), feelings of resentment in the workgroup (Kurland and Bailey 1999) and negative effects on co-worker satisfaction, especially at high frequencies of telework (Golden 2007). Other studies have shown how co-worker use of FWAs appears to be an important antecedent to employee choice to use FWAs (Almer, Cohen and Single 2003; Kossek et al. 1999; Lambert et al. 2008).

This group of studies draw on organisational justice theories, which explain how employees make social comparisons with their peers and make estimates of the fairness and justice of their treatment. According to organisational justice theories, employees' perceptions of fairness are traditionally divided in three different groups. The first, distributive justice, refers to the perceived fairness of received outcomes while the second one, procedural justice, refers to the perceived fairness of decision-making processes. The third one, interactional justice, refers to fairness of treatment of other people such as co-workers and is affected by personal interactions between employees and managers (Cohen-Charash and Spector 2001; Cropanzano, Li and Benson III 2011; Masterson et al. 2000).

Furthermore, since co-worker relationships often involve a group of co-workers and therefore interactions of a number of people, social exchanges become more complex and dimensions are added to perceptions of justice and support. Subsequently, FWA use may influence a greater variety of outcomes (e.g. collegiality (ten Brummelhuis, Haar and van der Lippe 2010) and knowledge sharing (Golden and Raghuram 2010)) as opposed to when the focus is on the individual level.

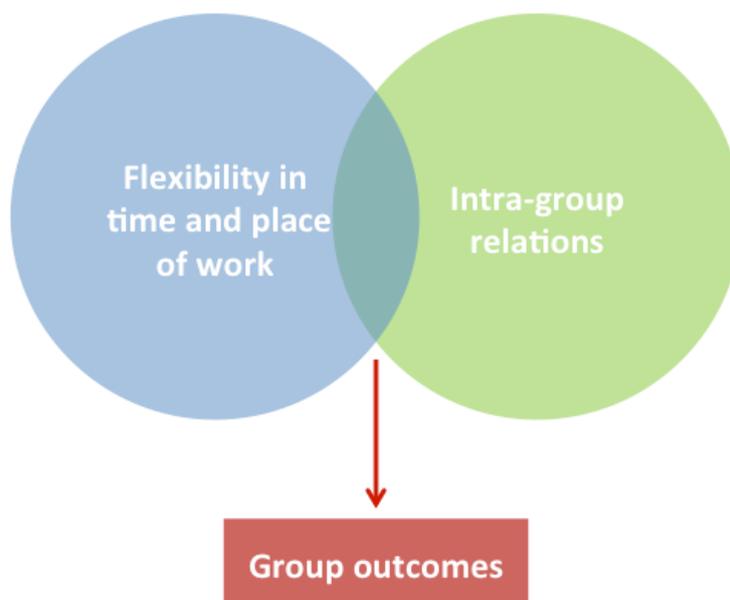
### **2.3.3 Summary**

In summary, both hierarchical and lateral relationships are social exchange relationships and informed by theories like social exchange theory and organisational support theory. This is reflected in research on FWAs and hierarchical relationships, which is mainly focused on organisational or managerial support to flexible working employees and on exchange perspectives, i.e. that the employer will profit from offering FWAs. Similarly, research done on lateral relationships and FWAs focuses on co-worker support to employees FWAs or on feelings of justice or fairness between co-workers when some work flexibly. Finally, since lateral relationships can involve a number of interacting co-workers, some of which may work flexibly and others not, this may lead to a diversity of group outcomes.

### **2.4 Summary of the field and review questions**

The literature on FWAs, as on work-life policies in general, is dispersed and suffers from a lack of conceptual clarity. This not only regards the conceptualisation of FWAs as a construct but also translates into measurement and even methodological issues. Therefore, comparison and synthesis of studies in the field of FWAs is problematic since studies are often looking at different aspects or measures of FWAs. The current paper will focus on flexibility in time and place of work. Furthermore, current research rarely addresses how outcomes from FWAs may be dependent on interactions with other people at the workplace and if they do, they commonly focus on support, although just one aspect of workplace relationships (e.g. Kossek, Baltes, et al. 2011). Interpersonal relationships at work allow employees to feel connectedness with other organisation members and allow for sharing and exchanging information, ideas and solutions to problems (Carmeli, Brueller and Dutton 2009). Such interpersonal exchanges may even lead to discovering ways to improve work outcomes and processes and may therefore contribute to better organisational performance. Better understanding is needed on how FWAs impact group-level relations especially since more organisations have team-based and flatter structures (Takeuchi, Yun and Wong 2011).

Furthermore, given that current research on outcomes from FWA is predominantly focused on the individual as level of analysis, a study of group-level relations will open up possibilities to explore group-level outcomes and therefore shifting the level of analysis to the group.



**Figure 2 – Map of the field**

Based on the above discussion two intersecting circles were developed (see Figure 2) and the following review question will be taken forward as well as two sub-questions:

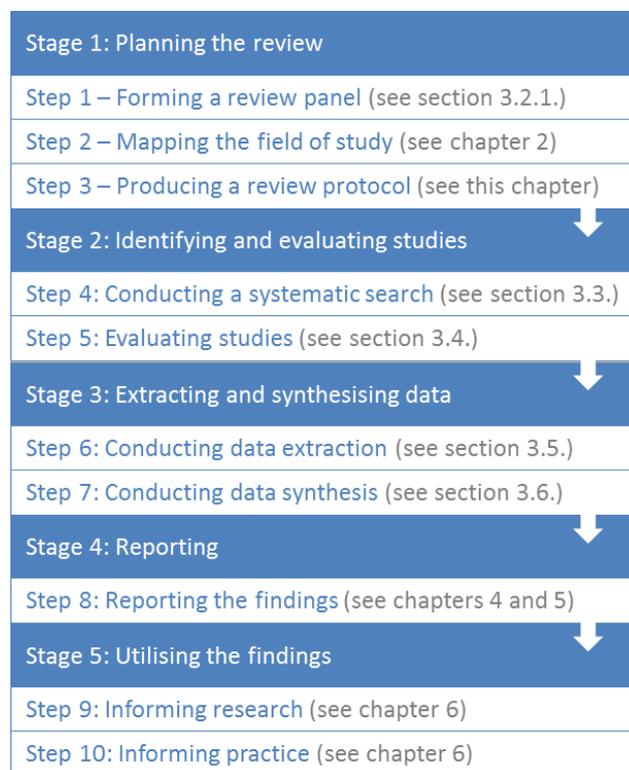
- What does the literature say about how flexibility in time and/or place of work impacts intra-group relations?
  - What does the literature say about how the relationship between flexibility in time and/or place of work and intra-group relations impact group-level outcomes?
  - What does the literature suggest these group-level outcomes may be?

The systematic review will focus on the intersection of the two circles through the use of relevant key words combined into search strings, in order to answer the primary review question. Furthermore, in order to answer the sub questions I will look at what the papers located within this intersect have said about group-level outcomes as well as which outcomes are being looked at.

## 3 METHODOLOGY

### 3.1 Purpose of a systematic review

The purpose of a systematic review is to conduct a literature search in a way that is replicable, exhaustive and transparent and where bias is minimised. Working from the basis of a review question identified in a scoping of the relevant fields, the goal of the systematic review is to answer this question through searching for, identifying, interrogating and synthesising all relevant literature. In that way a researcher is able to systematically search for and assess the available evidence in order to identify gaps and specify research questions to guide future research (Tranfield, Denyer and Smart 2003). The systematic review process consists of five main stages, illustrated in Figure 3. Each stage is described in detail in the following sections.



**Figure 3** - Stages of the systematic review process

## 3.2 Planning the review

### 3.2.1 Review panel

In order to ensure good quality and validity of the systematic review, I consulted with a number of academic experts both in my field as well as experts on the systematic review process. Table 1 provides an overview of my review panel and their roles.

Person	Title	Role
Professor Clare Kelliher	Professor of Work and Organisations, Cranfield School of Management	Supervisor. Will provide overall guidance on the review content, progress and relevant literature as well as give feedback.
Dr Emma Parry	Principal Research Fellow, Cranfield School of Management	Systematic Review Expert. Will provide support and advice on the systematic review process.
Dr Noeleen Doherty	Senior Research Fellow, Cranfield School of Management	Topic Advisor. Will provide topic guidance and support on the direction of the systematic review.
Mary Betts-Gray	Business Information Specialist. Management Information and Resource Centre, Cranfield School of Management	Literature Search Advisor. Will provide assistance with the literature search.

**Table 1 – Review panel**

### 3.2.2 Mapping the field

In order to identify a review question a scoping study of the relevant fields was conducted, see chapter 2.

## 3.3 Identifying studies

### 3.3.1 Search Strategy

In order to maximise the efficiency and effectiveness of the systematic review, the search process was threefold.

An initial literature search involved identifying relevant key words and conducting preliminary searches. I modified the search strings as needed until database searches provided relevant results.

A primary literature search involved running search strings in particular databases and identifying relevant articles by reading titles and/or abstracts using the inclusion and exclusion criteria presented in Table 4.

A secondary literature search involved full-text reading or skimming of the articles and identifying their relevance to the systematic review, by making use of the inclusion/exclusion criteria outlined in Table 5. This stage also included forward searching by reviewing the list of papers citing a potential high relevance text and backward searching by reviewing the references cited within a potential high relevance text.

Then, having identified relevant articles, I proceeded to assess their quality.

### 3.3.2 Key words

Key words were identified based on the primary review question, which is located at the intersection of the two literature fields illustrated in chapter 2. The development of the keywords was a process of trial and error and involved looking at a number of articles in order to identify keywords commonly used in the literature. Keywords are subsequently grouped in two (see Table 2).

Review question component	Keywords
Flexibility over time and/or place of work	alternative work, virtual work, remote work, flexible work, schedule control, flexible schedules, new ways of working, flextime, telecommuting, teleworking, flexplace
Intra-group relations	coworkers, colleagues, peers, supervisors, manager support, management support, manager relationships, professional relationships, dyadic, social groups, intergroup relations, team, teamwork, group dynamics, group relations, group processes, group performance, work environment, social support, interpersonal relationships, work relationships, social interactions, work behaviour, interprofessional relationships.

**Table 2 – Key words**

### 3.3.3 Search strings

Based on relatedness of the keywords listed above, a decision was made to group them into four different search strings. Search string 1 was run against search strings 2, 3 and 4 (see Table 3).

Search string 1 covered words that describe flexibility over time and/or place of work and was run against:

2. Keywords relating to dyadic relationships (involving two people) between employee and supervisor or employee and co-workers.

3. Keywords relating to non-dyadic relationships (involving more than two people), in particular within teams or groups.

4. Keywords relating to the overall environment at work and overall social interactions and relations in the workplace.

The goal of running the search strings separately was to bring out different aspects of intra-group relations.

No	Search string
1	"alternative work*" OR "virtual work*" OR "remote work*" OR "flexible work*" OR "schedule control" OR "flexible schedule*" OR "new ways of working" OR flextime OR flex-time OR telecommut* OR tele-commut* OR telework* OR tele-work* OR flexplace
2	coworker* OR co-worker* OR colleague* OR peer* OR supervisor* OR "manage* support" OR "manager relations*" OR "professional relations*" OR dyadic
3	"social groups" OR "intergroup relations" OR team OR teamwork OR "group dynamics" OR "group relations" OR "group process*" OR "group performance"
4	"work environment" OR "social support" OR "interpersonal relations*" OR "work relations*" OR "social interaction" OR "work behavior" OR "interprofessional relations"

**Table 3 – Search strings**

### 3.3.4 Choice of databases

I chose to search four different databases. Firstly, I searched ABI/Inform Global and EBSCO Business Source Complete but these two databases are the most comprehensive business databases and provide access to a large collection of scholarly journals in the field of business and management. I expected a degree of overlap between these two databases but deemed using both as important in order to make sure nothing would be missed, since a few journals are only covered within either one of them. Furthermore, I searched PsycInfo, which could be done within EBSCO by simply clicking PsycInfo in the databases option. Since my review question looked at human behaviour in a particular setting PsycInfo, the largest database in behavioural sciences, was expected to grasp papers from disciplines such as psychology and sociology, which the business databases missed out on. Finally, I searched Scopus in order to capture papers published by other publishers, particularly those from Science Direct, which would not appear in EBSCO or ABI/Inform. However, since Scopus also covers a great amount of literature on technical fields I limited my searches there to Social Science and Humanities. In addition to these four

databases I used Google scholar if needed to find particular papers that I could not get access to in the other databases. However, I did not search Google scholar systematically.

### **3.3.5 Cross referencing**

In order to not miss out on important papers additional relevant literature was identified by cross-referencing of papers deemed as highly relevant to the review question. These high-relevance papers are identified with an asterisk after the authors name in the data extraction tables in Appendix A and Appendix B. Citations of as well as citations in such papers were therefore reviewed and papers identified in this manor were then subject to the same selection criteria as other papers.

## **3.4 Evaluation of studies**

Papers brought out by the literature searches went through inclusion and exclusion criteria two times. First, titles and abstracts were scanned using the selection criteria in Table 4 (primary literature search). The papers selected from the primary review were then reviewed on their full text according to the selection criteria in Table 5 (secondary literature search). After that remaining papers moved on to quality assessment (see section 3.4.3).

### **3.4.1 Primary literature search: titles and abstracts**

The primary literature search selection criterion was adjusted during the systematic review process in order to be able to delimit the scope of this paper. This was mainly a result of the searches providing large amounts of papers on virtual teams, which were not deemed relevant for this review due to their focus on virtual work and geographical dispersion (see chapter 2.1 for definitional issues in the field). Subsequently, the third and the fifth parts in the relevance criterion to the review question (see Table 4) were added. These allowed excluding papers focusing on virtual teams, technology and relationships outside the workplace.

Relevance Criterion	Inclusion	Exclusion	Rationale
Publication	Academic papers, working papers less than three years old.	General press articles, conference papers and proceedings, reports, theses, web pages	The topic is a hot topic in general media and practitioner circles but claims are commonly not supported by evidence and overall quality may be low. Conference and working papers are work-in-progress and good ones are turned into articles. However, working papers younger than three years may be relevant and will not have had time to be turned into articles. Reports and theses lack reliability and information on how they got to their findings is often incomplete.
Contribution	Empirical and conceptual	Other than empirical and conceptual	The focus of the systematic review is to systematically map all relevant empirical academic research that has been done on the topic, their findings and limitations. However theoretical and conceptual papers will also be considered since they may provide interesting insights.
Language	English	All except for English	Large majority of articles in the field are published in English.
Date of publication	After 1990	Before 1990	Due to technological advancements in the last 20 years, which are highly relevant to the topic.
Relevance to review question	Measurement of flexible work: Use	Other measurements such as perceived availability or availability	Employee use of FWAs leads to different perceptions than e.g. perceptions of possible use.
	Types of flexible work in use: flextime or flexplace (some flexibility over time and/or place of work)	Other types e.g. part-time work, reduced workweeks, shift work	The review question limits itself to flexibility in time and place of work, i.e. telecommuting, flexplace.
	Impact of FWAs on workplace relationships and interactions e.g. with colleagues (lateral) or line-managers (hierarchical)	Relations and interactions with people outside the workplace e.g. customers, family and friends	The review question stipulates intra-group relations, therefore relationships within a work group.
		Focus on technology solutions (e.g. implementation of collaboration software)	The review question stipulates intra-group relations, which include a variety of types of interactions including face-to-face.
	Sample: Professional workers	Other occupations working in a non-office environment	In order to be able to compare studies samples need to be comparable in terms of the work attributes. Flexibility in time and/or place of work is primarily implemented in office-based work.
	Teams or workgroups in which one or more members work flexibly	Geographically dispersed virtual teams	In general, team members in virtual teams do not make use of FWAs. Furthermore, virtual teams deal with other problems such as time and culture differences.

**Table 4** – Primary literature search - Inclusion and exclusion criteria

### 3.4.2 Secondary literature search: full papers

Again due to the variety of terms and definitions used in the field it was in many cases not sufficient to identify relevant papers based on only title and abstract. Full understanding of what aspects of flexible work were being looked at as well as whether the sample was relevant or not could only be gained on reading the full text. Therefore, in the secondary literature search full papers were read and identified as relevant or not primarily based on their relevance to the review question, see Table 5.

Relevance Criterion	Inclusion	Exclusion	Rationale
Relevance to review question	Measurement of flexible work: Use	Other measurements such as perceived availability or availability	Employee use of FWAs leads to different perceptions than e.g. perceptions of possible use.
	Types of flexible work in use: flextime or flexplace (some flexibility over time and/or place of work)	Other types e.g. part-time work, reduced workweeks, shift work	The review question limits itself to flexibility in time and place of work, i.e. telecommuting, flexplace.
	Impact of FWAs on workplace relationships and interactions e.g. with colleagues (lateral) or line-managers (hierarchical)	Relations and interactions with people outside the workplace e.g. customers, family and friends	The review question stipulates intra-group relations, therefore relationships within a work group.
		Focus on technology solutions (e.g. implementation of collaboration software)	The review question stipulates intra-group relations, which include a variety of types of interactions including face-to-face.
	Sample: Professional workers	Other occupations working in a non-office environment	In order to be able to compare studies samples need to be comparable in terms of the work attributes. Flexibility in time and/or place of work is primarily implemented in office-based work.
	Teams or workgroups in which one or more members work flexibly	Geographically dispersed virtual teams	In general, team members in virtual teams do not make use of FWAs. Furthermore, virtual teams deal with other problems such as time and culture differences.

**Table 5** – Secondary literature search - Inclusion and exclusion criteria

### 3.4.3 Quality appraisal

Once relevant papers had been identified their quality was assessed. Quantitative and qualitative papers were assessed using different quality criteria adapted from Huff (1999) (see Table 6 and Table 7). Conceptual papers were assessed using similar quality criteria (see Table 8). All quality criteria assessed the papers on three key elements: Literature review and development of research questions, methodology and data analysis and on results and contribution. Papers with an average of 3 or higher in each of the categories: Literature review, methodology and data analysis (empirical papers only) and results and contribution, were taken forward to data extraction. I found that although papers varied in quality in many cases they would still have a relevant contribution in terms of answering the review question. This led to a relatively low number of papers being excluded based on quality. These limitations are acknowledged, however, as the papers are reviewed in chapter 4 and 5.

Questions for Quantitative Papers	1	2	3	4	5	NA
<b>Literature review and development of hypotheses</b>						
Are the study's propositions and hypotheses clearly articulated?						
Are the basic arguments of the paper relevant and interesting?						
Are important premises and assumptions identified?						
Are key terms and constructs identified?						
Are key theoretical underpinnings identified?						
Are relationships among variables clearly explained?						
<b>Methodology and data analysis</b>						
Is the methodology of the paper clearly explained?						
Is the overall methodology appropriate to the study objectives?						
Are the sampling strategy and sample sufficiently described?						
Are data collection methods sufficiently described?						
Is the operationalization of the variables and constructs plausible (content validity)?						
Are dependent variables identified and described?						
Are independent variables identified and described?						
Are control variables identified and described?						
Are questionnaire or other measurement items identified and described?						
Was the discussion of the interview or questionnaire construction and response rates clear and comprehensive?						
Have steps been taken to avoid data collection errors?						
Is there evidence of reliability or internal consistency in the study?						
<b>Results and contribution</b>						
Are the findings sufficiently and accurately described?						
Are results clearly related back to original propositions, hypotheses, research questions, and data analysis?						

Questions for Quantitative Papers	1	2	3	4	5	NA
Do tables and figures provide sufficient and accurate data?						
Are graphics and/or appendices used effectively to support the argument of the paper?						
Is implied causality justified?						
Has the author adequately considered alternative explanations for the results found?						
Are implications of research relevant and clearly described?						

1=Not at all; 2=Only to a limited extent; 3=At an acceptable level; 4=To a significant level; 5=Completely

**Table 6 – Quality criteria for quantitative papers**

Questions for Qualitative Papers	1	2	3	4	5	NA
<b>Literature review and development of research questions</b>						
Is the purpose of the research adequately established?						
Are the basic arguments of the paper relevant and interesting?						
Are important premises and assumptions identified?						
Are key terms and constructs identified?						
Are key theoretical underpinnings identified?						
Are relationships among constructs clearly explained?						
<b>Methodology and data analysis</b>						
Is the overall methodology appropriate to the study objectives?						
Are the choice of participants, nature of the situation and participant characteristics sufficiently described?						
Are data collection methods sufficiently described?						
Are data analysis methods sufficiently described?						
Does the writer convince the reader that he or she was able to gather information about key events from appropriate sources?						
Is there evidence that participants trusted the researcher and were likely to honestly share information with the researcher?						
<b>Results and contribution</b>						
Are the findings adequately and accurately described?						
Are results clearly related back to original objectives, research questions, and data analysis?						
Has the author adequately considered alternative interpretations of the data presented?						
Has the author adequately considered alternative explanations for the results found?						
Is there evidence of systematically considering evidence that contradicts the author's interpretations?						
Are implications of research relevant and clearly described?						

1=Not at all; 2=Only to a limited extent; 3=At an acceptable level; 4=To a significant level; 5=Completely

**Table 7 – Quality criteria for qualitative papers**

Questions for Conceptual Papers	1	2	3	4	5	NA
<b>Literature review and development of research questions</b>						
Is the purpose of the paper adequately established?						
Are the basic arguments of the paper relevant and interesting?						
Are important premises and assumptions identified?						
Are key terms and constructs identified?						

Questions for Conceptual Papers	1	2	3	4	5	NA
Are key theoretical underpinnings identified?						
Are relationships among constructs clearly explained?						
<b>Findings and contribution</b>						
Are findings clearly described?						
Are findings clearly related back to original objectives and research questions?						
Has the author clearly explained the contribution of the paper to theory?						
Are implications of the paper relevant and clearly described?						

1=Not at all; 2=Only to a limited extent; 3=At an acceptable level; 4=To a significant level; 5=Completely

**Table 8** – Quality criteria for conceptual papers

### 3.4.4 Final selection

Table 9 shows the number of peer reviewed hits that each search string generated and how each step of the systematic review process explained above led to the removal of more and more papers. Similarly, Table 10 shows the selection process from cross-referencing. The papers identified through cross-referencing went through the same inclusion and exclusion criteria as well as quality assessment as the papers from the database searches. The final number was 40 papers, of which 31 came from the literature searchers and 9 came from cross-referencing. More details on the papers are provided in the data extraction forms in Appendix A and Appendix B.

Database	Strings	Initial number of hits (peer-reviewed)	Number after screen on title and abstract	Number after screening on full text	Number after checking for duplicates	Number after screening for quality
ABI/Inform Global	1 and 2	130	30	16	16	15
ABI/Inform Global	1 and 3	101	18	4	1	0
ABI/Inform Global	1 and 4	93	18	5	4	3
EBSCO	1 and 2	206	39	19	6	5
EBSCO	1 and 3	490	53	8	3	1
EBSCO	1 and 4	564	77	20	5	2
PsycINFO	1 and 2	129	25	9	2	2
PsycINFO	1 and 3	116	14	4	1	0
PsycINFO	1 and 4	216	28	11	4	3
Scopus	1 and 2	80	23	13	0	0
Scopus	1 and 3	57	7	3	1	0
Scopus	1 and 4	2	1	1	0	0
<b>Total:</b>		<b>2184</b>	<b>333</b>	<b>113</b>	<b>43</b>	<b>31</b>

**Table 9** – Selection process from search strings

Number of papers identified through cross-referencing	Number after screening on full text	Number after screening for quality
41	16	9

**Table 10 – Selection process from cross-referencing**

### 3.5 Data extraction

Once papers had been selected based on the quality criteria they were imported into Mendeley and relevant data was extracted from each of them into a data extraction form (see Table 11). The data extraction form was adapted during the review process in order to help in establishing a critical argument within the systematic review. The adaptation involved adding the last three parts of the table presented below.

Themes	Description
Citation	Author(s), title, year, journal.
Background	Key constructs, theories and underpinnings to methodology and research questions and/or hypotheses.
Methodology	Overall methodology. Measures and data analysis methods.
Sample	Sample selection, size, composition, and characteristics.
Key findings	Key findings.
Remarks /contribution	Contribution. Key contribution to review question answer. Further observations or notes.
Quality assessment	Assessment of overall quality in terms of theoretical framework, development of research question, methodology, analysis and findings. Average score across categories.
Aspect of intra-group relations focused on	Which part of group relations is being discussed.
Type of flexible work	Which type of FWAs is being discussed.
General thoughts on paper	Final thoughts or remarks in relation to the systematic review.

**Table 11 – Data extraction form**

### 3.6 Data synthesis

A final step of the systematic review process is to synthesise the information and knowledge obtained from the evidence that has been identified. The synthesis was aimed at providing a comprehensive answer to the key review question. The data extraction process was used to identify key themes within each paper, which were then used to group papers together in an iterative process of trial and error in order to provide a narrative account of the existing literature. The findings from this process are presented in the following two chapters. In chapter 4 a descriptive account is given where the papers are grouped according to various categories and groupings. Chapter 5 provides a narrative account of the papers according to themes identified.

## 4 DESCRIPTIVE FINDINGS

### 4.1 Overview

This chapter provides a descriptive account of the final collection of papers identified from the systematic literature searches as well as those identified through cross-referencing. The characteristics covered here are those that were deemed to provide interesting insights into the status of current knowledge in the field and contribute to an answer to the review question. These include year of publication, type of paper, research methodology, type of FWAs studied and selected characteristics of the sample studied.

More details on each of the selected papers can be found in Appendix A and Appendix B.

### 4.2 General characteristics

The papers identified came from a selection of journals in a variety of fields such as human resource management, psychology, engineering and communications (see Figure 4).

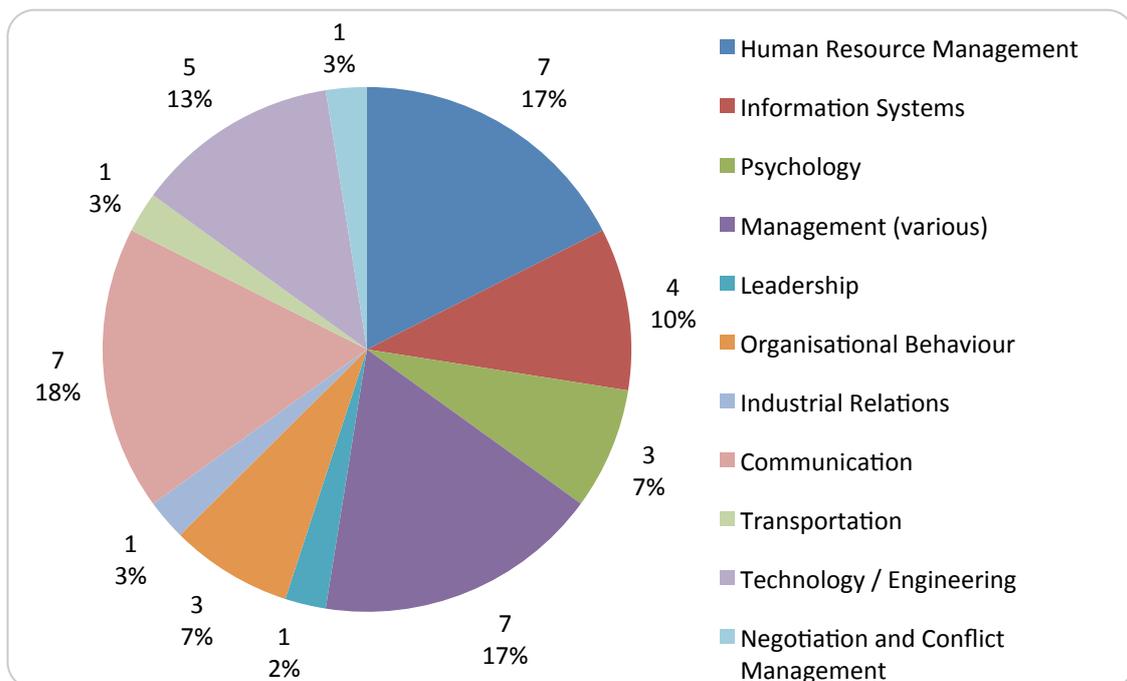


Figure 4 - Journal disciplines of selected papers

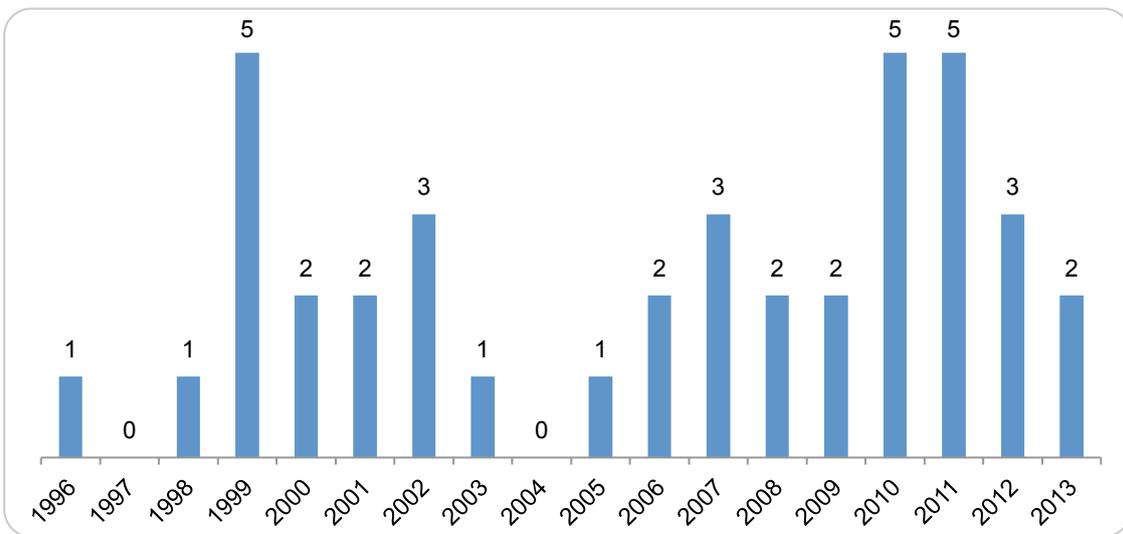
The papers therefore provide different angles of looking at the topic, e.g. from a technology standpoint (information systems and engineering journals) and from interactional standpoints (communication journals). Although a majority of the papers came from journals ranked 3\* or higher in the Cranfield School of Management journal ranking (see Table 12), journal ranking was not deemed to be an important factor in assessing the papers.

Journals	Count
Human Relations (4*)	3
Information Systems Research (4*)	1
Journal of Applied Psychology (4*)	2
Journal of Management (4*)	1
Organization Science (4*)	2
Leadership Quarterly (4*)	1
Academy of Management Review (4*)	1
British Journal of Industrial Relations (3*)	1
Human Resource Management Journal (3*)	2
Information and Management (3*)	1
Journal of Management Information Systems (3*)	2
Journal of Organizational Behaviour (3*)	3
The International Journal of Human Resource Management (3*)	2
Transportation Research Part A (3*)	1
International Journal of Technology Management (3*)	1
Journal of Managerial Psychology (2*)	1
New Technology, Work and Employment (2*)	1
IEEE Transactions on Systems, Man and Cybernetics - Part C: Applications and Reviews (1*)	1
Management Revue (1*)	1
Qualitative Research in Organizations and Management: An International Journal (1*)	1
Communication Monographs	2
IEEE Transactions on Professional Communication	1
Journal of Applied Communication Research	3
Journal of Business Strategies	1
Journal of High Technology Management Research	1
Negotiation and Conflict Management Research	1
Southern Communication Journal	1
Journal of Engineering and Technology Management	1
<b>Total</b>	<b>40</b>

**Table 12** – Overview of journals of selected papers

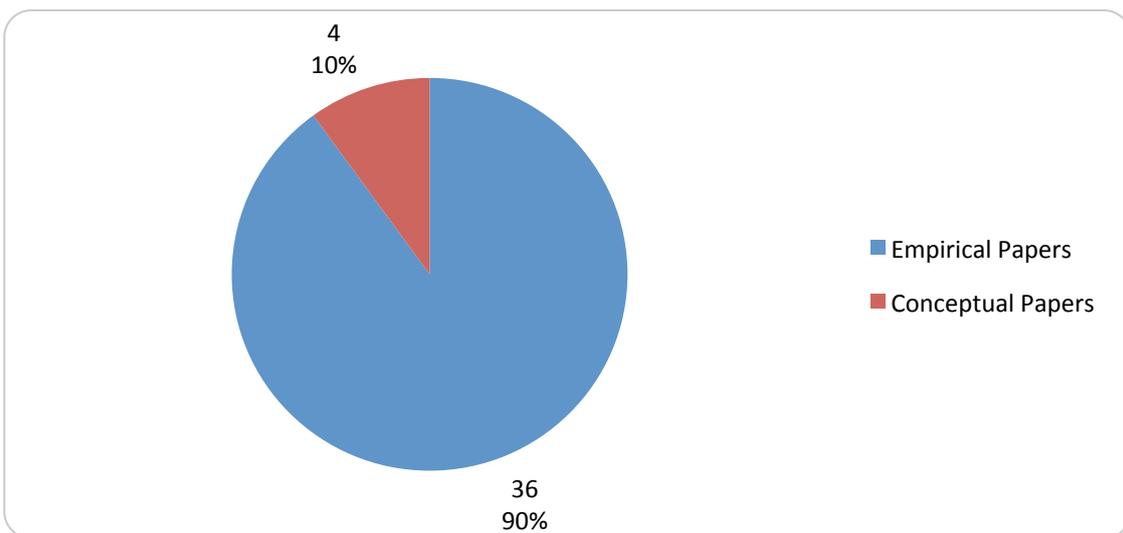
The distribution of the selected papers according to years published can be observed in Figure 5. Although the figure shows a fairly even distribution, two peaks can be observed. The first one, around 1999-2000, may be explained by an increased interest in telework in the period of the dot-com bubble. The

second peak is since 2010, which may indicate that interest in this topic is now rising again.



**Figure 5** - Distribution of papers by year published

The distribution of papers by their type, i.e. whether they are empirical or conceptual can be observed in Figure 6. A majority of the papers were empirical which echoes a general trend in the literature of FWAs, where theory building work is scarce (e.g. de Menezes and Kelliher 2011).



**Figure 6** - Distribution of papers by type

### 4.3 Methodology characteristics

The distribution of the empirical papers according to their methodology can be observed in Figure 7. The majority of the papers were quantitative, which again

echoes an overall trend in the literature of FWAs and human resource management (Eby et al. 2005; de Menezes and Kelliher 2011).

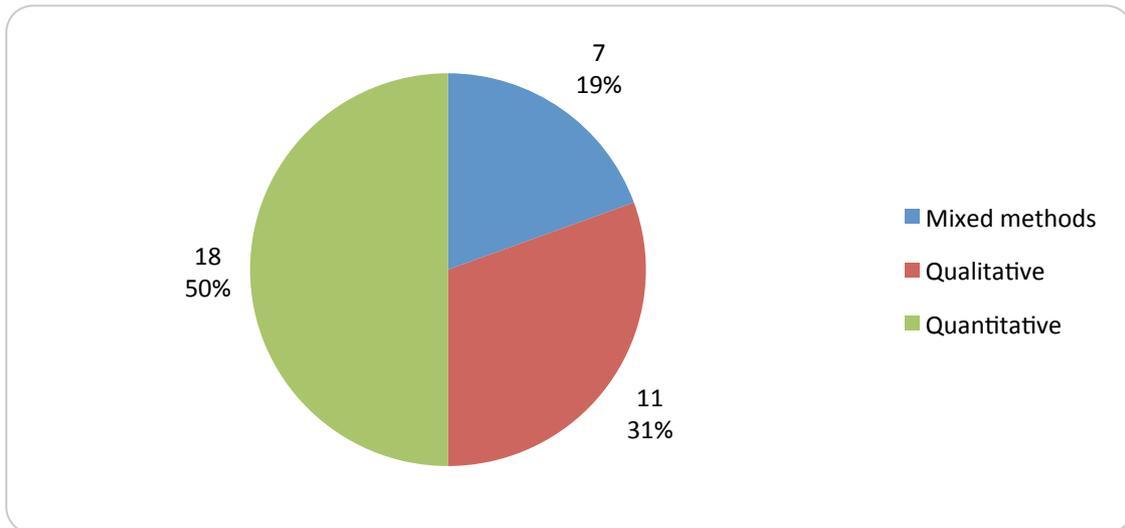


Figure 7 - Empirical papers by research methodology

#### 4.4 Type of FWAs studied

The searches conducted in the databases as well as through cross-referencing looked for papers on both locational flexibility (telework or telecommuting) and temporal flexibility (flexitime). However, interestingly, they almost exclusively brought out papers on telework (see Figure 8).

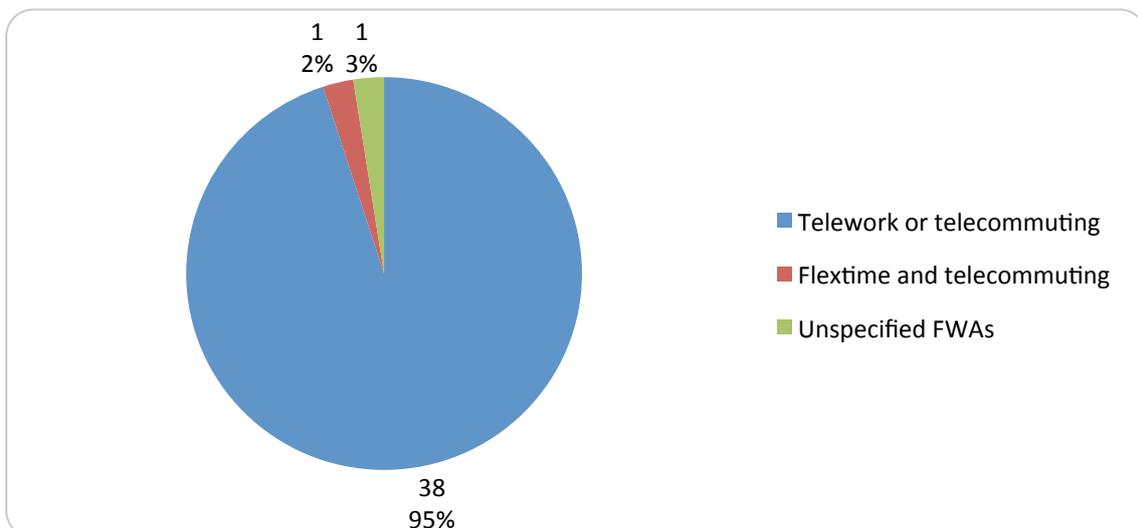
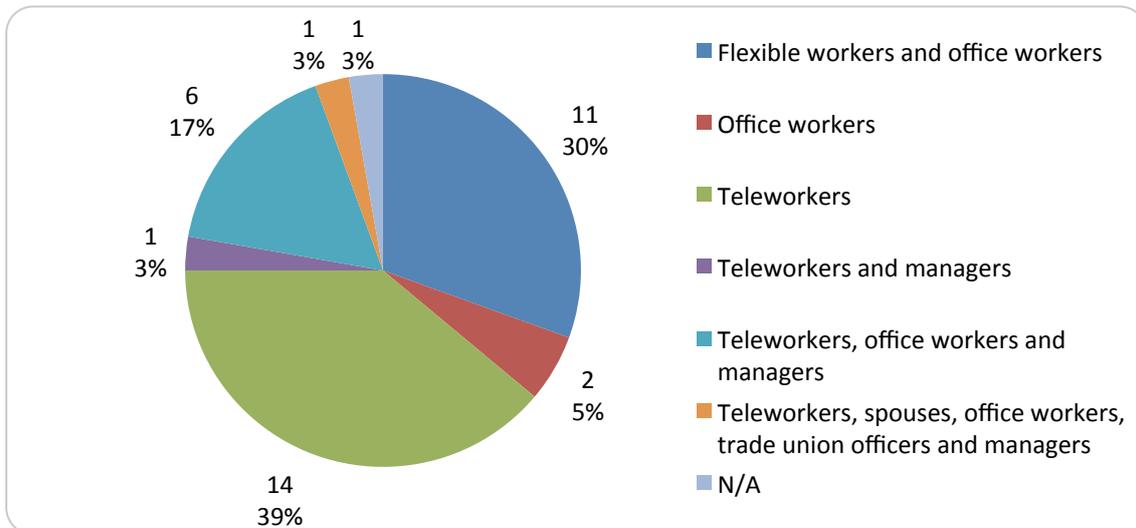


Figure 8 - Types of FWAs studied

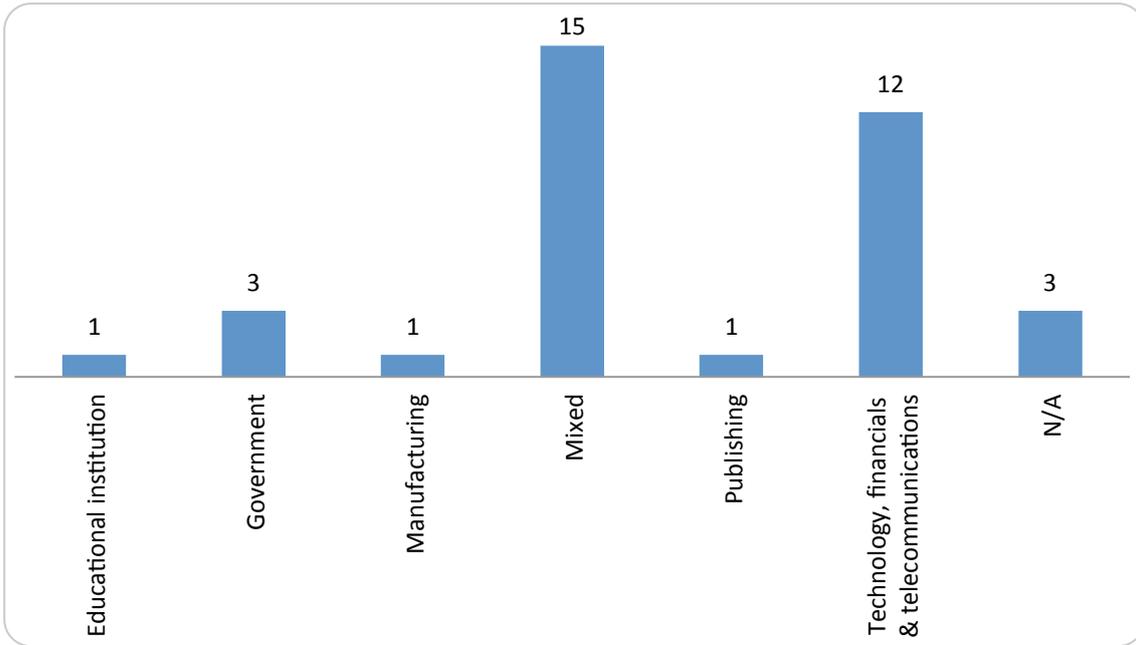
## 4.5 Sample characteristics

Four observations were made in terms of sample characteristics of the empirical papers. Firstly, Figure 9 depicts the participants in terms of whether they were the teleworkers, their managers, their in-office co-workers or others. It can be observed that 39% of the studies relied on the points of view of teleworkers alone, while 30% compared them to in-office workers through sampling both in-office workers and teleworkers. 17% of the papers had then added managers; so three different types of employees were sampled. Interestingly, only two studies sampled in-office workers alone. These observations reflect that a predominance of studies in the field focus on teleworkers and not on other actors in their social environment (e.g. Bailey and Kurland 2002).



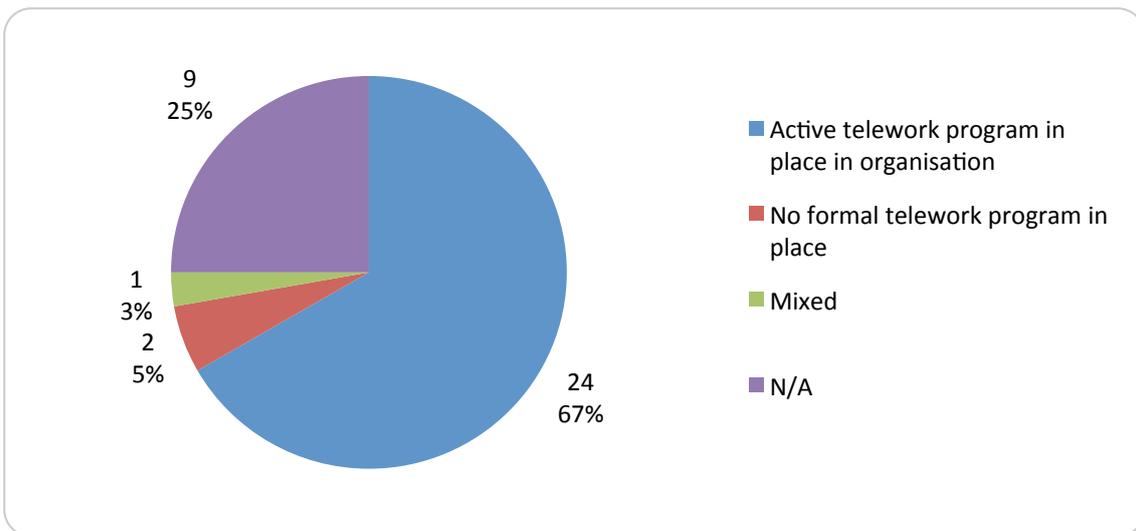
**Figure 9** - Empirical papers by sample - characteristics

Second, Figure 10 depicts the distribution of the empirical papers according to the organisations the samples were picked from. A considerable amount of papers sampled from different companies in different sectors (illustrated by Mixed, n=15), although it should be noted that some of these studies used snowball sampling. However, another observation here is the predominance of technology oriented organisations as these were used in 12 of the 36 empirical studies. One explanation for this may be that scholars assume telework is more practiced in these organisations, rather than others.



**Figure 10** - Empirical papers by sample - organisation type

Third, Figure 11 depicts whether a formal flexible work program or telework program was in place at the organisations studied. Here a clear trend can be observed in that scholars seem to select organisations based on that a formal program is in place. Following from the previous discussion perhaps such programs are more prevalent in technology-oriented organisations than others.



**Figure 11** - Empirical papers by sample - active telework program

Fourth and finally, Figure 12 depicts the geographical distribution of the samples. In a number of cases the papers did not provide explicit information on

the geographical location of the sample used. However, in these papers in many cases indications were found throughout the papers that the sample was US based (e.g. company description, contextual descriptions etc.). An overall observation in terms of geographical distribution was that the majority of papers were based on Northern American samples, suggesting the majority of work has been done in the US and Canada.

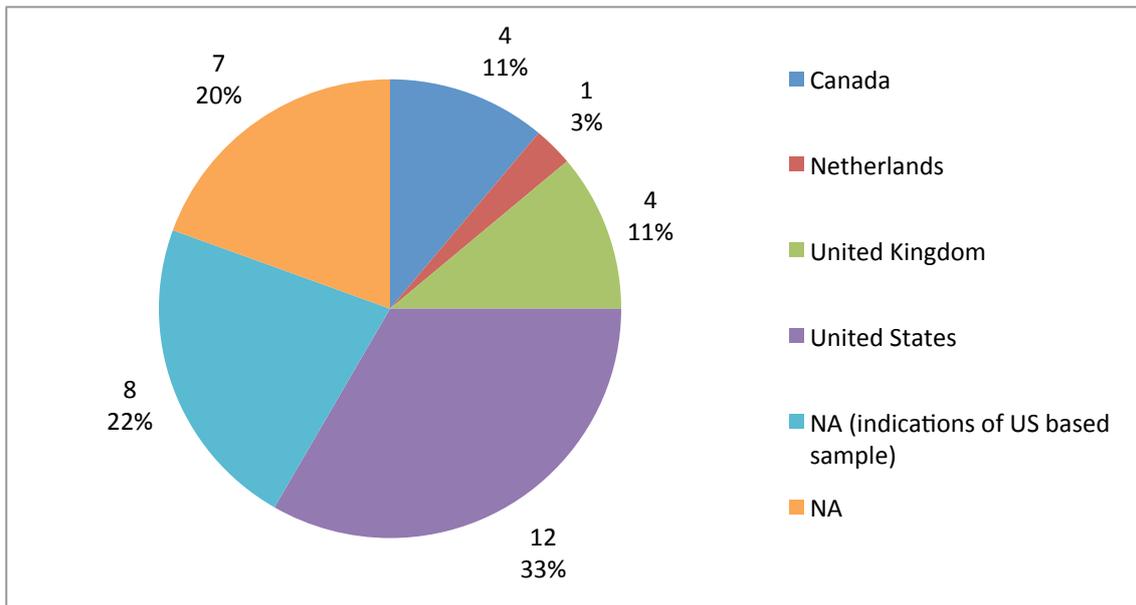


Figure 12 - Empirical papers by sample - geography

#### 4.6 Summary

In summary, a majority of the studies identified for this review were empirical and quantitative, which reflects a common trend in the literature on FWAs. Furthermore, the perspective of individual teleworkers was found to be a prime focus in the studies identified, as were organisations with active telework programs. Finally, there appears to be a tendency to look at technology-oriented organisations in terms of samples and most research has been conducted in North America, although this is not universal.

## **5 CONCEPTUAL FINDINGS**

This chapter reviews the findings of a thematic analysis of the evidence identified. It should be noted, in line with an observation made in the previous section, that almost all of the papers identified for this review discuss telework or telecommuting. The primary focus of the subsequent thematic analysis is therefore flexibility over place of work. When papers discuss flexibility over time of work (flexitime) this will be specifically mentioned. Subsequently, this chapter will use the term telework or telecommuting instead of using the term FWAs.

The following section is divided in two. First, I discuss the impact of telework on employee-supervisor relationships and co-worker relationships, from a dyadic perspective. Then, I look at various issues and challenges arising in mixed workgroups that involve both teleworkers and in-office workers.

### **5.1 Impact on the employee-supervisor relationship**

From the perspective of a simple dyadic employee-supervisor relationship telework has several important implications. A number of studies explore how having teleworking employees leads to changes to the employee-supervisor relationships and to how managers deal with teleworking employees.

#### **5.1.1 Relationship quality**

Telework has been shown to have a positive effect on the employee-supervisor relationship (Gajendran and Harrison 2007; Igbaria and Guimaraes 1999). In fact, Igbaria and Guimaraes (1999) found that teleworkers were more satisfied with their supervisor than non-teleworkers. Golden (2006) found a significant linear and positive relationship between extent of telework and leader-member exchange quality (LMX), which indicates that the more often workers telework the more positive effects it has on the relationships they have with their managers. An explanation of these findings may be that teleworkers and managers work more strategically on their relationship in the absence of constant presence at the workplace. However, they may also be a result of reversed causality. In fact, this is a problem in all three papers (Gajendran and

Harrison 2007; Golden 2006; Igbaria and Guimaraes 1999) because of their cross-sectional research design. It may therefore well be so that teleworkers have good relationships with their managers before they start teleworking and are given permission to do so because their managers trust them.

Employee-supervisor relationships have also been shown to influence teleworkers attitudes, as in a study by Golden and Veiga (2008) who found that extent of telework moderated the relationship between leader-member exchange relationship quality (LMX) and organisational commitment as well as between LMX and job satisfaction and LMX and job performance. These findings mean individuals who telework frequently and have a high quality exchange relationship with their managers are more likely to be highly committed and more satisfied, while high extents of telework for those in low quality exchange relationships will lead to lower levels of commitment and lower satisfaction. In terms of job performance, the findings indicate that irrespective of whether LMX qualities are low or high, more frequent teleworkers exhibit higher performance. Neufeld and Fang (2005) came to similar conclusions as they found positive manager interactions were not only associated with more positive beliefs and attitudes of teleworkers but also with higher teleworker productivity. As such positive social interactions with managers were identified as one of three key variables useful in identifying which teleworkers were high and low in productivity and which held positive and negative beliefs and attitudes.

In summary, the evidence indicates that telework not only has positive effects on the employee-supervisor relationship but also that the quality of these relationships plays a crucial role in various teleworker attitudes. However, these findings need to be interpreted in light of possibilities of reversed causality.

### **5.1.2 Maintaining control**

From the perspective of the manager, managing a teleworking employee leads to various managerial challenges. Kurland and Cooper (2002) explored the challenges of telework to managerial control through three different lenses of control. The first, behaviour control, specifies how outcomes are accomplished

through e.g. procedures, close supervision, formalisation and scheduled meetings. The second, output control, emphasises managing by results, and the third, clan control, consists of rituals, trainings and values. By conducting interviews with teleworkers, their managers and co-workers in two high-technology firms with active telework programs they found that managers employ a mixture of methods in controlling their teleworking employees. These included behavioural controls such as audio conference meetings, scheduled face-to-face interactions, casual interactions, evaluations of how well work is done, defined tasks and job formalisation. Managers also used output controls such as management by objectives and performance-linked rewards and clan controls, which primarily referred to selecting employees allowed to telework carefully and providing training. Felstead, Jewson and Walters (2003), in their qualitative study of homeworkers in different organisations in the UK, came to similar conclusions in that managers use a number of different strategies to maintain control of their homeworking employees. These included electronic surveillance technologies, emails, phone calls, meetings, occasional home visits and output monitoring, which was often difficult if the function of the homeworker was not really designed for it. Furthermore, they found that managers relied on trust as in a majority of the organisations studied teleworkers were allowed to work from home because they were known for that they could be trusted. Consequently, they found that since the teleworking employees were independent proven employees, using surveillance on them created scepticism.

Overall, from a manager perspective, Kurland and Cooper's (2002) and Felstead et al.'s (2003) findings indicate that managers fears of losing control when employees telework may be unfounded since they employ a variety of strategies to retain it.

Other studies provide more in-depth insights into the particular managerial methods that seem to be most effective in the context of telework. Madlock (2012) found that task-oriented leadership style seemed to be key in the telework context as it was found to be more utilised by supervisors as well as

having higher correlations with teleworkers job satisfaction and organisational commitment than other types of leadership. It was also found to be the greatest predictor of supervisor communication competence and of teleworkers communication satisfaction. It therefore appears not only managers of teleworkers prefer this way of supervision but that teleworkers also seem to favour it. One explanation of these findings is the need to rely on explicit communication in telework settings, although the work conducted may also simply be more task-based. However, since no information is given on the extent of telework of the teleworkers surveyed in this study, nor their actual occupations, which may play a key role in this context, these findings must be interpreted with caution. Building on his previous study, Madlock (2013) looked at the use of motivational language by supervisors, in particular empathetic (language where a leader expresses emotions by criticising, praising, sharing feelings etc.), direction-giving (language where leaders communicate instructions that are job-related to their employees to reduce uncertainty) and meaning-making (informal language where leaders communicate the values and rituals of the organisation) in the context of telework. The findings revealed that direction-giving language was most used by supervisors and was the only significant predictor of supervisor communication competence and teleworker communication satisfaction. This reiterates the findings from Madlock's (2012) previous study that supervisors seem to manage their teleworking employees using direction giving and task oriented communication and management styles, perhaps due to the nature of the telework environment to be task-oriented or the situation lending itself to more exchange of task related information. Although both of Madlock's studies were done in organisations with established telework programs, both are missing information on extent of telework. This lack of clarity is important since teleworking at higher frequencies may lead to more need to apply these sort of managerial methods as opposed to when employees telework less frequently.

In summary, managers appear to apply a variety of strategies to maintain control of their teleworking employees although they primarily need to rely on trust. Furthermore, managers appear to rely most on direction-giving and task-

oriented communication and management, perhaps because of the nature of the work situation, although this may be dependent upon extent of telework and the nature of the work.

## **5.2 Impact on co-worker relationships**

Just like telework has an impact on managerial practices it also impacts co-worker relationships, between teleworkers and their peers left at the office. The studies reviewed in this section provide two distinctive ways of viewing these relationships: From the teleworkers perspective and from the perspective of co-workers left at the office.

### **5.2.1 The teleworker's perspective**

While telework appears to have positive effects on the employee-supervisor relationship, the same does not appear to apply to co-worker relationships. A number of studies have examined co-worker relationships in the telework context from the perspective of the teleworker. As such, teleworkers have been found to be less satisfied with co-workers (Igbaria and Guimaraes 1999) and telework has been associated with lower team-member exchange (TMX) quality (Golden 2006). Furthermore, at higher frequencies of telework, TMX quality has been shown to go down (Golden 2006). Gajendran and Harrison's (2007) found teleworking intensity moderated the impact of telework on the co-worker relationship so that it amplified a negative effect for high intensity teleworkers.

Other studies have revealed that co-worker relationships are important sources of positive work attitudes for teleworkers. As such, social interaction with co-workers has been positively associated with beliefs and attitudes, which have then been shown to have a strong positive association with teleworker productivity (Neufeld and Fang 2005). Fay and Kline (2012) found that inclusion messages (messages that make teleworkers feel included in the workgroup), co-worker social support and collegial talk were all positively associated with teleworkers organisational identification and, except for collegial talk, were also positively correlated with organisational commitment. However, exclusion messages (messages that communicate rejection or separation to teleworkers)

were negatively related to both identification and commitment. Co-worker relationship quality was also positively related to identification and commitment of teleworkers. These findings emphasise the importance of quality co-worker relationships and co-worker informal interactions such as collegial talk and social support in helping teleworkers identify with and commit to their organisation. Using the same dataset as the previous study, Fay and Kline (2011) found that co-worker liking was positively related to teleworkers' job satisfaction and organisational commitment. They also found that informal communication satisfaction was a predictor of co-worker liking and that complaining talk, as a type of informal communication, was related to teleworkers' job satisfaction and organisational commitment. In the case of commitment, co-worker liking mediated this relationship. This indicates that, from the perspective of the teleworker, co-worker liking is an important contributor to their satisfaction and commitment. In a third study based on the same dataset, Fay (2011) seeks to identify themes that emerge through informal interactions between teleworkers and their co-workers, arguing that organisational outcomes, such as perceived membership, are formed and maintained through these interactions. The author found that informal interactions between teleworkers and their co-workers could be divided into five themes. First, personal disclosure refers to remote workers trying to establish personal relationships with their co-workers through opening up about personal matters. The second theme identified was sociality, which refers to casual chitchat, being social and collegial. A third theme was support giving and getting, which reflects the need of getting help or assisting others. The fourth theme was commiserating or complaining, which reflects how complaining with peers strengthens interpersonal bonds. Finally, the last theme identified was business updates or exchanges, which reflects keeping co-workers up-to-date or getting updates from them but these interactions were often found to be intertwined with the interactions represented by the other themes. Overall, the author found that informal co-worker interactions appear to serve multiple functions and goals, such as creating shared understandings, connecting,

creating and sustaining relationships, establishing and maintaining membership and managing impressions.

However, the findings of the above three papers must be interpreted in light of the limitation of their data set, as they used a small sample of 100 high-intensity teleworkers (defined as teleworking more than 3 days a week), which not only limits their generalizability to other groups of teleworkers but the small sample size also weakens the results drawn.

That said, a number of other papers echo these insights into the value of co-worker relationships, such as Mann, Varey and Button (2000) whose interviews with full-time teleworkers revealed that teleworkers missed the support of having a shoulder to cry on and someone to complain to. They furthermore found that teleworkers missed being able to look at their co-workers to see what to do or how to behave, therefore missed having social barometers to compare to, which led them to feeling insecure and unsure of their abilities. Wilton, Páez and Scott (2011) found that teleworkers felt that the level of normalisation of the practice depended on whether other actors in the work environment teleworked or supported telework. Their interviews of support personnel in an educational institution, where a formal telework program was not in place, revealed that respondents generally appreciated hearing others experiences of telework. They found that helped them to validate their telework experience as well as created shared understandings and contributed to a normalisation of the practice. Co-workers were therefore both viewed as social barometers as well as sources of support in a workplace where telework was not the norm. These are the same issues that Thatcher and Zhu (2006) address in their conceptual paper. They argue that because telecommuting changes the work environment it disrupts the psychological and social processes that underpin employee identification, identity enactment and verification in the workplace. Their conceptual paper draws on theoretical perspectives of social identity theory, which focuses on cognitive self-categorisation, self-verification theory, which stipulates that individuals actively look to bring others' assessments of them in line with their self views, and from identity enactment theory, in which identity is

a continual process of routines and activities that create a sense of structure and coherence in one's daily life. They further argue that these identification processes depend upon from where an employee teleworks, the extent to which they telework and whether it is mandatory or voluntary. Employees therefore draw various benefits from the co-presence with their co-workers, which are challenged in the telework context. They claim that teleworkers identification with the organisation and with the workgroup is particularly affected. Their paper draws attention to various issues such as employee isolation, coordination and social interactions, some of which will be explored further later in this paper. Its limitation, however, is the focus on the individual teleworker, ignoring the perspectives of others within the workplace.

In summary, from the perspective of the teleworker, telework appears to have negative impacts on co-worker relationships, especially at higher extents of telework. However, positive co-worker relationships have been shown to have clear implications in terms of positive employee attitudes. Teleworkers therefore appear to look at their workplace peers as important sources for social support and relational needs and they have an important role in establishing teleworkers membership and identification within the workgroup and the organisation.

### **5.2.2 The co-worker's perspective**

Telework has broader implications on the workgroups as co-workers left at the office are also affected and suffer several consequences.

Golden (2007) found that extent of telework had a significant impact on co-workers satisfaction with teleworkers as the more frequently they teleworked the more negatively co-workers were affected. More extensive face-to-face interactions were found to improve co-worker satisfaction with their teleworking co-workers and co-workers with less autonomy in their jobs were more likely to be unsatisfied with their teleworking co-workers. The findings from this study, although drawn from only one high technology company with an established telework program, clearly signal the potentially detrimental effects of telework on the co-workers left at the office. Thatcher and Bagger (2011) explored the perceived unfairness from the perspective of the colleagues of teleworkers,

drawing upon semi-structured interviews with 24 teleworkers, their peers and managers in four different organisations. Using organisational justice theories, they found that co-workers of teleworkers experienced increased workload as they were the ones present at the office and could more easily deal with issues and questions because of their visible presence. Their workload would also increase, as they needed to keep their teleworking co-workers in the loop, communicate information and deal with other issues. They therefore became a part of a forced exchange relationship with their teleworking colleagues as they were forced to deal with issues arising from their co-worker work arrangements.

By using the construct of collegiality, defined as the communicative and social behaviour of employees towards co-workers, Ten Brummelhuis et al. (2010) examined use of flexible work arrangements (flexitime and telework) on employee collegiality as well on the collegiality of their co-workers. Drawing upon a large sample of 1017 Dutch employees from a variety of organisations, they found that co-workers' flexitime use was negatively correlated to employee collegiality. However, no significant relations were found for telework. These findings contradict the previous study (Golden 2007), which indicated that negative effects on co-workers may be due to frequency of absence from the workplace. Rather, ten Brummelhuis et al.'s (2010) findings suggest that the negative effects may be due to irregular opportunities to interact with co-workers due to the varying and changing schedules that flexitime entails. However, the absence of negative effects when it comes to telework may be explained by that telework usually involves more formality and regularity in terms of hours worked. Other scholars have looked at the impact on co-workers in a similar light. The goal of Fogarty, Scott and Williams' (2011) qualitative study was to examine and contrast the impacts of formal and informal FWAs on office-based co-workers. They found that the formal flexible working scheme was overall well perceived with relatively few problems as co-workers experienced a relative ease in communicating with the absent workers. However, they reported more problems with the informal flexible work such as poor communication with office-based colleagues regarding hours of work, which became problematic because of the unpredictability of their hours. For

that reason, office-based co-workers also found it easier to contact formal flexible workers than the informal ones.

In summary, the evidence suggests that co-workers are negatively affected by having teleworking colleagues. Both high extents of telework as well as temporal flexibility (flexitime) seem to have especially detrimental effects on in-office co-workers.

### **5.3 Mixed workgroups**

Beyond the simple employee-supervisor and co-worker relationships reviewed in the previous sections, workgroups incorporating both traditional office based workers and flexible workers encounter several challenges that are not present in traditional collocated workgroups. Working with co-workers that are sometimes present and sometimes not, telework to different extents and at different times poses problems to intra-group communication, connectivity and socialisation. Fairness and justice issues may arise, overall group integration and dynamics are altered and knowledge creation and sharing may be affected. I will now explore each of these issues in turn.

#### **5.3.1 Communication patterns**

Group dynamics are largely dependent upon communication and interactions between group members. A number of studies have explored whether telework changes communication patterns in workgroups.

In order to understand the nature of communications in mixed groups, Belanger (1999) conducted network analysis on data obtained from two workgroups which consisted mainly of IT support personnel, 55% of which were teleworkers and teleworked on average 2 days a week. She found that work setting was not a significant predictor of whom workers chose to communicate with. Teleworkers did not appear to form their own blocks but would communicate rather equally with teleworkers and non-teleworkers. Although these findings should be viewed in light of the limitations of the sample used, they do indicate that teleworkers are not necessarily out of the loop in office communication since they appear to be communicating equally with other teleworkers and non-

teleworkers. In fact, Watson-Fritz, Narisimhan and Hyeun-Suk (1998) found teleworkers to be more satisfied with office communication than non-teleworkers. Furthermore, task predictability was found to be a positive predictor of satisfaction with office communication among teleworkers but in jobs high in task predictability procedures are known, defined, often formalised and generally require less interactions with co-workers (Watson-Fritz et al. 1998). This suggests that work that is characterised by task-orientation and clarity is easier to deal with and communicate in distributed settings than work that requires more interactions to be completed. However, Watson-Fritz et al.'s (1998) paper has important limitations such as that the teleworkers in their sample generally teleworked at low frequencies (86% less than two days a week), and had in general been in their job longer than the traditional workers which may mean they had already established good relationships, which underpin satisfactory communication.

Another paper published a year later, looked at whether telework altered communications patterns between teleworkers, supervisors, co-workers, subordinates and clients (Duxbury and Neufeld 1999). The authors used a mixture of methods including interviews, a survey and focus groups. Their quantitative data revealed that overall there was no significant change in frequency of communication before and after implementation of telework, between co-workers, teleworkers and managers. Although use of face-to-face meetings was lower after the implementation of telework for managers and co-workers, perceived importance of communication media remained the same for all groups, both face-to-face as well as electronic communication. It therefore appears that telework arrangements did not make it more difficult for managers, teleworkers and colleagues to communicate with each other. Although their qualitative data mostly confirmed these findings they also shed a light on a number of challenges encountered. These included a fear of disturbing, diminished sense of team, deterioration of relationships with colleagues and inability to attend spontaneous meetings. However, comments were also made that communication had improved as a result of the implementation of telework since it had become more formal. Based on these insights, the authors

therefore suggest that telework may actually improve communication, both hierarchically as well as laterally, as a consequence of it becoming more structured, pre planned, organised and formal. However, this paper suffers from the same limitations as the previous two papers since 65% of the teleworkers teleworked at relatively low extents, i.e. 2 days or less per week. Furthermore, the teleworkers had been chosen by their managers to participate in the telework pilot because they were trusted and had shown they could work independently, which suggests established relationships were in place.

In summary, telework does not appear to have negative effects on office communication or satisfaction with it and concerns that teleworkers are out of the loop in mixed workgroups may therefore be unwarranted. However, in light of the limitations of the evidence, the extent of telework may play a role as well as whether teleworkers already had established relationships within the workplace.

### **5.3.2 Connectivity – a paradox**

Although existing evidence suggests telework does not change how employees actually communicate with each other in mixed groups, a number of studies suggest that the methods through which communication takes place do change (Leonardi, Treem and Jackson 2010; Wiesenfeld, Raghuram and Garud 1999). As such, Wiesenfeld et al. (1999) suggest that in the context of telework electronic media may be the glue that binds individual employees together. In a study of organisational identification among teleworkers, they found that employees teleworking more frequently were less likely to communicate face-to-face and more likely to communicate electronically and via telephone. They also discovered that more frequent teleworkers valued electronic communication more than other means to create and maintain their organisational identification while less frequent teleworkers were more inclined to communicate via telephone to create and maintain their organisational identification.

Belanger, Webb Collins and Cheney (2001) also explored the role technology availability plays in the context of telework and communication. In a study of mixed workgroups, they found that availability of information system

technologies had significant effects on teleworkers performance while availability of communication technologies had a significant impact on teleworkers perceived productivity, performance and satisfaction. Belanger et al.'s (2001) findings illuminate two key issues with communication in a telework context. Firstly, they found that higher extents of work-related communication requirements had significant negative effects on teleworker performance and productivity, which means that the more teleworkers needed to communicate the more their performance and productivity went down. Second, authors found that the frequency of telework per week had a significant impact on productivity, in that those teleworking more frequently perceived themselves as more productive. Therefore, the more a teleworker needs to communicate the less productive he or she perceives himself, presumably because of disturbances from social contacts with peers. In contrast, the more often a teleworker works away from the office, more perceived productivity follows, presumably because of less disturbances.

Belanger et al.'s (2001) findings were the first clues to the existence of a connectivity paradox. The paradox suggests there are two facets to teleworkers connectivity where on one hand information technologies help teleworkers to remain connected to the workplace while on the other hand this connectivity starts being perceived as disturbance and as a threat to the teleworkers productivity. It was not until nine years later that Leonardi et al. (2010) first termed the construct. Their study demonstrated the importance of having the necessary technology, infrastructure and applications in place as teleworkers used these to reduce the distance to their colleagues. Their interviews, conducted in companies with active support of telework, also revealed that the longer teleworkers had been teleworking the more competencies they had developed in connecting virtually and the less concerned they were that telework led to a deterioration in interpersonal relationships. However, they would also perceive the connectivity with the office in a negative light, as they would have to invest time and effort in attending to communication demands. They expressed finding themselves in the middle of discussions with their peers, which they had thought they would avoid by teleworking. As such, they

found they were losing both the increased flexibility and productivity they sought by wanting to telework as well as the ability to concentrate on work without distractions. This would even lead to them strategically disconnect or dissimulate from the office using information technologies in order to better be able to concentrate on their work.

These findings again coincide with the findings of Belanger (1999), Duxbury and Neufeld (1999) and Watson-Fritz et al. (1998), reviewed in the previous chapter 5.3.1. Distance from the office does not necessarily lead to disconnection in communication and due to information technologies teleworkers not only remain highly connected and integrated regardless of their absence from the workplace, but perhaps too connected. Two papers written by Fonner and Roloff (2010; 2012) explore these issues of connectivity in the telework context further. They both draw upon a survey of teleworkers and office-based employees in which teleworkers are defined as those that work three or more days away from the office and office-based employees work at least three days at the office, but may or may not telework the other days. Fonner and Roloff (2010) found that high intensity teleworkers experienced significantly less general political behaviour, reduced stress due to interruptions and meetings and less frequent yet not lower quality information exchange. These findings suggest that high intensity telework may provide a break from the political behaviours at the workplace and the less frequent information exchange may relieve teleworkers from stress from meetings and interruptions. Fonner and Roloff's (2012) paper sets out to test the connectivity paradox of telework, referring to that information technologies connect teleworkers to the office and allow them greater social presence but also lead to increased interruptions and disturbances. They found only a partial support for the connectivity paradox, i.e. only the part that connectivity undermines the benefits of working away from the office. Therefore, although the use of various methods of communication such as face-to-face, videoconferencing and phone communication were positively related to teleworkers' perceptions of social presence, these relationships were not found to be significant and the benefits of increased communication on perceptions of social presence appeared to be marginal. Furthermore, high

intensity teleworkers and office-based employees reported similar perceptions of social presence, which suggests that telework does not necessarily lead to teleworkers feeling out of the loop or less a part of the workgroup. In fact, high intensity teleworkers reported less identification with the organisation when constant connectivity threatened the expected benefits of their work arrangement perhaps because they were trying to balance different aspects of their lives and therefore did not want to be disturbed. Furthermore, this appears to also apply to the office-based employees since their use of face-to-face and email communication was related to feelings of stress due to interruptions.

Taken together Fonner and Roloff's (2010), Fonner and Roloff's (2012) and Leonardi et al.'s (2010) papers suggest that teleworkers appear to be more likely to benefit from less presence in the office rather than it leads them to feel isolated from co-worker interactions. As such, they experience less stress and interruptions and are relieved from superfluous communication and political behaviours. Although the three studies all focused on high intensity teleworkers, communication seemed to be associated with stress and pressure for both office and teleworking employees. Issues of interruptions and interferences with ability to concentrate on work may therefore need to be addressed for both groups.

Watson-Manheim, Piramuthu and Narasimhan (2000) observed a different aspect of the connectivity problem of teleworkers. In a study of teleworkers and office-based workers, they found that higher levels of interdependence with co-located workers resulted in higher productivity satisfaction for office workers but had no impact on teleworkers, therefore contradicting suggestions that teleworkers should perform jobs, which involve little interaction with co-workers. This again echoes findings of previous papers (e.g. Duxbury and Neufeld 1999; Leonardi et al. 2010) that found that teleworkers managed to maintain good contact with their office peers. Watson-Manheim et al. (2000) also found that teleworkers preferred scheduled face-to-face meetings as opposed to unscheduled ones, although they valued unscheduled contact for the purpose of getting help from co-workers and finding out about job-related changes. This

also supports findings of previously discussed studies (Fonner and Roloff 2012; Leonardi et al. 2010) that teleworkers appear to want as little of unscheduled interruptions as possible in order to maintain their own productivity. Interestingly though, these findings also indicate that teleworkers value ad hoc contact for informal interactions. The next section will further explore the informal interactions in a telework context.

However, the preceding discussion on the connectivity paradox must be considered in light of the fact that it represents the perspective of the teleworker. Although some of the preceding studies also included comparison groups of in-office workers the purpose of these are comparison of attitudes and the aim was not to understand the impact of telework on co-workers or on the group as a whole. Presumably, therefore, co-workers and managers may have a different view of the connectivity of their teleworking co-workers.

In summary, electronic communication and information technology is especially important in workgroups consisting of teleworkers and in-office workers. Overall, teleworkers do not appear to suffer from a diminished presence in the workplace. In contrast, connectivity through information technology may become too much so that teleworkers productivity is impacted. However, their co-workers and managers may take a different view.

### **5.3.3 Socialisation**

Interactions at a workplace are not always work-related or happen at scheduled meetings. Building upon the discussion in chapter 5.2.1, in particular the studies of Fay (2011) and Fay and Kline (2011; 2012), it is clear various informal communication practices are of importance and value to teleworkers as well as their in-office counterparts.

One way to look at the value of such spontaneous interactions is by linking them to teleworkers' perceptions of isolation. Cooper and Kurland's (2002) study focused on exploring the relationship between isolation and three employee developmental activities in the telework context: Interpersonal networking with co-workers, informal learning that improves work skills and

mentoring from co-workers and supervisors. Authors conducted interviews with a mixture of supervisors, teleworkers and non-teleworkers from organisations in public and private sectors assuming a difference between the two as the public sector is generally more formalised in rules, regulations and programs. They found that teleworkers isolation concerns were associated with employee development activities, which involve overall skill growth and employee learning. In particular, teleworkers missed informal and spontaneous interactions, whether they involved simple gossiping, learning opportunities through interpersonal networking or mentoring from co-workers or supervisors. However, private sector employees were more concerned about this than public sector employees. Potential reasons are that in the public sector the telework arrangement, reporting procedures and learning are more formal. In terms of extent of telework, no relationship was found between isolation concerns and telework frequency, although interviews revealed an overall opinion that in order to not miss out on developmental activities teleworkers should telework less. Cooper and Kurland (2002) conclude that isolation concerns are linked to how much value is placed on developmental activities at the workplace and how much employees feel they are missing out on this when working from elsewhere. Subsequently, in workplaces in which employees are encouraged to interact informally, teleworkers may feel more out of the loop than in workplaces where spontaneous interactions are less valued.

To determine the role of professional isolation, i.e. feelings of being cut off, lacking support and missing social interactions, Golden, Veiga and Dino (2008) explored its impact on employee work outcomes. They found a significant negative impact of professional isolation on job performance and that this negative impact is greater among those who spend extensive time teleworking and those who have limited face-to-face interactions. The findings suggest that the job performance of teleworkers, especially high-intensity teleworkers, may suffer as a consequence of lack of informal interactions and social barometers from peers.

Co-workers have also been shown to experience confusion as a result of working with teleworkers, due to lack of socialisation with them. These perceptions were associated with perceptions of fairness and stemmed from lack of communication from management of what teleworking really meant to the workgroup. In-office workers were not sure how relationships were to be maintained and work was to be done in the telework context (Hylmö and Buzzanell 2002). They would express concern about relationship maintenance with teleworkers in the absence of the normal routines and rituals of greeting and saying goodnight. Without such informal conversations and spontaneous interactions, in-office workers experienced feelings of disconnectedness from the teleworkers (Hylmö and Buzzanell 2002).

In summary, teleworkers are more likely to feel cut off and isolated in workplaces where value is put on informal exchanges and interactions. Teleworkers performance may subsequently be affected. However, this also depends upon the extent of their absence from the workplace. Finally, in-office co-workers may also experience a sense of disconnectedness due to lack of spontaneous and informal interactions with teleworkers.

#### **5.3.4 Justice perceptions**

Although managing teleworkers is in itself a challenge, as was reviewed in chapter 5.1.2, managing groups mixed with teleworkers and office workers poses a whole different set of challenges. In particular, managers are faced with issues of fairness and justice in both groups of employees.

Organisational justice theories provide insight into the complex dynamics of mixed workgroups. Kurland and Egan (1999) explored the impact of telework on organisational relationships by linking it to organisational justice perceptions i.e. distributive justice (whether employees receive the outcomes they feel they deserve), procedural justice (whether the process of receiving is fair) and interactional justice (fairness of treatment, result of personal relationships in particular with managers). They furthermore explored whether these relationships were moderated by use of three objective managerial control strategies to evaluate performance i.e. the use of outcome-based evaluation,

formal communication and by the existence of formal job descriptions and performance standards. They found that telework was positively related to both procedural and interactional justice but not to distributive justice. Furthermore, they found that formal communication directly correlated with all forms of justice and job formalisation was significantly correlated with procedural and interactional justice and modestly with distributive justice.

Thatcher and Bagger (2011) also explored justice perceptions in mixed workgroups from the perspective of both teleworkers and non-teleworkers through a number of qualitative interviews. Taken together, the findings from Kurland and Egan (1999) and Thatcher and Bagger (2011) suggest that teleworkers are particularly concerned with clarity of evaluation and processes and that they receive fair treatment by their supervisors. Positive relationships between telework and procedural justice suggest that supervisors take precautions to keep track of their teleworkers, keep them informed and ensure they have voice in processes that affect them. Since procedural justice primarily refers to fairness in treatment, it reflects the importance of formal policies to resolve both issues of fairness and variations between managers in terms of support, information sharing and overall dealing with teleworking subordinates. Echoing this, Collins et al. (2013) found in their study that supervisors had a crucial role in determining the level of flexibility teleworkers were allowed. They had developed different views and interpretations of flexibility and subsequently how they implemented it would differ as well. They found that previously formed opinions of the employees from when they worked at the office would impact the negotiation of their flexible arrangement. Establishing procedural justice is therefore important as if procedures and processes are clear, inequity and inequality perceptions among employees in mixed groups are minimised (Fogarty et al. 2011; Kurland and Egan 1999; Thatcher and Bagger 2011).

Interactional justice may be achieved when communication is clear on formal telework policies and managers have support to follow them (Thatcher and Bagger 2011). Furthermore, it entails perceptions of fair treatment and clarity in interactions and communication, although these may sometimes be strained

because of use of electronic media such as e-mail. Kurland and Egan (1999) argued that the positive link between telework and interactional justice may be explained by the fact that teleworkers are often preselected because of their reputation as trustworthy employees and because of their pre-existing relationship with their supervisor. Furthermore, supervisors are demonstrating support at a personal level by allowing workers to telework and therefore help them resolve work-family or commute issues. The findings of Collins et al.'s (2013) study revealed that if employees had managed to negotiate a level of flexibility or work hours that they were satisfied with and suited them personally, they were unlikely to view differing levels of flexibility of their co-workers unfairly. Therefore, if employees were happy with their own level of flexibility they would be less likely to be frustrated at their co-workers level of flexibility.

However, distributive justice, which according to Thatcher and Bagger (2011) refers to the duty to provide equipment to the teleworker and the rewards provided to teleworkers either of economic or socio-emotional nature, was not found to be significantly important to teleworkers in Kurland and Egan's (1999) study, perhaps because respondents found being allowed to telework to be a reward in itself.

Finally Kurland and Egan (1999) found that informal relationships and connections with supervisors led to higher levels of distributive, interactional and procedural justice. This finding relates to both the discussion on high quality supervisor-employee relationships in section 5.1.1 as well as the discussion on the value spontaneous informal interactions in section 5.3.3 and therefore reiterates the value of socialisation and relationship building at a personal level.

In summary, since co-workers are aware of each other's treatment within the workplace, justice and fairness perceptions are an important attribute of mixed workgroups. As such, procedural and interactive justice appear to be of specific importance.

### **5.3.5 Group cohesion**

Maintaining group cohesion when one or more of group members are not present or only present some of the time as well as integrating these employees into a workgroup is another challenge facing managers of mixed groups.

Research has shown that teleworkers organisational identification is positively related to their perception of work-based social support, defined as to what level employees sense that they are socially integrated and have positive social relationships with others in the workplace (Wiesenfeld et al. 2001). This means that teleworkers who feel work-based social support report higher organisational identification and reveals the importance that managers apply an inclusive and supportive management style to integrate teleworkers into their workgroup. However, like Kurland and Egan's (1999) and Thatcher and Bagger's (2011) studies suggested, attempts to integrate teleworkers may have consequences on the in-office co-workers.

Lautsch et al. (2009) draw their findings from interviews with 90 dyads of supervisors and their direct reports, some of who teleworked. Their findings revealed that both teleworkers and non-teleworkers experienced a decrease in work-life conflict when supervised the same way. This finding illustrates how they are aware of each other's treatment (see section 5.3.4). Furthermore, they found that using the same monitoring strategies of job formalisation and feedback for both groups would positively relate to performance across the sample but was negatively related to helping behaviours for both groups. This suggests that these monitoring practices may not be suitable in work environments where cooperation and collaboration is valued and needed. However, teleworkers frequent contact with supervisors would lead to an increase in their helping behaviours towards their co-workers, which underlines the importance of keeping teleworkers connected as they will then reach out to their co-workers as well. Finally, when supervisors required teleworkers to draw strict boundaries between home and work it led to them experiencing lower work-family conflict, but also to lower helping behaviours towards their co-workers. This would then impact the non-teleworkers, as they would be relied

upon if something was needed and subsequently experience higher work-family conflict. It is therefore important that managers are aware that what benefits teleworkers may have detrimental effects on their colleagues.

Other aspects that have been identified to be a challenge to group cohesion and integration include teleworkers lack of presence or lack of visibility. Richardson (2009) interviews with high-intensity teleworkers revealed that face-to-face interactions helped teleworkers to reinforce their professional identities to their managers and co-workers and remain a part of the workgroup. Other challenges to group integration include teleworkers missing out of socialisation with peers (see section 5.3.3) and weakening of ties (Felstead et al. 2003). Within the workgroup justice perceptions may disrupt team integration (see section 5.3.4), as traditional workers may need to pick up work from teleworkers. Felstead et al. (2003) found that managers would deal with this by introducing new venues or ways to socialise for teleworkers and traditional workers. These socialising channels included phone calls, virtual meetings and real time meetings, but interestingly they were also found to be problematic. In fact, the authors discovered that when the teleworkers were finally in the office they tended to spend all of their time catching up on work-related matters, which left less time for informal socialising. They also identified a tendency of teleworkers to focus on personal achievements as opposed to corporate goals or group participation and found that characteristics of the teleworkers made it problematic to integrate them into workgroups because they would normally be very resourceful, self-sufficient and independent (Felstead et al. 2003). Managers therefore not only face the challenge of keeping track of frequently absent teleworkers' actual work progress and output but also the challenge of integrating independent and self-sufficient teleworkers into a workgroup of other employees.

In fact, integration challenges may not only stem from self-sufficient teleworkers but also from different individuals within the workgroup. Based on interviews with a mix of full and part-time teleworkers and managers in a government agency, Hylmö and Buzzanell (2002) identified four groups of employees with

different attitudes. First were the non-teleworkers with desire for promotions that stayed as long as they needed at work and equated presence at work with commitment. Second were the non-teleworkers that did not expect to be promoted, were strict on keeping to their scheduled work hours and who defined work as time spent and activities completed at the office. Since they were not collocated with teleworkers they were not interested in maintaining relationships with them. The third group were the teleworkers which spent most of their time working outside the office, viewed real work as the work done for clients and did not see presence at an office as necessary for promotion. The fourth and last group consisted of teleworkers who had no advancement aspirations, were primarily those approaching retirement or those more dedicated to their families. These people tried to maintain relationships and be social with colleagues.

Hylmö and Buzzanell (2002) therefore illustrate that the challenge to group integration is not only to provide support and address fairness issues but also to deal with the different characteristics, emotional reactions and agendas of the members of the workgroup. One of the few conceptual papers that address the problems of how employee flexibility affects workgroups (Van Dyne et al. 2007) presents a model of the effects FWAs have on group processes and organisational citizenship behaviour through the reduced presence of flexible workers at the office, i.e. reduced facetime. Their purpose was to identify and explore how various practices taken up by individuals as well as groups may benefit employees and their workgroups in dealing with the challenges of flexibility. The paper is built on the assumption that reduced facetime is the mechanism through which FWAs affect workgroup peers, group processes, coordination and cooperation. On one hand, the model stipulates how work practices at the group-level: Collaborative time management through synchronised interactions and team-centred coordination reduce the effects of reduced facetime on group-level coordination. It also stipulates how, at the individual level, proactive availability reduces these effects. On the other hand, the model describes how at the group-level redefinitions of contributions through event time (interaction rituals either formal or informal) and norms for

flexibility (normalising FWAs within the group by redefining work contributions) impact group-level motivation. It also describes how, at the individual level, proactive availability and strategic self-presentation (maintaining positive impressions others have of the individual as a worker through strategic ways) impact group-level motivation. Authors then illustrate that when facilitating work practices support group-level motivation and group coordination, this leads to organisational citizenship behaviour directed towards the organisation and towards individuals.

Van Dyne et al. (2007) paper identifies ways in which the problems discussed in previous sections can be dealt with so that flexible working employees can be a successful part of workgroups. Actually implementing these practices may be problematic though given the differences of group members and their agendas, differences in occupations, extent of absence and even due to differences in formality of the arrangements within the organisations. Furthermore, the model does not account for the informal interactions and personal relationships previously described to be important in this context.

In summary, although social support and equal treatment of teleworkers and non-teleworkers may facilitate group integration, challenges such as reduced visibility, differences in individual attitudes towards teleworkers and different characteristics of teleworkers still pose problems to the integration of mixed groups. Adopting facilitating work practices at multiple levels may help overcome some of these issues.

### **5.3.6 Knowledge sharing**

In addition to issues of fairness, and integration of groups containing flexible workers and building upon the discussion of the previous sections, knowledge sharing and knowledge creation in workgroups is also influenced by the presence of flexible workers.

Raghuram (1996) was one of the first to address the issue of how the telework context creates tension in knowledge creation and to explore the way teleworkers acquire and communicate knowledge, in particular through using

the distinctions between tacit and explicit knowledge. First, they argue that interpreting explicit knowledge and converting it to tacit knowledge should be similar in conventional and telework contexts. The interpretations of the teleworker may, however, remain unchanged for a long time since, due to less frequent interactions, they are unlikely to share their interpretations of explicit messages. Second, given the role of information technologies in converting explicit knowledge to explicit knowledge, this process should be the same for teleworkers and other employees. This is because documents, notes or other information can easily be shared in written form and interpretations happen at an individual level. Third, problems arise for teleworkers when it comes to converting tacit knowledge to explicit knowledge, since this happens in socialisation processes, which are less frequent in telework contexts. Insights may be contextual which makes communication of them difficult since teleworkers most of the time do not share the same space as office workers. Furthermore, teleworkers are also disadvantaged in terms of the explication of knowledge since it is dependent upon extensive peer socialisation, which depends upon relationships, trust and common perspectives between co-workers. Fourth, converting tacit knowledge to tacit knowledge is also difficult in the telework context for the same reasons i.e. the lack of proximity to co-workers, lack of shared context, informal interactions and exchanges. Authors conclude that although technology helps in communicating, accumulating and disseminating explicit knowledge, the lack of socialisation may hamper creation of tacit and explicit knowledge from tacit knowledge in a telework context.

Fourteen years later another conceptual paper (Taskin and Bridoux 2010) continued to explore the issues surrounding the dissemination of knowledge in a telework context. Authors argue that telework alters workers attachment to the organisation as well as the social relationships between teleworkers and in-office workers. As a consequence, they argue that transferring individual technical knowledge becomes easier if the employees in question have a close relationship and share organisational knowledge but telework may negatively affect these factors. In determining the extent of this negative impact they focus on three dimensions. First, they look at frequency of telework, second, they look

at teleworkers location, i.e. from where they telework and third, they look at perceptions of telework in terms of that it lacks social legitimacy and may be perceived as a constraint rather than opportunity. The authors then develop a model, which explains how these three factors influence knowledge transfer. On one hand they impact knowledge transfer through the cognitive components of socialisation i.e. narratives and language, shared mental schemes, identification with organisation's goals and values. On the other hand the three factors influence knowledge transfer through relational components i.e. close relationships.

Both of these conceptual papers are insightful in terms of the limitations telework poses to knowledge transfer and creation in workgroups, drawing special attention to the socialisation processes that teleworkers miss out on. They both assume that reduced facetime is the underlying issue, although they do this less explicitly than Van Dyne et al. (2007) in their paper on group processes reviewed in the previous section. However, no attention is given to how formalisation of telework may impact these processes. Furthermore, both papers problematise telework as something that challenges traditional ways of socialising with colleagues. Taskin and Bridoux (2010) even acknowledge this by noting that other papers should view the issues of knowledge transfer through a re-socialisation lens as opposed to de-socialisation. This view argues that teleworkers may bring in fresh perspectives since they have socialised with people outside the office, e.g. clients or friends.

Only one paper has empirically tested some of the propositions made in the previous two papers. In a survey of teleworkers who teleworked on average 48% of the workweek and were in a variety of positions, Golden and Raghuram (2010) found that interpersonal bond, trust and organisational commitment were all positively associated with knowledge sharing. On one hand they found that interacting face-to-face enabled knowledge sharing for teleworkers with low trust relationships with their co-workers. On the other hand interacting face-to-face was perceived less necessary when teleworkers' relationships with their co-workers were characterised by high-trust. Using electronic tools was

perceived necessary to enhance knowledge sharing for those in low trust relationships while that was not needed in higher trust relationships. Overall, a key insight gained from this paper is how important interpersonal connections are for knowledge sharing, particularly trust. In high trust relationships there appears to be less need for both electronic tool use as well as face-to-face interactions. However, interestingly, interpersonal bonds do not appear to matter, perhaps because when interpersonal bonds are present the altered context of telework does not change anything in terms of knowledge sharing.

In summary, dissemination of knowledge in mixed workgroups is challenged due to the lack of presence of teleworkers as well as lack of socialisation with peers. However, building quality relationships and trust among group members may be key to facilitate both knowledge sharing and creation in mixed workgroups.

#### **5.4 Summary**

The preceding discussion and analysis has organised the evidence according to whether it primarily focused on dyadic relationships between teleworkers and supervisors or teleworkers and co-workers, or whether workgroup issues were being discussed. Subsequently, the impact of telework use or teleworker prevalence on employee-supervisor and co-worker relationships was investigated as well as its impact on mixed workgroups. The following section will move on to consider whether the aim of this review has been fulfilled and whether the review questions have been answered.

## **6 DISCUSSION**

The aim of this review was to explore how flexibility in time and/or place of work impacts intra-group relations. A systematic process of going through the literature, identifying relevant papers and analysing them brought to light various interesting insights.

### **6.1 Overall observations**

A first observation was the scarcity of papers on the topic. Although numerous papers have explored the impact of virtuality on groups, within the literature on virtual teams in particular (e.g. Martins et al. 2004), much less work has been done on the impact of flexibility on groups. Although virtuality is also a characteristic of FWAs, especially in the case of telework, FWAs generally include an element of choice for the employee. Virtuality, observed in virtual work and virtual teams, simply refers to a different work location and that communication is virtual instead of face-to-face. Subsequently, although it was sometimes difficult to distinguish whether papers discussing virtual work actually referred to telework, the number of papers ultimately chosen for this review was relatively low: a total of 40 papers.

Second, the initial aim was to look at the impact of both flexitime and telework. However, the searches brought out almost nothing explicitly looking at flexitime. The focus of the review therefore unintentionally switched to locational flexibility. The reasons for the absence of studies of flexitime may be numerous. Flexitime involves control over one's own work time within a given range set by the organisation, and therefore may entail more irregularity than telework. Since employees can adjust their hours according to their needs, within limits, work hours may not be the same every day. These arrangements may subsequently be negotiated informally with managers and not be a part of formal programs in organisations. Perhaps they are therefore more difficult to research or identify. Furthermore, given that the majority of the empirical papers reviewed here were based on studies done in organisations with formal programs, the lack of studies on flexitime may reflect the lack of distinction in the overall literature on

FWAs between formal and informal FWAs and predominance to study formal FWAs (de Menezes and Kelliher 2011).

Third, during analysis of the evidence it soon became evident that almost all papers in this field are based on an underlying assumption that challenges and problems in workgroups that include teleworkers arise because of the teleworkers lack of facetime i.e. a lack of presence of the flexible workers at the workplace. The focus of the literature is subsequently to look at telework as a de-socialisation process while it could also be viewed as a re-socialisation process because teleworkers may spend more time socialising with people outside the workplace, whether clients, friends or family (Taskin and Bridoux 2010). A view of reduced facetime as having purely detrimental effects on socialisation processes may be overstated since teleworkers may bring fresh perspectives from socialising with other people.

A fourth observation was that frequency of telework is often not stated in empirical studies. When it is stated it is often unclear, e.g. by stating an average (e.g. Golden et al. 2008; Neufeld and Fang 2005), by grouping workers in different ways as high-intensity and office workers (Fonner and Roloff 2010; 2012) or by providing limited information (Kurland and Egan 1999; Lautsch et al. 2009). In fact, attempts to classify the empirical studies in this review according to extent of telework proved to be futile, given the ambiguity of how it was reported, if it was reported at all.

A final observation is that the studies identified for this review were predominantly focused on the teleworker perspective and less on other actors in the teleworkers social environment. This was particularly interesting in light of that the aim of this review was to explore the impact on the workgroup and the social environment. Even when studies also sampled co-workers this was mainly to compare attitudes of the two groups (e.g. Fonner and Roloff 2012; Watson-Fritz et al. 1998).

## **6.2 Has the review question been answered?**

This review has identified various ways in which intra-group relations are affected in the presence of teleworkers. As such, the current evidence suggests that employee-manager relationship quality is positively affected by telework while co-worker relationships are negatively affected. Various aspects of intra-group relations were picked up by the studies such as communication within workgroups, which was not seen as being negatively affected. As such, teleworkers did not perceived telework to be detrimental to workgroup communication, felt they were well connected to their peers and managers, to the extent that the connectivity became excessive. However, this may apply mainly to formal and work-related communication since both teleworkers and co-workers reported missing informal and spontaneous interactions with co-workers. Subsequently, the lack of socialisation and relationship building at personal levels would lead to challenges to knowledge sharing and creation in mixed workgroups. Finally, managers face challenges of not only maintaining control over absent teleworkers but also integrating them into a workgroup of diverse individuals where they are additionally faced with challenges of justice and fairness.

The evidence also suggests that frequency of telework may impact these issues as well as whether the teleworking employees have a formal and predefined schedule of telework or whether they telework on an irregular and informal basis.

Overall, in terms of flexibility in place of work, it can be said that the review question has been fairly well answered. However, in terms of flexibility in time of work, the same cannot be said. Only one study explicitly looked at flexitime and found it to have detrimental effects on employee collegiality, more so than telework (ten Brummelhuis et al. 2010). If one assumes that flexibility in time of work is generally less predictable and more ad hoc and need-based, a number of studies found less formalisation and structure to have more negative effects on workgroups (Cooper and Kurland 2002; Fogarty et al. 2011). Therefore, flexitime may possibly have more negative effects on workgroups because of

the schedule irregularity it involves. However, these are speculations and in no way provide a comprehensive answer to how flexibility in time of work impacts intra-group relations.

Finally, two sub-questions were put out at the beginning of this review in which it is asked how the relationship between flexibility in time and/or place of work and intra-group relations impact group-level outcomes and what these group-level outcomes may be. This review does not provide an answer to these questions. As previously discussed, the focus of the studies reviewed was predominantly on the teleworker. A few studies looked at the perceptions of co-workers or managers but no empirical studies were found that looked at the impact of having teleworkers as a part of the group on group-level outcomes, such as performance or productivity. The only papers that discussed these issues were conceptual (Van Dyne et al. 2007; Taskin and Bridoux 2010). In the initial stages of this review I came across many empirical studies that look at group-level outcomes of virtual teams, indicating substantial work has been done on these issues when it comes to virtuality in workgroups. However, as previously discussed, virtuality in workgroups is not the same as flexibility and therefore the lack of research on the effects of flexibility on workgroup outcomes is noteworthy.

Consequently, this review provides a limited answer to the review questions asked, primarily because of gaps identified in the field. The next section will put out research opportunities to fill these gaps.

### **6.3 Implications for further research**

Based on the previous discussion I have identified a number of research areas.

First, since the primary review question was only partially answered a straightforward research opportunity is to explore the impact of flexibility in time on intra-group relations. In view of the predominant focus on the teleworker this should be explored by involving multiple parties at the workplace including flexible workers, co-workers and managers.

A second research opportunity is to attempt to answer the subquestions, i.e. explore the impact of the presence of flexible workers in workgroups on group-level outcomes. In terms of identifying these outcomes group performance may be the most obvious choice. However in line with the conceptual papers on knowledge transfer and creation (Raghuram 1996; Taskin and Bridoux 2010), empirically examining the effect of FWAs on knowledge creation in mixed workgroups is an interesting opportunity of research. Taking it a step further, looking at creativity in mixed workgroups is also a viable research opportunity. Both knowledge creation and creativity would have to be defined or reliably measured.

A third research opportunity is to compare the impact flexibility in time and place of work has on intra-group relations in workgroups where employees have a formal flexible work arrangement and where they do not. Such a study may clarify the clues picked up in this review regarding whether formality plays a role in how FWAs affect intra-group relations.

A fourth and final research opportunity is to conduct a study that compares how teleworkers that telework at different frequencies are perceived in mixed workgroups. Such a study could clarify the impact telework frequency has on intra-group relations. Subsequently, the real value of facetime, the underlying assumption in the literature, can be scrutinised.

Overall, all these research areas would either include, or focus on, other members of the workplace, especially in-office co-workers, given the extent of attention teleworkers have received in the literature to date.

#### **6.4 Implications for practice**

This review identified various managerial challenges to mixed workgroups that managers need to address. In terms of teleworkers managers should maintain open and transparent communication, address justice issues and maintain connection with them while still trusting them to do their jobs. They should encourage informal socialisation among workgroup peers and open up channels so that they can communicate and share information in both formal

and informal ways. In terms of co-workers they should ensure open and transparent processes and communication regarding teleworkers work arrangements in order to avoid fairness issues. They should treat the workgroup equally and take care to integrate and include teleworkers into the workgroup so in-office peers do not bear the burden of their teleworking co-workers lack of presence at the office.

## **6.5 Limitations**

A key limitation of this paper is its methodology. Although a systematic review process is designed so that all available evidence is assessed and reviewed in the same way, the fact is that the field studied here is ambiguous. Terminology is not always clear as different constructs are used to delineate the same things. Furthermore, measures and methodologies vary, which makes comparisons of research difficult (see chapter 2 for a further discussion of issues in the field). The studies reviewed here were chosen to the best of my abilities as a researcher, thoroughly following the systematic review protocol. However, studies may have been omitted or missed. Given that this is not an entirely objective process, I may also have inadvertently included studies because of my own interest or assumptions rather than because of an objective evaluation.

## **6.6 Personal learning**

The process of conducting the systematic review itself was the key learning for me. It was a long and tedious process but in the end it did identify papers, which I had never seen before, although I did consider myself fairly well read on my topic to date. This process does not only ensure academic rigour but it also ensures that aspects of the topic that may have been researched in other disciplines (for me this included engineering and transportation for example) are picked up and included in the review. Synthesising the material was a challenge and felt like putting a big puzzle together without knowing what the picture is. It has certainly not been an easy process but the result makes it all worthwhile.

## **7 CONCLUSION**

This systematic literature review has provided insights into how flexibility in place of work impacts intra-group relations. The impact of telework on employee-supervisor and co-worker relationships as well as on overall group dynamics were discussed, challenges identified as well as gaps in the current knowledge on the topic. Furthermore, this review discovered that little is known about the impact of flexibility in time of work on intra-group relations and about how FWAs in general impact group-level outcomes. It has therefore identified significant gaps in the field.

Overall, the main problem with telework use in workgroups is the impact it has on spontaneous and informal interactions and socialisation between workgroups peers. Not only teleworkers miss the casual talks by the coffee machine or the water cooler but their office peers also feel disconnected from their teleworking co-workers. Managers face challenges in addressing these issues and creating group cohesion when flexible workers are sometimes present and sometimes not. Do these issues impact group outcomes? We don't know. More research is needed.

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## APPENDICES

### Appendix A - Data Extraction forms: Empirical papers

<b>Authors</b>	ten Brummelhuis, Haar and van der Lippe*
<b>Title</b>	Collegiality under pressure: the effects of family demands and flexible work arrangements in the Netherlands
<b>Year</b>	2010
<b>Journal</b>	The International Journal of Human Resource Management (3*)
<b>From search string</b>	Yes
<b>Background</b>	This paper examines the effect of family demands (number of children, presence of young children and family tasks) on one hand and use of flexible work arrangements (flexitime and telecommuting) on the other hand on employee collegiality as well on the collegiality of their co-workers.
<b>Methodology</b>	Quantitative
<b>Details of methodology</b>	Closed question interviews conducted orally and in written. Furthermore, respondents were asked to keep time diaries for a week to measure family demands. OLS regression with a cluster correction, run four times on four separate models. Measures: collegiality, family demands, flexible work arrangements, co-worker characteristics + control variables.
<b>Sample</b>	No details on the actual sectors of the participating organisations, but mentioned that it was deemed representative of the Dutch economy. Overrepresentation of the service sector. No detail on occupations of the participants. 28% response rate (n=1114). Final sample consisted of 1017 employees after adjusted for hours worked and fill-in of questionnaire. 46% had no children.
<b>Key findings</b>	Co-workers' flexitime and co-workers' telecommuting were also negatively correlated to employee collegiality. Supervisor support and job autonomy were positively correlated to employee collegiality and co-worker collegiality. Regression analyses revealed that use of flexitime was negatively related to collegiality. Furthermore co-worker flexitime use was negatively related to employee collegiality. No significant relations were found for telecommuting.
<b>Remarks/contribution</b>	Flexitime appears to have detrimental effects on collegiality. This is speculated to be the result of increased stress due to changing schedules and reduced opportunities to communicate with co-workers. However telecommuting was found to have no effects. This paper is methodologically sound, but suffers from a lack of information on professions of the participants.
<b>Quality assessment</b>	4 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Collegiality (the social and communicative behaviour of employees toward their co-workers, intended to contribute positively to team cooperation and the atmosphere at work).
<b>FWA type discussed</b>	Flexitime and telecommuting
<b>Additional thoughts</b>	Only paper that looks at flexitime. No effects for telework.

<b>Authors</b>	Golden*
<b>Title</b>	The role of relationships in understanding telecommuter satisfaction
<b>Year</b>	2006
<b>Journal</b>	Journal of Organizational Behavior (3*)
<b>From search string</b>	Yes
<b>Background</b>	Looks at the role of relationships with managers, co-workers and family in mediating the link between extent (frequency) of telecommuting and job satisfaction.
<b>Methodology</b>	Quantitative
<b>Details of methodology</b>	Web-based survey. Not clear who sent the survey. No evidence of piloting. Measures were job satisfaction, extent of telecommuting, LMX quality, TMX quality and work-family conflict. Established measures were used for all the variables. These are well explained. Exploratory factor analysis was used to confirm the variables and make sure the measures suggested were theoretically and empirically distinct. Then hierarchical stepwise regression was conducted.
<b>Sample</b>	Data were collected in a large high-technology company in the telecommunications industry in the US with an active telecommuting program. No information on types of jobs. 964 initially contacted, 294 returned surveys, 30% response rate. 53% male, 15 hours average telecommuting a week (around 2 days).
<b>Key findings</b>	Key hypothesis was supported: there seems to be a curvilinear relationship between extent of telecommuting and job satisfaction. Both LMX and TMX quality partially mediates this relationship - between extent of telecommuting and LMX quality on one hand the relationship was linear and positive and TMX quality on the other hand the relationship was linear and negative. Furthermore they found that at lower levels of telecommuting there was a decrease in conflict and a more pronounced drop at higher levels of telecommuting.
<b>Remarks/contribution</b>	Establishes that extent of telecommuting matter (curvilinear relationship). Telecommuting was associated with higher LMX quality but also lower TMX quality. They also found an association between high levels of LMX and job satisfaction but that after an initial increase at high levels of TMX job satisfaction declined (some frustration perhaps?). Limitations of this paper include the one company sampling. Cross sectional. Relationships may be reverse. No information on types of jobs or tasks.
<b>Quality assessment</b>	4 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Extent of telecommuting, quality of relationships with managers, co-workers and family and impact on job satisfaction.
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	Do telecommuters work hard to maintain relationships with their managers but not their colleagues? Do they need to work with their colleagues or managers? Quality of relationships before may have been good. Established program so respect in the company?

<b>Authors</b>	Golden and Raghuram*
<b>Title</b>	Teleworker knowledge sharing and the role of altered relational and technological interactions
<b>Year</b>	2010
<b>Journal</b>	Journal of Organizational Behavior (3*)
<b>From search string</b>	Yes
<b>Background</b>	Looks at knowledge sharing in a telework context. Focuses especially on relational qualities and hypothesises that trust, interpersonal bond (attachment and cohesion to co-workers based on he feels similarities with them) and organisational commitment (strength of identification and involvement with the organisation) will be related to knowledge sharing. Further hypothesises that teleworking employees' abilities to engage in knowledge sharing is contingent upon three moderating variables (which modify the hypothesised relationships): technology support, face-to-face interactions and electronic tool use.
<b>Methodology</b>	Quantitative
<b>Details of methodology</b>	Survey at two time points six months apart looking at the effect of the moderating variables six months later than the first three hypothesised relationships. Established measures used for all variables except knowledge sharing, which was rigorously developed by the authors. Confirmatory factor analysis was run to test the fit of their model to the data yielding an adequate fit. Data was analysed using hierarchical stepwise regression.
<b>Sample</b>	Large global technology (software) company (25000+ employees) with a formal telework program endorsed by upper management. 226 responses (37%). Average telework 48% of the workweek. 77% male. Variety of positions.
<b>Key findings</b>	Authors found that trust, interpersonal bond and organisational commitment were all positively associated with knowledge sharing. Impact of trust on knowledge sharing was moderated by high levels of technology support (when high in trust = more knowledge sharing), face-to-face interactions (low trust relations, more face-to-face = more knowledge sharing) and electronic tool use (low trust, more use, more knowledge sharing).
<b>Remarks/contribution</b>	Highlights the importance of interpersonal affective-based connections for individual knowledge sharing. High trust seems to be key, then less face-to-face seems to be needed, high levels of technology then lead to more knowledge sharing, use of electronic tools is less needed. In the context of telework, interpersonal bonds do not appear to matter; perhaps telework does not change anything there. This paper is limited since it focuses only on teleworkers (fairly high-intensity teleworkers as well), one company and one place.
<b>Quality assessment</b>	4 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Knowledge sharing (trust, commitment, interpersonal bond).
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	Study has a particular focus but other factors may impact knowledge sharing (ad hoc discussions, reliance on technology, helping behaviours, management etc.) Sample predominantly male.

<b>Authors</b>	Lautsch, Kossek and Eaton
<b>Title</b>	Supervisory approaches and paradoxes in managing telecommuting implementation
<b>Year</b>	2009
<b>Journal</b>	Human Relations (4*)
<b>From search string</b>	Yes
<b>Background</b>	Explores varying approaches to the supervision of telework: supervisory monitoring behaviours (with particular focus on job formalisation and feedback), requiring standard hours, approaches that require employees to separate work and home, contact frequency and the their effects on work-family conflict, performance and helping behaviours for both teleworkers and non-teleworkers.
<b>Methodology</b>	Mixed methods
<b>Details of methodology</b>	First a survey covering job and family background and then a taped telephone interview. Employees first, supervisors three months later, rationale for that is not given. Also no rationale for why first a written survey and then a telephone interview (why not another survey). All variables are clearly described as well as how they were measured. Data analysis used is standard multiple regression.
<b>Sample</b>	90 dyads of supervisors and their direct reports, some of whom telecommuted (79%) in two large information and financial services organisations. Various jobs presented but all professional. Working arrangements were overall flexibly negotiated between supervisors and employees. Response rate was 50% employees and 52% for the supervisors.
<b>Key findings</b>	It emerges that it is important to manage telecommuters and non-telecommuters the same way (lower work-family conflict for both groups). Frequent contact with supervisors was found to increase telecommuter helping behaviours but at low level in contact there is no difference between telecommuters and non-telecommuters. Also when supervisors require employees to draw strict boundaries between home and work these employees do not show helping behaviours towards colleagues. This has an impact on the non-teleworkers as they are called in if something is needed (have higher work-family conflict).
<b>Remarks/contribution</b>	Illustrates the importance of managing telecommuters and non-telecommuters the same and to have frequent contact with telecommuters. Also that what benefits telecommuters may have detrimental effects on their colleagues. This paper highlights the tensions and challenges in mixed workgroups. Equity concerns. This paper is fairly comprehensive and well developed. Only lacking on minor aspects. Acknowledges limitations e.g. individual reactions may be different depending on cultural background or personal preferences. Data is cross-sectional.
<b>Quality assessment</b>	4 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Impact of supervisory approaches on telecommuters and non-telecommuters (in groups where both are present).
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	How supervisory approaches impacts telecommuters and non-telecommuters in mixed workgroups.

<b>Authors</b>	Golden*
<b>Title</b>	Co-workers who telework and the impact on those in the office: Understanding the implications of virtual work for co-worker satisfaction and turnover intentions
<b>Year</b>	2007
<b>Journal</b>	Human Relations (4*)
<b>From search string</b>	Yes
<b>Background</b>	This paper looks at the impact of having teleworking employees on their co-workers job satisfaction and whether this is related to their turnover intentions. The study also examines how this impact may be influenced by amount of telework, extent of face-to-face interactions and job autonomy.
<b>Methodology</b>	Quantitative
<b>Details of methodology</b>	Survey. Measures were six: satisfaction with co-workers, turnover intentions, teleworker prevalence, time co-workers telework, face-to-face interactions and job autonomy and were all assessed using established scales. Hypotheses were tested using hierarchical regression analysis.
<b>Sample</b>	Sample was 240 educated professional employees in a large high technology company with an on-going and established telework program. 42% response rate (no information on how many were initially contacted). Variety of positions.
<b>Key findings</b>	All hypotheses were supported. Teleworkers prevalence impacts co-workers satisfaction with them and the more they telework the more negatively co-workers are affected. More extensive face-to-face led to higher satisfaction with co-workers across nearly all levels of teleworkers prevalence and when workers had little autonomy they were more vulnerable to the negative impact of teleworker prevalence on satisfaction with co-workers. Finally non-teleworkers with low satisfaction were more likely to leave the organisation.
<b>Remarks/contribution</b>	This paper looks at broader implications of teleworking prevalence on the work unit by only looking at co-workers of teleworkers and how they are affected by telework. Study is very clearly setup, good use made of figures and tables and findings are clear. Limitations are the one company sample with an established telework program. Technology sector. Seems the telework program was formal as well although no clear information is given on that. Acknowledges alternative explanations, cross-sectional data, and common method variance.
<b>Quality assessment</b>	4 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Impact of teleworkers prevalence on co-worker satisfaction with them. Moderated by extent of telework, face-to-face interactions and job autonomy.
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	Lots of interesting research directions given. Suggests using work adjustment theory to look at how telework impacts the work unit. And job characteristics in relation to job autonomy.

<b>Authors</b>	Fogarty, Scott and Williams*
<b>Title</b>	The half-empty office: dilemmas in managing locational flexibility
<b>Year</b>	2011
<b>Journal</b>	New Technology, Work and Employment (2*)
<b>From search string</b>	Yes
<b>Background</b>	This paper examines and contrasts the impacts of formal and informal FWAs on office-based co-workers. Develops four dilemmas of teleworking management based on three strands of literature: post-bureaucracy, labour process and allied critical organisational perspectives and theories of organisational justice.
<b>Methodology</b>	Qualitative
<b>Details of methodology</b>	Case study (single case). Semi-structured interviews with 8 employees and 6 informants with background knowledge of the official flexible working scheme. Interviews covered the employee perceptions of an existing formal flexible work scheme, its challenges and benefits and any issues regarding performance or communication arising from it. Also covered the same aspects with regards to informal flexible work. Existing organisational documentation on the official flexible working scheme was also analysed. The article provides no information on data analysis at all.
<b>Sample</b>	Publishing group with 250+ employees. People that were not officially working flexible were sampled. The second sample of key informants was purposive, from different departments and levels, who had background knowledge. No information on function types, details of the employees or their resemblances are given.
<b>Key findings</b>	Finds that the formal flexible working scheme was overall well perceived with relatively few problems, mainly related to the ease of communicating with the absent workers. The informal flexible work practices encountered more problems e.g. poor communication with office-based colleagues regarding hours of work (unpredictability). The informal scheme was also related to inequity and inequality perceptions and that it was down to line managerial discretion (which could be inconsistent). Its casualness created an undercurrent of unfairness in the organisation. Both practices brought out problems of absence from the office, conducting meetings over the phone and better accessibility to people physically in the office.
<b>Remarks/contribution</b>	Interesting insights into differences between formal and informal schemes. Absolute lack of data analysis information or how the interviews were processed. The paper argues that for co-workers it is more important that the schemes are formalised than frequency of telework. However no information on frequency aspects given. Formal arrangements also increased teleworkers legitimacy. Absence of procedural justice under informal flexible working scheme.
<b>Quality assessment</b>	3 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Attitudes of co-workers towards teleworking colleagues in formal or informal flexible telework schemes
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	Insights into informal vs. formal. Bad sampling.

<b>Authors</b>	Belanger, Webb Collins and Cheney
<b>Title</b>	Technology requirements and work group communication for telecommuters
<b>Year</b>	2001
<b>Journal</b>	Information Systems Research (4*)
<b>From search string</b>	Yes
<b>Background</b>	Looks at how the availability of information technology, communication technologies and communication patterns of telecommuters within their work groups impact outcomes in telecommuting, in particular productivity, performance and satisfaction. 15 hypotheses tested.
<b>Methodology</b>	Mixed methods
<b>Details of methodology</b>	First interviews with managers of work groups that included teleworkers then cross sectional surveys of telecommuters and their colleagues in multiple organisations. Chronbach Alpha reported to validate instrument reliability and validity as well as CFA. Methodology well reported, also changes made to it. Hypothesis for direct effects were tested using ANOVA and fit hypotheses were tested using multiple regression analysis.
<b>Sample</b>	Convenience sample in the US. No information on the sectors or type of work. Large organisations. 253 surveys delivered to 8 work groups in 6 organisations, 121 were returned (48% response rate). 110 were usable for overall analysis. Equal opportunities to telecommute. 61% of the sample was telecommuters, more males than females. The frequency of telecommuting varied heavily. This was included in the model. Information workers, mostly in IS.
<b>Key findings</b>	Availability of information system technologies had significant effects on performance. Availability of communication technologies had significant effects on perceived productivity, performance and satisfaction. Technologies therefore matter! Higher levels of communication requirements (network centrality) had a significant negative impact on productivity and performance, so that the more they needed to communicate the more their performance and productivity went down. Combined models (fit) were not very good.
<b>Remarks/contribution</b>	Main contribution is importance of information technology and communication technology. The more you have to interact the worse your productivity and performance is. However difficult to interpret since the telecommuters worked varying extents away from the workplace. However they also found that the number of days telecommuting per week had significant effects on productivity, indicating there is a difference between part time and full time telecommuters. Limit of this paper is the focus on technology. Convenience sample. Types of communication. Self-report.
<b>Quality assessment</b>	4 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Communication patterns and impact on productivity, performance and satisfaction in a telework context. Big focus on use of technology.
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	Big focus on technology. Show that the more you need to interact the less productive you are and the less you perform. Technologies matter a lot! Interesting to use network analysis to measure extent of interactions of teleworkers.

<b>Authors</b>	Watson Fritz, Narasimhan and Rhee*
<b>Title</b>	Communication and coordination in the virtual office
<b>Year</b>	1998
<b>Journal</b>	Journal of Management Information Systems (3*)
<b>From search string</b>	Yes
<b>Background</b>	This paper looks at individual satisfaction with office communication in the telecommuting and traditional work environments. Looks at job characteristics (interdependence of tasks and predictability), use of IT and IT support and use of coordination methods (scheduled meetings and frequency of use of electronic coordination methods) and predicts relationships with satisfaction with office communication.
<b>Methodology</b>	Quantitative
<b>Details of methodology</b>	Survey. No mention on how the variables were measured. Good information on how it was constructed (pilot, reviewed by other researchers, reliability analysis). Solid explanation on data analysis. Survey was conducted in 1995 (18 years ago).
<b>Sample</b>	Telecommuters and non-telecommuters in nine large, well-established organisations from different industries based in Atlanta, Georgia. 38% response rate. 170 of 230 respondents telework, most less than 2 days a week. Good information on participants. Information workers in various positions, full-time, mean age 41, more males than females.
<b>Key findings</b>	Key finding is that teleworkers were generally more satisfied with office communication than non-teleworkers; therefore telework does not seem to have negative consequences for office communication. Hypotheses were in general not supported. IT support was found to be positively related to satisfaction with communication for both groups. Task predictability was found to be a positive predictor of satisfaction with office communication among teleworkers.
<b>Remarks/contribution</b>	Little support for their hypotheses. Most interesting is the fact that increased task (job) predictability was associated with increased satisfaction with communication. Writers themselves acknowledge limitations e.g. low frequency of telework (less than two days a week: 86%), environment where telework was an established choice and potentially prior established relationships.
<b>Quality assessment</b>	4 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Office communication (differences between teleworkers and traditional workers)
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	First study to look at this. Not much that came out of it (hypotheses not supported).

<b>Authors</b>	Duxbury and Neufeld*
<b>Title</b>	An empirical evaluation of the impacts of telecommuting on intra-organizational communication
<b>Year</b>	1999
<b>Journal</b>	Journal of Engineering and Technology Management
<b>From search string</b>	Yes
<b>Background</b>	Looks at whether telework changes the way teleworkers communicate with supervisors, colleagues, subordinates and clients and whether they change the way managers communicate with teleworking subordinates. Develop 4 key hypotheses on how communication frequency and media will change as a result of telework and how telework will lead to intra-organisational problems.
<b>Methodology</b>	Mixed methods
<b>Details of methodology</b>	Survey and telephone interviews at time 1 (before implementation), focus groups after three months and survey and telephone interviews at time 2 three months later. This study builds on the study of Ramsower from 1985 and adopts measures from that study. A repeated measure MANOVA was used to compare responses in the surveys across time.
<b>Sample</b>	Two Canadian federal government departments in 1993 and 1994. At time 1 and 2 teleworkers, their managers, control workers and co-workers were surveyed and teleworkers and managers were interviewed. The focus groups consisted of two-teleworker focus group and two manager focus groups. All teleworkers worked at home part time, 65% 2 days a week.
<b>Key findings</b>	Survey findings find that there is very little difference in frequency of communication before and after implementation of telework, for all parties. It revealed that use of face-to-face meetings was lower in time 2 for managers and co-workers. Perceived importance of communication media remained the same for all groups, both face-to-face and electronic media. Interviews shed a light and are deemed to give more insights by the authors. A majority did not feel communication changed, some reported reduction in face-to-face and frequency, some found communication had improved since it was more structured and effective. Focus group discussion drew out challenges: fear of disturbing, diminished sense of team, jealousy, deterioration of relationships with colleagues and inability to attend spontaneous meetings.
<b>Remarks/contribution</b>	Overall well designed study, some thorough work here. Discrepancies in findings between quants and quals parts. Public sector may influence the findings as well as the fact that the teleworkers were handpicked by their managers as someone they trusted to telework. Relationships were already long established before the implementation of this program. Overall their finding is that part time telework has little impact on intra-organisational communication. They also conclude that managers adapted how they communicate to the telework arrangement and that communication can even be improved (both upwards-downwards and lateral because they are more planned, structured and organised.
<b>Quality assessment</b>	4 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Intra-group communication (part-time teleworkers, co-workers, managers, control workers)
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	Old paper, discusses email use the way it was perceived in 1993. Findings show that formalities help workgroups to deal with telework.

<b>Authors</b>	Cooper and Kurland
<b>Title</b>	Telecommuting, professional isolation, and employee development in public and private organizations
<b>Year</b>	2002
<b>Journal</b>	Journal of Organizational Behavior (3*)
<b>From search string</b>	Yes
<b>Background</b>	Paper focuses on employee isolation as an obstacle to telecommuting. The link isolation to developmental activities: interpersonal networking with colleagues, informal learning that enhances work skills and mentoring from colleagues and supervisors. They also look at public versus private sector based on the assumptions that the public sector is more formalised in rules, regulations and programs.
<b>Methodology</b>	Qualitative
<b>Details of methodology</b>	Coding done separately by two authors based on grounded theory, then compared. Three stages including comparing the tryads and then across public vs. private. Semi-structured interviews, it is explained how the interview protocol evolved. Very thorough information on how the coding was conducted. Overall very clear on methodology.
<b>Sample</b>	39 respondents from public sector, 54 from private sector (four organisations all in all). All organisations had established telework programs. The two private companies were in technology and employed 100k+ while the public ones were city governments with 10-14.000 employees.
<b>Key findings</b>	Authors found that telecommuters miss three types of developmental activities: interpersonal networking, informal learning and mentoring. However, private sector employees were more concerned about this than public employees. Potential reasons are that in the public sector the telecommuting arrangement is more formalised, reporting procedures are more formal and employees also telecommute less then in the private sector.
<b>Remarks/contribution</b>	Public sector defined as formal, almost like they are contrasting formal vs. informal work arrangements. Use of word isolation bothers me; they are looking at social interactions and interactional aspects. Title misleading because of this. All in all interesting insights.
<b>Quality assessment</b>	3 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Isolation as a result of telecommuting (interpersonal networking, informal learning and mentoring).
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	Theoretical development lacking but well developed methodologically. Interesting insights but I would not necessarily relate them to isolation!

<b>Authors</b>	Kurland and Cooper
<b>Title</b>	Manager control and employee isolation in telecommuting environments
<b>Year</b>	2002
<b>Journal</b>	Journal of High Technology Management Research
<b>From search string</b>	Yes
<b>Background</b>	This paper aims to better understand the nature and process of how telework evokes managerial control and employee isolation challenges. Manager control is looked at through lenses of behaviour control, output control and clan control. Professional isolation is the focus (as opposed to social isolation).
<b>Methodology</b>	Qualitative
<b>Details of methodology</b>	Grounded theory approach. Three phases of data collection, informal conversations with the companies telecommuting directors, site visits and 54 recorded interviews with telecommuters, their managers and their co-workers. Semi-structured interviews. Exploratory. Methodology well described. Authors each coded the interviews separately.
<b>Sample</b>	Two high technology firms with active telecommuting programs and interest in making them work. Good description of demographics. Different jobs, and different levels of telecommuting from 1-2 hours a day to full time. No details given on average extent on telecommuting. Nor how long they have been doing it.
<b>Key findings</b>	Study provides insights into control methods managers employ e.g. scheduled face-to-face, casual conversation and defined tasks. Also output controls such as management by objectives and performance linked rewards. Training was limited. Perceptions of managers, non-telecommuters and telecommuters largely in sync and managerial control issues and professional isolation concerns were linked. Telecommuters were concerned they were only managed by output and they therefore miss out on professional development and learning otherwise gained from face-to-face interactions. Concerns were greatest regarding clan-related challenges.
<b>Remarks/contribution</b>	They bring out four main conclusions: first that managers fears that they lose control when employees telecommute appear unfounded, second that organisations inadequately train telecommuters, non-telecommuters and supervisors for telecommuting, third telecommuters are most likely to feel professionally isolated when they telecommute frequently and fourth that managerial control and professional isolation are linked.
<b>Quality assessment</b>	3 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Types of managerial control of telecommuters and how they relate to professional isolation.
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	Preliminary findings. Interesting insights into different control mechanisms and how some of these are more affected by telework than others. Conclusions however not well related to original propositions. Theoretical perspectives missing. Based partly on same dataset as Cooper and Kurland (2002).

<b>Authors</b>	Richardson
<b>Title</b>	The Manager and the Flexworker: An Interpretive Interactionist Perspective
<b>Year</b>	2009
<b>Journal</b>	Management Revue (1*)
<b>From search string</b>	Yes
<b>Background</b>	Explores the relationship between teleworkers and their managers through the theoretical lens of interpretive interactionism. This theory is located in an interpretive ontology and focus on studying meaning, motive, intention, emotion, and feelings, as these mental and interactive states are experienced and organized by interacting individuals with subjective experiences in an emerging process of a social world.
<b>Methodology</b>	Qualitative
<b>Details of methodology</b>	Interviews with 76 flexworkers in a Canadian technology company. Sample was self-selected. People chose to participate. Analysed using template analysis, this process fairly well described. Protocol well described and interview questions.
<b>Sample</b>	76 flexworkers (teleworkers) working from home 2 or more days a week, subject to managers approval. Fairly newly established telework program. Self-selected. Participants came from all parts of the company. No proper information on the company, although in a side-note it is said to be technology based and a large MNC.
<b>Key findings</b>	Four key themes were picked up from the interviews. Trust (being trusted to work from home, sense of privilege, paying back to the company because of being trusted - draws on interactions with others to inform subsequent behaviour, evolving and dynamic relationships with others), communication (importance of communication either face-to-face, maintaining communication "doing" relationships), cohesion (visibility, professional identity, "significant others" - identification with the group, concerns of isolation) and the impacts of relationships with family members (managing the work - home boundaries, interruption etc.).
<b>Remarks/contribution</b>	Interesting four key themes - in sync with previous literature. Discussion brings out an interesting thought on how you compare your experience to what you have done before, in this case they had all worked in an office. Managing flexworkers is an affair of doing. Managers constantly trying to find the right balance between micro management and letting go. This paper provides a different angle then others because of its highly qualitative nature and ontological angle. Lacks in description of the company. Otherwise good.
<b>Quality assessment</b>	3 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Workgroup interactions, specifically manager-employee relationship.
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	Highly qualitative.

<b>Authors</b>	Wilton, Páez and Scott
<b>Title</b>	Why do you care what other people think? A qualitative investigation of social influence and telecommuting
<b>Year</b>	2011
<b>Journal</b>	Transportation Research Part A (3*)
<b>From search string</b>	Yes
<b>Background</b>	Examines the social dimension of the decision to telecommute and how telecommuters use information obtained from their social environment (social barometers) to make this decision, negotiate it, continue or discontinue it. Therefore how social contact shapes this decision.
<b>Methodology</b>	Qualitative
<b>Details of methodology</b>	Semi-structured interviews. Methodology is well argued for and explained. Analysis methods is said to have been selective coding and is referenced.
<b>Sample</b>	Large (6500 people) post-secondary educational institution in Canada. No formal telecommuting program in place. 32 interviews were conducted, 25 of those were women. Most of the participants were from admin, research assistants, IT or management. 11 respondents telecommuted regularly, 4 of which 2-4 days the others less than that. 6 were not telecommuting currently but had been in the past.
<b>Key findings</b>	Balance is sought between the benefits of a social contact at the workplace and the ability to concentrate on work. Telecommuters needed to justify themselves to authors why they are telecommuting. The negotiating of their arrangement was influenced by managers, co-workers and organisational culture and key points here are the normalisation of the practice and if the practice is not formalised and therefore there is a lack of clear institutional guidance. Knowledge of others experiences helped to validate the experience to the individual telecommuting, create shared understandings and contribute to normalisation of the practice. Main cons are loss of face-to-face interaction both for work-purposes and social interaction. Third con was negative reactions.
<b>Remarks/contribution</b>	Interesting balance between not wanting to be interrupted and needing social contact. Social influence to validate the choice to telecommute. Interesting insights on normalisation through interactions and furthermore since this institution did not have a formal program (like in almost every other study) perceptions and understandings may be different (hence the need for validation, normalisation etc.).
<b>Quality assessment</b>	3 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Social influence on decision to take up telecommuting and keep telecommuting. Telecommuting experiences from the social context lens.
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	Good paper, although it says it is looking at decision to telecommute in fact it is exploring the experience of telecommuters and how these are influenced by the social context. Where is the research question?

<b>Authors</b>	Madlock
<b>Title</b>	The influence of motivational language in the technologically mediated realm of telecommuters
<b>Year</b>	2013
<b>Journal</b>	Human Resource Management Journal (3*)
<b>From search string</b>	Yes
<b>Background</b>	Looks at the use of motivational language by supervisors in the telework context. It explores the links between three types of motivational language: direction-giving, empathetic and meaning-making and which is most used by supervisors, which is the greatest predictor of the supervisors communication competence and of the telecommuters communication satisfaction, their job satisfaction and their organisational commitment.
<b>Methodology</b>	Quantitative
<b>Details of methodology</b>	Survey. Used established assessments for the variables: motivating language, communication competence, communication satisfaction, job satisfaction and organisational commitment. Uses correlation and multiple regressions to analyse the data - more information on how this was done and steps were taken to insure accuracy is needed.
<b>Sample</b>	7 organisations in the US with established telecommuting programs. 177 returned questionnaires (37%). Insurance, health care, high-tech and banking/finance.
<b>Key findings</b>	All hypotheses were supported. Data revealed that direction-giving language was most used. For communication competence and communication satisfaction only direction-giving language was found to be a significant predictor but for job satisfaction and organisational commitment empathetic language was also found to be a predictor. Findings reveal that direction-giving language is the main type used to communicate to telecommuters. Perhaps due to the task orientation of working away from the office.
<b>Remarks/contribution</b>	Direction-giving language appears to be most used in a telework setting, it is also a predictor of communication competence and communication satisfaction. This may be due to the nature of the telework environment to be task-oriented or that it lends itself to exchanging more task-oriented information. Study also finds support for the SIPT theory since empathetic language was also used which suggests more relational exchanges (relationship building communication) can be done in the absence of extensive face-to-face interactions. Data was correlational, causality cannot be assumed.
<b>Quality assessment</b>	3 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Communication between manager/employee. Use of motivational language.
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	Provides insights into hierarchical communication in a telework setting. Does not provide information on extent of telecommuting of the participants (acknowledges this as a limitation). Also does not provide information on functions (jobs).

<b>Authors</b>	Fay and Kline*
<b>Title</b>	Coworker relationships and informal communication in high-intensity telecommuting
<b>Year</b>	2011
<b>Journal</b>	Journal of Applied Communication Research
<b>From search string</b>	Yes
<b>Background</b>	The focus of this study is to examine high-intensity (more than three days a week) teleworkers relations with their co-workers and how specific informal communication practices (frequency of socializing, family/friend talk, complaining talk, co-worker liking) they use are associated with organizational commitment and job satisfaction.
<b>Methodology</b>	Quantitative
<b>Details of methodology</b>	Good description on scales and distribution of questionnaires. Variables were informal communication practices (social and complaining talk), informal communication topics (family talk), informal communication satisfaction, organisational commitment, job satisfaction and co-worker liking. Data analysis methods were simple correlations and moderated multiple regression analysis.
<b>Sample</b>	100 persons (of 132) answered a questionnaire distributed to 12 organisations in a US mid-western city through personal contacts. They were in various jobs (examples given) and the organisations varied as well. 50/50 divide between under 45 and above. 48% were college educated. 55% with an above average income. 57% was female.
<b>Key findings</b>	Complaining talk was associated with both commitment and job satisfaction (importance of letting out steam?). Co-worker liking was positively related to organisational commitment and job satisfaction. Informal communication satisfaction was found to predict co-worker liking. Complaining talk and co-worker liking were found to predict organisational commitment. Co-worker liking was found to moderate the relationship between complaining talk and organisational commitment.
<b>Remarks/contribution</b>	Show the importance of informal workplace interactions and relationships since co-worker liking was associated with commitment and satisfaction. Also provided indication that people need to steam their frustrations however complaining must be done with a well liked co-worker to generate commitment. So other practices than those studied here must be at play. Since co-worker liking was associated with organisational commitment and job satisfaction, and moderated the effect of complaining talk, efforts to facilitate co-worker relationships could be considered a management priority.
<b>Quality assessment</b>	3 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Co-worker relationships (liking) and effect of informal communication on job satisfaction and organisational commitment of high-intensity telecommuters.
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	This is quite a complicated paper! This paper is one more that shows that co-workers matter in a telework context. A key limitation is the small sample. Also are the data analyses methods appropriate for such a small sample - this is not mentioned in the paper.

<b>Authors</b>	Fay and Kline
<b>Title</b>	The influence of informal communication on organizational identification and commitment in the context of high-intensity telecommuting
<b>Year</b>	2012
<b>Journal</b>	Southern Communication Journal
<b>From search string</b>	Yes
<b>Background</b>	This paper looks at the relationships between informal communication between teleworkers and their co-workers and teleworker organisational identification and organisational commitment. Look at informal communication in the form of inclusion messages, exclusion messages, collegial talk, social support, and co-worker-relationship quality.
<b>Methodology</b>	Mixed methods
<b>Details of methodology</b>	Primarily quantitative but inclusion/exclusion messages were assessed using written answers and coded by the researchers. Co-worker social support, specific co-worker relationship quality OI and OC were all assessed using established scales. Hypotheses were tested using Pearson's correlations and moderated multiple regression analysis.
<b>Sample</b>	100 persons (of 132) answered a questionnaire distributed to 12 organisations in a US mid-western city through personal contacts. They were in various jobs (examples given) and the organisations varied as well. 50/50 divide between under 45 and above. 48% were college educated. 55% with an above average income. 57% was female.
<b>Key findings</b>	The results showed that inclusion messages, co-worker social support, and collegial talk were all positively associated with OI and, except for collegial talk, were also positively correlated with OC, while exclusion messages were negatively related to both OI and OC. Co-worker-relationship quality was also positively related to OI and OC. In addition, the quality of the relationship teleworkers had with the co-worker they interacted with the most moderated the association of exclusion messages to OI and OC. Stronger levels of OI and OC were associated with higher levels of message inclusion (teleworker felt more embedded in the organisation).
<b>Remarks/contribution</b>	Shows how important it is to establish relationships and communicate with teleworkers in order to help establish their OI and OC. Specifically that informal communication plays a pivotal role in making them a part of the organisation. Problem with the study is the small sample size!
<b>Quality assessment</b>	3 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Co-worker relationships and relationships between informal communication (inclusion messages, exclusion messages, collegial talk and social support) and OI and OC.
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	Based on same data as the previous study. Also are the data analyses methods appropriate for such a small sample - this is not mentioned in the paper and should have been. However good that they are clear on their theoretical underpinnings. This is a better paper than the previous one and more support is found for the hypotheses.

<b>Authors</b>	Igbaria and Guimaraes
<b>Title</b>	Exploring differences in employee turnover intentions and its determinants among telecommuters and non-telecommuters
<b>Year</b>	1999
<b>Journal</b>	Journal of Management Information Systems (3*)
<b>From search string</b>	Yes
<b>Background</b>	Examines differences in turnover intentions among telecommuters and non-telecommuters. Furthermore explores whether there are differences in career success outcomes and patterns of relationships among the antecedent variables between the two groups. Puts forward a conceptual model, which it tests separately for the two groups.
<b>Methodology</b>	Quantitative
<b>Details of methodology</b>	Measures were role stressors, job satisfaction, organisational commitment and intention to leave. Analysis methods were NOVA and chi-square to test the difference between the groups. Multiple regressions for the hypotheses.
<b>Sample</b>	400 salespeople from a large company in the US. 104 telecommuters answered and 121 non-telecommuters, which resulted in a total of 225 questionnaires (56% response rate). No information on extent of telecommuting. Only that the telecommuters were defined as those who did most of their work from home or from the road.
<b>Key findings</b>	Telecommuters were lower on role ambiguity and role conflict, more satisfied with work and supervision and less satisfied with co-workers and promotion than non-telecommuters. Telecommuters were lower in overall satisfaction and were less likely to leave the company. Role conflict had more significant effects on satisfaction among telecommuters than the non-telecommuters. Job satisfaction had a stronger effect on commitment among telecommuters than non-telecommuters. Organisational commitment had an effect on turnover intentions for both groups but the effect was higher among telecommuters.
<b>Remarks/contribution</b>	Key contribution is the differences between the groups and for the purpose of my review that telecommuters were satisfied with their supervisor, more committed, lower on role ambiguity and conflict but lower in levels of satisfaction with peers and with promotion (due to less presence in the office, less participation in office politics etc.). Limitation is the sample (salespeople - but no detail), one company, US, no information on extent of telecommuting. Cross sectional.
<b>Quality assessment</b>	3 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Differences between telecommuters and non-telecommuters when it comes to satisfaction, turnover intentions, commitment, role stressors.
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	Teleworkers were happy with supervisors, unhappy with peers.

<b>Authors</b>	Wiesenfeld, Raghuram and Garud
<b>Title</b>	Organizational identification among virtual workers: the role of need for affiliation and perceived work-based social support
<b>Year</b>	2001
<b>Journal</b>	Journal of Management (4*)
<b>From search string</b>	Yes
<b>Background</b>	Explores the implications of distance, dispersion and isolation associated with virtual work on how individuals define themselves with respect to the organisation. Therefore specifically looking at organisational identification (members psychological link to the organisation) they explore how this is influenced by extent of contact and visibility of membership. They hypothesise that need for affiliation and perceived work-based social support will be positively related to organisational identification. Furthermore they predict that high levels of work-based social support will attenuate the relationship between need for affiliation and organisational identification.
<b>Methodology</b>	Mixed methods
<b>Details of methodology</b>	Primarily quantitative. The study is part of an on-going investigation, which involved field studies, semi-structured interviews. Established measures used to assess the variables. Organisational identification was analysed with a hierarchical multiple regression.
<b>Sample</b>	Large technology organisation (sales division): managers, sales people and sales support staff. Most participants worked primarily at home or on the road with some time in the company offices. Mandatory program. 250 of 325 surveys were received. No details on how these were divided (in functions, gender, level of responsibility).
<b>Key findings</b>	Authors found that need for affiliation was significantly and positively related to virtual workers organisational identification, which means they want to be connected and feel part of the organisation. They also found support that organisational identification was positively related to individuals' perception of work-based social support so that employees who did not receive work-based social support indicated lower levels of organisational identification. Draws attention to the importance of management style to include telecommuters. Finally they found that the interaction of need for affiliation and perceived work-based social support was also significant so that for virtual workers high in need for affiliation (need to belong) organisational identification was high even when work-based social support was low.
<b>Remarks/contribution</b>	Findings suggest that identification among virtual employees who are not specifically motivated to identify with the organisation can be strengthened by providing social support. When social support is high, individual differences in need for affiliation are not as relevant. Points to the importance of social support (the degree to which individuals perceive that they have positive social relationships with others in the workplace - whether they are socially integrated) and how organisations need to use this (they cannot control need for affiliation but they can provide support).
<b>Quality assessment</b>	3 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Organisational identification (how virtual workers identify themselves with the organisation) and how need for affiliation and perceived work-based social support impact this.
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	This paper essentially looks at how absence from the organisation impacts how virtual workers identify themselves as part of it. Another angle of professional isolation! Limitations of this paper lie with the lack of description of the sample and method, very limited information given on it! Also extent of telework, what was the average percentage of telework per week (assumed very high).

<b>Authors</b>	Fonner and Roloff*
<b>Title</b>	Testing the connectivity paradox: Linking teleworkers' communication media use to social presence, stress from interruptions, and organizational identification
<b>Year</b>	2012
<b>Journal</b>	Communication Monographs
<b>From search string</b>	Yes
<b>Background</b>	This paper explores the connectivity paradox of telecommuting and predicts that among high-intensity teleworkers, the frequency of communication media use will be positively related to perceptions of social presence (testing the first part of the connectivity paradox) and stress arising from interruptions (testing the second part of the connectivity paradox). Also explore social presence association to organizational identification, and predict stress from interruptions will be negatively related to organizational identification. Finally, that communication media use will be indirectly related to organizational identification through social presence and stress from interruptions. Explore these for office-employees as well.
<b>Methodology</b>	Quantitative
<b>Details of methodology</b>	Online survey. Items measures were work arrangement, communication media use, social presence, stress from meetings and interruptions and organisational identification. Analysis methods were multiple group path analysis, multiple group path analysis with maximum likelihood estimation and 95% bias-corrected confidence intervals for direct and indirect relationships specified in the model.
<b>Sample</b>	89 teleworkers and 104 office-based employees recruited through a snowball method. No information on the organisations for which they worked nor their sector but roughly 50/50 public vs private.
<b>Key findings</b>	Teleworkers' face-to-face, videoconferencing, instant messaging, and email communication were significantly related to increased stress from interruptions. However no significant relationships were found between communication media use and social presence. Teleworkers perceptions of social presence were positively related to organisational identification and stress from interruptions was negatively related to organisational identification. Congruent with teleworkers, office-based employees' use of face-to-face communication, email and video conferencing was positively related to their stress from interruptions. Furthermore perceived social presence was significantly related to organisational identification for this group.
<b>Remarks/contribution</b>	The connectivity paradox was only partially supported, i.e. only the part that connectivity undermines the benefits of working away from the office. The benefits of increased communication on perceptions of social presence appear to be minimal. Teleworkers and office-based employees reported similar perceptions of social presence, indicating that working remotely does not necessarily diminish the sense of personal connection in workplace interactions. Findings indicate that teleworkers feel less identified with the organization when constant connectivity threatens the expected benefits of their work arrangement. All in all, authors conclude that the study findings emphasize a need to address the stress and time pressure associated with the constant barrage of workplace communication. For both teleworkers and office-based employees, face-to-face and several forms of mediated communication were associated with stress from interruptions.
<b>Quality assessment</b>	4 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Teleworkers organisational identification, perceptions of social presence and stress from interruptions. Connectivity paradox and problems with interactions (too much or too little).
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	This paper is of good quality. Problems are related to the sample (same as the earlier paper by the same authors) and how they define teleworkers. Choice of looking at social presence (ill defined concept?). However, interesting insights if problems with the sample are ignored.

<b>Authors</b>	Fonner and Roloff*
<b>Title</b>	Why teleworkers are more satisfied with their jobs than are office-based workers: When less contact is beneficial
<b>Year</b>	2010
<b>Journal</b>	Journal of Applied Communication Research
<b>From search string</b>	Yes
<b>Background</b>	This paper's goal is to determine why telework positively influences job satisfaction through exploring intervening mechanisms through which remote work impacts individual outcomes. These intervening mechanisms are work-life conflict, stress due to meetings and interruptions, the experience of organizational politics and information exchange frequency and quality. Note: this paper defines high intensity teleworkers those that work three or more days away from the office, but the comparison group - office based employees work at least three days at the office, but may or may not telework the other days.
<b>Methodology</b>	Quantitative
<b>Details of methodology</b>	Online survey. Items measures were work arrangement, work-life conflict, perceived organisational politics, job satisfaction (used established measures) and information exchange and stress from meetings and interruptions (scales developed from previous research). Analysis methods were multiple mediation approach and path analysis with maximum likelihood estimation.
<b>Sample</b>	89 teleworkers and 103 office-based employees recruited through a snowball method. No information on the organisations for which they worked nor their sector but roughly 50/50 public vs private.
<b>Key findings</b>	Teleworkers reported significantly lower work-life conflict, which was then significantly related to job satisfaction. Teleworkers experienced significantly less stress due to meetings and interruptions but this was not significantly related to job satisfaction. Teleworkers perceived significantly lower levels of general political behaviour but no significant difference in their perceptions of get ahead political behaviours. Neither one mediated the relationship between telework and job satisfaction. Teleworkers reported significantly less frequent but not lower quality, information exchange and information exchange frequency was significantly related to job satisfaction but information exchange quality was not. The results from the path analysis were generally consistent with preliminary tests in that teleworkers reported significantly lower work-life conflict, less stress from meetings and interruptions, less perceived general politics, and lower information exchange frequency, but greater job satisfaction than did office-based employees. Telework was not significantly related to information quality or to perceived get ahead politics. Only two of the mediators were significantly related to job satisfaction: Reporting work-life conflict and perceiving get ahead politics were negatively linked to job satisfaction. A revised model revealed the original one may have been too simple and showed that teleworkers reported less information exchange and that was negatively related to stress associated with meetings and interruptions. The lack of stress was inversely related to work-life conflict, which aided job satisfaction. Organizational politics also mediated the telework - job satisfaction relationship. Teleworkers perceived less general politics and in turn, perceived less get ahead politics, which increased job satisfaction.
<b>Remarks/contribution</b>	This paper raises questions about the value of frequent interaction, which is so often claimed to be a negative consequence of telework. The findings reveal that telework provided a break from the on-going political behaviour at the workplace. It was also associated with less frequent information exchange, which is related to stress from meetings and interruptions and therefore since teleworkers are less present they avoid some of these stressors. The authors' model indicates that less frequent interaction with others may be desirable and aligns itself with recent findings that teleworkers view increased connectivity and interaction with others as interference in their ability to work without interruptions. Thus, a diminished presence in the office appears more likely to alleviate superfluous communication and stress than to isolate employees from necessary information and connections, as has been the concern in much of the telework literature. Paper is overall good, good information on data analysis and good hypotheses building. Criticism would be the sample and lack of information on sectors and function (job responsibilities).
<b>Quality assessment</b>	4 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Teleworkers job satisfaction and what mediates it: information exchange and the fact that less contact is beneficial to their satisfaction.
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	Concludes that less interaction is beneficial to teleworkers job satisfaction. Also quite a big criticism is to compare high intensity teleworkers to both full time in-office people and low intensity teleworkers as one group. The two latter ones could have been separated to give additional information and extent of telecommuting could therefore have been explored.

<b>Authors</b>	Golden, Veiga and Dino
<b>Title</b>	The impact of professional isolation on teleworker job performance and turnover intentions: Does time spent teleworking, interacting face-to-face, or having access to communication-enhancing technology matter?
<b>Year</b>	2008
<b>Journal</b>	Journal of Applied Psychology (4*)
<b>From search string</b>	Yes
<b>Background</b>	Looks at the impact of professional isolation; the feeling of being cut off from others and not getting the support, understanding and other social aspects of interaction desired; on work outcomes, particularly performance and turnover intentions. The study predicts that professional isolation is positively related to turnover intentions and job performance due to lack of interactions, social barometers which helps them to better do their job and hindrances in establishing and maintaining interpersonal relationships. Based on earlier literature they also argue that time spent teleworking, face-to-face interactions and access to communication-enhancing technology moderates these relationships (6 hypotheses).
<b>Methodology</b>	Quantitative
<b>Details of methodology</b>	Online survey. Authors created a measure to assess professional isolation. They used established measures to assess other variables (job performance, turnover intentions + the three moderating variables). Authors ran correlations and used hierarchical regression analysis to test the hypotheses.
<b>Sample</b>	One high-tech corporation (80.000 employees) with an active teleworking program. 522 mid-level supervisors (26% of those contacted) and 261 direct reports (50% of those contacted). Both had to be engaged in telework (managers on average 37% of the workweek and employees on average 60% of the workweek).
<b>Key findings</b>	Authors found significant support for a negative relationship between isolation and job performance and also support that time spent teleworking moderates this relationship (isolated individuals who spend extensive time teleworking exhibit the lowest performance). They also found that face-to-face interaction moderates this relationship, so that the performance of teleworkers experiencing isolation suffers the most when they have limited face-to-face interaction. The most isolated employees expressed the least turnover intentions. Same applied to the moderating effects on this relationship of time spent teleworking (those that teleworked the most had the least intentions to quit, there was no support for the moderating effect of face-to-face interactions but support was found for access to technologies (those with limited access reported the lowest turnover intentions)
<b>Remarks/contribution</b>	Their contribution primarily lies with how they observe a negative impact of professional isolation on job performance and how this negative impact is greater among those who spend extensive time teleworking and those who have limited face-to-face interactions. They also explore correlations e.g. between time spent teleworking and face to face interactions (positive) which suggests the more you telework the more inclined you are to seek out face-to-face interactions. While trying to explain the counter-intuitive findings of turnover intentions they suggest that people are so happy with the flexibility telework gives them that they are afraid they would not get this elsewhere. Authors draw on theory such as media richness theory and social learning theory to explore the impact of interactions to work outcomes.
<b>Quality assessment</b>	4 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Professional isolation of teleworkers and impact on performance and turnover intentions
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	Overall good paper. No information on functions. Once again one company and in the high-tech sector with an actively encouraged telework program. Causality cannot be inferred due to cross-sectional design.

<b>Authors</b>	Gajendran and Harrison
<b>Title</b>	The good, the bad, and the unknown about telecommuting: Meta-analysis of psychological mediators and individual consequences
<b>Year</b>	2007
<b>Journal</b>	Journal of Applied Psychology (4*)
<b>From search string</b>	Yes
<b>Background</b>	This paper identifies studies that address employee outcomes of telecommuting and quantitatively summarises available findings. Authors focus on three conceptual themes: Psychological control or perceived autonomy, impacts on the work-life interface and potential relational impoverishment as a consequence of telecommuting. Based on these themes they build a theoretical framework and put forward 12 hypotheses which stipulate that telecommuting is positively related to perceived autonomy, negatively related to work-family conflict and supervisor-telecommuter relationship quality and telecommuter-co-worker relationship quality. They predict that telecommuting is positively related to job satisfaction and job performance, negatively related to turnover intent, to employee role stress and to perceived career prospects. They predict that telecommuting's beneficial effects on individual outcomes are mediated by perceived autonomy and work-family conflict, and its detrimental effects are mediated by relationship quality with the supervisor and relationship quality with co-workers. Finally they predict that telecommuting intensity moderates the relationships between telecommuting and perceived autonomy, work-family conflict and supervisor and co-worker relationship quality.
<b>Methodology</b>	Quantitative
<b>Details of methodology</b>	Meta-analysis. Search words are identified. Inclusion criteria as well. Good information on dependent and independent variables and analysis methods. Methodologically seems very sound.
<b>Sample</b>	Data from 46 studies, which included 27, published works and 19 unpublished dissertations. The typical telecommuter was a manager or a professional from either the information technology or the sales and marketing function of a firm. 2.5 or more days per week—the sample was coded as one involving high-intensity telecommuters. Fewer than 2.5 days per week working remotely were coded as a sample of low-intensity telecommuters.
<b>Key findings</b>	Telecommuting was associated with higher perceived autonomy and lower work-family conflict. They found a positive effect of telecommuting on the supervisor-employee relationship and no support for an effect on the co-worker relationship quality. They found support for a positive relationship between telecommuting and job satisfaction and support for a positive relationship with supervisor or archival rated performance (not self-reported performance). They found support for a negative association with employee turnover intention and employee role stress but telecommuters did not necessarily perceive diminished career prospects relative to those under typical work arrangements. Perceived autonomy was found to fully mediate the effect of telecommuting on job satisfaction, work-family conflict was found to partially mediate the impacts of telecommuting on job satisfaction, turnover intent, and role stress and the partial correlations for supervisor relationship quality suggest partial mediation for job satisfaction and turnover intent when compared with the relevant original correlations. Telecommuting intensity was found to moderate the relationship between telecommuting and work-family conflict (negative effect for high-intensity but not low intensity), intensity did not moderate the impact on the employee-supervisor relationship but did so with the co-worker relationship (amplified a negative effect for high intensity telecommuting).
<b>Remarks/contribution</b>	Findings indicate that being a telecommuter does not appear to damage one's social ties with others at work, at least in a direct way - authors did not observe the bad relational outcomes that are expected in this domain and that they hypothesized. In fact, they found that telecommuting was positively associated with the quality of employee-supervisor relationship. Reasons for this may be reversed causality or that employee-supervisor relationships are worked on in the context of telework. The more extreme loss of "face time" that comes with being a high-intensity telecommuter undermined the depth of ties with peers in the workplace. Intensity, however, did not moderate telecommuting's effects on perceived autonomy and employees' relationships with supervisors. Limitations are the limitations of the papers chosen, cross-sectionality, lack of randomisation, and individual level of analysis.
<b>Quality assessment</b>	4 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Effect of telecommuting on supervisor and co-worker relationship quality.
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	No effect of telecommuting on co-worker relationships at low-intensity but negative in high-intensity telecommuting. Telecommuting intensity did not matter for the employee-supervisor relationship. However, telecommuting appeared to have a positive effect (positive association) on employee-supervisor relationship quality.

<b>Authors</b>	Kurland and Egan*
<b>Title</b>	Telecommuting: Justice and Control in the Virtual Organization
<b>Year</b>	1999
<b>Journal</b>	Organization Science (4*)
<b>From search string</b>	Yes
<b>Background</b>	Looks at the impact of telecommuting on organisational relationships by exploring the associations between telecommuting and organisational justice perceptions i.e. distributive justice (whether employees receive the outcomes they feel they deserve), procedural justice (whether the process of receiving is fair - was the employee's input requested and valued) and interactional justice (fairness of treatment, result of relationships in particular with managers). Authors put forward hypotheses predicting telecommuting is related with these three types of organisational justice. They furthermore that these relationships will be moderated by using objective and written records as opposed to subjective managerial evaluations to evaluate performance, by the use of formal communication and by the existence of formal job descriptions and performance standards.
<b>Methodology</b>	Quantitative
<b>Details of methodology</b>	Established scales used to measure the variables: distributive justice, procedural justice, interactional justice, outcome-based evaluations, formal communication and job formalisation. Regressions used to test hypotheses 1,2 and 3 and moderation was tested for using linear regression equations.
<b>Sample</b>	11 organisations with a collective total of 258 active (voluntary) telecommuters. Organisation contacts matched the telecommuters with non-telecommuting employees on job type and level. Surveys therefore mailed to 496 employees and returned surveys were 191 (38,5% response rate) of which 111 were active telecommuters. No detail on the variety of extent of telecommuting in this group. 31 different job types recorded. In the discussion section they surprisingly start talking about having conducted semi-structured interviews as well with some of the sample. Very limited information on this - big drawback. Use the interview data to illustrate their conclusions.
<b>Key findings</b>	Telecommuting was positively related to both procedural and interactional justice but not to distributive justice. None of the control mechanisms were moderators as was proposed. However, communication formality directly correlated with all forms of justice, job formalisation with procedural and interactional and outcome-based evaluations had no relationships with any form of justice. Results suggest that telecommuters are particularly concerned by how their outcomes are evaluated and that they receive fair treatment by their supervisors. They explain the positive relationship with procedural justice by that supervisors take precautions with telecommuters to keep track of them and e.g. further test whether email use mediated the relationship between telecommuting and PJ and found a significant relationship. They explain the relationship between telecommuting and interactional justice by that supervisors perceive individuals that telecommute more trustworthy (thus preselected as such), supervisors are demonstrating supporting by allowing workers to telecommute (work-family issues, commute issues). This they checked for by dividing the sample according to extent of telecommute and found that active (more then 30% in a given week) telecommuters were more satisfied with their supervisor. They also found that more active telecommuters and non-telecommuters perceived higher interactional justice than the less active telecommuters. A third reason for the link to interactional justice may be the topic of communication - in that more active telecommuters spend more time communicating about personal topics than less active telecommuters, thus reflecting the consideration component of interactional justice. They explain that the absence of effect of the moderating variables may be explained by the scales used (outcome-based evaluation).
<b>Remarks/contribution</b>	Interesting insights into how organisational justice is perceived among telecommuters (importance of process of evaluation (formalisation) and supervisory relationships - more casual and informal and supportive). Some big flaws in the methodology. This should have been explained. The mention of semi-structured interviews in the discussion section comes out of nowhere. Should have been mentioned earlier.
<b>Quality assessment</b>	3 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Justice perceptions
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	They found that informal relations and connections with supervisors led to higher levels of distributive, interactional and procedural justice. What was the purpose of matching the sample of telecommuters with non-telecommuters? The non-telecommuters are hardly mentioned in the findings or discussion parts of this paper.

<b>Authors</b>	Mann, Varey and Button
<b>Title</b>	An exploration of the emotional impact of teleworking via computer-mediated communication
<b>Year</b>	2000
<b>Journal</b>	Journal of Managerial Psychology (2*)
<b>From search string</b>	No
<b>Background</b>	Explores the emotional impact of teleworking on individuals. How computer-mediated communication leads to an absence of para-communication cues, reductions in emotional tone and feeling, reduction in intimacy (affective bonds and emotional involvement). Isolation also has emotional impacts, as well as conflict, stress and spillover to name a few. Discuss how emotions are entering the literature on organisations and how they are important in teams (emotional contagion: mimic others emotions and expressions). No research questions!
<b>Methodology</b>	Qualitative
<b>Details of methodology</b>	15-30 minute semi-structured telephone interviews. Care was taken that the respondents did not know the purpose of the study. Manual content analysis of the interviews.
<b>Sample</b>	14 full time teleworkers from 2 organisations, a bank and a telecommunications both with an established telework scheme. Non-managerial workers who had teleworked for a while. 4 were female.
<b>Key findings</b>	Identifies positive and negatives aspects of teleworking. Advantages include less travel (emotion: stress), more freedom, better working environment (less stress), fewer distractions (less irritability), lower costs, freedom from office politics (positive side of isolation) and domestic chores. Disadvantages include isolation (lack of being able to look at others to see what to do or how to behave - emotional contagion - social barometers). Reduction in the sense of belonging. Leads to employees feeling unsure of themselves and less confident - they cannot easily compare to others. Other negative aspects include longer hours and lack of support, both social (a shoulder to cry on) and technical (lead to worries and panic). Career progression (employees need to show they are doing their job - feel they are missing out) and cost.
<b>Remarks/contribution</b>	Key aspects identified are due to isolation, predominance of CMC and being predominantly home based. Most interesting aspects of this study are how other people used as social barometers and when you are away you miss this, the emotional contagion "esprit du corps". You do not have a shoulder to cry on - the interpersonal bonds are missing. No clear conclusion on emotional effects of telecommuting but further avenues to explore. This paper lacks information on analysis. A bigger sample would be better. Analysis seems superficial and could have done with a deeper level coding.
<b>Quality assessment</b>	3 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Emotional responses of teleworkers
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	Emotional contagion (emotions spread out in a social environment). Social support lacking (someone to bitch to or cry on the shoulder of. Most interesting aspects: isolation and support.

<b>Authors</b>	Hylmö and Buzzanell
<b>Title</b>	Telecommuting as viewed through cultural lenses: An empirical investigation of the discourses of utopia, identity, and mystery
<b>Year</b>	2002
<b>Journal</b>	Communication Monographs
<b>From search string</b>	No
<b>Background</b>	Examines telecommuting as a socially constructed process, which is embedded in specific contexts. Does this through three specific epistemological lenses from a organisational cultural framework introduced by Martin (1992). These are the integrationist lens, differentiation lens and fragmentation lens. This paper highlights the problems and paradoxes within and across the lenses of organisational culture.
<b>Methodology</b>	Qualitative
<b>Details of methodology</b>	Participants self-selected themselves for participation. 37 interviews followed by a brief background survey. Analysis method used is constant comparative method, used to see what conceptual categories about culture, telecommuting and work surfaced repeatedly. Very good description of how the analysis was done and verified.
<b>Sample</b>	Participants were members of FEDSIM, a federal government agency. Of 162 potential telecommuting and non-telecommuting employees 37 employees scheduled interviews (23%). 13 of them (35%) were full-time telecommuters, 24 (65%) were not a part of a formal contractual telecommuting agreement although they indicated they would telecommute from time to time. The telecommuting program was voluntary. Participants worked as project managers (20), senior project managers (11) or directors (4) and contracting officers (2) to provide IT support to major government agencies.
<b>Key findings</b>	The integration lens revealed a uniqueness theme observed in a shared value system, material and economic conditions and descriptions of autonomy and adaptability. Telecommuting was a normal practice, which helps employees take care of their families and had no distinction from the normal work mode. Another theme from the integration lens was greatness of the agency, its high quality service etc. Employees could meet their own and clients need and participate in cultural rituals such as meetings, which reinforces their identity. In such meetings they could receive client awards which illustrated that through autonomous work they gained full team recognition (paradox between autonomy and team membership). From a differentiation lens authors identified four clusters of employees: in house employees who stayed as long as they needed at work and equated presence at work with commitment, in house employees for which work was defined as time spent and activities completed at the office and since they were not collocated with teleworkers saw no reason to maintain relationships with them. Third group was teleworkers, which worked outside the office most of the time and defined real work as activities done for clients and disregarded presence as necessary for promotion. Last group was teleworkers who had no advancement aspirations, these people tried to maintain relationships and be social with colleagues. From a fragmentation lens FEDSIM was equivocal in most aspects. The mystery of reorganisation refers to the emotions employees experienced after the reorganisation when some experienced happiness and other confusion, uprootedness and disconnection. The mystery of procedure refers to the confusion of understanding operating procedures in general. Trust was seen as a value of FEDSIM so people were trusted to do their job, but they often felt they lacked resources or guidance. The mystery of promotion refers to the confusion as to what you need to do to advance and the mystery of telecommuting refers to the confusion regarding this work arrangement as to what telecommuters do and how can they maintain relationships? This mystery was rooted in perceptions of fairness and organisational justice and stemmed from lack of communication of formal guidelines for telecommuting (communicated to the telecommuters but not the non-telecommuters). The lack of sharing led to the second issue relationship maintenance. Without the routine patterns and rituals of greeting and saying goodnight, hallway conversations and other informal interactions people felt a loss or feelings of disconnectedness. Together the three lenses draw out the different ways in which telecommuting was discursively constructed.
<b>Remarks/contribution</b>	Integration lens revealed the utopy - the ideal of greatness and uniqueness, the differentiation lens revealed the distinctive groups within the organisation and their complex relationships and the fragmentation showed the emotional side of employees experiences - the confusion, loss, joy and uncertainties. Limitations include one organisation, self-selection of participants, and specific nature of the organisation. Recent reorganisation of the organisation.
<b>Quality assessment</b>	4 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	How telework is experienced, perceived and constructed in the workplace. Utopian views, different subgroups and problems with emotional responses to it.
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	Different angles to how telecommuters and the telework practice are perceived in an organisation. Implication part has even more stuff and thoughts on this.

<b>Authors</b>	Felstead, Jewson and Walters
<b>Title</b>	Managerial Control of Employees Working at Home
<b>Year</b>	2003
<b>Journal</b>	British Journal of Industrial Relations (3*)
<b>From search string</b>	Yes
<b>Background</b>	This paper looks at problems managers of telecommuters face in managing them, as individual employees and as a part of a workgroup. Authors pose three research questions. First, they explore in what ways working from home creates problems for traditional managerial control strategies in which the focus lies on presence and visibility of workers. Second, they explore which strategies and techniques managers use to deal with these challenges of managing workers with low presence and visibility. Third, they look at difficulties and contradictions that managers face in using such strategies. Absence of a literature review - at least it is very short!
<b>Methodology</b>	Qualitative
<b>Details of methodology</b>	Two sets of interviews, first one with managers and second one with homeworkers and their spouses. The interviews formed a part of a bigger project; this study seems to be a sideshow to that. No information on type of interview (semi-structured etc.) but the topics the questions covered were given as well as duration. No information on data analysis.
<b>Sample</b>	The first group: 82 respondents from 13 different organisations in UK with telework programs. 71 managers; 11 trade union officers or representatives. The second group: 60 professional /managerial employees who worked at home from the same 13 organisations. Spouses or partners were also interviewed (120 interviewees in total). Type of work generally similar: delivery of professional or scientifically based services, data analysis, report writing, research, advocacy etc.
<b>Key findings</b>	First they discuss visibility and working at home. Loss of visibility identified as a serious problem. Homework is associated with slacking and managers struggle with it because they cannot see their employees. Employees try to establish their visibility by sending out emails at odd times, carrying their phone at all times and not taking time off sick. Managers use different strategies e.g. electronic surveillance technologies which did not seem to bother the home workers, other surveillance methods not created for that purpose such as emails, phone calls, meetings, monitoring outputs which was often difficult if the function of the homeworker was not really designed for it and home visits. Finally they rely on trust, and in 10 of the 13 organisations homeworkers were chosen because they were known for that they could be trusted. They were independent proven employees and therefore using surveillance on them created cynicism. The proven independence of the chosen telecommuters meant they would possess characteristics or qualities, which posed problems to teamwork. Second they discuss presence and working at home. Here the main issue is the impact on other employees, integration of teams and teamwork, especially prevalent in organisations that rely on tacit knowledge. Identified problems were loss of organisational identification since for the majority these employees do not come to the office anymore, problems of organisational socialisation with peers, weakening of ties and tendency of homeworkers to focus on personal achievements as opposed to corporate goals or group participation. Within the workgroup resentment and envy was also identified as traditional workers pick up work from homeworkers further disrupting team integration. Socialising channels included phone calls, virtual meetings and real time meetings, but the problems with this are primarily that when the homeworkers are finally in the office they tend to spend all of their time catching up on work-related matters which leaves less time on informal socialising. "You always remember something when you see someone". Overall it was found that because of the characteristics of the homeworkers it was problematic to integrate them into workgroups because of their resourcefulness, self-sufficiency and independence. "I'm me. I'm on my own"
<b>Remarks/contribution</b>	Good insights into the problems of managers dealing with telework and of colleagues dealing with it. Visibility is challenged and social relationships in the workplace are affected. Managers used a number of social technologies to control their employees, mostly on an ad hoc basis. Finally findings highlights the individual attributes of teleworkers which always them to be trusted but poses difficulties in integrating them into the workgroup or team. Study has some interesting findings. Literature review absent, implications as well. Nothing on data analysis. No information on extent of telework or formality of the arrangement although one can assume a full time telework arrangement so therefore fairly formal.
<b>Quality assessment</b>	3 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Impact on managers and traditional workers when their co-workers work from home. Managerial strategies and challenges in dealing with this.
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	Very good insights.

<b>Authors</b>	Neufeld and Fang
<b>Title</b>	Individual, social and situational determinants of telecommuter productivity
<b>Year</b>	2005
<b>Journal</b>	Information and Management (3*)
<b>From search string</b>	Yes
<b>Background</b>	Attempts to answer the question of what factors determine telecommuter productivity. Authors develop hypotheses that predict that telecommuter beliefs and attitudes (i.e., relative advantage, complexity and compatibility) are positively associated with telecommuter productivity. That telecommuter beliefs and attitudes and productivity are positively associated with family status and gender (demographic factors). They further hypothesise that telecommuter beliefs and attitudes and productivity are positively associated with social interaction with clients, colleagues, managers and family members (social factors) and resource availability and a distraction-free environment (situational factors).
<b>Methodology</b>	Mixed methods
<b>Details of methodology</b>	First 32 semi-structured interviews with home-based workers to go deep into important issues analysed both qualitatively and quantitatively. A second stage was distributing a survey consisting of items that quantitatively assessed perceived productivity as well as potential determinants of productivity. Analysed first by running a median split to generate low- and high- productivity groups. A predictive discriminant analysis (PDA) was then conducted to identify the linear combination of independent variables best predicting group membership.
<b>Sample</b>	Phase one: Canadian division of a MNC with a telework program established 6 months prior. 32 interviews (out of 41 requested). 75% male. 80% married. Worked from home average 32 hours a week. Second phase: two Canadian organisations 100 usable surveys (of 141 distributed) - 71% response rate. 64% were male. 83% married. Average 22h telecommute per week. No info on jobs or types of organisations in either case.
<b>Key findings</b>	Beliefs and attitudes were strongly associated with telecommuting productivity (high productivity, positive attitudes). Social interaction with colleagues was positively associated with beliefs and attitudes, such that individuals with positive beliefs and attitudes reported more positive interactions with colleagues. Same applied to manager interactions so that those with more positive beliefs and attitudes reported stronger manager interactions. Manager interactions were also associated with telecommuter productivity (high reported productivity reported positive manager interactions). Resource availability and a distraction free environment were positively associated with beliefs and attitudes and telecommuter productivity. Three variables were useful in discriminating between low- and high-productivity telecommuters: beliefs and attitudes, manager interactions and family interactions. Three variables were useful in discriminating between telecommuters holding negative and positive beliefs and attitudes: colleague interactions, manager interactions, and family interactions.
<b>Remarks/contribution</b>	Taken together, results from the qualitative and quantitative studies suggested that the most important determinants of telecommuter productivity were beliefs and attitudes about telecommuting and social interactions with manager and family members. In turn, the most important determinants of telecommuter beliefs and attitudes were social interactions with colleagues, manager, and family members. Shows the role managers play and how colleagues shape attitudes of telecommuters (and vice versa). Limitations: no information on jobs, cross-sectionality, small sample of the second study. Results revealed that high and low productivity telecommuters differed in terms of beliefs and attitudes toward telecommuting, particularly in terms of social interactions with managers and family members.
<b>Quality assessment</b>	3 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Teleworkers productivity and their beliefs and attitudes and how these are associated with relationships with managers, colleagues, family.
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	Show how colleagues shape attitudes of teleworkers. How their productivity is determined by their managers.

<b>Authors</b>	Leonardi et al
<b>Title</b>	The Connectivity Paradox: Using Technology to Both Decrease and Increase Perceptions of Distance in Distributed Work Arrangements
<b>Year</b>	2010
<b>Journal</b>	Journal of Applied Communication Research
<b>From search string</b>	No
<b>Background</b>	Argues that technologies that allow for perpetual connectivity make it difficult for teleworkers to segment their work and non-work lives. Uses structuration theory and practice lens theories. They ask whether distributed work arrangements are crafted to decrease perceptions of the teleworkers' distance from the office, if so, how do the work arrangements affect teleworkers' ability to achieve their goals for teleworking and how do teleworkers use ICTs to manage others' perceptions of their distance from the office while simultaneously achieving their own specific goals for the distributed work arrangement?
<b>Methodology</b>	Qualitative
<b>Details of methodology</b>	36 semi-structured interviews. Constant comparative technique - selective coding. Good description of analysis.
<b>Sample</b>	Participants came from companies that actively support distributed work arrangements recruited through a snowball method. Nine different industry sectors, average of 4 years in their arrangement. Participants were flexiworkers (14) - part time telecommuter, fixed workers (11) - full time telecommuter, mobile workers (4) and distributed workers (7). No further information on sample (gender, occupations etc)
<b>Key findings</b>	In answer to the first research question findings reveal the importance of having the necessary technology, infrastructure and applications in place. Respondents use these to reduce the distance to their colleagues as well as the functional differences between the respective arrangements. In answer to the second research question findings indicate that although initially teleworker were concerned that their arrangement would lead to a loss of interpersonal relationships as time progressed (the longer they teleworked) this would not be the case - they would develop competencies to connect virtually. Rather, they perceived high connectivity as carrying potential costs associated with the time and effort needed to attend to communication demands. As such, they missed the flexibility to balance work and personal lives and the ability to focus on work without distraction from others. Conversely, they often felt they did not have enough distance from the office to allow them flexibility in their schedules and to focus on their work. The third research question explores the use of ICT's in this context and the findings revealed that over time teleworkers found that ICTs kept them so well connected with co-workers that it was difficult to introduce flexibility into their day and to focus on their work. Informants noted two strategic uses of their ICTs that helped them to feel more distant from the office. This was strategically disconnecting and dissimulating (putting away when you are not away).
<b>Remarks/contribution</b>	Two aspects of the practice of telework emerge from the informants' comments. The first is that teleworkers change their use of technologies to constitute a variety of structures based on situated needs (work uninterrupted or attend to family matters for example). The second theme is that in distributed work arrangements the operating assumption was that distance meant disconnection in a communicative sense. Distance was conceptualized as a communicative problem and over-use of communication eliminated much of the desired distance of teleworkers. Also shows how ICT's can and are used to provide evidence of visibility or non-visibility. Limitations include lack of demographic info of the sample. No info of extent of teleworking and although the group is separated in four subgroups the differences between them are not discussed. Small sample. No info on formal vs. informal arrangements.
<b>Quality assessment</b>	4 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Connectivity between teleworkers and in-house employees, how it is perceived and managed.
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	Connectivity (in mixed groups). This paper provides some evidence on the connectivity paradox, and shows teleworkers remain highly connected regardless of their absence from the workplace.

<b>Authors</b>	Wiesenfeld, Raghuram and Garud
<b>Title</b>	Communication patterns as determinants of organizational identification in a virtual organization
<b>Year</b>	1999
<b>Journal</b>	Organization Science (4*)
<b>From search string</b>	No
<b>Background</b>	Puts forward a core proposition that virtual status will moderate the relationship between mode of communication and identification. Explores how different forms of communication help employees in a virtual context and of different extents of virtuality to sustain their organisational identification.
<b>Methodology</b>	Quantitative
<b>Details of methodology</b>	Correlation and multiple regressions. Measures were organisational identification (established scales used), virtual status and communication with organisation members.
<b>Sample</b>	Sales division of a large international computer company with a 6-month-old mandatory virtual work program. 325 employees got the survey (276 responded - 85%). Approximately half were less than 2 days in the office and more than 2 days. Sales people.
<b>Key findings</b>	Results indicated that the relationship between virtual status and face-to-face communication was significant, suggesting that more frequent teleworkers may be less likely (than their in-office counterparts) to use face-to-face communication and documents, and more likely to use electronic and telephone communication. The virtual status by electronic communication interaction effect that emerged as significant in the regression analysis takes the following form: among higher virtual status employees, electronic mail communication creates a psychological link between individuals and the organization. Electronic communication does not appear to have the same effects for individuals who spend a greater proportion of their time in the office. Higher levels of phone communication were related to weaker organizational identification among higher virtual status employees. In contrast, higher levels of phone communication appeared to lead to stronger identification among lower virtual status employees.
<b>Remarks/contribution</b>	In summary, electronic communication appears to be a more critical means by which high virtual status workers create and sustain their organizational identification relative to less virtual employees. Phone communication appears to be a more critical means by which low virtual status workers create and sustain their organizational identification relative to high virtual status employees. Contribution appears limited - pretty straightforward findings. Electronic communication was a critical predictor of identification among virtual employees. Face-to-face less important maybe even for in-office employees since there are less people there also for them to communicate with? Identification is a psychological tie that binds employees together, the finding suggest that electronic media may be the glue to bind the individual employees together, in the maintenance of organisational identification. Limitations of the study are the sample: salespeople, mandatory program, no info on demographics. One company.
<b>Quality assessment</b>	3 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Organisational identification (how virtual workers identify themselves with the organisation) and how different forms of communication and different levels of telework are related to this.
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	"Virtual work enables an organization as a system of work, it has the potential to constrain an organization as a system of meaning for its virtual participants"

<b>Authors</b>	Belanger
<b>Title</b>	Communication patterns in distributed work groups: A network analysis
<b>Year</b>	1999
<b>Journal</b>	IEEE Transactions on Professional Communication
<b>From search string</b>	No
<b>Background</b>	Looks at the nature of communications within workgroups that are composed of both telecommuters and non-telecommuters and whether proximity makes a difference in which employees choose to communicate together. Authors hypothesise that work setting will be related to whom he chooses to communicate with, in mixed groups there will be a higher proportion of blocks consisting on non-telecommuters exclusively and telecommuters will choose to communicate equally with telecommuters and non-telecommuters. They also predict that extent of telecommuting; tenure with the organisation, gender and job type will be a significant predictor of block membership.
<b>Methodology</b>	Quantitative
<b>Details of methodology</b>	Preliminary interviews with managers of two workgroups followed by a survey administered to members of the workgroups. Initial interviews seemed to have been primarily to get information on the telecommuting program and secure participation. Good information on the creation of the questionnaires, it was pilot tested. Network analysis. Chi-square tests for the statistical significance of block membership (to test hypotheses).
<b>Sample</b>	Large telecommunications company. Two workgroups. Most respondent were computer system support personnel. Voluntary telecommuting. 55% were telecommuters. Data is also given for gender and tenure. Average frequency of telecommute was 2 days in group (network 1) and 1,8 in group (network 2).
<b>Key findings</b>	Work setting was not a significant predictor of who workers chose to communicate with, telecommuters did not appear to form their own block but partial support that they communicate equally with telecommuters and non-telecommuters (to them all are remote anyway). Extent of telecommuting, gender and job tenure were not significant predictors of block membership but job type was. The discussion section points to that there were blocks mostly consisting of telecommuters and speculates on the reasons for this - that perhaps telecommuters are more comfortable communicating with colleagues in a similar situation. Yet the hypothesis predicting this is not supported. They also observe that managers tended to create blocks of their own.
<b>Remarks/contribution</b>	Study suggests telecommuters are not necessarily out of the loop. They are communicating equally with other telecommuters and non-telecommuters although they tend to form groups among themselves just like women and managers. Having mixed groups does not appear to impact the communication structure of the workgroups. This study has numerous limitations. Only one company and a majority of the workgroups were in the same function, IT support. Small sample. Only two workgroups. Although a network analysis is an interesting way of exploring the issue it would have been illuminating to combine this with e.g. focus groups or interviews to gain more insights. No information on what was gained from the manager interviews.
<b>Quality assessment</b>	4 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Communication in groups of telecommuters and non-telecommuters. What are the determinants of who chooses to communicate with whom.
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	Limited by sample size and sample. Provides insights that having telecommuters does not change the communication structure - but based on a limited sample.

<b>Authors</b>	Watson-Manheim et al
<b>Title</b>	Exploratory analysis of factors influencing performance dynamics of telecommuters and traditional office workers
<b>Year</b>	2000
<b>Journal</b>	IEEE Transactions on Systems, Man and Cybernetics - Part C: Applications and Reviews (1*)
<b>From search string</b>	No
<b>Background</b>	Explores factors that play a role in influencing the performance of both traditional workers and telecommuters. Authors investigate the influence of coordination methods, job characteristics, and information technology (IT) capabilities on individual and group aspects of performance. Authors ask: how are coordination methods being used in the telecommuting work environment and what is their perceived effect on the performance of members of this work environment? How does the suitability of the job influence performance in the telecommuting work environment? Specifically, what is the influence of job characteristics and IT capabilities?
<b>Methodology</b>	Quantitative
<b>Details of methodology</b>	Survey. Analysis method is inductive learning. Independent variables were usage of coordination techniques, job characteristics and IT capabilities. Performance was the dependent variable. Good explanation on the scales used. No alphas reported. Well argued for the use of the analysis method. Good explanation of it.
<b>Sample</b>	Eight firms with existing remote work programs in Atlanta, GA. 3 high-tech service and sales, 3 primarily utility firms and 2 were public. In all but one case voluntary telework program. In most cases a majority of the groups were telecommuters (in terms of respondents 28% were traditional and 72% teleworked). 81% of the telecommuters telecommuted 2 days or less per week.
<b>Key findings</b>	Regarding scheduled or unscheduled use of medium: that a minimal number of unscheduled FTF meetings with co-workers were perceived to be highly productive by telecommuters. However, that telecommuters perceived that a large number of unscheduled FTF meetings with co-workers to be very beneficial in getting help from co-workers, and a moderate number of unscheduled FTF meetings were considered excellent for finding out about job-related changes. Interestingly, traditional office workers preferred scheduled FTF meetings for these purposes. Therefore that teleworkers need ad hoc meetings for certain aspects of performance. It was the inverse for telephone use. Regarding communication partner: Data indicates that telecommuters prefer to obtain information from managers in non-electronic coordination methods. For all three outcomes examined, the frequency of e-mail discussions with managers was inversely related to the outcome. Telecommuters seem to prefer to meet with managers and obtain information through FTF interactions or by telephone than by e-mail. Regarding influence of job characteristics and IT factors: Increased levels of interdependence with co-located workers resulted in higher satisfaction with productivity for traditional workers, but, surprisingly, had no effect on telecommuters. This finding contradicts the suggestion that telecommuters should perform jobs with little interaction with co-workers. Technical capabilities were also important for both groups.
<b>Remarks/contribution</b>	Interesting insights: Telecommuters value ad hoc meetings to get help from their co-workers but want as little as possible of them for their own productivity. They prefer telephone interactions to be scheduled (the inverse for non-telecommuters). Electronic coordination methods were perceived beneficial for both groups but to a lesser extent for the non-telecommuters. However telecommuters seem to prefer to meet with managers and obtain information through FTF interactions or by telephone than by e-mail. Interdependence with collocated led to higher satisfaction with productivity for non-telecommuters but had no effect on telecommuters. Increased levels of interdependence were helpful for both groups in getting help from co-workers. Paper explores effects of telework on mixed workgroups but presentation of findings is very confusing - probably because of analysis method chosen.
<b>Quality assessment</b>	3 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Performance dynamics in mixed workgroups. Especially with regards to communication modes, communication partners, job characteristics and IT factors.
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	Findings are confusing! Ad hoc meetings are valued to a certain extent especially with regards to getting help from co-workers. Telecommuters like interruptions like telephone calls to be scheduled. Some support for the connectivity paradox.

<b>Authors</b>	Collins, Cartwright, Hislop
<b>Title</b>	Homeworking: Negotiating the psychological contract
<b>Year</b>	2013
<b>Journal</b>	Human Resource Management Journal (3*)
<b>From search string</b>	Yes
<b>Background</b>	This paper draws upon psychological contract theory as a framework to explore the employment relationships of homeworkers. The aim of it is to explore the content of the psychological contract of homeworkers attempting to answer the following two key research questions: What expectations homeworkers have of the employing organisation; and what expectations homeworkers have of the homeworking scheme.
<b>Methodology</b>	Qualitative
<b>Details of methodology</b>	Semi-structured interviews. Template analysis used to analyse them - well explained. Epistemological stance also acknowledged.
<b>Sample</b>	Thirteen homeworkers (out of a possible 22); 11 of which were full-time and 2 part-time. Furthermore 2 managers, 6 supervisory staff (including one who was a homeworker) and 12 office-based employees also took part in the study. One organisation, local authority in the UK. Telework scheme was voluntary; homeworkers interviewed were in clerical positions and all female.
<b>Key findings</b>	The findings from this research revealed two key themes, temporal flexibility and fairness. Findings revealed that differences in temporal flexibility appear to be a result of whom they negotiated with. Supervisors had developed different interpretations and perspectives regarding flexibility, and therefore differed in their implementation of flexibility. Supervisors may have formed opinions of the employees from when they worked at the office and this impacts how they can negotiate their flexible arrangement. Also findings suggest that differing levels of flexibility allowed are not viewed unfairly because individual homeworkers had been able to negotiate their working times to suit them personally and were happy with their attained levels of flexibility. Thus, co-workers flexibility arrangements are more likely to be accepted by individuals if they are able to attain their desired level of flexibility also.
<b>Remarks/contribution</b>	Two key themes: fairness (two way process, employees will reciprocate with e.g. additional effort) and temporal flexibility (to balance work/life). One organisation, female clerical workers. Not good for generalisation but good insights. Contribution fairly little though.
<b>Quality assessment</b>	3 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Telework, psychological contract theory and employment relationship
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	If employees were happy with their level of flexibility they were not bothered about co-workers level of flexibility - feelings of unfairness were diminished.

<b>Authors</b>	Madlock
<b>Title</b>	The influence of supervisors' leadership style on telecommuters
<b>Year</b>	2012
<b>Journal</b>	Journal of Business Strategies
<b>From search string</b>	Yes
<b>Background</b>	The objective of this paper is to improve theoretical and practical understanding by engaging in a study of leadership and communication in the telecommuting setting. Specifically, the goal was to determine what form of leadership style (task and relational) and or communication behaviour would elicit the most favourable outcomes in the realm of telecommuting. Hypotheses and research questions developed (explained in key findings), thorough literature review.
<b>Methodology</b>	Quantitative
<b>Details of methodology</b>	Established measures used for the variables: Leadership style, communication competence, communication satisfaction, job satisfaction, and organisational commitment. Correlations and multiple regressions used to answer hypotheses. Lacks information on analysis.
<b>Sample</b>	Participants included full-time non-management employees working for companies with established telecommuting programs. 400 telecommuters were invited to participate in the study; 157 telecommuters (approximately 39.2%) provided useable completed surveys. Participants were comprised of (48% female, n = 85) and (52% male, n = 92). Variety of industries including insurance, high tech, healthcare and banking. No information on occupations or extent of telecommuting.
<b>Key findings</b>	Authors found support for a positive relationship between the task and relational leadership style of supervisors and the job satisfaction of their telecommuters, more so for task-oriented leadership style. They also found support for a positive relationship between the task and relational oriented leadership style of supervisors and the organizational commitment of their telecommuters, more so for task-oriented leadership style. Results indicated that supervisors engaged in greater task oriented leadership. Overall, task oriented leadership style was found to be a greater predictor of communication competence, communication satisfaction, of job satisfaction and of organizational commitment. The first finding of interest centres on the correlational findings, which indicate that there was a greater emphasis placed on task-oriented leadership in the virtual workplace compared to traditional work settings. This may be the result of distant leaders having to rely more heavily on explicit communication, whereas leaders in traditional work settings may have at their disposal additional informal influence. Can also be because of the nature of the work conducted in this setting or the people that conduct it - that they are more task oriented. May also reflect that telecommuters prefer this sort of leadership. A second key finding is the indications found that task oriented leadership style was a greater predictor of the communication satisfaction, job satisfaction, and commitment of telecommuters than was communication competence and relational oriented leadership. This finding again suggests that in order for supervisors to be perceived as effective leaders they must possess the knowledge and skills associated with the job in order to be able to communicate task relevant information to telecommuters.
<b>Remarks/contribution</b>	Primary insights are the importance of task-oriented leadership in the realm of telecommuting. Limitations include that amount of telecommuting is not known.
<b>Quality assessment</b>	3 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Which leadership styles are effective in the realm of telecommuting
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	Task-oriented leadership seems to be key in all aspects.

<b>Authors</b>	Fay
<b>Title</b>	Informal communication of co-workers: a thematic analysis of messages
<b>Year</b>	2011
<b>Journal</b>	Qualitative Research in Organizations and Management: An International Journal (1*)
<b>From search string</b>	No
<b>Background</b>	This paper examines informal interactions reported by remote workers with their central office peers to identify themes that emerge through everyday talk. Takes a constructivist perspective in that it views organizational outcomes, such as perceived membership, as being created and maintained through messages. Research questions addressed are what types of themes are represented in informal communication between remote employees and their central office peers and what do messages between peers suggest about how informal communication in the work context functions to achieve POM?
<b>Methodology</b>	Mixed methods
<b>Details of methodology</b>	Survey was distributed analysed using grounded theory and thematic analysis.
<b>Sample</b>	112 persons (of 400 requests) answered a questionnaire distributed to organisations in through personal contacts - only 100 were usable. Worked a minimum of three days a week outside the central office. They were in various jobs (examples given) and the organisations varied as well. 50/50 divide between under 45 and above. 48% were college educated. 55% with an above average income. 57% was female
<b>Key findings</b>	Five key themes emerged from the data: personal disclosure (remote workers trying to establish personal relationships, opening up about themselves, sociality (casual chit-chat, being social, greetings - however teleworkers need to demonstrate they are working hard), support giving and getting (reflect the need for manager support e.g. responses were sometimes related to support needed because a supervisor's behaviour was upsetting, and sometimes were direct requests to supervisors for support), commiserating /complaining (complaining together strengthens bonds), and business updates or exchanges (intertwined with more informal interactions). To answer the second research question, which sought to identify whether informal communication practices reported by remote workers reflected three underlying dimensions of POM, the message units were again examined. These were categorised in three parts: Need fulfilment (both one's own and others - helping with business matters, thanking others, receiving help), mattering (feeling you matter and are valued in the organisation) and belonging (being a part of the organisation). Two primary findings emerged from using the POM framework to analyse informal teleworker interactions. First, POM's explanatory and predictive power is limited by its implicit focus on positive interaction. Negative forms of interaction, and the perceived failure to provide positive forms of interaction when warranted, are not well incorporated in the model, yet these reported interactions clearly provide evidence that both phenomena are being experienced by teleworkers. Further, the POM framework assumes only one relationship: that between the individual and the organization.
<b>Remarks/contribution</b>	Informal interactions appeared to serve multiple functions and goals, which included achieving common ground, developing relationships, defining context, claiming and granting membership, managing impressions, reducing uncertainty, and bonding. Workplace peers are clearly important sources for relational, social, and support needs. Also explores the perceived organisational membership framework and suggests it is too limited, it needs to account for co-worker informal interactions and be more explicitly defined with regard to key informal messages, such as supportive communication, and with regard to individual interactional and relational goals as well as individual organizational needs. Limitations of this paper is self-report, self-selection, no information on jobs, only looks at the perspectives of remote workers. It's epistemological stance.
<b>Quality assessment</b>	3 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Informal communication among high intensity telecommuters and their in-office colleagues
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	Insights into importance of informal communication among peers in building membership and identity of remote workers and as to what these interactions consist of. Constructivist theory.

<b>Authors</b>	Thatcher and Bagger
<b>Title</b>	Working in pajamas: Telecommuting, unfairness sources and unfairness perceptions
<b>Year</b>	2011
<b>Journal</b>	Negotiation and Conflict Management Research
<b>From search string</b>	No
<b>Background</b>	This paper uses organisational justice theory to evaluate employees' experiences with telecommuting, by highlighting the experiences of all three parties i.e. telecommuters, non-telecommuting colleagues and managers. The aim is to contribute to the intersection of organisational justice and telecommuting. Literature review describes the different types of justice: distributive justice, procedural justice and interactional justice.
<b>Methodology</b>	Qualitative
<b>Details of methodology</b>	Semi-structured interviews. Good summary of what the interviews entailed and what was asked. Analysis of the interviews was done using coding a priori. Responses were highlighted that were consistent with the different aspects of unfairness.
<b>Sample</b>	24 telecommuters, their non-telecommuting peers and managers from four organisations: medium sized clothing retailer, financial organisation, and two large telecommunications organisations. No further information on the respondents.
<b>Key findings</b>	This paper applies the organisational justice theory to the telecommuting context from three different perspectives, using the different organisational justice perspectives and looking at different sources. First from the perspective of the telecommuter. Distributive justice from an organisational source refers to the duty to provide equipment to the telecommuter; from the manager source it refers to the assessment of the telecommuter - economic but especially socio-emotional rewards and from the co-worker source it refers to the information and information sharing. Procedural justice from the organisation source refers to both the importance of formal policies to resolve issues of inconsistency and also clarity in promotion guidelines, from the manager source it refers to the variations between managers in terms of support, information sharing and overall dealing with telecommuting subordinates and from the co-worker source refers to how vigilant co-workers are in sharing and distributing important informal information regarding events, meetings etc. with the telecommuter. Interactional justice from the organisational source refers to the importance of consistency between formal policies and that managers have support in following these policies as well as clear communication on what these policies entail, from a manager source it refers to the perceived fairness of the information provided to and treatment of the employee by his or her manager and difficulties with electronic communication which may be strained or limited and from a co-worker source refers to when telecommuters are for example left out on meetings or not kept in the loop in email communication etc. Perceived unfairness from the non-telecommuters view is the second perspective. Distributive justice from an organisation source refers to that telecommuting may be seen as a reward in itself and giving additional benefits such as equipment may be seen as unfair and also that it is seen as a reward for hard workers or be linked to positions which leads to perceptions of unfairness, from a managerial perspective it may mean increased workload for the non-telecommuter and may also refer to that managers make arbitrary decisions who can telecommute and who not, finally from a co-worker source it refers primarily to the increased workload on non-telecommuters e.g. because they need to do extra work to keep the telecommuter in the loop and because they are the one present and the one who can more easily answer questions or deal with issues because they are visibly present. Procedural justice from an organisation source refers to the importance of having consistent guidelines or policies to ensure consistent treatment, from a manager source it refers to that who the manager is may determine whether or not employees may telecommute - again a question of possible inconsistencies and from a co-worker source it refers to the importance that telecommuters deliver their assignments on time because the non-telecommuter finds it more difficult to reach him. Finally interactional justice from a organisation source refers to that non-telecommuters may experience colleagues all of a sudden move to telework without any information having been provided or training having been provided, from a manager source it refers to the perceived unfairness non-telecommuters may feel when they were not allowed to telecommute with inadequate explanations for it, and from the co-worker source it refers to the forced exchange relationship non-telecommuters are faced with in dealing with telecommuting colleagues.
<b>Remarks/contribution</b>	Very good and thorough outline of sources of unfairness in organisations when telecommuting has been implemented. Overview of potential impacts on non-telecommuters. Good insights in how it may impact teams or workgroups. Very clear.
<b>Quality assessment</b>	3 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Perceptions of unfairness in mixed workgroups from telecommuter and non-telecommuter perspectives.
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	Very good insights.

<b>Authors</b>	Golden and Veiga
<b>Title</b>	The impact of superior-subordinate relationships on the commitment, job satisfaction, and performance of virtual workers
<b>Year</b>	2008
<b>Journal</b>	Leadership Quarterly (4*)
<b>From search string</b>	Yes
<b>Background</b>	This paper seeks to understand how leader-member exchange relationship quality impact on work outcomes is influenced by the degree of virtual work. Authors expect that the quality of this exchange relationship will be far more instrumental in determining work outcomes for those who work extensively in this virtual mode, than for those who do not. Specifically, depending upon the quality of the exchange relationship with the individual's supervisor, the highest and lowest levels of commitment, job satisfaction, and performance will be experienced by individuals who work extensively in a virtual mode.
<b>Methodology</b>	Quantitative
<b>Details of methodology</b>	Measures: organisational commitment, job satisfaction, job performance, degree of virtual work, LMX quality. Correlations, hierarchical stepwise regression to test hypotheses.
<b>Sample</b>	1 large corporation high technology with telework program. Responses received from 375 virtual workers (out of 1000). Respondents were 55% male, averaged 42 years of age, spent an average of 25% of their workweek in the virtual mode, and had been working this way for the past 20 months.
<b>Key findings</b>	The impact of LMX was significantly affected by the extent of virtual work, demonstrating the important role of supervisory relationships in determining the commitment, job satisfaction, and performance of virtual workers. In terms of organizational commitment, the findings suggest that there is an organizational upside and downside to extensive virtual work. On the upside, individuals who work extensively in a virtual mode and have a high quality exchange relationship with their supervisors are likely to demonstrate significantly higher levels of organizational commitment. However, for those who have a low quality exchange relationship, the downside of extensive virtual work is a significant reduction in commitment. With respect to job satisfaction, the findings suggest that for individuals who work extensively in a virtual mode, satisfaction is heavily dependent upon their relationship with their supervisor. Consequently, high quality relationships for them result in markedly higher levels of job satisfaction compared to those with low quality relationships who appear to experience eroding satisfaction. For job performance, the results indicate those who work more extensively in the virtual mode have higher performance, and this effect occurs for those with both high and low LMX qualities.
<b>Remarks/contribution</b>	Very clear study. Limitations: cross-sectional, one company, no information on occupations.
<b>Quality assessment</b>	3 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Employee-supervisor relationship
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	Initially excluded but added back last minute.

## Appendix B - Data Extraction forms: Conceptual papers

<b>Authors</b>	Van Dyne, Kossek and Lobel*
<b>Title</b>	Less need to be there: Cross-level effects of work practices that support work-life flexibility and enhance group processes and group-level OCB
<b>Year</b>	2007
<b>Journal</b>	Human Relations (4*)
<b>From search string</b>	Yes
<b>Overview</b>	Develops a model of the effects of flexible work arrangements on group processes and OCB through reduced facetime. Thus, the purpose is to consider ways in which combined group and individual facilitating factors have the potential to help employees and their work groups successfully cope with the challenges of flexibility Authors argue that cross-level theory and research is needed on how reduced facetime influences workgroup peers and group processes as performance decrements associated with flexible work arrangements stem from the coordination and motivation challenges that individual flexibility poses for professionals in the work group. Describes the effect of reduced face time (as a consequence of FWAs) on group-level motivation and coordination and subsequently group level OCBI and OCBO. Model describes how collaborative time management through synchronised interaction and team-centred coordination as well as individual proactive availability reduces the effects on group-level coordination. Furthermore, it describes how redefinitions of contributions through event time and norms for flexibility as well as individual proactive availability and strategic self-presentation impact group-level motivation.
<b>Contribution</b>	Identifies facilitating work processes that can enhance group processes and effectiveness. Suggestions based on literature how reduced face time in groups (because of FWA use) can be dealt with. Outcome looked at: OCB. Mixes individual-group facilitating work practices and subsequently two levels of analysis (cross-level).
<b>Remarks</b>	Paper is well built on existing empirical research on the topic. However, there isn't much research out there on the topic so the paper is basically built on a few select papers repeatedly referenced throughout. Model ignores many other components of teamwork, which FWAs may impact such as interactions. Does not specify differences according to types of FWAs, extent of flexibility of employees. Is reduced face time the key problem behind FWAs? Can there be other aspects? Does not build on theories or theoretical perspectives that may explain these processes.
<b>Quality assessment</b>	4 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Facetime, teamwork
<b>FWA type discussed</b>	FWAs (unspecified)
<b>Additional thoughts</b>	Assumption of reduced facetime is the underlying problem to FWAs in workgroups.

<b>Authors</b>	Taskin and Bridoux
<b>Title</b>	Telework: A challenge to knowledge transfer in organizations
<b>Year</b>	2010
<b>Journal</b>	The international Journal of Human Resource Management (3*)
<b>From search string</b>	Yes
<b>Overview</b>	Builds on teleworking and knowledge literature to study the impact of telework on knowledge transfer between teleworkers and non-teleworkers. Builds on evidence that telework modifies the attachment of workers within the organisation and the social relationships between teleworkers and non-teleworkers. Argues that the transfer of individual technical knowledge becomes easier if the source and recipient have a close relationship and share organisational knowledge but telework may have a negative impact on these factors. In determining the extent of this negative impact they argue for three dimensions, frequency (through less contact there is less possibility to share common language, mental schemes and narratives, it affects organisational identification of teleworkers and affects the relationships between teleworkers and non-teleworkers), location and perceptions (lack of social legitimacy, constraint rather than opportunity).
<b>Contribution</b>	Builds a model of how knowledge transfer may be affected in a teleworking context and identifies elements that affect it.
<b>Remarks</b>	By focusing on particular elements it misses out on others such as formalisation (only mentioned through social legitimacy arguments). Does not really mention work design in the development of the model or differences according to functions or levels. Focuses on telework as having de-socialisation effects as opposed to a different way to socialise (mentioned by authors themselves). Does not mention theories which would help support their argument (equity theory, social exchange theory etc.).
<b>Quality assessment</b>	3 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Knowledge transfer
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	Interesting paper.

<b>Authors</b>	Raghuram
<b>Title</b>	Knowledge creation in the telework context
<b>Year</b>	1996
<b>Journal</b>	International Journal of Technology Management (3*)
<b>From search string</b>	Yes
<b>Overview</b>	This paper explores how the telework context creates a tension in knowledge creation and the way teleworkers acquire and communicate knowledge using the distinctions between tacit and explicit knowledge. To be effective in an organisation an employee needs to learn both explicit rules but also about the values and the implicit organisational systems to become a part of the organisation. Authors look at how new knowledge may be created by converting tacit to tacit, explicit to tacit, explicit to explicit and tacit to explicit. They argue that the social context of telework may hamper the creation of tacit knowledge from existing tacit knowledge. Interpreting explicit knowledge is less problematic and should be similar in conventional and telework contexts but the interpretations of the teleworker may remain for a longer time since they interact less frequently with their organisation members. Due to technology e.g. computer systems converting explicit knowledge to explicit may be an advantage for teleworkers. However converting tacit knowledge to explicit knowledge happens in socialisation processes, which are less frequent with teleworkers that makes this problematic. Their insights may be contextual which makes communication of them difficult and explication of knowledge is dependent upon extensive peer socialisation that leads to creation of trust and a common perspective.
<b>Contribution</b>	Explores knowledge creation in a telework context, specifically tacit and explicit knowledge.
<b>Remarks</b>	Technology helps in communicating, accumulating and disseminating explicit knowledge but lack of socialisation may hamper creation of tacit knowledge and/or explicit knowledge from tacit knowledge. Points to how socialisation, mentoring and documentation are important in this process. Paper provides interesting insights but is not highly conceptual or theoretical. Appears more practitioners oriented than theoretically oriented.
<b>Quality assessment</b>	3 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Knowledge creation
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	Difficulty of knowledge transfer and creation when it comes to tacit knowledge.

<b>Authors</b>	Thatcher and Zhu
<b>Title</b>	Changing identities in a changing workplace: Identification, identity enactment, self-verification, and telecommuting
<b>Year</b>	2006
<b>Journal</b>	Academy of Management Review (4*)
<b>From search string</b>	No
<b>Overview</b>	This paper draws from literature on social identity, identity enactment, and self-verification. It shows how these three research areas provide a complementary view of identity processes and examines the three aspects of identity in telecommuting situations. Finally, it shows how telecommuting impacts our understanding of identity-related issues. It argues that telecommuting, by altering the work environment, disrupts the social psychological processes underlying identification, identity enactment, and verification in the workplace. It draws on theoretical perspectives of social identity theory (focusing on cognitive self-categorization), research on self-verification theory, which posits that individuals have a fundamental need for others to see them as they see themselves and that individuals actively seek to bring others' appraisal in line with their self-views. Finally, it is grounded in research emphasizing identity as habitual routines (identity enactment theory). In this view, identity is not just an abstract perception of the individual one thinks oneself to be but, rather, a continual process of habitual activities that confers a sense of structure and a sense of coherence on one's daily life.
<b>Contribution</b>	Applies the three identity theories to the context of telecommuting. Explores differences depending on type of telework, extent of telework and whether it is mandatory or voluntary. Puts this up in a theoretical model. Paper explored the implications of telecommuting by discussing how changes in the social, physical, and psychological work environment affect organization-related identification, self- verification, and identity enactment.
<b>Remarks</b>	Interesting paper that explores the issues teleworkers are confronted with when working out of the central office. Explores issues such as isolation, identity differences because of place of work, amount of work, lack of face-to-face contact, coordination, control, social interaction, organisational membership etc. Limitation is the individual perspective - focused on the individual.
<b>Quality assessment</b>	4 (Average across categories)
<b>Aspect of intra-group relations focused on:</b>	Telecommuters identity issues and enactment
<b>FWA type discussed</b>	Telework
<b>Additional thoughts</b>	Teleworkers need the validation of others. Routines.