Semi-Autonomous Work Teams: The Effects of Implementation and Team Membership Change

Kate Elisabeth Charles

Institute of Work Psychology
University of Sheffield

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Abstract

This thesis focussed on the development of semi-autonomous work teams in a manufacturing production setting. The thesis investigated the impact of both work team implementation and team membership change on work characteristics (e.g. role breadth, interdependence), supervisory style, team processes (e.g. team task support) and employee outcomes (e.g. satisfaction, well-being). In addition, relationships between these variables were addressed. Finally, the role of the supervisor was examined in more detail, through the investigation of supervisors' perceptions of semi-autonomous teamworking.

These investigations were undertaken using quantitative survey data, collected at three timepoints over a period of nineteen months, and qualitative data gained using the repertory grid technique.

The results suggested that the implementation of teamworking had beneficial effects in terms of work characteristics, supervisory style, team processes and, to some extent, employee outcomes. However, findings suggested that there may be a decline in such benefits over time. Furthermore, there was some suggestion that a management-initiated team membership change event undermined employees' beliefs about teamworking, and may have contributed to this decline.

Interestingly, for those employees directly involved in the membership change, these declines were smaller in relation to role breadth and team processes, but larger in relation to employee outcomes. These findings suggest that changing team membership may better enable employees to maintain effective teams, but may be problematic in terms of employee motivation, satisfaction and well-being.

Relationships between variables highlighted the key role of the supervisor in developing and maintaining positive team processes and employee outcomes. In addition, it was suggested that supervisory styles were formed, in part, by supervisors' perceptions of teamworking.

Conceptual implications arising from this thesis include the integration of temporal issues into team effectiveness models, and greater attention to supervisory style in the study of semi-autonomous teamworking. Practical implications regarding the adoption of team-based working and the development of appropriate work team supervision are also addressed.
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This thesis is about working in teams. More specifically it focuses on the implementation and subsequent development of semi-autonomous work teams in a manufacturing production setting. The thesis investigates the impact of introducing such teams on shopfloor employees' jobs ('work characteristics'), their interactions with each other ('team processes'), the way they are supervised ('supervisory style') and how they feel about their work ('employee outcomes'). Following this implementation, the thesis also examines the impact of a management initiated event in which the membership of teams was changed.

Furthermore, this thesis investigates some of the relationships which may influence the positive impact of teamworking. More specifically, the thesis addresses the relationships between inputs (ie. work characteristics, supervisory style) and team processes, and between inputs and processes (ie. work characteristics, supervisory style, team processes) and employee outcomes.

Finally, this thesis examines the role of first line supervisors in more detail, by exploring supervisors' perceptions of teamworking and the relationship between these perceptions and supervisory style.

This chapter gives a brief overview of the structure of this thesis. Each chapter is presented in turn, and the main sections covered in each are described.
Chapter 2: Literature Review

Chapter 2 reviews the literature relevant to this thesis, and is arranged into four sections. In the first section, work team definitions are outlined and the boundaries of scope for the literature review are established. Section two considers some general background issues including the current popularity of teamworking, the historical origins of work teams, changing rationales behind the use of team-based working, and the impact of teamworking on employee and organisational outcomes. The third section looks at how teams develop and change over time, with particular focus on how teams respond to changes in their team membership. The final section of the literature review outlines models of team effectiveness, and discusses three key factors; supervisory style, work characteristics and team processes; which may impact on team effectiveness. The chapter is concluded with a presentation of the eight research questions which are addressed within this thesis.

Chapter 3: Organisational Context

The third chapter provides an overview of the organisation in which the studies in this thesis were conducted. This chapter begins with a description of the research setting, and outlines the organisation of production processes prior to the adoption of team-based working. Following this, management's rationale for introducing teamworking is presented, and the organisation of production processes following this initiative is outlined. The teamworking initiative is then discussed in more detail, focussing particularly on changes to shopfloor and supervisory jobs, and human resources issues resulting from the new way of working. Data collection points are also placed within the context of team implementation and change. The chapter is concluded with an overview of the nine work teams which were implemented, and their circumstances at the first data collection point.
Chapter 4: Team Implementation

Chapter 4 is the first of three empirical studies presented in this thesis. This study used quantitative surveys at two timepoints to investigate the introduction of semi-autonomous work teams. The chapter addresses the first three research questions of the thesis as follows:

1. What is the impact of implementing semi-autonomous work teams on work characteristics, supervisory style, team processes and employee outcomes?
2. Following the implementation of semi-autonomous work teams, are work characteristics, supervisory style and team processes related to employee outcomes?
3. Following the implementation of semi-autonomous work teams, are work characteristics and supervisory style related to team processes?

The chapter begins by outlining contextual issues relevant to the study. This is followed by a description of the methodology used, including an outline of the scales measured. The results section then addresses each research question in turn. A discussion of results is given after the analysis for each research question, before the chapter concludes with a summary of the main results.

Chapter 5: Supervisors' Perceptions of Teamworking

This chapter presents a cross-sectional study exploring the factors which supervisors perceived to be important for effective teamworking. This study used repertory grid technique to investigate supervisors' perceptions, and addresses the following two research questions:

4. What are the factors which supervisors perceive to be important for effective teamworking?
5. Are these perceptions related to supervisory style?

The chapter begins with a brief introduction to Personal Construct Theory and the repertory grid technique. Following this, the context for the study and the research method are presented. The grid analyses section then addresses each research question in turn, and a discussion is given after the analyses for each research question. The chapter concludes with a summary of the main findings of this study.
Chapter 6: Team Membership Change

Chapter 6 presents the final empirical study in this thesis. This study focused on a management initiated event in which the membership of work teams was reorganised. As in Chapter 4, this study used quantitative survey data from two timepoints, and addressed the final three research questions. These research questions were similar to those investigated in Chapter 4, but were based in the context of team membership change. Thus, this chapter examined the following three research questions:

(6) What is the impact of team membership change on work characteristics, supervisory style, team processes and employee outcomes?

(7) Following team membership change, are work characteristics, supervisory style and team processes related to employee outcomes?

(8) Following team membership change, are work characteristics and supervisory style related to team processes?

The structure of this chapter is the same as that of Chapter 4. That is, firstly contextual and methodological issues are presented. Then the results of analyses for each research question are described, along with a discussion for each set of results. The chapter concludes with a summary of the main findings for this study.

Chapter 7: Thesis Discussion

The final chapter provides an overall discussion of the issues raised in this thesis. More specifically, the key findings from each of the empirical studies are drawn together, and their practical and conceptual implications are discussed. The chapter begins by summarising the focus of the thesis. Following this, the key empirical findings are presented, and their conceptual implications are discussed. Consideration is then given to the practical implications arising from the key results. The chapter is concluded with a discussion of the methodological issues and areas for future research.
Chapter 2: Literature Review

This literature review is organised into four sections. In the first section, definitions of teams are presented and the boundaries of scope for this literature review will be established. Section two considers some general background issues including the current popularity of teamworking, the historical origins of work teams, changing rationales behind the use of team-based working, and the impact of teamworking on employee and organisational outcomes. In the third section, issues relating to team development and change over time are discussed. This section considers the limitations of traditional team development theories, and discusses how teams change over time, with particular focus on how teams respond to changes in their team membership. The fourth section of this literature review outlines models of team effectiveness, and discusses three key factors; supervisory style, work characteristics and team processes; which may impact on team effectiveness. The chapter is concluded with a presentation of the research questions which will be addressed within this thesis.
Chapter 2: Literature Review

Definitions and Scope

"Work groups pervade organisations. They are found in the executive suite, on the front line with customers and clients, and on the shopfloor. They operate in organisations that provide services, that make things, and that create entertainments. Virtually everyone who has worked in an organisation has been a member of a task performing group at one time or another." (Hackman 1990, p.2)

The above quotation highlights the extent to which collective working is a central theme of organisational life. This is particularly so in recent years, with ever increasing numbers of companies adopting formal teamworking structures. It is not surprising, therefore, that psychology, management and human resources researchers have invested considerable attention in the study of work teams and groups. Indeed, over 7,500 journal articles, reviews and books have been published in the last 20 years alone. As a consequence, in order to present a concise and coherent literature review, it is first necessary to restrict discussion to those areas most relevant to this thesis.

The first section of this literature review, therefore, begins by presenting some general definitions of work teams. Discussion is then made of the types of work which teams are engaged in and the organisational settings in which they work. It will be established that this thesis is concerned with manufacturing production teams and, as such, the section concludes by differentiating between different types of manufacturing production team commonly in use.

Prior to this, however, it is important to note that the terms "work team" and "work group" are both used, largely interchangeably, in the teamworking literature. Although it is acknowledged that differences may exist between the conceptualisation of these terms; Katzenbach and Smith (1993) for example, argue that a group becomes a team when they develop a sense of shared commitment and strive for synergy amongst members; in line with Guzzo and Dickson (1996), Guzzo and Shea (1992) and others, the terms work group and work team are used interchangeably within this thesis.
Definitions of Work Teams

A number of general definitions of work teams have been proposed in the teamworking literature (e.g. Hackman 1990, Sundstrom, De Meuse and Futrell 1990, Salas, Dickinson, Converse and Tannenbaum 1992, Guzzo and Dickson 1996). Although varying in their focus, most definitions include four key attributes which characterise work groups and teams, namely: operation within an organisational context; social identification; interdependence; and the performance of common goals and tasks.

Firstly, work teams are embedded within a wider organisational context, and interact with agents within that context (Hackman 1990, Sundstrom et al 1990). Secondly, work teams should be identifiable as a coherent group, both by team members and those outside of the team. Salas et al (1992) for example, state that work teams are "a distinguishable set" of employees.

Furthermore, the presence of interdependence between team members features prominently in most work team definitions (e.g. Sundstrom et al 1990, Hackman 1990). Argote and McGrath (1993), for example, distinguish between "acting" and "standing" groups. The former are teams engaged in interdependent activities, whereas standing groups are designated as a group for identification purposes, but work largely independently (e.g. a group of secretaries). In general, theorists define work teams as having at least some degree of interdependence. Working interdependently also implies that interaction between team members occurs. Salas et al (1992) for example state that work team members "interact dynamically, interdependently, and adaptively."

Finally, work teams are groups of individuals are engaged in the completion of a common task or goal. Thus work teams work "toward a common goal / objective / mission" (Salas et al 1992), "have tasks to perform" (Hackman 1990) and "share responsibility for specific outcomes" (Sundstrom et al 1990).

Combining these four attributes, this thesis will use Guzzo and Dickson's (1996) definition of work teams. They define work teams as group of individuals:

"who see themselves and who are seen by others as a social entity, who are interdependent because of the tasks they perform as members of a group, who are embedded in one or more larger social systems (e.g. community, organisation) and who perform tasks that affect others (such as customers or co-workers)."
Chapter 2: Literature Review

Categorisations of Work Teams

The above definitions refer to work teams and groups in general. However, there is a great deal of difference between, for example, a top management team, a product development team, an interdisciplinary team of health care professionals and a shopfloor production team. Cannon-Bowers, Oser and Flanagan (1992) list 20 common types of work team, including problem solving teams, quality circles, multidisciplinary teams, semi-autonomous work teams, committees, maintenance and repair crews, product development groups, negotiating teams and cockpit crews. Furthermore, Argote and McGrath (1993) note that:

"autonomous work groups, labour-management steering committees, new product development teams, executive committees, and the like are examples of the myriad types of groups that nowadays form vital parts of organisational life."

Two primary ways in which work teams can be categorised are on the basis of the type of tasks they are engaged in, and the organisational setting in which they work. These two types of categorisation are discussed below.

Work Team Tasks

Devine, Clayton, Philips, Dunford and Melner (1999) distinguish between teams which process information (i.e. planning, creating, choosing, deciding) and those which produce goods and services. Sundstrom et al (1990) elaborate further by categorising four types of primary task which work teams undertake, namely: advice and involvement; production and service; projects and development; and action and negotiation. Advice and involvement teams are primarily engaged in decision making and include top management teams, committees and quality circles. Production and service teams are usually first line employees working over a relatively long period to produce products or deliver services, for example manufacturing teams, sales teams and airline crews. The third category of team, projects and development, are usually created in order to address a particular project or problem, and are usually disbanded after completion of the task. They are often cross-disciplinary, and tend to contain experts such as researchers, engineers and designers. The final category of action and negotiation teams consist of highly trained individuals who are engaged in brief performance events, for example sports teams, teams in the military and music groups.
In an alternative framework, McGrath and colleagues (e.g. Argote and McGrath 1993, McGrath and O'Connor 1996) conceptualise team types based on their model of work group formation. Here, it is stated that:

"**work groups come about in an organisation when a set of people, tools and purposes are selected, recruited or created....**" (McGrath and O'Connor 1996).

Three types of work group result, depending on which of the three components - people, tools or resources - form the main driving force behind team creation. Thus, when a specific purpose is central to the team's creation, the resultant team is a "**task force**", such as a group of designers developing a new product. By contrast, when the person component is central, team members are selected on the basis of specific skills and abilities, such as an inspection and repair team or a medical operating team. The final type of work teams, "**crews**", are created when the tools component is central. Here, tools, machines and resources are obtained first, and then individuals are selected to man them, as is the case with a production team or a crew to operate a computerised storage system.

The focus of this thesis is on work teams that are engaged in producing products (i.e. Sundstrom et al.'s (1990) production and service teams, or "crews" as McGrath and colleagues define them). As such, this review will focus primarily on literature which addresses this type of team.

**Work Team Settings**

Work teams can also be categorised on the basis of the organisational setting in which they operate. Hackman (1990), for example, organises reports of teamworking into task type categories, similar to the above, and then provides examples from a variety of industries, including flight attendant teams (Cohen and Denison 1990), a children's theatre company (Friedman 1990), a semiconductor manufacturing team (Abramis 1990) and a corporate restructuring team (Cohen 1990).

Historically, until the mid 1980's, the use of teamworking was almost exclusively restricted to manufacturing settings, and in particular the automotive industry (Jenkins 1994). More recently, however, team-based working has been implemented in other
sectors, particularly in the service industry. In addition to the above examples, research on teamworking has now been documented in a wide variety of settings, including telecommunications (Cohen and Ledford 1994, Cohen, Ledford and Spreitzer 1996), pharmaceutical sales (Lloyd and Newell 2000), postal services (Lucio, Jenkins and Noon 2000), dog food plants (Walton 1977), coal mines (Trist, Susman and Brown, 1977), financial investment firms (Sims, Manz and Bateman 1993), paint manufacturing plants (Poza and Markus, 1980), small parts manufacture (Manz and Sims 1987), independent insurance firms (Manz and Angle 1986), mental health hospitals (Shaw, 1990), warehouses (Manz, Keating and Donnellon 1990) and paper mills (Manz and Newstrom 1990).

The setting for this thesis is a photographic film manufacturing organisation. Therefore, this literature review will focus primarily on research conducted in manufacturing settings. However, where appropriate research conducted in organisational settings other than manufacturing will also be discussed.

Manufacturing Production Work Teams

Thus far, it has been established that the focus of this thesis is on teams engaged in producing products in a manufacturing setting. However, one final distinction is needed before moving on to the next section of this literature review. This is between different types of manufacturing production team currently in use. More specifically, it is important to make the distinction between traditionally managed teams, lean teams and autonomous work teams.

Traditional work teams are comprised of workers who perform the central tasks in the production of products. They are usually controlled by a first line supervisor or foreman, who undertakes all planning, organising, directing, monitoring and staffing duties. Traditional team members have no input into support activities, such as quality control and maintenance, and have little or no input in the day-to-day running of their work area (Banker, Field, Schroeder and Sinha 1996). As such, traditional work teams are little more than groups of individuals working together in the same area.
Lean production teams function as part of an organisational system aimed at reducing costs through eliminating all unnecessary stocks, resources (including employees) and actions (Womack, Jones and Roos 1990). Benders and Hootegem (2000) define the key characteristics of lean teams as the minute description and regulation of work through standardised operating procedures, the use of off-line continuous improvement groups, and the status and centrality invested in the first line supervisor. Thus, lean team members are primarily involved in central production tasks, with little involvement in management or support activities, and a small degree of participation in problem solving through continuous improvement groups (Banker et al 1996, Delbridge, Lowe and Oliver 2000). In addition, the use of standard operation procedures and the status attributed to the supervisor mean that lean teams usually experience little autonomy (Benders and Hootegem 2000, Proctor and Mueller 2000).

Forms of autonomous teamwork are of the most relevance to this thesis, and have been defined variously as self-managed teams (Banker et al 1996, Hackman 1998), autonomous work groups (Cummings 1978, Clement 1996), semi-autonomous work teams (Larson and LaFasto 1989), high performance work teams (Banker et al 1996), self-regulating teams (Pearce and Ravlin 1987), self-directed teams (Murakami 1997) and self-designing teams (Banker et al 1996). Distinctions between these definitions will be addressed shortly (see p12), however, in general, they are defined as:

"teams of employees who typically perform highly related or interdependent jobs, who are identified as a social unit in an organisation and who are given significant authority and responsibility for many aspects of their work, such as planning, scheduling, assigning tasks to members and making decisions with economic consequences" (Guzzo and Dickson 1996).

A number of researchers have categorised how autonomous work teams differ from other forms of production work team (eg. Hackman 1986, Osburn, Moran, Musselwhite and Zenger 1990, Cannon-Bowers et al 1992, Manz and Sims 1993, Zenger, Musselwhite, Hurson and Perrin 1994, Cohen et al 1996). The main distinguishing characteristics are as follows. Firstly, autonomous work teams undertake a whole or completely identifiable piece of work and are responsible for its production (Cannon-Bowers et al 1992, Manz and Sims 1993, Cohen and Ledford 1994, Cordery 1996). In completing this work, autonomous work teams tend to have higher levels of interdependence than other types of production work team. Secondly, the team has considerable decision making autonomy over tasks such as deciding on methods of
working, assigning members to tasks, solving quality and interpersonal problems, regulating goals, obtaining performance feedback and conducting meetings (Cummings 1978, Wellins, Byham and Wilson 1991, Manz 1992, Cohen et al 1996, Cordery 1996). Indeed, Wall, Kemp, Jackson and Clegg (1986) argue that a high degree of self-determination in the management of day-to-day tasks is the key feature of autonomous work groups. Thirdly, autonomous work groups tend to be multiskilled so that each team member is able to complete all the tasks within the team (Cordery 1996). These multiple skills refer not only to technical skills, but also to interpersonal and problem solving skills (Manz 1992). The final defining characteristic of autonomous work teams is the way in which they are supervised. First line supervisors are seen as external team facilitators, rather than top-down decision makers, as is the case in more traditionally managed teams (Manz and Sims 1993). Appropriate behaviours for such supervisors include encouraging team members to set their own goals, be aware of their own performance and engage in problem solving activities, and ensuring team members receive appropriate training (Manz and Sims 1987, Cohen et al 1996). Autonomous work groups may also have a formal or informal leader internal to the team, who helps the team to organise itself and co-ordinate its efforts.

There is often little distinction made between the different types of autonomous work team, either in the literature or in practice. Banker et al (1996) however, have developed the Team Autonomy Continuum in an attempt to classify all types of production team, including the variants of autonomous group working. Thus, they argue that teams can be categorised by the degree of autonomy which is afforded to them. Traditional work groups, for example, are categorised as having low autonomy, with lean teams having slightly more autonomy by comparison. All types of autonomous work team are seen to have greater autonomy than both traditional and lean teams. Within these autonomous work team types, Banker et al (1996) categorise high performance work teams, semi-autonomous work groups, self-managing / self-directed teams, and self-designing work teams in order of increasing levels of autonomy. Semi-autonomous work groups, for example, are seen as having more autonomy than high performance work teams, but less autonomy than self-managed teams. Of particular relevance to this thesis are the conceptual distinctions between semi-autonomous work teams and self-managed teams.
Chapter 2: Literature Review

According to Banker et al (1996), semi-autonomous work teams have considerable autonomy over the day-to-day management and execution of production tasks, in addition to aspects of work immediately related to production, such as solving problems and setting goals. However, unlike self-managed teams, support activities are not included in the remit of semi-autonomous work teams' responsibility. Self-managed work teams are categorised as having autonomy and responsibility over the entire production process, from raw materials to distribution, including the management of support activities such as quality control and maintenance. In addition, self-managed teams have greater autonomy over the management and discipline of team member behaviour than is the case in semi-autonomous work teams.

Another useful conceptualisation is provided by Marchington (2000), in the form of his Teamwork Matrix. This matrix combines the axes of "degree" and "scope" of employee involvement to produce a profile of team autonomy and involvement. "Degree of involvement" refers to the autonomy teams have over decision making. A low degree of involvement is exemplified by management making decisions which are merely communicated to team members. As the degree of involvement increases, team members may be consulted over decisions, may have the autonomy to co-determine decisions or may be afforded full control over decision making (Marchington, Goodman, Wilkinson and Ackers 1992, Marchington 2000). "Scope of involvement" refers to the type of decisions which teams may be involved in. This axis, based on Gospel and Palmer's (1993) categorisation, distinguishes between autonomy over work organisation (e.g. methods of working, allocation of work, process improvement), employment relations (e.g. recruitment of team members, team member discipline and appraisal) and management-employee relations (e.g. representing the team, negotiating payments and rewards). This categorisation of the scope of involvement is similar to others which have been developed in the past. Susman (1979), for example, distinguished between decisions of self-regulation, decisions of interdependence and

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1 It is also worth noting the conceptual distinction of both semi-autonomous and self-managing work teams in comparison with self-defining work teams. Banker et al (1996) state that self-defining teams are characterised by very high levels of autonomy. These teams have control over such aspects as the design of the team and over strategic decisions for the team's future, in addition to the levels of autonomy found in semi-autonomous and self-managing teams. In such contexts, it would be expected that middle layers of supervision would be largely abolished, and that teams would interact directly with senior management. Self-defining teams are outside of the focus of this thesis, and evidence is scarce as to whether they exist in reality at all.

Although not intended to be an exhaustive categorisation of team types, the Teamwork Matrix is a useful tool for the analysis of variations in teamworking initiatives (Marchington 2000). It would be expected, for example, that semi-autonomous teams would have both a lower degree of involvement and a lower degree of scope than self-managed teams. Thus, the key distinction between types of autonomous work teams is the degree and scope of autonomy they are afforded.

As was noted previously, this thesis is concerned with types of autonomous teamworking, and as such, research on traditional teams and lean teams will not be addressed in this literature review. Within the broad category of autonomous work teams, the manufacturing production team type which most exemplifies the teams in this thesis is the "semi-autonomous work team" (See Chapter 3: Organisational Context, p58, for more detail). However, as the issues surrounding other types of autonomous work team overlap conceptually, and because the literature often does not distinguish between these team types (particularly in differentiating between semi-autonomous work teams and self-managed teams), the remaining sections of this literature review will consider research which addresses all types of autonomous group working. In doing so, the general term "Autonomous Work Team" will be used to refer to these teams, with specific terms being reserved for those researchers who define particular types of autonomous group working.

Summary of Thesis Focus

In summary, this thesis is concerned with semi-autonomous work teams involved in the production of products in a manufacturing setting.

This established, this literature review now discusses some general background issues relating to the current popularity, history, rationale and impact of autonomous work teams.
Chapter 2: Literature Review

General Background

This section of the literature review begins with some evidence of the current popularity of autonomous teamworking as a management practice. The historical origins of autonomous work teams are then outlined, before a discussion of the changing rationale behind autonomous work team introduction is presented. The section concludes with a presentation of empirical research into the outcomes associated with autonomous work teams.

Current Popularity of Autonomous Work Teams

In 1986, Hackman predicted that

"organisations in the future will rely heavily on member self-management",

and surveys of current practice have highlighted the popularity of autonomous work teams as a management strategy. Osterman (1994), for example, found autonomous work teams to be in use within more than half of the USA’s leading companies. In the UK, 40% of companies are using some form of self-managed teams (Industrial Society 1995). In a survey of 564 UK manufacturing companies, teamworking was used to at least a moderate extent by 55% of employers (Waterson, Clegg, Bolden, Pepper, Warr and Wall 1999). Finally, in repeated surveys with Fortune 1000 companies, Lawler, Mohrman and Ledford (1995) found that the use of self-managed teams rose from 27% in 1987 to 47% in 1990 and again to 68% in 1993.

However, despite the popularity of team-based working in recent years, the concept of teamworking, and autonomous work teams in particular, is not a recent phenomenon.
Historical Origins of Autonomous Work Teams

Human beings have worked together in groups for many centuries. As Buchanan (2000) notes:

"the benefits of collective organised action must have been evident to anyone attempting to erect pyramids with manual labour, or to propel ocean going galleys by oar."

However, it was not until the twentieth century that teamworking received systematic attention from social science researchers.

Group based working was noted as having positive effects on morale and productivity in the 20's and 30's, both in the UK, by researchers at the Industrial Fatigue Research Board (Wyatt, Fraser and Stock 1929), and in the USA, as part of the Hawthorne studies (Whitehead 1938, Roethlisberger and Dickson 1939). The contemporary concept of autonomous work teams, however, was not developed until the 1950's, following the work of the Tavistock Institute of Human Relations, in London (Trist and Bamforth 1951). The Institute's work with the UK coal mining industry looked at the effects of automation on miners' jobs, which transformed work from multiskilled group-based working to a mass production "long wall" method. The miners, unhappy with the monotonous, narrowly fragmented jobs which resulted, negotiated an agreement which allowed them to work a "composite short wall" method (Trist, Higgin, Murray and Pollock 1963). This shortwall method was based on

"composite, multiskilled, self-selecting groups, collectively responsible for the whole coal-getting cycle on any one shift" (Buchanan 2000),

and was associated with social, psychological and organisational benefits (Herbst 1962).

At around the same time, the Tavistock Institute was also involved in investigating forms of group-based working with the Ahmedabad Manufacturing and Calico Printing Company, in North West India (Rice 1958, 1963). Rice set up an experiment to compare teams of workers responsible for banks of textile looms against the existing production lines characterised by fragmented, repetitive tasks. The experimental groups were so successful, both in terms of performance and employee morale, that workers from the traditional production lines began to spontaneously organise themselves into self-selecting groups (Buchanan 2000).
It is interesting to note that, in these early cases, the workers themselves were instrumental in initiating the change to team-based working, rather than solely management, as is almost exclusively the case today (Buchanan 2000, Proctor and Mueller 2000).

Following this early work, the Tavistock Institute developed "Socio-Technical Systems" (STS) theory, and, in particular, the notion of the autonomous work group. STS theory advocates that the work system should balance both the technical and social aspects of work (Emery and Trist 1969, Susman 1979, Cummings 1978), where the social aspects are the employees of an organisation and the relationships between them, and the technical aspects are the tools, techniques, strategies, skills and knowledge used to accomplish tasks (Emery 1959, Cummings and Srivastva 1977, Pasmore 1988). The theory suggests that focusing on either aspect to the detriment of the other produces a less than optimal system. Fisher, Rayner and Belgard (1995) explain the problems which may result from over focusing on either the social or technical aspects of work as follows:

"A team that is too heavily focused on task may find itself overlooking important relationship issues. As a result, tension may rise and tempers may flare. A team that overemphasises relationships may find that important tasks do not get done or that quality begins to slip. As a result, the team may lose credibility as expectations are not met, motivation of team members may decline and individuals may begin to point fingers."

Autonomous work groups formed a central component of STS theory, being a tool which enabled the best match between technical and social systems to be achieved (Cummings 1978). These autonomous work teams provided an enriched, motivating work environment for employees, satisfying such social needs as the opportunity to learn and use a variety of skills, to complete a meaningful and challenging piece of work and to have autonomy over decision making (Cherns 1976, Karasek 1979, Hackman and Oldman 1980, O'Brien 1986, Karasek and Theorell 1990, Wall, Jackson and Davids 1992, Yeatts and Hyten 1998). The social aspects of work were thus enhanced, in addition to providing opportunities for team members to get to know, understand and support each other (Cherns 1976, Lawler 1986, Larson and LaFasto 1989, Plunkett and Fournier 1991).
Simultaneously, technical aspects of work were addressed through autonomous work teams having the autonomy, authority and resources to manage the efficient completion of work tasks and to respond to problems. As noted by Susman (1979),

"a group can more effectively allocate its resources when and where required to deal with its total variance in work conditions than can an aggregate of individuals each of whom is assigned a portion of the variance."

The STS approach has formed the basis of much contemporary teamworking theory, particularly in relation to autonomous work teams. In particular, STS has become a strong driver of the development of autonomous work teams in the UK and Europe (Whybrow and Parker 2000), most notably with Volvo’s Kalmar and Uddevalla car plants (Berggren 1993, Sanberg 1995).

In the 1970’s, autonomous work groups formed a large part of the “Quality of Working Life” (QWL) movement (Davis and Taylor 1972, Chern and Davis 1975, Wild 1975). QWL research considered work designs which improved employees’ job satisfaction and their experience of work, in an attempt to lower absenteeism and turnover and to improve productivity. QWL researchers saw autonomous work teams as a key technique in

"improving conditions of work to meet the aspirations and expectations of a more affluent and better educated workforce, and to meet the perennial organisational needs for improved quality and productivity" (Buchanan 2000).

The use of autonomous work teams has undergone somewhat of a reinvention during the 80’s and 90’s, in what has been described as a “management transformation” (Walton 1985), "paradigm shift” (Ketchum 1984) and “corporate renaissance” (Kanter 1983). Indeed, autonomous work teams have formed a central part of several recent work system conceptualisations, including “high performance work systems” (Lawler 1986, 1992, Buchanan and McCalman 1989), shifting from a “culture of control” to a “culture of commitment” (Walton 1985), “cellular manufacturing” and “manufacturing systems engineering” (Parnaby 1988, Dawson 1994) and “business process engineering” (Hammer and Champy 1993).

Although incorporated into this variety of new work systems, it is argued that the core concept of autonomous work teams has undergone a packaging shift, rather than a paradigm shift, with the key features of autonomous work teams remaining largely
unchanged since the development of STS theory (Buchanan 2000). However, although the key characteristics of autonomous group working have not changed substantially in recent years, the rationale behind their introduction into organisations has undergone a dramatic shift.

Changing Rationale behind Introducing Autonomous Work Teams

Mueller (1994) notes that, over the years, management's objectives in adopting autonomous work groups have moved from the social to the economic. Prior to and during the QWL movement, the primary focus was on employee morale, and the implications of boredom on job satisfaction, absenteeism, turnover and productivity (Buchanan 2000). Indeed, the driving force behind team-based working initiatives at Volvo was to make jobs more attractive in an effort to retain employees in a restricted labour market (Berggren 1993).

However, since the 1980's, organisations have faced increasingly competitive and changeable markets. In this aggressive climate, the need to reduce costs and improve efficiency is of key importance to gaining a competitive advantage. In addition, as Proctor and Mueller (2000) note, organisations must be more concerned with the way they relate to customer requirements. In manufacturing contexts in particular, customers are demanding smaller quantities of higher quality, specifically customised goods, available more immediately. Thus, manufacturing managers are faced with developing a more flexible, innovative, and cost effective work system than that found using traditional mass production methods.

Autonomous group working has come to be seen as a means by which such a competitive advantage can be achieved (Buchanan 1994, Jenkins 1994). Autonomous work teams allow the reduction of costs through flatter organisational structures (Parker and Wall 1998) and

"enable them [organisations] to run more effectively with a lower number of employees" (Kirkman and Shapiro 1997).
Furthermore, as was previously noted, autonomous work teams provide the potential to respond more effectively to variance in work conditions, therefore providing an effective structure for environments where responding quickly to customer requirements and machine problems is crucial to success (Walton and Susman 1987, Wall, Jackson and Davids 1992, Manz and Sims 1993, Wall and Jackson 1995, Parker and Wall 1998). In addition, the autonomy and responsibility afforded to autonomous work teams encourages employees to work smarter rather than harder by enhancing knowledge and skill (Wall, Jackson and Davids 1992) and promoting employees’ strategic understanding and proactive role orientations (Cummings and Blumberg 1987, Parker, Wall and Jackson 1997). Finally, it has been argued that autonomous work teams have the potential to improve the quality of products (Wellins, Wilson, Katz, Laughlin, Day and Price 1990, Lawler et al 1992), enhance innovation (Haynes 1997, Manz and Sims 1993, Anderson and West 1998) and increase safety (Goodman, Devadas and Hughson 1988).

Overall, the common belief has developed that economic performance is dependent on "committed, flexible, multiskilled, constantly retrained people, joined together in self-managing teams" (Peters 1987).

These beliefs are reflected in recent surveys on management practices, with customer service, faster problem solving, more motivated staff and higher quality output being the top four reasons for the introduction of teamworking by organisations (Industrial Society 1995). Similarly, management have reported using teamworking as an employee involvement practice in order to improve productivity, quality and morale, and to lower costs (Lawler et al 1992).

Thus, the popularity of autonomous work teams over the last 20 years has grown hand in hand with the need for organisations to compete in a challenging environment (Kirkman, Shapiro, Novelli and Brett 1996), and the belief prevails that; "small groups are quite simply the basic organisational building blocks of excellent companies" (Peters and Waterman 1982, p126).

However, although such claims are persuasive, empirical evidence suggests that the gains from autonomous work teams are less than consistent.
The Impact of Autonomous Work Teams

As was discussed above, the use of autonomous work teams has gained in popularity, largely due to the belief that they can help to achieve a competitive advantage. In addition, the STS basis of autonomous work teams proposes that working in teams can have positive effects on employees, in terms of job satisfaction, motivation, commitment and strain. However, although theoretical literature and anecdotal studies espouse the benefits of autonomous group working, surprisingly few robustly designed empirical studies have been conducted which statistically test the impact of autonomous work groups (Pasmore, Francis, Haldeman and Shani 1982, Pearce and Ravlin 1987, Goodman et al 1988, Cannon-Bowers et al 1992, Cohen et al 1996). Furthermore, in a review of those studies which have been undertaken, Cordery (1996) states that;

"The research findings on the individual and organisational performance effectiveness of autonomous work groups are somewhat surprising in the face of so many different theoretical arguments indicating the potential positive performance benefits."

In considering the impact of autonomous work teams, researchers and theorists have addressed both organisational level criteria, such as productivity and quality, and employee outcomes, such as satisfaction and commitment (Goodman 1979, Gladstein 1984, Hackman 1987, Wall et al 1986, Sundstrom et al 1990, Campion, Papper & Medsker 1996). Cohen et al (1996) for example consider three types of criteria, namely: performance (cost, productivity and quality); employee attitudes (job satisfaction, commitment); and employee behaviour (absenteeism, turnover).

In addition, some researchers also argue that the team's viability to remain effective in the future is also an important criterion to consider. (Hackman 1987, 1990, Sundstrom et al 1990, Guzzo and Dickson 1996).

This thesis addresses the impact of autonomous work teams on employee outcomes. However, the results of empirical work are presented below, in relation to both employee outcomes and organisational outcomes.
Autonomous Work Teams and Employee Outcomes

A number of studies have investigated the impact of autonomous work teams on employee outcomes. Cohen and Ledford (1994), for example, compared self-managed work teams with traditionally managed teams within a service organisation, finding that self-managed work teams were associated with more positive employee attitudes and satisfaction. Cordery, Mueller and Smith (1991) conducted a study based on autonomous work groups at a greenfield mineral processing plant. A comparison with traditionally managed sites indicated more favourable job satisfaction and commitment for the autonomous work groups, although this finding abated over time. However, this study also indicated that turnover and absenteeism were higher amongst autonomous work group employees. Similar findings were reported from a comparison of autonomous work teams and traditional groups in a confectionery plant (Kemp, Wall, Clegg and Cordery 1983, Wall et al 1986), with autonomous work teams reporting favourable levels of satisfaction but detrimental turnover rates. Other studies which report improvements in relation to job satisfaction include Spector and O'Connell (1994), Kirkman and Rosen (1999) and Jackson, Sprigg and Parker (2000).

However, although improved job satisfaction has been associated with autonomous work teams, the findings in relation to other employee outcomes are less than consistent. Kirkman and Rosen (1999), for example, reported that empowered teams were associated with enhanced commitment, as did Cordery et al (1991). Wall and colleagues, however, found no differences between autonomous work teams and traditionally managed groups in relation to commitment, motivation or mental health.

Few studies have assessed the mental health and well-being benefits of teamworking (Sonnetag 1996). There is some evidence that employees working in teams experience better mental health than their non-team counterparts (Sonnetag, Brodback, Heinbokel and Stolte 1994, Carter and West 1999), and there is some suggestion that autonomous work teams may be associated with reduced strain (Karasek and Theorell 1990, Jackson et al 2000). However, the impact of autonomous work teams on well-being has been largely under researched. In addition, although STS theory suggests that working in autonomous teams leads to more motivated employees,

"in recent years, motivation in groups has received more theoretical rather than empirical attention" (Guzzo and Dickson 1996).
Thus, although enhanced job satisfaction has been associated with autonomous work teams in a number of studies, it appears that more work is needed to assess the impact of such teams on other employee outcomes. This thesis contributes to the greater understanding of autonomous work teams by investigating the impact of such teams on three employee outcomes, namely: motivation, job satisfaction and job related well-being.

**Autonomous Work Teams and Organisational Outcomes**

In relation to performance benefits, several studies have associated autonomous work teams with productivity gains (e.g., Wall et al. 1986, Cohen and Ledford 1994, Banker et al. 1996, Elmuti and Kathawala 1999). However, as Wall et al. (1986) point out, such improvements may be due to a reduction of costs through reduced staff numbers, rather than from improvements in efficiency. Banker et al. (1996) also found that quality improvements were associated with the high performance work teams in their study, as did Elmuti and Kathawala (1999) in their longitudinal study of self-managed manufacturing teams. In addition, Kirkman and Rosen (1999) reported that empowered teams were associated with better customer service. Further work suggesting performance benefits arising from autonomous work teams includes Guzzo, Jette and Katzell (1985) and Beekun (1989).

Overall, these studies show some modest but inconsistent benefits associated with autonomous work teams. However, most of these manufacturing teamworking studies have been conducted on greenfield sites, with a lack of research attention being given to brownfield sites where the impact of teamworking may operate differently (Parker and Jackson 1994, Sprigg, Parker and Jackson 1996). In addition, because many introductions of autonomous teams are accompanied by other interventions, it is often difficult to isolate the positive outcomes due to teamworking (Cannon-Bowers et al. 1992).

In 1988, Goodman et al’s review concluded that autonomous work teams had a modest impact on productivity, led to changes in attitudes but only those specific to
teamworking and could improve safety. However, they concluded that there were no clear trends for turnover and absenteeism.

Cordery's (1996) review suggests that little has been clarified in the intervening decade, concluding that:

"autonomous work groups are associated with increased employee job satisfaction, although their impact on other work attitudes is far less consistent. Performance effects are also found to be modest and variable, leading to speculation that contingency factors are operating."

This inconsistency in findings is further echoed by Guzzo and Dickson (1996), who conclude that:

"overall there is substantial variance in research findings regarding the consequences of autonomous work groups on such measures as productivity, turnover and attitudes. This variance may indicate that the effects of autonomous work groups are highly situationally dependent."

Thus, the empirical work on the impact of autonomous work teams is inconclusive, and failures of teamworking to deliver its potential have often been reported (Walton 1985, Lawler 1986, 1988, Saporito 1986, Verespej 1990). Within the practitioner field, organisations also often report disappointment with teamworking initiatives. Waterson et al (1999) for example, report that 50-60% of organisations were only moderately satisfied with the effectiveness of teamworking.

Some have argued that such failures are due to poor implementation strategies and point to the importance of involving employees in the change process (Whybrow and Parker 2000) in an attempt to minimise common reports of employee resistance to change (Dyer 1987, Osburn et al 1990, Barker 1993, Manz and Sims 1993, Kirkman and Shapiro 1997). Shapiro and Kirkman (1999) suggested that such resistance may be due in part to employees' concerns over anticipatory justice (ie. employees anticipating that autonomous work teams may lead to unfair outcomes such as undesirable job assignments, increased workload and reduced effort from fellow team mates). It has also been suggested that the self-management requirements of autonomous work teams conflict with employees' views of themselves as shopfloor workers and friends, thereby making them resistant to take on "management's jobs" (Ezzamel and Willmott 1998).
Involving employees in the change process is beneficial in capitalising on employees' expertise in designing an appropriate form of teamworking (Heller, Pusic, Strauss and Wilpert 1998, Whybrow and Parker 2000), giving employees "voice" and enhancing their perceptions of fairness (Novelli, Kirkman and Shapiro 1995), promoting feelings of ownership and a motivation for the change to work (Heller et al 1998), and providing opportunities for discussing and understanding other stakeholders' views and reactions to the change (Parker and Axtell 1998, Whybrow and Parker 2000).

However, even with successful change management, the success of autonomous work teams may be dependent on a number of key factors. Efforts to identify such key factors are reflected in the considerable number of team effectiveness models which have been developed. These models, which incorporate such factors as work characteristics, organisational context, team composition, supervisory style and team processes, will be discussed shortly (see p35). However, prior to this, attention now turns to a further factor which is often not considered in autonomous work team research; namely that of the development and change of work teams over time.
Team Development and Change over Time

This section of the literature review considers issues surrounding team development and change over time. Traditional approaches to team development are presented and the limitations of these conceptualisations in the study of long-term teams are discussed. An alternative model of team development is outlined, which incorporates several important temporal issues. The section is concluded with a more in-depth discussion of the impact of changes in team membership.

Traditional Group Development

Most team and group effectiveness research views group development as a relatively fixed series of stages, as developed by the classic work of Tuckman (1965, 1977). This work, based on reviews of training, therapy, laboratory based and natural groups concluded that there were four key stages in the development of a group: forming; storming; norming; and performing. In the forming stage, team members establish interpersonal relationships and conform to organisational standards. Following this, the storming stage is characterised with conflict and resistance, as group members try to influence each other and test out acceptable norms and behaviours. In the norming stage, group conflicts are resolved, group norms are established, roles within the group emerge and group cohesion develops. The performing stage is concerned with team members focusing on task completion and clarification of team member roles. Tuckman (1977) later added a fifth stage, "adjourning", whereby the team is disbanded once tasks have been completed.

Tuckman's model has been influential in moulding other theories (eg. Worchel, Coutant-Sassic and Grossman 1992, Worchel 1994), and has been used in studying organisational interventions (eg. Heinen and Jacobson 1976, Bunning 1991, Smith 1993). His work has also influenced much of the practitioner's approach to team creation, as is evident in the vast team building literature.
There are, however, a number of shortcomings related to these fixed stage models of team development. Firstly, as McGrath and O’Connor 1996 state;

"Most research in this domain has assumed that there is a fixed sequence of stages that is the same for all groups, that the stages are of equal duration, and that groups go through them at uniform rates."

However, there is some controversy over whether the stages postulated by Tuckman and others actually exist. Cissna (1984) for example concluded that most groups do change in many ways, but that evidence was not conclusive as to the number and content of traditional stages, or to the universality of stages across groups.

Secondly, and more importantly to the present discussion, fixed stage models tend to focus primarily on the initial stages of group development, and imply that once developed, teams and groups do not change. There are, for example, no stages between performing and adjourning in Tuckman’s stage model, suggesting that, once developed, groups and teams perform with little incident until they are disbanded. It has been noted that, when faced with changing circumstances, teams may re-enter the forming, storming, norming, performing cycle (Martin 1991). This conceptualisation, however, may be overly simplistic.

The focus on initial development followed by relatively static performance is reflected in empirical studies on the effectiveness of autonomous work teams. The majority of these studies tend to be either cross sectional in nature, or focus on “transition management” (Buchanan and McCalman 1989), measuring the impact of autonomous work teams before and shortly after implementation. In addition, few of the models of team effectiveness (see Models of Team Effectiveness, p35) consider the continuous change and development of work teams.

The relatively static traditional fixed stage approach to team development may be sufficient in laboratory-based settings, or for short-term teams, such as project teams. However, manufacturing production teams exist over relatively long periods of time and, as such, the lack of research attention paid to the continued development and change experienced by autonomous work teams means that only part of the picture is being considered.
Team Development and Change over Time

As McGrath and O'Connor (1996) note,

"groups are continuing and dynamic systems that develop and change over time."

In the light of concerns such as those highlighted above, Argote and McGrath (1993) developed a model of work group development which incorporates the temporal aspects of working in teams. The resulting CORE (Construction, Operations, Reconstruction and External Relations) model outlines four key phases of teamwork development over time. These phases are not seen as fixed stages, but rather as an

"interconnected recurrent cycle of activities that constitutes a work group's life cycle."

(McGrath and O'Connor 1996)

The Construction phase is concerned with the initial establishment of a group, the acquisition of resources, recruitment of team members, adaptation of tools and technology and the establishment of purposes (Argote and McGrath 1993, McGrath and O'Connor 1996). This stage is, therefore, largely analogous to the forming stage of traditional stage models.

The Operations phase of the CORE model is concerned with technical problem solving, conflict resolution and the execution of tasks (Argote and McGrath 1993). In this respect, it is similar to the storming, norming and performing stages of traditional theories. However, the Operations stage also considers the synchronisation and coordination of people, processes, resources, actions and activities within the team in the completion of work tasks (McGrath 1991, Argote and McGrath 1993, McGrath and O'Connor 1996). Work in this area has included the development of temporal patterns of behaviour and interaction (Hayes and Cobb 1979, Kelly, Futoran and McGrath 1990, Ancona and Chong 1996), the impact of time pressure (Gersick 1988, 1989) and the impact of technology on temporal patterns of communication (Jessup and Valacich 1993, McGrath and Hollingshead 1993).

The third phase of the CORE model, Reconstruction, deals with how changes over time occur within work teams as a function of their own experience and learning (McGrath and O'Connor 1996). As groups gain experience, they tend to habituate the way in which they complete tasks, which may in turn reduce the levels of interdependence, co-
ordination and information exchange required to successfully complete tasks (McGrath, Arrow, Gruenfeld, Hollingshead and O'Connor 1993). This stage is also concerned with how the work group uses its own past behaviour and performance as a basis for modifying itself and embedding knowledge within the team. Work in this area has focused on group learning, memory and the transfer of knowledge (Stasser and Titus 1985, Argote, Epple, Devadas and Murphy 1990, Liang, Moreland and Argote 1995) and on the temporal development of norms, procedures and routines (Bettenhausen and Murnighan 1991).

The final, External Relations, phase of this model addresses how work teams monitor and manage their relations with the external organisation, such as acquiring knowledge from external sources (Ancona 1990), transferring knowledge to external parts of the organisation (Argote et al 1990) and responding to threat and uncertainty (Staw, Sandelands and Dutton 1981). In addition, as Argote and McGrath (1993) note:

"Because groups and organisations live in a continually changing environment, over time there likely will be changes in some of the conditions upon which group and organisational performance is contingent - in membership, in tasks/purposes, in technology, in operating conditions".

The External Relations aspect of the CORE model, therefore, also addresses how work teams respond to such changes in their constituent parts.

Overall, the CORE model of group development provides an attempt to consider work teams as dynamic and changing units. It is important to consider the implications of change and development in continuing work teams, as McGrath et al (1993) state:

"Over the past half century, researchers have accumulated an enormous base of theory and evidence on small work groups in the static case. If we are to gain maximum value from that base, we must begin to ask questions about how matters change over time, in the face of both continuity and change in major facets of those groups and in the context in which those work groups work"

It is not the purpose of this thesis to examine all aspects of the CORE model of team development. However, temporal issues are addressed by considering two temporal contexts in which autonomous work teams operate, as follows. Chapter 4: Team Implementation (see p83) is based in the Construction and Operation phases of team
development, and investigates the impact of introducing semi-autonomous work teams in a manufacturing setting. Chapter 6: Team Membership Change (see p174) considers the impact of changes in team membership and, as such, is concerned with the External Relations phase of team development. In addition, issues relating to Reconstruction (i.e. teams habituating, learning and developing over time) are discussed in both these chapters, as appropriate.

As the impact of changes in team membership are a particular focus of this thesis, they will now be discussed in more depth.

**Changes in Team Membership**

"When the membership of a group changes - whether the change involves the arrival of new members, temporary absences, permanent departures, turnover and replacement, or the occasional participation of irregular members, such as guests - other aspects of the groups functioning are bound to change as well. Yet the impact of changes in small group membership has not been systematically studied" (Arrow and McGrath 1993).

This quotation highlights the lack of research that has been undertaken on the impact of team membership change to date. Indeed, it is the most under researched aspect of the CORE model (Arrow and McGrath 1993). The reasons cited for this lack of research include the predominance of laboratory-based group studies where teams meet only once, and the tendency of researchers to view membership change as an unwelcome problem, often excluding such cases from analysis (Arrow and McGrath 1993, McGrath et al 1993, McGrath and O'Connor 1996). In addition, it is virtually impossible to plan to study membership change in applied settings, due to the methodological and ethical issues that arise. It is questionable, for example, to ask an organisation to purposely manipulate team membership purely for research profit.

Some studies, however, have been undertaken, including those on the impact of newcomers (Ziller and Behringer 1961), and leadership patterns over successive generations of small groups (MacNeil and Sherif 1976, Insko, Thibaut, Moehle, Wilson, Diamond, Gilmore, Solomon and Lipsitz 1980, Insko, Gilmore, Moehle, Lipsitz, Drenan and Thibaut 1982).
However, although such work is increasing, systematic predictions about the effects of team member change on team effectiveness have yet to be established. McGrath and O'Connor (1996) note that,

"...such changes can produce dynamic effects dramatically different from those of continuity. In general, we would expect continuity or increased experience of a group, over time, with the same basic constituents, to result in increased routinization of patterns of group behaviour. In contrast, we would expect change - in membership, in projects, in technology or in context - to result in perturbation of such patterns of group behaviour. But such a sweeping general statement leaves many crucial questions unaddressed."

Changes in team membership are likely to disrupt team effectiveness, at least in the short run, through disrupting patterns of task completion (McGrath 1991, McGrath et al 1993), increased lost time in training and integrating new members (Cohen et al 1996), and unfamiliarity of new members to tasks (Goodman and Leyden 1991). It is further argued that changes in team performance following a membership change will be due, at least in part, to changes in group interaction processes (McGrath 1991, Arrow and McGrath 1993).

However, the stability of team membership over time is not necessarily preferential to membership change. Team stability contributes to the team's degree of contact with the external environment, and too much stability may result in the team becoming increasingly isolated from the rest of the organisation (Moorhead, Neck and West 1998). The arrival of new members may also give the team the opportunity to view things from a different perspective, and to abandon old, inefficient routines (McGrath and O'Connor 1996). As Levine and Moreland (1991) point out,

"groups develop their own culture, and culture is invisible to those who share it. The outside perspective of the visitor, the fresh eyes of an absent member returning, and even the reshuffling of duties required when a member is missing may all help group members reflect on how and what they were doing as groups."

Furthermore, stability in work teams may lead to a lack of diversity (in attitudes, skills and experience), making tasks harder to perform, team decisions less creative and dysfunctional behaviours more likely to occur (Katz 1982, Stein 1982).

O'Connor, Gruenfeld and McGrath (1993) also found that team members' experience of conflict decreased following a membership change. They argued that this could be due to the fact that teams were attempting to develop positive relationships with new members (Fry, Firestone and Williams 1979), or that in stable teams, members were
familiar enough with the tasks and each other to be more able to address interpersonal problems.

Given such conflicting predictions regarding the impact of membership change, it is likely that such effects may be dependent on several aspects of the individual change event (Arrow and McGrath 1993, McGrath and O’Connor 1996).

The effects of membership change may differ depending on the type of change that occurs. Several types of membership change have been differentiated, including planned or unplanned, abrupt or tapering (Rose 1989), whether team members or management initiate the change (Arrow and McGrath 1993), whether the membership change results in an addition, subtraction or replacement of team members (Ziller, Behringer and Goodchilds 1962) and the regularity and predictability of the change (Arrow and McGrath 1993).

The size of the membership change, relative to the size of the team may also affect the resulting impact. Minor changes, for example, may only perturb the team to a minor degree and the team may re-establish its equilibrium quickly. A major change by comparison may result in the group operating far from its original state (McGrath and O’Connor 1996). Team membership changes may also move the team closer to, or further from the optimal team size for completing the task (Moreland and Levine 1992). The individual team members who are lost or added as a result of the change may further influence this effect. As Arrow and McGrath (1993) comment, changes in team membership will have a greater impact if the team loses a member who is central to team functioning as compared to the loss of a relatively low status, ineffectual team member.

The effects of team membership change may also be related to the structure and effectiveness of the team, prior to the change. McGrath and O’Connor (1996) argue that if the team was functioning successfully, a change in membership may prove detrimental. However, changes in team membership may provide an inefficient team with the opportunity to change methods of working and patterns of interaction.
Work team history and experience of change may also affect the nature of reaction to membership change. Membership changes earlier on in a team’s history may have differential effects to those which occur later, as negotiating and renegotiating group norms occur differently at different stages in the group’s development (Moreland and Levine 1988). A work team’s previous experience of membership change may also impact on its reaction, although the exact nature of this relationship is unclear. McGrath and O’Connor (1996) propose two opposing theories. Firstly, it may be the case that stable membership over time makes a team “brittle”, so that membership change has a greater impact for stable teams as compared to those teams who are used to change. Alternatively, it could be the case that repeated membership change becomes a source of stress for the team, resulting in a greater impact in those groups who have experienced a higher frequency of change in the past.

Overall, although work on the impact of membership change is increasing, this field is still in its infancy, and the systematic testing of contingency factors has been largely untouched. Arrow and McGrath (1993), however, did attempt to address some of these issues, as is detailed below.

In a laboratory study of 22 three- and four- person student teams, Arrow and McGrath (1993) investigated the impact of membership change initiation (member vs. experimenter), experience of repeated change, and communication medium (face-to-face vs. computer mediated) on performance (group essays and tasks), group processes (time spent working on tasks, experience of conflict) and group cohesiveness. Although they note that their findings should only be taken as preliminary speculations, this study provides some evidence on the nature of membership change.

More specifically, it was found that membership change increased performance on group essays tasks but not other types of task, increased the teams’ focus on tasks and decreased experiences of conflict. These findings were more consistent under conditions of experimenter-initiated change as opposed to member-initiated change, suggesting that members may react differently to the presence of an imposed new member and may also be able to direct hostility about the change towards the experimenter rather than fellow team members.
The results also suggested that group cohesion was higher during membership change events. However, as groups experienced a greater frequency of membership changes, their responses to further change became more negative. In addition, the study provided anecdotal evidence that responses to membership change were affected by which individual members were gained and lost by the group.

Finally, the study noted that group cohesion was stronger for the face-to-face groups as compared to the computer-mediated groups.

This study provides some useful insights into the complex issues affecting the impact of membership change. However, overall,

"various aspects of membership change have been the focus of extensive, but fragmented research in social and organisational psychology. The suggestive, but scattered, finding are just beginning to be integrated into a broader theory of membership dynamics in small groups." (Arrow and McGrath 1993).

In addition, the majority of work on membership change has involved concocted groups in laboratory settings, and it is not absolutely certain that inferences can be made about natural groups from such findings (Driskell and Salas 1992, Guzzo and Shea 1992).

**Team Development Focus in This Thesis**

As was previously discussed, this thesis examines the impact of semi-autonomous work teams on employee outcomes in terms of motivation, well-being and job satisfaction. These relationships will be investigated in two temporal contexts, namely team implementation and team membership change. In doing so, the thesis contributes to research in considering teamworking over a longer time period than that usually addressed. The thesis also capitalises on a management initiated team membership change event, thus giving the opportunity to investigate the impact of such changes in an applied setting.

The final section of this literature review now considers three key factors which may influence the relationship between semi-autonomous work teams and team effectiveness, in both temporal contexts.
Factors Affecting Autonomous Work Team Effectiveness

The final section of the literature review considers factors which may influence the effectiveness of team-based working. The section begins by outlining some examples of team effectiveness models which have been developed, and discusses limitations of such models in examining autonomous work teams. The section then considers three key factors which are particularly relevant to team effectiveness in autonomous work team settings. Firstly, the importance of appropriate styles of supervision is discussed, including how supervisors’ perceptions of teamworking may affect the styles they adopt. Following this, autonomy and involvement, and interdependence are considered as work characteristics which affect successful team functioning. Finally, the importance of team processes; team support and cooperation, and team efficacy in particular, are discussed.

The section concludes by combining the issues developed throughout this literature review into eight research questions to be addressed in this thesis.

Models of Team Effectiveness

As Argote and McGrath (1993) note,

"understanding how groups function and what makes them effective has important theoretical and practical implications."

In addition, as many researchers have postulated, knowledge about successful teamworking in one setting does not necessarily generalise to teams in other settings (Hackman 1990, McGrath 1991, Guzzo and Shea 1992, Devine et al 1999). Thus, given that autonomous work teams do not consistently achieve their potential, as was discussed previously (see The Impact of Autonomous Work Teams, p21), several researchers have attempted to investigate the factors which are associated with more successful work teams. In doing so, a number of researchers have developed models of teamworking, typically discussing between four and six categories of variables which influence the effectiveness of teams (eg. Gladstein 1984, Pearce and Ravlin 1987,

McGrath (1964) developed one of the first and most influential models of work team effectiveness (Yeatts and Hyten 1998). This model proposed that individual factors (such as skills and attitudes), group level factors (such as size and cohesion) and environmental factors (such as task characteristics and reward structure) combined to influence group interaction processes. These processes in turn determined both performance and team members' outcomes.

Hackman (1987) also developed a theoretical model of team effectiveness. The inputs in this model were organisational context (e.g. reward, education and information systems) and group design (task structure, group composition, group norms). These inputs, moderated by the group's synergy (i.e. level of process loss and synergistic process gains) affect what he termed the process criteria of effectiveness. These process criteria included the level of effort bought to bear on the team's task, the amount of knowledge and skill applied to tasks and the appropriateness of task performance strategies. In the final part of the model, process criteria, moderated by the demands of the task, determine group effectiveness in terms of task output, future viability and achievement of team member needs.

Tannenbaum, Salas and colleagues worked together to produce two similar models of work team performance (Salas et al 1992, Tannenbaum et al 1992). Both models include task, work, individual and team characteristics as inputs which are interrelated and which, in turn, impact on team processes such as co-ordination, decision making, communication and problem solving. These team processes, in conjunction with team training, then determine levels of performance in terms of quality, quantity, errors and cost. Unique to Tannenbaum et al's (1992) model is the inclusion of team and individual changes, suggesting that the work team's experience changes over time in such aspects as norms, processes, attitudes and skills. In addition, both models also
include a feedback loop, thereby explicitly acknowledging that feedback affects future team performance.

Campion and colleagues (Campion et al 1993, Campion et al 1996) developed a further model of teamwork effectiveness, which is one of the few to receive empirical testing. Based on a review of the teamworking literature, they identified 19 characteristics, organised into five themes, which were believed to affect work team performance. These five themes were job design (eg. self-management, participation), interdependence (in terms of tasks, goals and outcomes), composition (eg. team size, diversity, flexibility), context (eg. training, managerial support) and processes (eg. social support, workload sharing). They then conducted empirical research which suggested that each of the five themes did indeed contribute to work team effectiveness in terms of employee satisfaction, productivity and manager's judgements of effectiveness. Campion and colleagues did not intend their work to represent a formal model, and did not attempt to show interrelationships between the five themes. Rather, their focus was on identifying the most important design characteristics which could then be addressed by managers (Yeatts and Hyten 1998).

The final model of effectiveness presented here was developed by Cohen (1994). This model attempted to address those issues of particular relevance to self-managed work teams, and highlights employee involvement context (eg. training, rewards, resources), supervisory behaviours, group task design (eg. variety, autonomy) and group characteristics (composition, beliefs, processes) as factors which impact on team performance, team members' quality of life and employee withdrawal behaviours. In a similar vein to Campion and colleagues, Cohen's model did not propose interrelationships between inputs and processes, although she did acknowledge that they are likely to exist.
Limitations of Team Effectiveness Models

The above models, and others, highlight a variety of factors which may influence the effectiveness of teamworking. However, there has been criticism that such models are overly theoretical, and there is a lack of empirical research supporting proposed pathways. As Parker and Wall (1998) state;

"there is a need for further conceptual development ... to build true 'models' of group effectiveness, rather than what are effectively 'frameworks' that guide research."

In those cases where empirical testing has occurred (eg. Campion et al 1993, Cohen et al 1996), investigation of the interrelationships between inputs and processes have not been addressed.

In addition, the applicability of using these models in studies of autonomous work teams may be limited by the generalisability of such models to a particular type of team. The majority of theorists argue that team effectiveness models are applicable to all teams, but, as Cohen et al (1996) note;

"... a predictive model of self-managed work team effectiveness may differ from a generic group effectiveness model, because self-managed work teams may require a different combination of attributes."

Cohen’s (1994) model of self-managed work team effectiveness is one of the few examples of a specific team type model and as such is useful, particularly in explicitly highlighting the importance of supervisory behaviours in the effectiveness of autonomous group working.

A final criticism of team effectiveness models, which was highlighted in the previous section (see Team Development and Change over time, p26), is their largely static nature. Although theorists usually acknowledge that individuals and teams develop and change over time, few have attempted to incorporate temporal issues into effectiveness models. Tannenbaum et al (1992) provides an exception to this, in incorporating both individual and team changes, and a feedback loop into their model. In addition, Cohen (1994) includes group stability as a group composition characteristic, thereby acknowledging the potential impact of membership change on team effectiveness. However, on the whole, temporal issues, and team membership change in particular, have been largely under represented in the team effectiveness literature.
It is not the intention of this thesis to test any complete model of team effectiveness. Rather, attention will be focused on three key factors which are particularly relevant to autonomous work teams. Firstly, difficulties in achieving appropriate supervision for autonomous work teams is regarded by many as one of the primary reasons why such teams fail (Stewart and Manz 1995, Manz and Sims 1987). As such, it is important to examine the impact of supervisory style on autonomous work team effectiveness. Secondly, this thesis will address two work characteristics particularly salient to autonomous work teams; namely, autonomy and involvement, and interdependence. Finally, the majority of team effectiveness models highlight the importance of effective group processes. In the context of autonomous work teams, two particular team processes will be addressed; namely, team efficacy and team support and cooperation. These three factors will now be discussed in more detail.

**Supervision of Autonomous Work Groups**

Stewart and Manz (1995) state that;

"work team management or supervision is often identified as a primarily reason why self-managed teams fail to properly develop and yield improvements in productivity, quality and quality of life".

Furthermore, Proctor and Mueller (2000) note that most autonomous work teams studies show that the role of the supervisor does not disappear, but becomes one of the key issues organisations have to deal with. Despite this, and the general abundance of research on leadership, little work has been undertaken which addresses leadership in an autonomous work team context (Stewart and Manz 1995).

**Changes to the Role of Supervisor**

Parker and Wall (1998) distinguish between several supervisory structures which may result from the introduction of autonomous work teams. Generally, teams may incorporate supervision into the team, in the form of an internal team leader, or alternatively, teams may have an external supervisor whose role differs from that of a traditional supervisor. This thesis is concerned with the latter context, where an external supervisor of some form remains.
Following the introduction of autonomous work teams, the role of the supervisor changes in several ways. Foremost, to a large extent

"the traditional role is eliminated because employees carry out the day-to-day supervisory tasks themselves" (Parker and Wall 1998).

Although the scope of change may differ from one case to the next, supervisors of autonomous work teams are often required to set broad objectives for the team (Cordery and Wall 1985), facilitate employee development towards self-management (Manz and Sims 1986, Parker and Jackson 1994), and ensure that employees have the appropriate knowledge, skills and abilities to perform effectively (Lawler 1986, 1992). The span of control is often widened, with supervisors now working with more than one team (Wellins, Byham and Dixon 1994, Parker and Wall 1998, ) and overall the new role tends to be more strategic and facilitatory in focus (Child and Partridge 1982, Stoker and Remdisch 1998).

Supervisors of autonomous work teams are thus required to exhibit

"considerate, participative supervision, an absence of close monitoring, along with effective boundary control." (Cordery 1996),

and Wellins, Byham and Dixon (1994) note new responsibilities such as coaching, facilitating, handling disciplinary problems, reviewing performance and communication are often reflected in new job titles such as "facilitator" or "co-ordinator".

Problems Achieving Changes in Supervisory Style

However, although

"there is a widespread belief that the transition from supervisor to team leader involves a change of style -- from cop to coach" (Campion et al 1993),

this change in style can be very difficult to achieve, and has been shown to contribute to the failure of teamworking initiatives (eg. Cummings 1978, Walton and Schlesinger 1979, Klein 1984, Manz and Sims 1987, Letize and Donovan 1990).

Supervisors are often resistant to the introduction of autonomous work groups in general (Birchall 1975, Hackman 1975, Hackman and Oldham 1980, Kerr, Hill and Broedling 1986). More specifically, supervisors are often reluctant to relinquish control to their subordinates (eg. Denison 1982, Manz and Sims 1987, Letize and Donovan 1990, Manz
et al 1990, Verespej 1990, Buchanan and Preston 1992). This reluctance is further exacerbated by supervisor's fears about the future security of their jobs (Wagel 1987, Mack 1990, Versepej 1990, Parker and Wall 1998) and fears that they will not be able to function successfully in the new role (Manz et al 1990).

Pfeffer, Cialdini, Hanna and Knopoff (1998) identified faith in supervision and self-enhancement bias as two reasons why organisations tend not to truly empower workers. This study showed that external observers tended to rate work teams' output more favourably when the supervisor had greater involvement, suggesting a belief that teams need supervision. This study also found that supervisors tended to rate teams' output as higher quality when they themselves were more involved, thereby validating their continued work role.

Even if resistance to change is overcome, the development of appropriate behaviours for autonomous work team supervisors can be difficult to achieve. Part of this difficulty stems from the inherent paradox of autonomous work team supervision; that is

"how do you lead teams of employees who are supposed to manage themselves?" (Manz and Sims 1986).

The new supervisor role is often filled by those who previously held traditional supervisory roles. This can lead to problems as both the supervisor and team members have a history of established behaviours (Campion et al 1993, Parker and Wall 1998). These difficulties can be minimised through training for supervisors (Grey and Corlett 1989, Parker and Jackson 1994, Park and Harris 2000) and developing a shared understanding of the new supervisory role (Walton 1985). However, balancing guidance and direction against subordinate participation and autonomy is an inherently difficult task (Hackman 1990). As Wellins, Byham and Dixon (1994) note,

"knowing when to hang on and when to let go is a skill that leaders must master. Some leaders however, simply can't make the transition."

In addition to this balancing act, supervisors are often faced with conflicting pressures. On the one hand, they are required to behave in a way appropriate to teamworking, but on the other they are also faced with production deadlines and financial pressures. This conflict sometimes leads to supervisors reverting back to a traditional command and control style (Watson and Rosborough 2000).
Theories and Empirical Evidence

As noted previously, little work has been undertaken on supervision in autonomous work team contexts. Some conceptual and empirical work, however, has been conducted.

Stewart and Manz (1995), for example, developed a theoretical typology of leadership for autonomous work teams. This theory combines Bass' (1990) dimensions of autocratic/democratic and active/passive leadership styles. The resulting four types of self-managing leadership styles, defined as "overpowering", "powerless", "power building" and "empowered", are outlined below.

**Overpowering supervision** derives from leaders who adopt an autocratic, active style. In this type of supervision, the supervisor retains power and engages in autocratic decision making and discipline. As a result, control remains with the supervisor, who overpowers the team and never gives it the opportunity to develop self-management. These teams are left with nothing but the illusion of self-management, and may become sceptical about the teamworking initiative.

**Powerless supervision** results from supervisors who engage in autocratic, passive styles of leadership. This type of supervision is typified by supervisors who practice a hands-off approach, but continue to exert autocratic influence. For example, this type of supervisor may initially provide the team with autonomy, only to distribute punishments and criticism when the results do not meet expectations. This type of supervision leads to ambiguity and confusion for team members, as the team periodically loses power and control to the leader. The passive, hands-off approach also means that the team receives no help in cultivating appropriate self-managing skills, and so lacks the ability to be able to manage itself.

**Power Building Supervision** is associated with supervisors who adopt a democratic, active style. This type of supervision builds team power by providing guidance, teaching appropriate skills, and providing encouragement and reinforcement to the team. As a result, the team is able to develop appropriate self-managing skills and behaviours, and a positive culture is promoted which allows the team to manage itself. In this type of supervision, however, the supervisor retains active control over team
behaviours and long-term strategic issues and, as such, the team continues to rely on its supervisor for overall strategic direction and governance.

The final type of supervision, empowered supervision, occurs where supervisors engage in democratic, passive styles of leadership. In such situations, many supervisory functions are undertaken by the team and the active involvement of the supervisor is no longer required. As such, these teams become truly self-governing. The supervisor however, retains some influence, albeit passive, for example through modelling appropriate behaviours. The supervisor also acts as a "boundary spanner" (Gilmore 1982), linking the team with the rest of the organisation, and regulating the impact of environmental influences on the team. Overall, in empowering supervision, the supervisor is more of a resource than an authority figure.

Stewart and Manz (1995) argue that autocratic supervision (overpowering or powerless) is inappropriate for autonomous work teams, as it does not allow the team to develop autonomy and self-management. Within the democratic styles, they acknowledge that autonomous work teams need active involvement from the supervisor (ie. power building) in the early stages of team formation, in order to guide the team’s development. Following this initial development, however, power building supervision may limit the extent to which teams become truly self-managing. As such, Stewart and Manz (1995) argue that there should be a development over time of supervisory style, from power building to empowered approaches. The most appropriate form of supervision will, however, also be dependent on the type of autonomous work team the organisation aims to create.

Overall, this typology provides a useful guiding framework, within which to study autonomous work team supervision. However, at present, the existence of these four supervisory styles has not been empirically tested.

By far the most work on autonomous work team supervision has been conducted by Manz and Sims (eg. 1986, 1987, 1991) who developed a theory of leadership for self-managed teams, based on observations in organisational settings. Their theory proposes six types of behaviour that supervisors should perform in order to help autonomous work teams manage themselves. These behaviours are to encourage the team to engage
in self-observation and self-evaluation (ie. gather and evaluate information about the team’s performance), self-goal setting (ie. establish challenging but achievable goals), self-reinforcement (ie. regulate desirable team member behaviour), self-expectation (ie. to expect high standards of the team), and to encourage rehearsal and planning prior to task completion. Manz and Sims’ work is based on Bandura’s (1977) social learning theory and, as such, appropriate supervisory behaviours are those which encourage self-competence and feelings of personal control amongst team members. Manz and Sims (1987) found these six supervisory behaviours to be correlated to team members’ evaluations of supervisor effectiveness in a manufacturing setting, although they did not address the impact of supervisory behaviour on team effectiveness.

Cohen et al (1996) note that there has been little work done to validate this theory of autonomous work team supervision. In an empirical test of Cohen’s (1994) team effectiveness model, Cohen et al (1996) were surprised to find no relationship between supervision and effectiveness in traditional work groups, and a negative relationship between supervision and managers’ ratings of effectiveness in self-managed work teams. However, in a validation study of Manz and Sims’ theory, Cohen, Chang and Ledford (1997) found support for the six-factor model, using 58 self-managing and 60 traditional teams from a telecommunications company. This study also found support for a common second-order factor, suggesting that there may be a general construct of “encouraging self-management”. Furthermore, Cohen et al (1997) found that employees from self-managing teams perceived slightly more self-managing leadership behaviours than did employees from traditional teams, and that these behaviours were positively associated with satisfaction, commitment and team members’ ratings of team effectiveness. Overall, Cohen et al (1997) concluded support for Manz and Sims’ theory of self-managing leadership and its positive associations with team effectiveness.

Despite these empirical studies, it is clear that more research is needed on the impact of supervisory style on autonomous work team effectiveness. In addition, although Stewart and Manz (1995) suggest that supervisory styles should change over time, there has been no systematic study of how supervisory style actually changes, or how changes to the team (such as changes in membership) may affect the relationships between supervisors and team members.
Supervisory Style in this Thesis
The potential importance of supervisory styles in autonomous work teams and the lack of research into these issues have been highlighted above. Within this thesis, several issues relating to supervisory style will be addressed.
Firstly, it is important to determine how both the introduction of autonomous work teams and team membership change events affect supervisory style. It would be hoped that the introduction of autonomous work teams would lead to the development of appropriate behaviours by supervisors. However, as indicated above, the successful transition of supervisory styles is not always accomplished. It is also unclear as to how team membership change may affect supervisory style. Membership change may result in additional demands on supervisors, leading them to revert back to command and control styles. Alternatively, faced with a team in uncertain circumstances, supervisors may engage in guiding and encouraging roles to a greater extent.
Secondly, this thesis will also investigate the impact of supervisory style on employee outcomes. As these relationships may differ, depending on the temporal context, these relationships will be addressed following both autonomous work team implementation and team membership change. It is unclear, for example, whether supervisory style has a greater impact on employee outcomes under conditions of stability or change.
Thus, this thesis will address the impact of both semi-autonomous work team introduction and team membership change on supervisory style. In addition, the thesis will investigate the relationship between supervisory style and employee outcomes, in each of these temporal contexts.

Supervisors' Perceptions of Autonomous Work Teams
Given the potential importance of developing appropriate supervision for autonomous work teams, this thesis also examines one route through which supervisors may develop particular styles of behaviour, namely supervisors' perceptions of autonomous work teams.

The link between perceptions and behaviour has been highlighted in a number of psychological theories, including the theory of reasoned action (Ajzen and Fishbein...
1980) and interactional stress models (eg. Lazarus and Folkman 1984). In relation to supervisory behaviours, Stewart and Manz’ (1995) argue that supervisors make “cognitive appraisals” (Lazarus and Folkman 1984) about teamworking, which influence their goals and behaviours. These cognitive appraisals are based on an overall perception of teamworking and its expected outcomes, and also on supervisors’ perceptions of their own self-efficacy for managing teams.

Thus, as Stewart and Manz (1995) describe, if supervisors perceive teamworking as a threat and as having negative outcomes, and if they also have low self-efficacy for team leadership, they will tend to develop an active and autocratic behavioural style (ie. overpowering leadership). If, by comparison, supervisors see teamworking as irrelevant, having little lasting effect on themselves and the organisation, and also have low self-efficacy for team leadership, they will tend to develop a passive and autocratic style (ie. powerless leadership). Active, democratic supervision (ie. power building leadership) is likely to occur when supervisors see teamworking as a challenge, having positive outcomes which they themselves can influence, and also have high self-efficacy for team leadership. Finally, leaders with high self-efficacy for team leadership, and who also see teamworking as benign-positive, having nothing but positive effects on themselves and the organisation, they will tend to develop a passive and democratic style (ie. empowered leadership).

One method of examining how individuals perceive a particular topic is by using the repertory grid method. Repertory grid technique was developed from Kelly’s (1955) Personal Construct Theory and a more detailed discussion of this methodology is given in Chapter 5: Supervisors’ Perceptions of Teamworking (p129). Briefly, however;

"the repertory grid is a tool through which we can attempt to uncover and formally represent how individuals construct their world. A grid can, at one level, be thought of as a cognitive 'map' charting a particular aspect of a person's world."

(Easterby-Smith, Thorpe and Holman 1996)

Thus, this thesis undertakes a cross-sectional examination of supervisors’ perceptions of teamworking, using repertory grid technique. This study explores the factors supervisors perceive to be important for effective teamworking. In addition, the study investigates whether supervisors’ perceptions are related to their supervisory style.
Work Characteristics in Autonomous Work Teams

In addition to supervisory style, team effectiveness may be influenced by the characteristics of the team's job. The most well known theory highlighting the importance of work characteristics was developed by Hackman and Oldham (1976, 1980), in the form of the Job Characteristics Model. This model states that there are five components of the work environment which influence outcomes, namely: task identity, task significance, task variety, autonomy and feedback. These characteristics are said to promote feelings of meaningfulness, responsibility and feedback knowledge, which in turn lead to positive outcomes. Although primarily focusing on individual jobs, the model has also been expanded and applied to group task designs.

In addition to the job characteristics model, STS theory (see Historical Origins of Autonomous Work Teams, p16) also points to the importance of positive work characteristics, focusing particularly on autonomy and involvement as mechanisms by which autonomous work teams may benefit both organisations and employees.

Overall, work characteristics have been incorporated into the majority of team effectiveness models with aspects such as self-management, autonomy and task control (Gladstein 1984, Hackman 1987, Sundstrom et al 1990, Cohen 1994), participation and involvement (Campion, Medsker and Higgs 1993, Cohen 1994), task meaningfulness (Pearce and Ravlin 1987, Cohen 1994), task demands (Hackinan 1987), task complexity (Salas et al 1992, Tannenbaum et al 1992), task identity (Campion et al 1993, Cohen 1994) and interdependence (Campion et al 1993) receiving theoretical and empirical attention. In empirical studies, Campion and colleagues found that work characteristics were one of the most predictive themes in their model of team effectiveness.

This thesis focuses on autonomy and involvement, and interdependence, as these work characteristics form the heart of autonomous work teams.

Autonomy and Involvement

As was discussed previously (see Manufacturing Production Work Teams, p10), autonomy and involvement is a central theme in autonomous work teams, and is referred to in many definitions of such teams. It is advocated that autonomy and
involvement improve team effectiveness through increasing responsibility (Hackman and Oldham 1980) and satisfying social needs (Cherns 1976, Cummings 1978), in addition to providing improved feedback and knowledge from which employees can learn and modify their actions (Hackman and Oldham 1980, Wall et al 1992). Furthermore, increased levels of control over tasks allow employees to cope more effectively with the potentially detrimental effects of demanding jobs (Karasek 1979, 1990).

Autonomy and involvement may be measured in general terms or in terms of the breadth of activities teams are involved in. As was mentioned previously, Marchington (2000) for example considers the scope of involvement in his teamworking matrix, thereby addressing the extent to which team members are involved in a variety of tasks. Similar classifications of the scope of autonomy and involvement have been developed (eg. Gospel and Palmer 1993, Breaugh and Becker 1987), and team role breadth indices have also been empirically examined (eg. Little 1988, Mullarkey, Jackson and Parker 1995, Sprigg, Jackson and Parker 2000).

In relation to team effectiveness models, greater autonomy and involvement has been shown to be associated with productivity, employee satisfaction and management judgements of effectiveness (Campion, Medsker and Higgs 1993, Campion et al 1996, Cohen et al 1996).

**Interdependence**

Interdependence is the extent to which

"group members must interact and depend on each other in order for the group to accomplish its work" (Guzzo and Shea 1992),

and is seen by many as a defining characteristic of work teams (eg. Wall et al 1986, Salas et al 1992, Guzzo and Shea 1992). Indeed, Campion and colleagues include interdependence as a separate theme in their model of work team effectiveness.

Several researchers have noted the lack of interdependence as a contributing factor in the failure of teamworking initiatives (Pearce and Ravlin 1987, Cohen and Ledford 1994, Proctor and Mueller 2000). More specifically, it has been suggested that if teamworking is implemented in settings where the interdependence of tasks is low, the
benefits gained are minimal, and may even prove detrimental (Liden, Wayne and Bradway 1997, Langfred 2000, Sprigg et al 2000).

In addition to the importance of task interdependence, interdependence can also be considered in terms of goals and outcomes (Campion et al 1996). The benefits of shared goals on team performance have developed from goal setting theory (eg. Locke and Latham 1990) and can improve team effectiveness through enhancing team members’ responsibility for the team’s work (Wong and Campion 1991). Outcome interdependence enhances the reward value of group accomplishments (Shea and Guzzo 1987) and encourages team members to contribute to the team (Campion et al 1993). Emans, Van der Vegt and Van de Vliert (1999) emphasise the importance of similar levels of interdependence between tasks, goals and outcomes, discussing for example the problems which may occur when team members complete tasks relatively independently, but are rewarded as a team.

Interdependence has been shown to be positively related to motivation (Kiggundu 1983, Wong and Campion 1991), satisfaction and team performance (Campion et al 1996).

**Work Characteristics in This Thesis**

Thus, it has been suggested that work characteristics, and autonomy, involvement and interdependence, in particular, are positively related to autonomous work team effectiveness. However, as in the case with supervisory style, little work has investigated the impact of changes over time on such work characteristics. It is unclear, for example, whether teams maintain the same levels of autonomy, involvement and interdependence over time, or whether they change as a result of learning and routinization. In addition, it is unclear how changes in team membership impact on these work characteristics. It may be the case that team membership changes make it more difficult for autonomous work teams to maintain optimal levels of autonomy, involvement and interdependence. Alternatively, such changes may “freshen” the team and lead to increased input into self-management activities. Finally, there is a lack of research into whether the relationships between work characteristics and outcomes differ, depending on temporal contexts.
As in the case of supervisory style therefore, this thesis will investigate two aspects of work characteristics as follows. Firstly, the impact of both semi-autonomous work team implementation and team membership change on these work characteristics will be investigated. Secondly, the relationships between these work characteristics and employee outcomes will be examined, in both temporal contexts.

Team Processes in Autonomous Work Teams

Team processes refer to "how members interact as they do their work" (Cohen, Ledford and Spreitzer 1996), and their central importance in team effectiveness is highlighted in virtually all models of teamworking. Effective team processes are important in minimising the problems often associated with working in groups, such as process losses, social loafing, groupthink and conflict.

Steiner (1972) proposed that problems in the effective task performance of groups may arise from what he termed "process losses". Process losses are said to occur when actual performance falls short of the sum of each team member's skills and abilities. These problems may arise from a variety of sources, including motivation and coordination (Hackman 1990, Guzzo and Shea 1992, Argote and McGrath 1993). For example, large group size or poor communication strategies can make the coordination of tasks more difficult. In addition, when motivation is low or team members are unable to identify with the group, "social loafing" may also occur, whereby team members put reduced effort into the team (Williams, Harkins and Latane 1981). It has been suggested that social loafing worsens as the team size increases (Latane, Williams and Harkins 1979, Latane 1986), when team members feel that their individual contribution to performance is not identifiable (Harkins and Szymanski 1987, Weldon and Mustari 1988, Gagne and Zuckerman 1999) and when teams experience low control, low task interdependence or are engaged in unmeaningful tasks (Brickner, Harkins and Ostrom 1986, Price 1987, Wageman 1999).
Further problems may arise in highly cohesive teams, through "groupthink". Janis (1972) defines groupthink as

"a mode of thinking that people engage in when they are deeply involved in a cohesive in-group, when the members' strivings for unanimity override their motivation to realistically appraise alternative courses of action...a deterioration of mental efficiency, reality testing and moral judgement that results from in-group pressures."

Given the opportunities for decision making autonomy, group cohesion and insulation from supervisors and experts, Moorhead et al (1998) conclude that autonomous teams, and self-managed teams in particular, are likely to be susceptible to groupthink.

Working in a group may also lead to conflict between individual team members. Studies have pointed to the potential for conflict when team members are unwilling to cooperate (Hanappi-Egger 1996), or when one team member begins to behave inconsistently towards fellow team members (Keyton 1999). O’Connor et al (1993) note that the nature of the team’s task, major changes in team membership and methods of communication can all affect team member experiences of conflict.

Furthermore, Barker (1993) notes that in some autonomous work teams bureaucratic management can sometimes be replaced by within-team coercion and constraint, as members enforce attendance and develop strict norms about behaviour. He cites this concept as the reason why higher absenteeism and lower commitment are sometimes found in relation to autonomous work teams, and notes that this type of within-team control may lead to increased strain for team members.

Effective team processes may help to minimise the development of dysfunctional behaviours such as those outlined above, and may lead to more positive outcomes. Such team processes as coordination (Pearce and Ravlin 1987, Salas et al 1992, Tannenbaum et al 1992, Cohen 1994), group norms (Hackman 1987), team cohesion (Tannenbaum et al 1992), communication (Salas et al 1992, Tannenbaum et al 1992), team efficacy (Campion et al 1993) and social support (Campion et al 1993) have been addressed in teamworking effectiveness models.

Campion and colleagues found team processes to be one of the most predictive of their themes, in relation to job satisfaction, productivity and manager’s ratings of effectiveness (Campion et al 1993, Campion et al 1996). In addition, Viswesvaran,
Sanchez and Fisher (1999) suggest that better team processes may be related to more favourable employee well-being. However, despite such claims, there is still a need for work on team processes, and Cordery (1996) states;

"it is apparent that we still know very little about social processes which occur within autonomous work teams."

Thus, in the context of autonomous work teams, this thesis investigates the impact of two team processes on employee outcomes; team support and cooperation, and team efficacy.

Team Support and Co-operation

Several researchers have pointed to the impact of positive team support and cooperation on team effectiveness (eg. Gladstein 1984, Pearce and Ravlin 1987). Campion et al (1993) for example note that;

"effectiveness may be enhanced when members help each other..."

Support and cooperation improve the likelihood that team members will share their workload, thereby reducing the possibility of problems such as social loafing and the free riding tendency (Albanese and Van Fleet 1985, Harkins 1987). Teams working in a cooperative and supportive environment are also less likely to spend large amounts of time in disagreements, and more likely to increase the effort they put into task completion (Yeatts and Hyten 1998). In addition, support and cooperation promotes a climate which enhances the frequency and quality of information exchange, leading to better group decision making (Cordery 1996).

Team support and cooperation may be particularly important in autonomous work team settings, given the degree of self-management inherent in such teams. In traditionally managed teams, supervisors undertake the majority of decision making activities, and as such, conflicts and problem solving are dealt with through the supervisor. In autonomous work teams, by comparison, the team has greater autonomy and so must ensure that conflicts are solved and team members contribute to task completion. Indeed, it has been noted that new organisational structures are often built on
cooperation and require strong linkages between individual and collective effort (Shamir 1990).

**Team Efficacy**

Team efficacy, sometimes referred to as "potency" (Guzzo 1986, Guzzo, Yost, Campbell and Shea 1993), is the "belief amongst team members that a group can be effective" (Cohen, Ledford and Spreitzer 1996).

Developed from the concept of self-efficacy (Bandura 1982), team efficacy is not an estimation of skills, rather it is a judgement about what the team can accomplish with its skills. Such judgements of team efficacy affect the team’s choice of activities, the effort team members expend and levels of persistence (Little and Madigan 1997). Thus, teams with higher team efficacy would be expected to choose more challenging goals (where such choice is available), expend greater effort and persist longer in the face of adversity than those with lower efficacy.

Laboratory based studies have suggested support for this team process, with high efficacy groups accepting challenging goals more readily (Whitney 1994) and showing more persistence following failure in group tasks (Hodges and Carron 1992).

Studies conducted both in laboratory and applied settings have also suggested that team efficacy is related to team effectiveness (Larson and LaFasto 1989, Cohen and Denison 1990, Little and Madigan 1997, Jung and Sosik 1999), and in particular related to productivity, job satisfaction (Campion et al 1993), and customer service (Shea and Guzzo 1987).

Despite this evidence however, there is a need for more research in connection with team efficacy, particularly in applied settings (Guzzo et al 1993, Cannon-Bowers, Tannenbaum, Salas and Volpe 1995). Furthermore, Cordery (1996) notes that little or no work has been conducted on the effects of team efficacy in autonomous work team settings, and asserts that work of this nature would be beneficial.

Team efficacy may be of particular importance in such autonomous work settings, again due to the emphasis on self-management.
Team Processes in this Thesis

Thus, it has been suggested that team processes are positively related to team effectiveness. However, as in the cases of supervisory style and work characteristics, little work has been conducted on team processes in different time contexts. For example, as was discussed previously (see Changes in Team Membership p30), although changes in team membership are likely to affect team processes, the nature of this effect is unclear. In addition, clear relationships between these team processes and employee outcomes have yet to be established.

Thus, as with supervisory style and work characteristics, two aspects of team processes will be investigated. That is, firstly, the impact of both semi-autonomous work team introduction and membership change on team processes will be addressed. Secondly, the relationships between these two team processes and employee outcomes will be investigated, once again in both temporal contexts.

Relationships between Inputs and Processes

Prior to the conclusion of this literature review, one final area of research interest is discussed, namely that of potential relationships between supervisory style, work characteristics and team processes. As was asserted earlier (see Limitations of Team Effectiveness Models, p38), models of team effectiveness have been largely theoretical in nature, with little testing of the proposed relationships between inputs, processes and outputs. In particular, there is little evidence on how input variables may influence team processes, even though this is the primary proposed pathway through which teamworking is argued to impact on team effectiveness.

Some empirical work has been undertaken, including suggestions that team size is related to team cohesion (Zaccaro 1991, Mullen and Copper 1994), group composition and resources affect team efficacy (Shea and Guzzo 1987), and supervision and human resources policies affect employee empowerment (Kirkman and Rosen 1999). However, overall, the antecedents of team processes have not been systematically
tested. Campion et al (1993) cite the integration of input, process and outcome variables as a future research need for the field, stating that;

"it would be useful to know which inputs enhance key process variables, like potency, and whether these process variables mediate the influence of input variables on the outcomes."

In the context of this thesis, therefore, the impact of supervisory style and work characteristics (autonomy, involvement and interdependence) on team processes (team support and cooperation, team efficacy) will be investigated. The emphasis on developing self-competence in the supervision of autonomous work teams, for example, is argued to be related to the team's development of efficacy (Guzzo et al 1993, Druckman and Bjork 1994), and may also be related to how well team members support and cooperate with each other. Similarly, task interdependence has been argued to influence team efficacy (Shea and Guzzo 1987), and it likely to also affect the ease with which team members can work effectively together. Furthermore, the team's experience of autonomy and involvement would be expected to influence the development of effective team processes, although this and the above predictions have not been systematically established.

Finally, it may be the case that the relationships between these inputs and processes differ, depending on the temporal context in which teams are operating.

Thus, this thesis will examine the relationships between input variables (ie. supervisory style and work characteristics) and process variables (ie. team processes), and will do so in both temporal contexts.
Research Questions

During this literature review, several areas of research interest have been established as the focus for this thesis. In order to align these issues with the logical development of semi-autonomous work teams in the organisation under study, eight research questions were formed. These research questions, shown in Figure 2.1, will be addressed in the following three empirical chapters.

Chapter 4: Team Implementation investigates the impact of introducing semi-autonomous work teams to the department under study, with particular focus to the following three research questions:

(1) What is the impact of implementing semi-autonomous work teams on work characteristics, supervisory style, team processes and employee outcomes?

(2) Following the implementation of semi-autonomous work teams, are work characteristics, supervisory style and team processes related to employee outcomes?

(3) Following the implementation of semi-autonomous work teams, are work characteristics and supervisory style related to team processes?

In Chapter 5: Supervisors Perceptions of Teamworking, a cross-sectional investigation is undertaken which addresses the following two research questions:

(4) What are the factors which supervisors perceive to be important for effective teamworking?

(5) Are these perceptions related to supervisory style?

In the final empirical chapter, Chapter 6: Team Membership Change, the research questions addressed in relation to team implementation (Chapter 4) are considered in the context of team membership changes. Thus, this chapter focuses on the following three research questions:

(6) What is the impact of team membership change on work characteristics, supervisory style, team processes and employee outcomes?

(7) Following team membership change, are work characteristics, supervisory style and team processes related to employee outcomes?

(8) Following team membership change, are work characteristics and supervisory style related to team processes?
Figure 2.1: Research Model

Temporal Context
- Implementation of Work Teams
- Team Membership Change

Work Characteristics
- Autonomy and Involvement
- Interdependence

Team Processes
- Team Support and Cooperation
- Team Efficacy

Supervisory Style

Employee Outcomes
- Motivation
- Job Satisfaction
- Well-being

Supervisor’s Perceptions of Teamworking

(RQ1, RQ6)
(RQ2, RQ7)
(RQ3, RQ8)
Chapter 3: Organisational Context

This chapter provides an overview of the context in which data were collected for this thesis. The chapter begins with a description of the company and department of study, and outlines how production processes were organised prior to the teamworking initiative. Following this, the rationale for introducing autonomous teamworking in the department is presented, along with an overview of the organisation of production processes resulting from this teamworking initiative. Changes to shopfloor and supervisory roles are discussed, and it is established that the type of teams implemented were "semi-autonomous work teams." This is followed by a overview of human resources issues relating to the teamworking initiative, and the relationship of data collection points to the development of teams. The chapter is concluded with an overview of the nine semi-autonomous work teams implemented, including their circumstances at the first data collection point.
Chapter 3: Organisational Context

Research Setting

The studies in this thesis were conducted within a multinational organisation which manufactures photographic and imaging products. The company website states that the organisation;

"has been one of the foremost names in imaging for well over a century... with key specializations in the development and manufacture of black and white and color photographic materials, digital inkjet products and digital photoprinting technology" (organisational website, 1999).

Established in 1879, the organisation now has distribution offices in fifteen countries, including Japan, Portugal and South Africa, and has three manufacturing plants, based in the UK, Switzerland and Australia. Although independent for most of its operating life, the company is now owned by a financial holding company. The organisation manufactures products for a wide variety of amateur and professional markets. Amongst the more specialised products are those for use in aerial photography, X-rays, mass spectography and recording ionising radiation.

The UK manufacturing site employs approximately 800 staff.

The Department

Data for this thesis were collected from one department of the UK manufacturing plant, located in the North of England. The department in question employs approximately 150 staff, in shopfloor production, quality control, technical, planning, support and managerial roles. The department undertakes the final processes of photographic film production, producing a variety of rolled and sheet film products, for use in a wide range of cameras and photographic mechanisms.

This thesis focuses on autonomous work team initiatives which involve shopfloor production staff and their first line supervisors. At the first data collection point, there were 86 employees on the shopfloor and 8 supervisors. The following section provides an overview of the organisation of production within this department, prior to the introduction of autonomous teamworking.
Organisation of Production Processes Prior to Teamworking

Figure 3.1 shows the organisation of production processes within the department, before the introduction of autonomous work teams. Shopfloor employees worked in one of eight work areas (Slitting; Cine spooling; Cine perforating; Cine packing; Special Products; Roll Film; AMCL (Automated Cassette Line); and AMCL perforating), on one of two rotating day shifts (known as the A and B shifts). In addition, the department has a permanent night shift. Employees on the night shift completed tasks in a variety of the work areas (apart from slitting), although the majority were involved in AMCL perforating. More detailed descriptions of the work organisation in each work area are discussed later in this chapter (see Overview of Teams, p75). However, the main production processes undertaken in the department are summarised below.

Slitting - The slitting work area undertakes the first production process in the department. Photographic film enters this work area as large "parent rolls", approximately eight feet in width and three feet in diameter. These rolls of film have previously been treated with light sensitive coatings (in the Sensitising Department) and, as such, must not be exposed to light. As the name of the work area suggests, the first stage of production is to slit the parent rolls into narrower widths. The two slitting machines used to complete this process are large and potentially dangerous, as they are fitted with racks of sharp blades. In addition, because the parent rolls cannot be exposed to light, they must be loaded onto the machines, and the machines operated and adjusted in conditions of complete darkness. As such, this job required a relatively high level of skill. Once the film has been slit, each 'slice' of the parent roll (known as a "slitting") is put into a light sealed canister, and placed in the slit film storage area.

A variety of widths of slitting are produced, to feed the requirements of the remaining work areas. Prior to the introduction of autonomous work teams, work progressed through the department in four parallel streams: Cine; Special Products; Roll Film; and AMCL. In each of these streams, a combination of four processes: perforating; spooling; chopping; and packing, are undertaken. These four processes are outlined below.
Figure 3.1 – Pre-Teamworking Organisation of Production Processes

(Cine production returns to slit film store between each process)

- Cine Perforating Area
  - Processes: chop; pack

- Cine Spooling Area
  - Processes: spool; pack

- Cine Packing Area

- Special Products Work Area
  - Processes: chop; pack

- Roll Film Work Area
  - Processes: spool; pack

- AMCL Perforating Area
  - (majority produced on night shift)

- AMCL (Automated Cassette Line) Work Area
  - Processes: spool; pack

- Slitting Work Area

- Distribution Department
**Perforating** - Perforating involves making holes along the edges of both sides of the film, enabling it to be fed onto camera mechanisms. Both the Cine and AMCL streams require film to be perforated. In this stage of production, each light sealed canister of film is taken into a dark room. Here it is opened, and threaded through a series of wheels and sprockets, onto perforating machines. This is considered a skilled job, as the operator must load the machine in the dark. Once the perforating machine is loaded, it draws the entire length of slitting through it, cutting the required holes down both sides of the film. In addition to loading the perforating machines, operators are responsible for adjusting the machines to the perforating requirements and responding to any faults or problems which occur. It should be noted however that prior to the introduction of teamworking, “responding” to problems usually consisted of simply informing the supervisor.

**Spooling** - This stage of production involves transforming the long slittings of film into individual shorter rolls, for the use in a variety of cameras. Each slitting (perforated if necessary) is threaded onto spooling machines, which draw the film through into short spools, cutting the film so that each spool is of the required length. The spooling process is required when producing film in the Cine, Roll Film and AMCL streams. In the case of Cine products, slittings are taken into a dark room, and threaded through a series of wheels and sprockets onto the spooling machines. As in the case of perforating, Cine spooling operators have to perform all aspects of this process in complete darkness, and as such, Cine spooling is considered to be a skilled job. By comparison, in the Roll Film and AMCL areas, slittings are loaded onto a spool feeder in a dark room, which automatically feeds the film to the spooling machines. The spooling machines in these work areas are light sealed, and so operators are able to work in “white light” (ie. normally lit conditions), following the operation of the spool feeder.

**Chopping** - In the Special Products area, slittings of film are neither perforated nor spooled. This area produces sheets of film for use in specialised cameras, including those used for aerial photography. Here, slittings of film are loaded onto chopping machines, which can be adjusted to produce sheets of film of the required dimensions.
As in the Cine perforating and spooling processes, operators in Special Products require a relatively high level of skill as they must adjust, load and respond to chopping machinery in complete darkness.

**Packing** - The final process in the department is the packing of finished film products, ready for transportation to the Distribution Department. In some areas, packing is undertaken by hand, whereas in others, machines are used. More detail about the packing processes for each work area will be given later in this chapter (see Overview of Teams, p75).

**Support Functions**

Shopfloor operators are supported by quality control, engineering, service operator and supervisor functions.

Following each stage of production in each work area, a sample of film is sent to quality control, who must pass each sample before the film can progress to the next stage. A computer inventory system, which tracks the progress of orders through the department is used to communicate the results of these quality control tests.

Engineers are responsible for the maintenance of machines, and responding to machine faults which occur in the department.

Service operators are responsible for moving film to and from the slit film stores, and for transporting completed goods to the Distribution Department.

Each work area is managed by a first line supervisor. Prior to the introduction of autonomous work teams, these supervisors operated largely in a traditional, directive manner. As such, prior to teamworking, the main aspects of shopfloor employees' roles were operating a limited number of machines, maintaining safety and quality standards and adjusting machinery for changeovers in product. Wider responsibilities, such as managing day-to-day production, liaising with planners, quality control and engineers, and dealing with interpersonal disputes were undertaken by the supervisors.
Rationale for Introducing Autonomous Work Teams

The initial impetus for introducing teams within the department came from management's desire to improve the efficiency of the Cine stream of the department. As Figure 3.1 shows, Cine perforating, spooling and packing processes were conducted in three separate work areas, with film returning to the slit film stores between each process. Shopfloor production staff were employed in one process area only and the supervisor in each production stage undertook a traditional, directive role. The Cine area was concerned largely with small customer specific orders of three types of film: 35mm; 16mm; and DPP. As such, the perforating and spooling machines had to be adjusted on a regular basis, in order to produce the necessary batches of product.

Thus, in order to improve the efficiency of production within the Cine stream, managers decided to reorganise this stream into three product-based areas, based on the principles of cellular manufacturing.

"Cellular manufacturing is a system in which machines and workers within a factory are organised into groups or 'cells', each of which is responsible for as much as possible of the manufacture of a 'family' of related products (Procter, Hassard and Rowlinson 1995)"

This work organisation is seen as beneficial in reducing the time wasted in transporting goods between production stages and storage areas (Hill 1991), and in re-setting and re-tooling machinery (Bennett 1986). Management wanted to created three cells, each responsible for one of the types of film produced in the Cine stream. As such, each product area would be responsible for the perforating, spooling and packing of either 35mm, 16mm or DPP film products.

Although the redesign of these production areas was based on cellular production, it should be noted that these areas were not designed into "true" cells, as the size, cost and complexity of slitting machinery meant that it was not feasible to incorporate this stage of production into the new Cine design. In addition, management decided to use this opportunity to develop autonomy, involvement and multiskilling throughout the shopfloor. As such, although cellular production formed the basis of redesign in the Cine stream, it was the concept of autonomous work teams which formed the central theme of the teamworking intervention (see Changes to Shopfloor and Supervisor Roles, p67).
Chapter 3: Organisational Context

The following section presents the organisation of the department after all teams had been implemented. Following this, the changes to shopfloor job roles and supervisory roles as a result of the teamworking initiative will be discussed, and consideration will be made as to the type of autonomous work teams which resulted.

Organisation of Production Processes Following the Introduction of Teamworking

Figure 3.2 shows the organisation of production processes in the department, after teamworking had been introduced to all areas. As is shown in this diagram, managers in the department organised the shopfloor into nine autonomous work teams. The first three teams were the product-based teams formed from the Cine stream (35mm team, 16mm team, DPP team). These three teams comprised of employees from both day shifts. Five more teams were organised around existing work areas (Slitting, Special Products, Roll Film and AMCL). Similarly to the 35mm, 16mm and DPP teams, Special Products, Roll Film and Slitting teams also comprised of employees from both day shifts. In the case of the AMCL work area, two teams were formed, one on each day shift, due to the number of employees working in this area. The final team was formed by those employees working on the permanent night shift. The perforating stage of production was incorporated into both AMCL teams. However, in practice, the majority of AMCL perforating continued to be undertaken by the Night Shift team.

As Figure 3.2 shows, six of the teams were comprised of employees from both day shifts. These cross-shift teams were socially identified as one team, and undertook training and development activities together. However, on a practical level, the team members on each shift formed two subgroups, coming together on a daily basis only for a 30-minute shift change over. As such, where organisational events and interventions affect the two day shifts differently, these teams will be treated as separate subgroups (see Chapter 6: Team Membership Change, p174).
1) 35mm Team (A and B shifts)
   Processes: Perforate; Spool; Pack

2) 16mm Team (A and B shifts)
   Processes: Perforate; Spool; Pack

3) DPP Team (A and B shifts)
   Processes: Perforate; Spool; Pack

4) Special Products Team (A and B shifts)
   Processes: Chop; Pack

5) Roll Film Team (A and B shifts)
   Processes: Spool; Pack

6) AMCL A Team (A shift only)
   Processes: (Perforate); Spool; Pack

7) AMCL B Team (B shift only)
   Processes: (Perforate); Spool; Pack

8) Slitting Team (A and B shifts)

   (Slit Film Store)

9) Night Shift Team
   Processes: Various (mostly AMCL perforating)
Chapter 3: Organisational Context

Changes to Shopfloor and Supervisory Roles

In order to remain consistent with their initial ideas, management defined the new shopfloor job role as "universal cellular manufacturing operator", and defined new teams as "cells". However, since not all the work areas in the department are cellular in design, this thesis will refer to all work areas as "teams".

The changes to shopfloor employees' jobs, as a result of the new initiatives will now be discussed, in terms of the four defining characteristics of autonomous work teams: completion of an identifiable piece of work; autonomy and involvement; multiskilling; and facilitatory supervision (see Chapter 2: literature review, p10). In addition, reference will be made to the degree of interdependence in the new teams, as this is a core concept of work teams in general (see Chapter 2: Literature Review, p7)

Completion of Identifiable Piece of Work

As was previously discussed, it was not possible to incorporate the slitting process into the new Cine teams, or indeed into any of the other work areas. In addition, quality control, engineering and service operator functions were not incorporated into the new work teams. As such, none of the teams had responsibility over a truly complete piece of work. However, in the majority of cases, work teams were responsible for all production stages from perforating to packing, and as such can be considered to be completing an identifiable piece of work. The slitting team was responsible for one stage of production only. However, team members were responsible for all aspects of production within this stage, and so can also be considered to be completing an identifiable piece of work. Work tasks were more fragmented for the Night Shift team, as night shift employees were required to work on processes in different work areas (although most work was conducted in AMCL perforating). However, the implementation of work teams gave employees more control over organising themselves (see Autonomy and Involvement, p68) and thus improved their opportunities for undertaking meaningful pieces of work.
Multiskilling

The shopfloor operators' new job description required them to "operate various perforating, spooling and packaging machines" (Universal Cellular Manufacturing Operator Job Description, 1996). It was intended that all employees would become multiskilled and able to operate all machinery within their work area.

Autonomy and Involvement

The new job role required employees "to produce finished film to customer requirements and to meet due dates"; "to plan and establish correct conditions for finishing of scheduled film products"; and "to manage all resources, schedules and systems, to maximise efficiency and continuity within an empowered team" (Universal Cellular Manufacturing Operator Job Description, 1996). As such, team members were given considerable autonomy over the management of day-to-day production in their team. This autonomy included not only the production of products, but aspects such as negotiating goals and targets for production with planners, deciding how the team would go about getting its work done and liaising with other teams and support functions.

Teams were also given some autonomy over interpersonal issues, such as training new team members and solving conflicts within the team. It was intended, however, that such responsibilities would be undertaken in cooperation with the supervisor.

The new job role also gave team members greater problem solving opportunities "to organise and carry out trouble shooting of unplanned failure of materials, processes, machinery or product" (Universal Cellular Manufacturing Operator Job Description, 1996). Although it was not expected that employees would solve larger problems by themselves, it was intended that they would work directly with quality control and engineering in order to solve such problems. Furthermore, team members were required "to monitor, maintain and restore production systems to ensure suitability to produce highest quality product at minimum cost" (Universal Cellular Manufacturing Operator Job Description, 1996). In other words, it was intended that employees would be involved in process improvement activities in addition to responding to problems which
arose. Management had previously noted that employees often saw problems and potential improvements in their work area, but seldom attempted to change them. It was hoped that these increased levels of autonomy and involvement would encourage employees to become more proactive.

The above requirements were highlighted in the organisation’s person specification for the new team member role. In addition to a requirement for technical abilities, management required employees to be “self-disciplined, self-managing, able to adapt and aware of the needs of others and the needs of the business” (Universal Cellular Manufacturing Operator Person Specification 1996).

**Supervisory Style**

In line with the above changes to shopfloor operators’ roles, the role of the first line supervisor was also redesigned. Prior to the introduction of teamworking, work areas were supervised in a largely traditional, directive manner. In order for greater responsibilities to be successfully devolved to the shopfloor, supervisors were required to take on a more of a facilitatory role.

The job title for supervisors was changed from “Section Leader” to that of “Process Owner.” The new job description highlighted the proposed changes in style, requiring supervisors “to develop and maintain effective motivated teams which contribute fully to the achievement of departmental objectives”; “to ensure that individual and team development needs were met through appropriate guidance and training”; and “to guide continuous improvement, problem solving and waste reduction” (Process Owner Job Description, 1996). Thus, the emphasis for the new supervisor role was on encouraging and guiding the teams. However, it is important to note that supervisors retained a considerable amount of control over some aspects of team functioning. For example, supervisors were required to “actively manage the performance of individuals and teams through appropriate monitoring and feedback” (Process Owner Job Description, 1996), thus remaining responsible for individual performance monitoring and discipline. In addition, some activities, for example process improvement and team member training, were to be co-determined by team members and supervisors.
Interdependence

It was intended that goal interdependence would be increased, following the introduction of autonomous work teams, as teams would be collectively responsible for setting and accomplishing production targets. However, it was not possible for management to enhance outcome interdependence, as the company's pay grading scheme was based on individual remuneration. The expanded shopfloor job role was, however, reflected in an increased rate of pay.

Task interdependence was generally enhanced throughout the department, following the introduction of autonomous work teams. Individual teams did, however, vary in their degree of task interdependence, and these differences will be highlighted shortly (see Overview of Teams, p75).

The above changes to shopfloor and supervisory roles outline the changes which management aimed to achieve through the implementation of teamworking. More detailed information concerning the successful achievement of these aims is given in the Overview of Teams (p75), and in the context sections of Chapter 4: Team Implementation (p83) and Chapter 6: Team Membership Change (p174).

Type of Autonomous Work Team

The proposed changes highlighted above suggest that teams in this department were developed from traditionally managed teams to autonomous work teams. However, changes in the degree and scope of autonomy indicate that teams in the department were not afforded enough autonomy to be considered "self-managed work teams". In particular, quality control and engineering functions were not incorporated into the teams, although greater control was given to team members in liasing and collaborative problem solving with these areas. In addition, although these teams were given considerable autonomy and involvement opportunities, a degree of control, particularly in relation to team member discipline and performance management remained in the hands of the supervisor.

Thus, overall, rather than self-managed work teams, it is more appropriate to define the teams studied in this department as "semi-autonomous work teams."
The following section of this chapter discusses human resources issues which related to the adoption of teamworking in the department. Data collection points for this thesis will also be placed in the context of teamworking development. The chapter concludes with an overview of each of the nine semi-autonomous work teams, including the organisation of production processes and each team’s circumstances at the start of data collection.

### Human Resources Issues

Management chose to introduce semi-autonomous work teams in stages, one team at a time, across a period of 15 months. From the outset, management made it clear that teamworking would be expanded across the whole shopfloor. It was anticipated that productivity gains from team-based working would lead to an overall reduction in departmental staff. However, as a number of older employees chose to take voluntary redundancy, no forced redundancies were required.

### Staffing of Dark Rooms

When management’s intentions for redesigning the Cine areas was first presented to Cine employees, there were some concerns over mixed-sex staffing of the dark room areas. In the original Cine production design, all the perforating employees were male, whilst all the spoolers were female. As a result, some employees were concerned about the potential for sexual harassment and, indeed, false accusations of harassment which the three cell-based teams might provide. This concern had not previously arisen, as the other work areas containing dark rooms; Slitting and Special Products; were all male and all female areas respectively.

However, lengthy discussions amongst management and employees were able to resolve this issue, and it was also felt that the team-building course (see Training and Development, p72) was instrumental in building trust between employees of opposite sexes.
Selection

In order to create the first three cellular-based teams (35mm, 16mm and DPP), the following selection procedure was used. Applications, taken from across the department, were screened on the basis of employees' time keeping, attendance and ability to perform their current duties. Suitable applicants then completed Cattell's 16PF personality inventory, Belbin's team role inventory and attended an hour-long interview. Criteria used during the interview reflected the personal attributes required for the new job role, and included willingness to take on new responsibilities, ability to work with minimal supervision, adaptability, contribution to teamworking and interpersonal skills. Interviewers selected applicants in order to create a "balanced" team, rather than recruiting the "best" individual applicants.

Those applicants not selected to work in the first team (35mm) were considered for selection in the second team (16mm). Following the formation of these two teams, the remaining applicants were used to create the third team (DPP). The remaining teams were formed from employees currently working in each area and, as such, a selection procedure was not used.

Remuneration

As was mentioned previously, the additional responsibilities of the new teamworking role meant that team members qualified for an increased in pay, as defined by the organisation's pay grade system.

Training and Development

Once created, each semi-autonomous work team undertook a number of training courses. Each team attended a two-day 'Team Building' course. During this course, team members took part in a variety of activities and games, objectives being to "learn more about each other"; "develop a sense of pulling together"; and "develop the ability to resolve conflict within the team" (Team Building Course Objectives 1996). At the end of the two days, it was hoped that "team members have an understanding of teamworking and have 'bought into' the process" (Team Building Course Objectives
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The course concluded by teams drawing up a contract of appropriate behaviour and functioning for their team.

In addition to the above course, each team also attended a two-day 'Problem Solving In Teams' course and a one-day 'Process Improvement' course.

In addition to the above training courses, a skills inventory was developed for each team. This formed the basis of scheduling technical skills training, to ensure that all employees would become multiskilled over time.

Once teams were considered to be functioning satisfactorily, a monthly team meeting was established, facilitated by the team's supervisor. These meetings gave team members the opportunity to solve ongoing disputes and problems, and to engage in process improvement activities.

Data Collection and Implementation of Teams

Figure 3.3 presents a timeline, showing both the introduction of semi-autonomous work teams and data collection points over time.

Shopfloor employee data for this thesis were collected in the form of three quantitative self-report surveys. At the time of the first survey (T1), three of the nine work teams had been implemented. The remaining teams were implemented between the first and second (T2) surveys. Chapter 4: Team Implementation (see p83), investigates the impact of introducing these semi-autonomous work teams to the department, and addresses the first three research questions outlined in Chapter 2: Literature Review (see p56).

Investigations were also made into supervisors' perceptions of teamworking at T2, using repertory grid methodology. These investigations, focussing on research questions 4 and 5 (see Chapter 2: Literature Review, p56) are reported in Chapter 5: Supervisors' Perceptions of Teamworking (see p129).
Figure 3.3 – Data Collection and Introduction of Semi-Autonomous Work Teams

Data Collection

March 1997 - Time 1 survey

December 1997 - Time 2 survey, Supervisor's perceptions of teamworking

November 1998 - Time 3 Survey

Introduction of Teams

April 1996 – 35mm Team (1)

October 1996 – 16mm Team (2)

January 1997 – DPP Team (3)

May 1997 – Special Products Team (4)

June 1997 - Roll Film Team (5)
AMCL A Team (6)
AMCL B Team (7)

July 1997 - Slitting Team (8)
Night Shift Team (9)

January 1998 - Team Membership Change
Shortly after T2 data collection, management made the strategic decision to permanently change the membership of some of the work teams. The final employee self report survey (T3) was conducted ten months after this team member reorganisation. The impact of the resulting changes in team membership are addressed in Chapter 6: Team Membership Change (see p174), more specifically through addressing the final three research questions (see Chapter 2: Literature Review, p56).

**Qualitative Data**

In addition to the data collection depicted in Figure 3.3, qualitative data is presented in this thesis where appropriate. This qualitative data was collected on three occasions. Firstly, one month before the T1 survey, preliminary discussions were held with management and shopfloor employees, in order to gain background information about the current circumstances of the department. Secondly, semi-structured interviews were held with shopfloor employees, both one month after T2 and at T3. The primary focus of these interviews was on issues other than those covered in this thesis. However, illustrative quotations from these qualitative data sources will be included in this thesis where appropriate.

**Overview of Teams**

In the final section of this chapter, a brief overview of each semi-autonomous work team is given. These descriptions include the organisation of production processes in each area, and discusses levels of autonomy, multiskilling and interdependence at the time data collection began (T1).

**1) 35mm Team**

*Production Processes* – The 35mm team are responsible for the production of relatively small, customer specific batches of 35mm film products. As Figure 3.2 indicates, the production processes involved in this area are perforating, spooling and packing. The perforating and spooling machines are located in a dark room and, as previously
discussed, have to be operated in complete darkness. These machines are free standing, which gives team members the opportunity to change the configuration of machines, according to the orders being produced. Following the perforating and spooling stages, the 35mm film products are packaged for dispatch. The spooling machines in this team attach a protective paper to the end of each spool, thereby protecting them from light. As such, all remaining packaging activities can be undertaken in normal white light conditions. The spools of 35mm film are packed into cartons and then into larger boxes by hand, as the order sizes are relatively small. However, a machine is available which seals and labels both cartons and boxes. The team’s area also includes a white light room, where the progress of orders can be monitored, and team members can discuss issues relating to the day-to-day management of production.

This sequence of production processes leads to a moderate degree of task interdependence within the 35mm team, as one process cannot begin until the previous process is complete. However, as these processes are not physically linked together, there is some scope for buffering between processes. In addition, as each spooling and perforating machine is operated by one team member only, there are no efficiency gains from more than one team member operating the same machine. However, the free-standing nature of these machines means that team members are able to reconfigure these machines to be able to work together on a larger order, or separately on smaller orders as appropriate.

*Circumstances at T1* – The 35mm team was the first to be created, eleven months before T1, and consisted of nine employees separated over A and B shifts. As it was the first team to be formed, management spent a considerable amount of time and effort ensuring this work area was successfully staffed, trained and developed. As such, by T1, this team had achieved relatively high levels of autonomy and involvement, had high levels of multiskilling and held high levels of goal interdependence.

*(2) 16mm Team*

*Production Processes* – The 16mm team are responsible for the production of 16mm film products. As with the 35mm team, orders for these products are relatively small and customer specific. The team’s work is organised in the same way as that of the
35mm team, with free-standing perforating and spooling machines in the dark room, packing processes occurring in white light, and an open white light area for monitoring and discussing production progress. As this production organisation is the same as that in the 35mm team, task interdependence in this team is also moderately high.

Circumstances at T1 — The 16mm team was the second team to be formed, six months before T1. The members of this team were selected from those applicants unsuccessful in the 35mm team formation. The development of the 16mm team was problematic as production demands decreased soon after the creation of the team. As such, team members were temporarily assigned to other work areas for a period of time. However, by T1, the nine 16mm team members were once again working together, and exhibited relatively high levels of autonomy and involvement, were multiskilled for the most part and had high goal interdependence. As with the 35mm team, team members were split over the two day shifts.

(3)DPP Team

Production Processes — The DPP team were organised in the same way as both the 16mm and 35mm teams, this time being responsible for the production of DPP film products. As with the two previous teams, this production organisation led to moderate levels of task interdependence.

Circumstances at T1 — The DPP team was the third to be created, two months before T1. The team was formed from those applicants who were not selected for the 35mm or 16mm teams. As there were not enough of these remaining applicants to fully staff the DPP team, team members were also recruited from elsewhere in the organisation, resulting in a nine member team spanning A and B shifts. Despite the relatively short tenure of this team, as compared to the 35mm and 16mm teams, this team was seen by management to have made considerable progress in the two months leading up to T1. As such, at T1, this team was characterised by relatively high levels of autonomy and involvement, a good level of multiskilling and high goal interdependence.
As shown in Figure 3.3, the remaining teams in the department were not implemented until after T1. In each of the following cases, the team was created from employees currently working in each area, and as such, the selection process was not used. As selection procedures and work area redesign were not required, the remaining teams were all created over a relatively short length of time.

(4) Special Products Team

Production Processes - The Special Products team produces relatively small batches of sheet film, for the use in specialised markets such as aerial photography. As shown in Figures 3.1 and 3.2, the production processes in this team are chopping and packing. The work area for this team comprises of six separate dark rooms, each containing one or more specialised machines for the production of different types of sheet film product. Once again, operators are required to adjust, operate and respond to these machines in complete darkness. Chopped sheet film is dispensed from the chopping machines, and operators batch the sheets and pack them into boxes by hand. These boxes of sheet film can then be packaged into larger boxes, in normal white light conditions. Similarly to the 35mm, 16mm and DPP teams, the Special Products team also has a white light area for monitoring and discussing production progress. This production design leads to a moderate level of task interdependence.

Circumstances at T1 – The Special Products team was the fourth to be created, two months after T1. However, although not a team at T1, the supervisor for this area had been gradually devolving responsibilities, such as discussing problems with quality control, to operators over a period of time. As such, at T1 the Special Products team had a relatively high level of autonomy and involvement, and relatively high goal interdependence. However, as some operators in this area tended to work on the same machines over time, the amount of multiskilling in this area was only moderate. At T1, eight employees worked in the Special Products area, once again spanning both A and B shifts.
(5) Roll Film Team

**Production Processes** – The Roll Film team are responsible for the production of relatively large orders of non-perforated rolls of film. As figures 3.1 and 3.2 indicate, the processes involved in this team are spooling and packing, and the machines used for these processes are organised into a production line type set up. The first stage of production for this team is to load slittings of film onto a spool feeder, in a darkroom. The spool feeder then feeds into two spooling machines. Unlike the 35mm, 16mm and DPP teams, the spooling machines and all subsequent machines in the Roll Film area are light sealed and, as such, can be operated in normal white light. Once the individual spools of film are produced, each protected by a length of paper, they are loaded, by hand, onto the packaging machines. The packaging machines in Roll Film consist of a foiling machine, which wraps each individual spool in a foil package, a cartoning machine, which packages spools into cartons, and a boxing machine, which packages cartons into boxes. Foiled spools have to be transferred to the cartoning machine by hand, but a conveyor belt transfers cartons automatically to the boxing machine.

The organisation of production processes in the roll film area leads to a relatively high level of task interdependence, as a fault in one process prevents the next from being completed. In addition, although one employee typically operates one machine at a time, employees can help, for example in transferring film from one process to the next, in order to ensure efficient production.

**Circumstances at T1** – The Roll Film team, along with the two AMCL teams, were all developed three months after T1. Prior to teamworking, Roll Film employees had been given some autonomy, for example over allocating tasks and solving machine breakdowns with engineers, although much control still remained with the supervisor. As such, at T1 the Roll Film area was characterised by moderate levels of autonomy and involvement, in addition to moderate levels of multiskilling and some goal interdependence. As with previous teams, the Roll Film team included employees on both day shifts and, at T1, employed 10 shopfloor operators.
(6) and (7) – AMCL A and B Teams

Production Processes - The AMCL (Automated Cassette Line) work area produces large batches of film encased in cassettes that can be loaded into standard cameras. This work area is also organised predominantly as a production line, and produces approximately 70% of the department's volume of output. The AMCL is the largest work area in the department, and contains two identical lines each comprising a signing and spool feeding machine, two spooling and cassette loading machines, a tubber, a cartoning machine and a boxing machine. The first stage of production, perforating, is located in a geographically separate area of the department and, prior to teamworking, this process was undertaken by the night shift and two day shift "AMCL perforators". As with the 35mm, 16mm and DPP teams, perforating for the AMCL takes place in complete darkness. Following perforation, film is transferred to the main AMCL area, and is loaded onto a signing and spool feeding machine, in a dark room. This machine signs the date and operator details onto the film at regular intervals, and then feeds the film to the spooling and cassette loading machines. These, and all subsequent machines, are light sealed, so these processes can be operated in normal white light conditions. The spooling and cassette loading machines spool the film to the required lengths and insert the spools into camera cassettes which are fed automatically from the tubber. The filled cassettes are then transferred by conveyor belt to a cassette unloading area. Operators unload the cassettes, and load them manually onto the cartoning machine. As in the Roll Film area, this machine packages the cassettes into cartons, then transfers them automatically to the boxing machines, which packages the cartons into boxes ready for dispatch.

As the name of this area suggests, the AMCL is largely automated and a control desk is used to adjust spool length and batch size, according to customer orders. Due to the amount of physical linking between machines, task interdependence in the AMCL is relatively high.

Circumstances at T1 – The AMCL teams were created at the same time as the Roll Film team, three months after T1. As the AMCL is a large area, two teams were formed, one on each of the day shifts. Prior to teamworking, employees in the AMCL were involved in a limited number of decision making activities, for example task allocation. However, the majority of control was undertaken by the supervisor. Some
employees were able to operate all machines in the AMCL area, but most had been trained on only some of the AMCL's machines. As such, at T1, the AMCL was characterised by relatively low levels of autonomy and multiskilling, and had a relatively low level of goal interdependence. In addition, at T1, the AMCL work area employed 18 operators, with nine working on each day shift.

(8) Slitting Team

Production processes – As described earlier in this chapter, the Slitting area is responsible for undertaking the department's first stage of production; that of slitting parent rolls of film into narrower slittings. The Slitting area contains two slitting machines, one of which can be adjusted to produce slittings for 35mm and 16mm products, and the other which can be adjusted to produce slittings for all other products. Employees in this area adjust the machines accordingly, load parent rolls onto the machines, monitor the slitting process and pack the resulting slittings into light sealed canisters for transport to the slit film store.

The slitting process is arguably the most physically demanding in the department, as it involves handling large, heavy machinery and parent rolls. It is also the most dangerous area, as the machines contain sharp blades, and all operations have to be completed in complete darkness. Task interdependence, therefore, it relatively high, as the operators must work together to ensure safe and efficient production.

Circumstances at T1 – The Slitting team was one of the last teams to be formed, four months after T1. Prior to the introduction of teamworking, this area had been managed in a largely traditional way. As such, employees were involved in central production tasks, but had little involvement in managing or scheduling activities. Therefore, at T1 the slitting area had low levels of autonomy and involvement, although levels of multiskilling were moderate. In addition, goal interdependence was relatively low. As with the majority of other teams, the Slitting team crossed both day shifts and nine operators were employed in this area.
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(9) Night Shift Team

Production Processes – The Night Shift team operates machines in various areas of the department, depending on where customer orders are largest or where machine problems have restricted output during the day. However, at T1, the majority of night shift employees were involved in perforating film for the AMCL production area. As a result, task interdependence on the night shift is low, relative to day shift work areas.

Circumstances at T1 – Along with the Slitting team, the Night Shift team was formed four months after T1. Prior to this, they were managed in a largely traditional manner. There was however, a strong communal feeling amongst night shift employees, largely stemming from their being somewhat isolated from day shift production. In addition, some employees were multiskilled, but the majority of employees tended to work in the same work area over time. Therefore, at T1, the Night Shift team had low levels of autonomy, involvement and goal interdependence and moderate levels of multiskilling. At T1, the night shift comprised of 14 shopfloor employees.

Concluding Comments

In summary, the context for this thesis is the introduction and subsequent development of semi-autonomous work teams, in a department of a photographic film manufacturing organisation. The department in question created nine semi-autonomous work teams over the space of 15 months. Three of these teams were formed prior to the start for data collection for this thesis, with the remaining teams being created between the T1 and T2 data collection points.

The next chapter in this thesis addresses the impact of the introduction of these teams, and considers the relationships between work characteristics, supervisory style, team processes and employee outcomes within the department.
Chapter 4: Team Implementation

This chapter investigates the impact of introducing semi-autonomous work teams within the department under study. As such, its primary focus is on the Construction and Operations phases of the CORE model of team development (see p28). As discussed in Chapter 2: Literature Review (p45, 49, 54, 56), this chapter also addresses the nature of relationships between work characteristics, supervisory style, team processes and outcomes. More specifically, this chapter addresses the following three questions:

(1) What is the impact of implementing semi-autonomous work teams on work characteristics, supervisory style, team processes and employee outcomes?

(2) Following the implementation of semi-autonomous work teams, are work characteristics, supervisory style and team processes related to employee outcomes?

(3) Following the implementation of semi-autonomous work teams, are work characteristics and supervisory style related to team processes?

The chapter begins by outlining contextual factors relevant to data collection at T1 and T2. Following this, the data collection methodology is presented, including the scales which were measured at both timepoints. The results section is presented next, with each research question being addressed in turn. A discussion of results is given following the analyses for each research question, before the chapter concludes with an overall summary of results.
Chapter 4: Team Implementation

Context

One month before the T1 survey, preliminary discussions were held with management and shopfloor employees, and a tour of the department was undertaken. These activities were designed to familiarise the author with the department and to gain background information about teamworking initiatives, prior to T1 data collection. As discussed in Chapter 3: Organisational Context (p73), at the time of the T1 survey, semi-autonomous work teams had been introduced in three of the nine teams within the department (referred to within this chapter as "team areas"). During preliminary discussions, management generally felt that the development of these three cellular-based teams had been successful and that these teams were functioning well. Employees working in these teams also made positive comments in relation to the new way of working. For example, one employee from the 35mm team stated:

"Since becoming a cell, our responsibilities have increased and we have more ownership. I like it better – we get to think for ourselves and work as a team. We all take a turn on each job and don't feel so isolated in the dark room."

In addition, an employee from the DPP team commented:

"We get to do more things now, not just turning out film. It makes the job more interesting and we have more say over how things get done."

At T1, semi-autonomous work teams were yet to be introduced in the remaining work areas of the department (referred to within this chapter as "non-team areas"). Informal discussions with employees at this time revealed some discontentment within non-team areas over how teamworking had been introduced. Historically, attention and job status within the department had been focused on the AMCL and Roll Film areas. In particular, external visitors to the department were often shown around the AMCL, and this area was considered the department's "showcase" area. However, management's strategy for implementing teams had been to address those work areas in most need of development, before introducing semi-autonomous work teams elsewhere in the department. As discussed in Chapter 3: Organisational Context (p64), prior to any changes, the Cine areas were characterised by narrow job roles, inefficient production flow and traditional supervision. As such, management chose to develop teamworking in those areas first.
Following the creation of teams from the Cine areas, non-team employees, particularly those from the AMCL and Roll Film, were unhappy that management's attention was now focused on the new cell-based teams. One AMCL employee commented:

"It feels like all the hard work we've put in over the years has been forgotten -- it counts for nothing now".

In addition, many non-team employees commented that the new teams were being recognised for completing tasks which non-team areas felt they were already involved in. As one Roll Film employee put it:

"I'm sick of hearing about the cells -- we've been working as a team for years".

These feelings were further reinforced by the fact that the three cell-based teams had received an increase in pay to reflect their expanded job roles. Overall, management confirmed that there was some unrest amongst non-team employees and differences between pay grades were currently a source of conflict.

Management's strategy for introducing semi-autonomous work teams, and the conflicts arising from it, highlight the fact that team and non-team areas within the department were in varying stages of development prior to the implementation of teams. That is, before any teamworking was introduced, some of the non-team areas were generally regarded as having greater levels of involvement and autonomy than the original three team areas. Therefore, from a research perspective, it is important to note that the teams developed up to T1 actually originated from a less developed position than other areas of the department.

The T2 survey took place nine months after the first survey. At the time of this second survey, semi-autonomous work teams had been introduced in the remaining six areas within the department. As noted in Chapter 3: Organisational Context (p71), these teams did not experience any redesign of their job areas or undergo a selection procedure. Rather, the teams were formed from those employees currently working in each area. Apart from these differences, however, the focus of the teamworking initiative was on expanding employees' roles and creating semi-autonomous work teams (see Chapter 2: Organisational Context, p67) in the same way as that undertaken in the three cellular-based teams.
Chapter 4: Team Implementation

It was felt that the introduction of teamworking in these areas had been relatively successful, and that these newer teams were working effectively on the whole. More specifically, management noted that the process of teamworking implementation was more straightforward for the non-team areas, as no redesign of job areas or recruitment of staff was needed. However, the Operations Manager did note that

"It was hard in some areas to get people to understand they were doing something new. They said they were a team anyway, when in fact we were asking them to take on new tasks and change the way they thought about the job."

Work was also undertaken, between T1 and T2, to develop and train supervisors. As discussed in Chapter 3: Organisational Context (p69), first line supervisors took on the new role of "Process Owner" in parallel to the development of teams. As such, supervisors were encouraged to take on more of a coaching, facilitatory role, rather than their traditional directive style. Following the initial changes in role, supervisors underwent training and met regularly as a group, between T1 and T2, in order to develop behaviours and styles of thinking which were appropriate to the new way of working.

Method

Data were collected at both T1 and T2 using quantitative self-report surveys. One week before each survey, the department’s Operations Manager circulated a letter which outlined the research project, encouraged attendance and emphasised confidentiality of responses. Employees completed the questionnaires on site, within work time. Employees were assigned to a one-hour survey session, run by the author, and attended sessions in groups of eight to twelve. At each session, the rationale for the survey was explained and confidentiality was guaranteed.

Following the survey administration sessions, blank questionnaires and pre-paid envelopes were left on site, in order that employees who had been unable to attend a session would have the opportunity to take part in the survey.
Survey Measures

The measures used in this thesis were selected from those used in an ongoing research project at the Institute of Work Psychology, University of Sheffield. The research project in question was led by the author’s PhD supervisor, and the intention was to be able to relate work conducted for the present studies with that of the research team. Both T1 and T2 surveys contained the measures detailed below. Full itemisation for all scales can be found in Appendix A (p253)

Biographical Data

Employees were asked to give background information on their age, sex, organisational tenure, job tenure, and team affiliation. Employees were also asked whether they worked full-time or part-time and whether they held permanent or temporary contracts.

Work Characteristics

Autonomy and Involvement Two scales were used to measure autonomy and involvement. Firstly, “Task Control” assessed the extent to which team members had autonomy over their immediate production tasks. Secondly “Team Role Breadth” was used to measure the extent to which teams were involved in a broader range of tasks. Both scales are detailed below.

Task Control was assessed by combining Jackson, Wall, Martin and Davids’ (1993) timing and method control scales. This 10-item scale measured the extent to which employees have control over the timing aspects of their work (eg. “do you decide on the order in which you do things?”) and over how they carry out their work (eg. “can you decide how to go about getting your job done?”). A 5-point response scale was used, with responses ranging from “not at all” to “a great deal”. The average Cronbach’s alpha reliability coefficient over the two timepoints was 0.85.

Team Role Breadth was measured using a 17-item list, which was based on work by Wellins, Byham and Dixon (1994). Employees were asked to indicate how often members of their team were involved in a variety of tasks, and a 5-point scale was used, ranging from “never” to “always”. For the purposes of this thesis, these items were
Chapter 4: Team Implementation

separated into two subscales as follows. The first subscale, “TRB-basic role” contained tasks that formed part of the basic shopfloor job role in the department, such as “ensuring quality standards are maintained” and “ensuring your team’s work area is safe to work in”. The second subscale, “TRB-teamwork”, included those tasks which management intended to address through the introduction of semi-autonomous work teams, such as “setting targets and goals for your team” and “suggesting new ways of doing things in your team”.

As these scales were checklists of different role tasks, the calculation of reliability coefficients was inappropriate (Sprigg, Jackson and Parker 2000).

Interdependence A 6-item scale adapted from Campion, Medsker and Higgs (1993) was used to measure interdependence (see Sprigg, Jackson and Parker 2000). This scale assessed task, goal and performance interdependence and included such items as “I cannot get my tasks done without information or materials from other members of my team” and “my work goals come directly from the goals of my team”. Employees responded on a 5-point scale, from “strongly disagree” to “strongly agree”. The averaged alpha coefficient over the two timepoints was 0.82.

In all work characteristics measures, a higher score indicated a greater reported incidence of each variable (i.e. greater control, broader role breadth and more interdependence).

Team Processes

Team Task Support assessed the extent to which team members supported and cooperated with each other in the completion of their tasks. A 7-item scale was used, based on items from Cook and Wall (1980) and Campion, Medsker and Higgs (1993). Employees responded on a 5-point scale from “strongly disagree” to “strongly agree” on items such as “I can rely on other members of my team to help me out when I am

1 The surveys also measured 8 tasks which were expected to remain outside of the expanded teamworking role, such as “deciding how to spend the team’s budget” and “disciplining your team members”. This TRB subscale, “TRB-outside role” was not included in formal analysis, but will be referred to where appropriate, in order to validate the type of teamworking adopted by the department.
overloaded with work” and “members of my team cooperate to get the work done”. The average internal reliability was 0.88.

*Team Efficacy* was assessed using a 5-item scale based on work by Guzzo, Yost, Campbell and Shea (1993) and Campion, Medsker and Higgs (1993). This scale assessed the extent to which team members had confidence in the abilities of the team, and included such items as “my team feels it can solve any problem it encounters” and “members of my team have great confidence that the team works effectively”. A 5-point response scale was used, which ranged from “strongly disagree” to “strongly agree”. The internal reliability for this scale was 0.89 across the two timepoints.

Higher scores for these two scales reflected greater team task support and team efficacy.

**Supervision**

*Supervisory style* was measured using an 11-item scale, based on Manz and Sims’ (1987) and Taylor and Bowers’ (1972) supervisory style scales. Employees responded using a 5-point scale ranging from “strongly disagree” to “strongly agree” on items such as “my immediate supervisor encourages us to praise each other for doing a good job” and “my immediate supervisor encourages us to plan a difficult job before we attempt it”. Higher scores on this scale indicated a more coaching, supportive style, as opposed to a controlling, directive style. Cronbach’s alpha, averaged across the two timepoints was 0.93.

**Employee Outcomes**

*Motivation* was measured using Warr, Cook and Wall's (1979) 6-item scale which included items such as “I take pride in doing my job as well as I can”. Employees responded on a 5-point scale from “strongly disagree” to “strongly agree”. Cronbach’s alpha coefficient across the two timepoints was 0.75.

*Job Satisfaction* was assessed using Warr, Cook and Wall’s (1979) job satisfaction scale. The scale asked subjects how satisfied they were with 15 aspects of their work.
Subjects responded on a 7-point scale, from "extremely dissatisfied" to "extremely satisfied". The scale formed two subscales relating to intrinsic satisfaction (7 items), for example "the recognition you get for good work" and extrinsic job satisfaction (8 items), for example "your salary" and "your hours of work". Cronbach's alpha coefficients were 0.83 and 0.73 for intrinsic and extrinsic satisfaction respectively.

**Job Related Well-being** was measured using a 12-item scale, developed by Warr (1990). This scale asked employees to indicate how much, during the past month, their job had made them feel a variety of emotions, for example "tense", "depressed" and "enthusiastic". The scale combines Warr's continuums of anxiety-comfort and depression-enthusiasm, and was assessed using a 5-point response scale, with responses ranging from "never" to "all the time". The average Cronbach's alpha for the current sample was 0.88.

For all employee outcome measures, higher scores reflected more favourable outcomes (i.e. more motivated, more satisfied, better well-being / less anxious and depressed).

**Sample**

77 employees completed the T1 survey, representing a response rate of 89%. The T2 survey was completed by 65 employees, giving a response rate of 79%. There was a matched response over the two timepoints of 57 employees (67%). All subsequent analyses were conducted for the matched sample only.

75% of the matched sample were female. The age of employees ranged from 20 to 64 years, with the average age over the two timepoints being 42 years 4 months. Average organisational tenure was 12 years 1 month and average job tenure was 6 years 10 months. Of the matched sample, all were full-time employees, and the majority (90%) held permanent contracts.

**Team Status**

Team affiliation was used to categorise employees working in "team" (value=1) and "non-team" (value=0) areas at T1. This categorisation will be referred to as the "Team Status" variable. Of the matched sample, 20 employees worked in "team" areas and 37 worked in "non-team" areas at both T1 and T2.
Results

The results section is organised into four parts. Firstly, some preliminary descriptive statistics and correlations are presented. Following this, each of the three research questions is addressed in turn, with a discussion being presented at the end of the analyses for each research question.

All analyses were conducted for the matched sample (n=57) only. In addition, although unidirectional (one-tailed) predictions could be made for parts of each research question, in other cases it was not appropriate to make such predictions. For example, whilst there is a theoretical basis for expecting that the introduction of semi-autonomous work teams in non-team areas would be related to improved work characteristics, it is unclear how work characteristics may change over time for the established team areas. Therefore, in order to remain consistent throughout, two-tailed significance levels are used for all analyses in this results section. Finally, due to the relatively small sample size, the level of the analysis is that of the individual, rather than aggregating scores to the team level. However, variances between and within teams suggest that individuals from the same team responded similarly on the scales in this thesis.

Preliminary Analyses

Prior to investigating the three research questions, means, standard deviations and zero order correlations were conducted for all scales, at each timepoint separately. These descriptive statistics can be found in tables 4.1a and 4.1b and will be referred to throughout this results section, as they relate to the research questions.
Table 4.1a: Means, Standard Deviations and Zero Order Correlations Between All Scales at T1

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<th>Std Dev</th>
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<th>12</th>
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(*= p≤.05; **= p≤.01; ***=p≤.001)
Table 4.1b: Means, Standard Deviations and Zero Order Correlations Between All Scales At T2

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(*= p≤.05; **= p≤.01; ***=p≤.001)
Research Question 1 - What is the impact of implementing semi-autonomous work teams on work characteristics, supervisory style, team processes and employee outcomes?

In order to investigate the impact of semi-autonomous work teams within the department, analysis was undertaken in three stages.

Firstly, given management's strategy for introducing teamworking and the fact that work areas were in differing stages of development, prior to the introduction of any teams (see context p84 and Chapter 3: Organisational Context, p58), it was important to statistically determine the circumstances of team and non-team areas at T1. In order to do this, independent t-tests, comparing team and non-team areas at T1 were conducted. Secondly, the once circumstances at T1 had been established, the main analyses for this research question were undertaken, through the use of two-way repeated measures ANOVAs. These ANOVAs allowed changes over time for both team and non-team areas to be investigated.

Finally, in order to determine the circumstances within the department once all the semi-autonomous work teams had been established, independent t-tests were conducted, comparing team and non-team areas at T2.

Comparison between Team and Non-Team areas at T1

In order to compare team and non-team areas at T1, independent t-tests were conducted to compare these two groups on all scales. The results of these tests can be found in Table 4.2.

These results indicate that team and non-team areas differed significantly on TRB-teamwork only (p<.001), with teams reporting significantly higher levels of involvement in teamwork-related tasks as compared to non-team areas. However, the t-test for TRB-basic role was approaching significance (p=.061), and indicated that non-team areas were more involved in basic role tasks than were teams.

(NB. These relationships can also be seen in Table 4.1a, with significant correlations being found between team status and both TRB-teamwork and TRB-basic role (r=.455, p<.001 and r=.292, p<.05 respectively.))
Table 4.2: Independent T-Tests, Comparing Team and Non-Team Work Areas at Time 1.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Team areas (n=20)</th>
<th>Non-team areas (n=37)</th>
<th>T-value</th>
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<td>1.29</td>
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<td><strong>Employee Outcomes</strong></td>
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<td>job related wellbeing</td>
<td>3.49</td>
<td>3.52</td>
<td>-0.20</td>
</tr>
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</table>

(\(*= p \leq 0.05; **= p \leq 0.01; ***= p \leq 0.001\))
In relation to the remaining work characteristics, both team and non-team areas reported relatively high levels of task control and moderate levels of interdependence. It is worth noting, however, that although teams and non-teams did not significantly differ on interdependence as a whole, the differing levels of task and goal interdependence described previously (see Chapter 3: Organisational Context, Overview of Teams, p75) were reflected in the means of the relevant interdependence items. That is, task interdependence (items 1 & 2, Appendix A, p253) was higher in non-team areas as compared to the teams ($\bar{x}=3.18$ and $\bar{x}=2.90$ respectively), whereas goal interdependence (items 3 & 4, Appendix A, p253) was greater amongst teams as compared to non-teams ($\bar{x}=3.75$ and $\bar{x}=3.59$ respectively). In addition, the means for TRB-outside role suggested that both groups were only minimally involved in tasks outside of the semi-autonomous work team role ($\bar{x}=1.76$ for teams, $\bar{x}=1.53$ for non-teams).

In relation to supervision, both teams and non-teams indicated moderate levels of supervisory style, with team areas reporting slightly higher (non-significant) levels. Both groups also reported highly favourable levels of both team processes, and these scores were slightly more positive (non-significant) for team areas. Finally, the results also suggest that employee outcomes were largely favourable for both team and non-team groups, and there were no significant differences between the two groups in relation to these variables.

Overall, these t-tests provided some support for the differential characteristics between work areas described previously (see Overview of Teams, p75). However, they also highlight a lack of differences between team and non-team areas in relation to supervisory style, team processes and employee outcomes. The inferences which can be made from these results will be discussed shortly (see p103). Prior to this, however, attention now turns to the second stage of analysis in relation to research question 1.
Comparison of Change in Team and Non-Team Areas

The above results provide an indication of the circumstances of both groups at T1. However, as there is no statistical data available prior to T1, it is not possible to clearly assess the impact of semi-autonomous work team initiatives from these analyses. Therefore, in order to establish a clear understanding of the impact of the teamworking initiative, two-way repeated measures ANOVAs were undertaken. These ANOVAs comprised of one between-subjects factor (team status) and one within subjects-factor (time). Each dependent variable was treated separately, due to the relatively small sample size.

The subgroup means, F-ratios and significance levels for these analyses are shown in Table 4.3. Diagrammatic representations of significant interaction effects are also shown, in Figures 4a to 4c.

As ANOVA tests focus on average mean differences, both over time and between groups, simple main effect tests were also conducted. These simple main effect tests allowed significant changes in team and non-team areas separately over time to be assessed. Significant simple main effects are denoted in Table 4.3 by the symbol “+” next to the T2 mean for the relevant group.

The results of these ANOVA and simple main effects tests are summarised below.

Work Characteristics: In relation to work characteristics, Table 4.3 shows team effects for both TRB-teamwork and TRB-basic role (p≤.01 and p≤.05 respectively). In the case of TRB-basic role, non-team areas reported higher levels of involvement in these tasks at both timepoints, whereas team areas experienced higher levels of involvement in TRB-teamwork tasks at both timepoints. A significant interaction effect was also found for TRB-teamwork (p≤.001). Here, non-team areas' involvement in these tasks increased over time, with decreased involvement for team areas (see Figure 4a). Simple main effect tests indicated significant changes for both groups in relation to TRB-teamwork.

No significant main or interaction effects were found in relation to task control and interdependence. However, in both these cases, non-team areas experienced some improvement following the introduction of semi-autonomous work teams. In the case
Table 4.3: Two-way Repeated Measures ANOVAs, Comparing Team and Non-Team Areas between T1 and T2

<table>
<thead>
<tr>
<th>Variable</th>
<th>Means</th>
<th>ANOVA F-ratios</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T1</td>
<td>T2</td>
</tr>
<tr>
<td>Work Characteristics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>task control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>team</td>
<td>3.81</td>
<td>3.72</td>
</tr>
<tr>
<td>non-team</td>
<td>3.76</td>
<td>3.99</td>
</tr>
<tr>
<td>TRB – teamwork</td>
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<td></td>
</tr>
<tr>
<td>team</td>
<td>3.64</td>
<td>3.25†</td>
</tr>
<tr>
<td>non-team</td>
<td>2.77</td>
<td>3.07†</td>
</tr>
<tr>
<td>TRB-basic role</td>
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</tr>
<tr>
<td>team</td>
<td>4.45</td>
<td>4.33</td>
</tr>
<tr>
<td>non-team</td>
<td>4.72</td>
<td>4.60</td>
</tr>
<tr>
<td>interdependence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>team</td>
<td>3.34</td>
<td>3.43</td>
</tr>
<tr>
<td>non-team</td>
<td>3.22</td>
<td>3.50†</td>
</tr>
<tr>
<td>Supervision</td>
<td></td>
<td></td>
</tr>
<tr>
<td>supervisory style</td>
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<td></td>
</tr>
<tr>
<td>team</td>
<td>3.32</td>
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</tr>
<tr>
<td>non-team</td>
<td>3.02</td>
<td>3.65†</td>
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<td>Team Processes</td>
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</tr>
<tr>
<td>team task support</td>
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<td></td>
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<tr>
<td>team</td>
<td>4.26</td>
<td>4.06</td>
</tr>
<tr>
<td>non-team</td>
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<td>4.38†</td>
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<td>team efficacy</td>
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<td></td>
</tr>
<tr>
<td>team</td>
<td>4.10</td>
<td>3.92</td>
</tr>
<tr>
<td>non-team</td>
<td>3.95</td>
<td>4.10</td>
</tr>
<tr>
<td>Outcomes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>motivation</td>
<td></td>
<td></td>
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<tr>
<td>team</td>
<td>4.17</td>
<td>4.34</td>
</tr>
<tr>
<td>non-team</td>
<td>4.21</td>
<td>4.38</td>
</tr>
<tr>
<td>intrinsic satisfaction</td>
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<tr>
<td>team</td>
<td>4.69</td>
<td>4.67</td>
</tr>
<tr>
<td>non-team</td>
<td>4.52</td>
<td>4.85†</td>
</tr>
<tr>
<td>extrinsic satisfaction</td>
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<td></td>
</tr>
<tr>
<td>team</td>
<td>4.40</td>
<td>4.45</td>
</tr>
<tr>
<td>non-team</td>
<td>4.56</td>
<td>4.77</td>
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<tr>
<td>job related wellbeing</td>
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<td></td>
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<td>team</td>
<td>3.49</td>
<td>3.33</td>
</tr>
<tr>
<td>non-team</td>
<td>3.55</td>
<td>3.70</td>
</tr>
</tbody>
</table>

(∗= p≤.05; **= p≤.01; ***=p≤.001)

(†= significant simple main effect)
Figures 4a to 4c – Significant Interaction Effects

**Fig 4a – Team and Interaction Effects for TRB-Teamwork**

![Graph showing significant interaction effects for TRB-Teamwork between T1 and T2 with markers indicating changes in TRB-Teamwork scores.]

**Fig 4b – Interaction effects for Team Task Support**

![Graph showing interaction effects for Team Task Support between T1 and T2 with markers indicating changes in Team Task Support scores.]

**Fig 4c – Interaction Effects for Team Efficacy**

![Graph showing interaction effects for Team Efficacy between T1 and T2 with markers indicating changes in Team Efficacy scores.]

Legend:
- Teams
- Non-Teams
of interdependence, this improvement was significant, as is indicated by the significant simple main effect.

**Supervisory Style:** A highly significant time effect was found for supervisory style \((p \leq 0.01)\), with both team and non-team areas reporting that supervisors developed a more coaching style over time.

**Team Processes:** Significant interaction effects were found in relation to both team task support and team efficacy \((p \leq 0.01\) and \(p \leq 0.05\) respectively). In both of these cases, non-team areas reported more favourable levels of team processes, following the introduction of semi-autonomous work teams between TI and T2. These results also indicate a small decrease in both team processes for the team areas over time (see Figures 4b and 4c). However, simple main effect tests were significant for non-team areas’ improvement in team task support only.

**Employee Outcomes:** In relation to the outcome variables, only one significant effect was found. This was a time effect for motivation \((p \leq 0.05)\), with improvements over time for both team and non-team areas. However, the interaction effect for job related well-being was approaching significance \((p = 0.081)\) and was of the same form as the interactions reported above. Only one significant simple main effect was found, indicating a significant improvement in intrinsic satisfaction for non-team employees over time.

In summary, the results of these ANOVAs and simple main effect tests indicate that non-team areas experienced significant improvements in TRB-teamwork, interdependence, supervisory style, team task support, motivation and intrinsic satisfaction between T1 and T2. There was also some suggestion that task control, team efficacy and job-related well-being improved over time. In addition, non-team areas were more involved in TRB-basic role tasks at both timepoints than were team areas. The original three cellular-based teams also experienced significant increases in supervisory style and motivation over time. In addition, team areas were more involved in TRB-teamwork tasks at both timepoints than were non-team areas. However, in
contrast to the non-team areas, there was some evidence that team areas experienced decreases in TRB-teamwork, team task support, team efficacy and job related well-being between T1 and T2.

These results will be discussed shortly (see p103), following the final stage of analysis for research question 1.

**Comparison between Team and Non-Team areas at T2**

In the final stage of analysis for Research Question 1, independent t-tests were used to compare team and non-team areas at T2. It should be remembered that the "non-team" areas had actually become teams by T2. However, in order to remain consistent, these work areas are still referred to as the "non-team" areas. The results of these tests can be seen in Table 4.4.

These results indicate that, by T2, teams and non-teams differed on only one variable, namely job related well-being ($p \leq .05$), with non-team areas being significantly less anxious and depressed, as compared to the original three teams. (NB. This result is also shown in Table 4.1b, with a significant negative correlation between team status and job related well-being ($r = -.292$, $p \leq .05$)).

Overall, by T2, both the established teams and the more recently formed teams were characterised by high task control and TRB-basic role, moderately high interdependence and TRB-teamwork, favourable levels of supervisory style, highly positive team processes and favourable employee outcomes. In addition, the means for TRB-outside role indicate that these tasks remained largely outside of the teamworking role at T2 ($\bar{x} = 1.47$ for team areas, $\bar{x} = 1.52$ for non-team areas).

It is interesting to note, however, that although the majority of t-tests were not significant, non-team areas' means were slightly more favourable than team area means, in all cases other than TRB-teamwork.

These results, along with the previous two stages of analysis will now be discussed.
Table 4.4: Independent T-Tests, Comparing Team and Non-Team Work Areas at Time 2.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Team areas (n=20)</th>
<th>Non-team areas (n=37)</th>
<th>T-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Work Characteristics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>task control</td>
<td>3.72</td>
<td>3.99</td>
<td>-1.51</td>
</tr>
<tr>
<td>TRB-teamworking</td>
<td>3.25</td>
<td>3.02</td>
<td>1.23</td>
</tr>
<tr>
<td>TRB-basic role</td>
<td>4.33</td>
<td>4.59</td>
<td>-1.61</td>
</tr>
<tr>
<td>interdependence</td>
<td>3.43</td>
<td>3.50</td>
<td>-0.31</td>
</tr>
<tr>
<td><strong>Supervision</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>supervisory style</td>
<td>3.65</td>
<td>3.76</td>
<td>-0.53</td>
</tr>
<tr>
<td><strong>Team Processes</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>team task support</td>
<td>4.06</td>
<td>4.38</td>
<td>-1.83</td>
</tr>
<tr>
<td>team efficacy</td>
<td>3.92</td>
<td>4.10</td>
<td>-0.90</td>
</tr>
<tr>
<td><strong>Outcomes</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>motivation</td>
<td>4.34</td>
<td>4.39</td>
<td>-0.27</td>
</tr>
<tr>
<td>intrinsic satisfaction</td>
<td>4.64</td>
<td>4.85</td>
<td>-0.78</td>
</tr>
<tr>
<td>extrinsic satisfaction</td>
<td>4.44</td>
<td>4.78</td>
<td>-1.56</td>
</tr>
<tr>
<td>job related wellbeing</td>
<td>3.33</td>
<td>3.70</td>
<td>-2.25*</td>
</tr>
</tbody>
</table>

(*= p≤.05; **= p≤.01; ***= p≤.001)
Discussion: Research Question 1

Research question 1 investigated the impact of introducing semi-autonomous work teams on work characteristics, supervisory style, team processes and employee outcomes. The main results found in relation to this research question are discussed below.

A feature of this study was the fact that semi-autonomous work teams had already been introduced in part of the department prior to T1 data collection. In addition, information from management and employees suggested that the original three teams were less developed than the rest of the department, prior to the introduction of any teamworking. As such, it was important to determine the circumstances of team and non-team areas at T1.

T-test comparisons at T1 provided some evidence that team and non-team areas differed in characteristics. More specifically, these analyses showed that teams areas tended to have greater autonomy and involvement in teamwork-related tasks, greater goal interdependence but lower task interdependence. These results are in line with the descriptions of teams previously given (see Overview of Teams, p75). The latter finding highlights differences in the design of team and non-team production areas. Differences in goal interdependence and team role breadth, however, suggest that at T1 the team areas were, in fact, engaged in a true teamworking role to a greater extent than were non-team areas.

Interestingly, however, there was evidence that non-team areas were more involved in basic role tasks than were team areas at T1. Two interpretations of this result may be made. Firstly, it could be the case that teams were more involved in teamwork-related tasks at the expense of basic role tasks. Alternatively, it may be that non-team areas were always more involved in basic tasks than were team areas. This latter explanation is more likely, as an ANOVA team effect was found for TRB-basic role, suggesting that non-team areas were consistently more involved in basic role tasks. This finding, along with positive reports of task control, may explain why non-team employees believed that they were “already working as a team”.
The results of comparisons at T1 showed no differences between teams and non-teams with respect to task control, supervision, team processes or employee outcomes (although teams did report slightly higher, non-significant, levels of supervisory style and team processes). On one level, these results suggest that introducing semi-autonomous work teams had little impact on these variables. However, given reports that the original three teams (formed from the Cine area) were less developed prior to the introduction of any teams, these results are suggestive of improvements following teamworking initiatives for these three teams. However, due to the lack of pre-T1 data, it was not possible to determine whether team areas “caught up” with non-team areas by T1, or whether the introduction of semi-autonomous work teams had little or no impact.

The ANOVA and simple main effect analyses provided a clearer understanding of the impact of semi-autonomous work teams, as they allowed for changes over time to be investigated. These results indicated that non-team areas were more involved in teamwork-related tasks, were more interdependent, supported each other in the completion of their tasks more and were more satisfied with the immediate aspects of their job, following the introduction of semi-autonomous work teams. There was also some suggestion of improvements over time in non-team areas’ autonomy over immediate production tasks, beliefs in the team’s abilities and job-related well-being. Overall, these findings suggest that introducing semi-autonomous teamworking for these areas had a positive effect on work characteristics, team processes and, to a lesser extent, employee outcomes.

Interestingly, there was some evidence that the three original teams were less involved in teamwork-related tasks, supported each other to a lesser extent, had less positive beliefs in their team and felt more anxious and depressed between the two timepoints. These findings suggest that the novelty of teamworking and the effort employees put into functioning as a team may have decreased for these established teams. It may also be the case that team areas’ behaviours and perceptions were modified over time, as a result of habituation, learning and experience, as is suggested by the Reconstruction phase of CORE model (see p28). Finally, it may be that employees were engaged in making comparisons between the team and non-team areas and, as a result, perceptions for both groups converged once semi-autonomous work teams were implemented for all
work areas. It is worth noting, however, that the decreases associated with team areas were only significant in relation to TRB-teamwork, and that the absolute score for these variables still remained relatively positive.

The ANOVA results also indicated that both supervisory style and motivation scores increased over time for all employees. The favourable reports of supervisory style are likely to be related to the training and development work which supervisors were engaged in between the two timepoints.

The reasons for an increase in motivation for all work areas over time is unclear, although it may be related to the changes in supervisory style, the introduction of teamworking for non-team areas, or as a result of stability being achieved in the department once all the semi-autonomous work teams had been created. Further investigation into the factors related to changes in motivation are addressed in research question 2 (p106).

Finally, comparisons at T2 suggested that, by this timepoint, team and non-team areas had largely reached similar levels of team development. That is, both team and non-team areas were characterised by high autonomy over immediate production tasks and involvement in basic job tasks, moderately high interdependence and involvement in teamwork-related tasks, appropriate supervision for teamworking, highly positive team processes and favourable employee outcomes. In the majority of cases, non-team areas were in a slightly more positive (non-significant) position at T2 than were team areas, although this is likely to be due to a recency effect. Finally, TRB-outside role means for both groups validated the categorisation of these teams as “semi-autonomous”, rather than “self-managing” or “self-directed”.

In conclusion, it appears that the introduction of semi-autonomous work teams was related to a broadened role breadth, greater interdependence, more positive team functioning and some improvements in job satisfaction and employee well-being. However, established teams experienced some decreases in role breadth and team functioning, suggesting that maintaining highly effective semi-autonomous work teams over time may be difficult to achieve.
Research Question 2: Following the Implementation of Semi-Autonomous Work Teams, are Work Characteristics, Supervisory Style and Team Processes related to Employee Outcomes?

Research question 1 investigated the impact of implementing semi-autonomous work teams on work characteristics, supervisory style, team processes and outcomes. In the subsequent research questions, the focus of inquiry was turned to the nature of relationships between these groups of variables. More specifically, the second research question investigated whether work characteristics, supervisory style and team processes were related to employee outcomes, following team implementation.

In examining this research question, reference was firstly made to the Preliminary Analyses (see p91), to investigate whether significant correlations were found between employee outcomes and other variables, at each separate timepoint. However, although these correlations give some indication of associations, the primary interest of this thesis is on relationships between the groups of variables over time, rather than cross-sectional relationships. As such, the following two stages of analysis were undertaken. Firstly, zero order correlations were made between T1 to T2 change scores, in order to investigate whether changes over time in work characteristics, supervisory style and team processes were related to changes over time in employee outcomes. Following this, regression analyses based on these change scores were conducted, in order to further investigate these relationships.

Preliminary Analyses

Reference was made to the Preliminary Analyses presented in Tables 4.1a and 4.1b (p92-93), in order to determine whether work characteristics, supervisory style and team processes were related to employee outcomes at each separate timepoint. The results of these correlations are reported below, in relation to each employee outcome.

Motivation: The preliminary correlations indicate that motivation was positively correlated with only one other variable, namely interdependence at T1.
Intrinsic Satisfaction: Considerably more relationships were found between intrinsic satisfaction and other variables. At both T1 and T2, intrinsic satisfaction was found to be significantly positively correlated with interdependence, supervisory style and both team processes. In addition, intrinsic satisfaction was positively correlated with TRB-teamwork, although at T1 only.

Extrinsic Satisfaction: Significant positive correlations were found, at both timepoints, between extrinsic satisfaction and both supervisory style and team task support. In addition, positive correlations were found in relation to interdependence at T1 only, and team efficacy at T2 only.

Job Related Well-being: Table 4.1a shows that job related well-being was not related to any other variables at T1. However, at T2, well-being was positively associated with TRB-teamwork, team task support and team efficacy.

In addition to the above findings, the preliminary correlations also allowed for the investigation of relationships between background variables and employee outcomes. These correlations indicated that background variables had minimal relationships with employee outcomes. More specifically; job tenure was negatively related to intrinsic satisfaction at both timepoints, and with job related well-being at T1 only; organisational tenure was negatively related to job related well-being at T1 only; and age was positively related to motivation at T2 only. Overall, therefore, background variables were not systematically related to employee outcomes.

The results of the preliminary correlations indicated some interesting associations between employee outcomes and other variables at each timepoint. However, approximately half of these correlations were not found to be robust over time. This is likely to be due, at least in part, to the changing team structure of the department between T1 and T2. As such, the implications drawn from these correlations are limited as they do not address the impact of changes over time.
Correlations between Change Scores

Thus, in order to investigate the potential relationships between work characteristics, supervisory style, team processes and employee outcomes over time, zero order correlations between changes in scores were conducted. Change scores for each scale were computed using the equation “change (Δ) score = T2 score minus T1 score”. The change score correlation matrix is shown in Table 4.5. Team status was also included in this correlation matrix, to show whether changes in employee outcomes were related to semi-autonomous work team implementation.

The results of these change correlations are summarised below.

**ΔMotivation:** Table 4.5 shows that changes in motivation were significantly positively correlated with only one other variable, namely Δtask control (p<.05).

**ΔIntrinsic Satisfaction:** ΔTRB-teamwork and Δsupervision style were both positively correlated with Δintrinsic satisfaction (p<.01 and p<.05 respectively).

**ΔExtrinsic Satisfaction:** Table 4.5 shows that Δextrinsic satisfaction was also positively associated with ΔTRB-teamwork and Δsupervisory style (p<.01 and p<.05 respectively).

**ΔJob related well-being:** Changes in job related well-being over time were not correlated with changes in any other variables.

The results of correlations between change scores suggest that positive changes in motivation were reported where employees experienced an improvement in task control between T1 and T2. It was also shown that those employees who became more satisfied over time had also experienced a broadening of their role tasks and supervisors who developed a more coaching style.

The investigation of correlations between change scores helps to incorporate the longitudinal aspects of the data. However these correlations alone do not uncover the entire picture, for two reasons. Firstly, these correlations were based on change scores alone, with no reference to T1 scores. As such, these findings relate to absolute change only, without controlling for the impact of T1 differences. Secondly, correlations consider only one variable’s association with another, and thus do not allow for the examination of several variables at once.
Table 4.5: Means, Standard Deviations and Zero Order Correlations between All Change Scores (T2-T1)

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std Dev</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. team status</td>
<td>0.35</td>
<td>0.48</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Δtask control</td>
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</tr>
<tr>
<td>3. Δtrb-teamwork</td>
<td>0.05</td>
<td>0.74</td>
<td>-0.49***</td>
<td>.055</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>4. Δtrb-basic role</td>
<td>-0.12</td>
<td>0.51</td>
<td>-0.07 **</td>
<td>0.123</td>
<td>0.337*</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>5. Δinterdependence</td>
<td>0.22</td>
<td>0.75</td>
<td>-0.12</td>
<td>-0.183</td>
<td>0.237</td>
<td>0.175</td>
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<td>6. Δsupervisory style</td>
<td>0.59</td>
<td>0.79</td>
<td>-0.074</td>
<td>0.096</td>
<td>0.144</td>
<td>0.212</td>
<td>0.244</td>
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<tr>
<td>7. Δteam task support</td>
<td>0.15</td>
<td>0.58</td>
<td>-0.45***</td>
<td>0.233</td>
<td>0.333*</td>
<td>-0.044</td>
<td>0.170</td>
<td>0.199</td>
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<td>8. Δteam efficacy</td>
<td>0.04</td>
<td>0.62</td>
<td>-0.259*</td>
<td>-0.092</td>
<td>0.092</td>
<td>-0.061</td>
<td>0.126</td>
<td>0.159</td>
<td>0.567***</td>
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<tr>
<td>9. Δmotivation</td>
<td>0.17</td>
<td>0.59</td>
<td>0.008</td>
<td>0.270*</td>
<td>-0.117</td>
<td>0.032</td>
<td>-0.000</td>
<td>0.172</td>
<td>0.071</td>
<td>0.078</td>
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<td></td>
</tr>
<tr>
<td>10. Δintrinsic satisfaction</td>
<td>0.20</td>
<td>0.79</td>
<td>-0.213</td>
<td>-0.059</td>
<td>0.427**</td>
<td>0.244</td>
<td>0.181</td>
<td>0.322*</td>
<td>0.144</td>
<td>-0.015</td>
<td>0.025</td>
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<td>11. Δextrinsic satisfaction</td>
<td>0.08</td>
<td>0.84</td>
<td>-0.241</td>
<td>0.012</td>
<td>0.401**</td>
<td>0.127</td>
<td>0.068</td>
<td>0.285*</td>
<td>0.176</td>
<td>-0.004</td>
<td>-0.037</td>
<td>0.655***</td>
<td></td>
</tr>
<tr>
<td>12. Δjob related wellbeing</td>
<td>0.03</td>
<td>0.61</td>
<td>-0.239</td>
<td>0.061</td>
<td>0.073</td>
<td>0.064</td>
<td>-0.100</td>
<td>0.149</td>
<td>-0.020</td>
<td>-0.073</td>
<td>-0.008</td>
<td>0.136</td>
<td>0.395*</td>
</tr>
</tbody>
</table>

(* = p ≤ .05; ** = p ≤ .01; *** = p ≤ .001)
Regression Analyses

Thus, in order to incorporate multiple variables and to control for differences at T1, regression analyses were conducted. These regressions focused on the change scores discussed above, in order to consider longitudinal aspects of the data. The technique used (see e.g. Hibbs 1974, Plewis 1985) was a modification of the standard regression analysis. Although this method has tended not to be used in organisational research in recent years, having been superseded by path analysis and structural equations modelling, it remains a useful and informative method of analysing change, particularly where sample sizes do not allow more sophisticated statistical techniques to be used (Monge 1995). Furthermore, the change score variables in this study were less intercorrelated than were those at separate timepoints, thereby reducing problems due to multicollinearity.

One final consideration is the fact that research question 1 (p94) found significant changes over time for only one employee outcome, namely motivation. However, as these analyses were based on mean scores, it was still appropriate to conduct regression analyses on the change scores for all employee outcomes.

Four separate regression analyses were undertaken, one for each employee outcome. In each case, the dependent variable was the change score for the relevant employee outcome. Variables were entered into each regression in the following steps. In the first step, T1 differences were controlled for by entering the T1 score for the dependent variable. Following this, team status was entered, to assess differences in the dependent variable due to the development of semi-autonomous work teams. In subsequent steps, work characteristics, supervisory style and team process variables were examined for their impact on each employee outcome. In each case, both the change score and the T1 score were entered, in order to control for T1 differences.

All scores were standardised, prior to inclusion in the regression analyses, in order to minimise problems arising from multicollinearity. In addition, as the sample size limited the number of variables which could be included to produce a meaningful regression, these variables were entered in a variety of small group combinations, with consistently non-significant variables being discarded.

---

2 T1 and change scores for background variables were also examined in each regression analysis, but were not found to significantly predict any change in employee outcome.
The results of the four regression analyses can be seen in Tables 4.6a to 4.6d. The findings from these analyses are summarised below, in relation to each employee outcome.

**Motivation:** It was found that no combination of variables was able to produce a significant regression model for Δmotivation. The model shown in table 4.6a shows the best regression model which was produced, although this model was not significant (F=1.78, p=.12), and was only able to account for 19% of the variance in Δmotivation. This model suggests that, after controlling for motivation at T1, team status and task control (both T1 and Δ), Δsupervisory style was a positive predictor of Δmotivation (p≤.05). However, as the regression model as a whole is not significant, the reliability of this finding is highly questionable.

Whilst it is acknowledged that a significant model may have been found using a larger sample, for the current sample the lack of significant regression models raises the possibility that Δmotivation was influenced by variables other than those measured in this thesis.

In the remaining three regression models, supervisory style and TRB-teamwork proved to be the best predictors of employee outcomes, over and above team status.

**Intrinsic Satisfaction:** The regression model formed with Δintrinsic satisfaction as the dependent variable (see Table 4.6b) was significant (F=3.54, p≤.01), and was able to account for 33% of the variance. In the first step of this regression, intrinsic satisfaction at T1 was a significant predictor (p≤.01). The β weight for this variable was negative, indicating that those employees reporting a lower T1 intrinsic satisfaction score experienced a greater improvement in intrinsic satisfaction over time, than did employees with higher T1 intrinsic satisfaction scores. Team status did not significantly predict Δintrinsic satisfaction at any stage of the model. Δsupervisory style, however, did significantly predict Δintrinsic satisfaction (p≤.05). The β weight for this variable was positive, indicating that an improvement in supervisory style over time was related to an increase over time in intrinsic satisfaction. The final step of the model accounted for 10% of the variance (p≤.05), although neither TRB-teamwork nor ΔTRB-teamwork
Tables 4.6a to 4.6d: Regressions predicting changes in employee outcomes between T1 and T2.

Table 4.6a: Regression Analysis for Δ Motivation

<table>
<thead>
<tr>
<th>Step</th>
<th>β</th>
<th>β</th>
<th>β</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. T1 motivation</td>
<td>-.205</td>
<td>-.204</td>
<td>-.255</td>
<td>-.258*</td>
</tr>
<tr>
<td>2. team status</td>
<td>.010</td>
<td>-.002</td>
<td>.056</td>
<td></td>
</tr>
<tr>
<td>3. T1 supervisory style</td>
<td>.168</td>
<td>.218</td>
<td>.305</td>
<td>.312*</td>
</tr>
<tr>
<td>Δ supervisory style</td>
<td></td>
<td></td>
<td>.305</td>
<td>.312*</td>
</tr>
<tr>
<td>4. T1 task control</td>
<td>-.032</td>
<td></td>
<td></td>
<td>.287</td>
</tr>
<tr>
<td>Δ task control</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ΔR² (total R² =.188 ) | .042 | .000 | .059 | .087 |

Table 4.6b: Regression Analysis for Δ Intrinsic Satisfaction

<table>
<thead>
<tr>
<th>Step</th>
<th>β</th>
<th>β</th>
<th>β</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. T1 intrinsic satisfaction</td>
<td>-.354**</td>
<td>-.336*</td>
<td>-.356*</td>
<td>-.235</td>
</tr>
<tr>
<td>2. team status</td>
<td>-.194</td>
<td>-.192</td>
<td>.008</td>
<td></td>
</tr>
<tr>
<td>3. T1 supervisory style</td>
<td>.132</td>
<td>.206</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Δ supervisory style</td>
<td>.313*</td>
<td>.367*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. T1 TRB-teamwork</td>
<td>-.253</td>
<td></td>
<td>.189</td>
<td></td>
</tr>
<tr>
<td>Δ TRB-Teamwork</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ΔR² (total R² =.325 ) | .125** | .037 | .068 | .095* |

(*= p≤.05; **= p≤.01; ***=p≤.001)
Table 4.6c: Regression Analysis for \( \Delta \) Extrinsic Satisfaction

<table>
<thead>
<tr>
<th>Step</th>
<th>( \beta )</th>
<th>( \beta )</th>
<th>( \beta )</th>
<th>( \beta )</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. T1 extrinsic satisfaction</td>
<td>-.196</td>
<td>-.219</td>
<td>.029</td>
<td>.105</td>
</tr>
<tr>
<td>2. team status</td>
<td>-.297</td>
<td>-.214</td>
<td>-.215</td>
<td></td>
</tr>
<tr>
<td>3. T1 supervisory style ( \Delta ) supervisory style</td>
<td>.093</td>
<td>.230</td>
<td>.348*</td>
<td>.244</td>
</tr>
<tr>
<td>4. T1 TRB-teamwork ( \Delta ) TRB-Teamwork</td>
<td></td>
<td></td>
<td>-.197</td>
<td>-.212</td>
</tr>
</tbody>
</table>

\( \Delta R^2 \) (total \( R^2 = .274 \)) | .038 | .087 | .093* | .055 |

Table 4.6d: Regression Analysis for \( \Delta \) Job Related Well-being

<table>
<thead>
<tr>
<th>Step</th>
<th>( \beta )</th>
<th>( \beta )</th>
<th>( \beta )</th>
<th>( \beta )</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. T1 job related well-being</td>
<td>-.487***</td>
<td>-.525***</td>
<td>-.541***</td>
<td>-.575***</td>
</tr>
<tr>
<td>2. team status</td>
<td>-.310*</td>
<td>-.349**</td>
<td>-.374**</td>
<td></td>
</tr>
<tr>
<td>3. T1 supervisory style ( \Delta ) supervisory style</td>
<td>.345*</td>
<td>.232</td>
<td>.240</td>
<td>.112</td>
</tr>
<tr>
<td>4. T1 TRB-teamwork ( \Delta ) TRB-Teamwork</td>
<td></td>
<td></td>
<td>.429*</td>
<td>.322*</td>
</tr>
</tbody>
</table>

\( \Delta R^2 \) (total \( R^2 = .487 \)) | .237*** | .094* | .081* | .074* |

\( *= p \leq .05; **= p \leq .01; ***= p \leq .001 \)
separately were able to significantly predict $\Delta$ intrinsic satisfaction. However, the inclusion of these two variables did cause $T_1$ intrinsic satisfaction scores to become non-significant, suggesting that TRB-teamwork was able to explain some of the variance previously attributed to $T_1$ intrinsic satisfaction.

**$\Delta$Extrinsic Satisfaction:** This regression model (see Table 4.6c) was significant ($F=2.89$, $p \leq .05$) and accounted for 27% of the variance in $\Delta$ extrinsic satisfaction. Neither $T_1$ extrinsic satisfaction scores nor team status significantly predicted $\Delta$ extrinsic satisfaction. The inclusion of $T_1$ supervision and $\Delta$ supervisory style in Step 3, however, accounted for a significant amount of the variance ($\Delta R^2=.093$, $p \leq .05$), with $\Delta$ supervisory style proving to be a significant predictor ($p \leq .05$). The $\beta$ weight for this variable was positive, indicating that an improvement over time in supervisory style was related to an improvement over time in extrinsic satisfaction. In the final step of this regression, neither $T_1$ TRB-teamwork nor $\Delta$TRB-teamwork were significant predictors. However, the inclusion of these variables did cause $\Delta$ supervisory style to become non-significant, suggesting that TRB-teamwork accounted for some of the variance previously attributed to $\Delta$ supervisory style.

**$\Delta$Job-Related Well-being:** The final regression model (see Table 4.6d) was the most significant ($F=6.79$, $p \leq .001$), and accounted for 49% of the variance in $\Delta$ job related well-being. Job related well-being scores at $T_1$ were highly significant predictors of $\Delta$ job related well-being ($p \leq .001$). This $\beta$ weight was negative, indicating that those employees with lower $T_1$ job related well-being scores experienced a greater improvement in job related well-being over time than did employees with high $T_1$ scores. Team status was also a significant predictor of $\Delta$ job related well-being ($p \leq .05$ step 2, $p \leq .01$ steps 3 and 4). The $\beta$ weight for this variable was negative, and indicated that non-team areas experienced greater improvements in job related well-being over time than did team areas (as teams were coded as 1 and non-teams as 0). The inclusion of $T_1$ supervisory style and $\Delta$ supervisory style, at Step 3, also accounted for a significant amount of variance ($\Delta R^2=.081$, $p \leq .05$), although only the $T_1$ score for supervisory style proved to be a significant predictor of $\Delta$ job related well-being ($p \leq .05$). The positive $\beta$ weight indicated that employees reporting a higher $T_1$ supervisory style score also reported greater increases in job related well-being over time. However,
following the inclusion of the TRB-teamwork predictors, T1 supervisory style ceased to be a significant predictor. The final step of this model was significant, with both T1 TRB-teamwork and ΔTRB-teamwork proving to be significant predictors (p≤.05 in both cases). The directions of the β weights for these variables indicated that team members with greater TRB-teamwork scores at T1, and those who experienced a greater improvement in TRB-teamwork over time, also reported greater improvements in job related well-being over time.

The implications of these findings, along with the correlation findings, are discussed below.

**Discussion: Research Question 2**

The second research question investigated whether work characteristics, supervisory style and team processes were related to employee outcomes, following the implementation of semi-autonomous work teams. The main findings in relation to this research question are discussed below.

The preliminary correlations indicate some relationships between employee outcomes and other variables. Of particular interest to this research question are the T2 correlations, which occurred after all the semi-autonomous work teams had been formed. These results suggest that, where team members supported each other in task completion and believed in the team’s abilities, they also tended to be more satisfied and less anxious and depressed. In addition, more coaching, encouraging supervision was associated with greater satisfaction. Furthermore, more interdependent teams were related to more favourable satisfaction over employees’ immediate jobs, and a broader role breadth was associated with less anxiety and depression.

Interestingly, no variables were found to be significantly correlated with motivation at T2. Although this may be due to the small sample size, this lack of findings raises the question of whether motivation was related to factors other than those addressed in this thesis.
Taken alone, the preliminary correlations point to the importance of designing interdependent teams, enhancing team role breadth, developing appropriate supervision and promoting positive team processes, in order to develop favourable employee outcomes. These correlations, however, only provide a cross-sectional view of the teams under study and, as discussed previously, do not capitalise on the longitudinal nature of the data.

The correlations between change scores provided detail of the relationships between employee outcomes and other variables over time. These findings indicate that those employees who experienced a broadening of their team's role breadth and improvements in the coaching style of their supervisor over time also became more satisfied. In addition, team members who reported increasing autonomy over immediate production tasks also became more motivated over time. These results therefore support theoretical arguments of the employee benefits derived from improving autonomy and involvement, and providing appropriate supervision for autonomous work teams.

It is important to acknowledge, however, that the direction of causality cannot be determined through correlational analyses. Thus, although in the cases of T2 and Δscore correlations, it is tempting to infer that positive work characteristics, supervisory style and team processes caused favourable employee outcomes, the direction of causality may in fact be in the opposite direction. That is, the argument that more motivated, more satisfied, less anxious and depressed employees perceive their work environment more positively, cannot be discounted.

In addition to the above concern, correlations by their nature show bivariate relationships only, and these relationships may differ when multiple variables are considered together. The regression analyses conducted as the final stage of analyses for this research question, therefore, provide the most complete indication of variables which are related to employee outcomes over time.
Chapter 4: Team Implementation

The regression analyses showed that no significant regression model could be produced which significantly explained changes in motivation over time. It could be that case that, given a larger sample size, significant predictor variables would be uncovered. However, for the sample in this thesis, the lack of significant findings suggests that changes in motivation were affected by factors not addressed in this thesis.

The regression analyses for changes in both intrinsic and extrinsic satisfaction indicated that the strongest predictor in both these cases was the change in supervisory style between T1 and T2. Thus, in both these cases, the development of more coaching, encouraging supervisory styles was associated with improvements in satisfaction over time. There was also some evidence that TRB-teamwork affected satisfaction over time, although these predictors did not reach significance.

The final regression model, for changes in job related well-being, proved to be the most significant, and accounted for the most variance in an employee outcomes' change over time. This regression model indicated that a broader role breadth over time was related to improvements over time in job related well-being.

In addition, there was some evidence that the T1 scores for supervisory style and TRB-teamwork predicted changes in job related well-being, with T1 TRB-teamwork scores being the stronger predictor. Although these variables were entered into the regression analysis largely as control variables, these results suggest that those areas with a broader role breadth and more appropriate supervision at T1 may have had a stronger basis from which to maintain their feelings of anxiety and depression.

Furthermore, this regression equation also indicated that non-team areas experienced a greater improvement in job related well-being over time than did team areas. There was some indication of this finding in research question 1 (see p103), and the finding suggests the positive impact of introducing semi-autonomous work teams on job related well-being.

Finally, there was evidence that those employees with lower T1 job related well-being scores experienced a greater improvement in this variable over time. However, this effect is largely due to these employees having greater scope for improvements, and suggests that a ceiling effect may occur.
It was somewhat surprising that neither of the team process variables proved significant predictors in any of the above regressions. This may be due to the small sample size, or alternatively, it could be that variables which influence team processes directly influenced outcomes (see research question 3, p119, for more detail on factors affecting team processes).

It should be noted that the regression equations discussed above are limited by the sample size, which did not allow for all the variables measured to be entered together into the equation. In addition, although changes in employee outcomes were defined as the dependent variables in these regressions, there is the possibility that the direction of causality is in the opposite direction. However, the inclusion of TI scores gives conceptual support to the direction of causality being from inputs to employee outcomes, and the significance of TI scores (in relation to job related well-being) further supports this assertion. Given these limitations, however, the regression analyses do provide the clearest indication of factors which influenced changes in employee outcomes, following the introduction of semi-autonomous work teams.

In summary, this study provided cross-sectional evidence that teams with greater interdependence, more involvement in teamworking tasks, more favourable team processes and more appropriate supervision, were more satisfied and had better employee well-being. Over time, positive changes in supervisory style and teamworking role breadth were the strongest predictors of positive changes in satisfaction and job related well-being, following the introduction of semi-autonomous work teams. Finally, there was some evidence that those teams with a broader team role breadth and more appropriate supervision at TI, were better able to develop more favourable employee well-being over time.
Research Question 3: Following the Implementation of Semi-Autonomous Work Teams, are Work Characteristics and Supervisory Style related to Team Processes?

The final research question in this chapter addressed whether work characteristics and supervisory style were related to team processes, following the implementation of semi-autonomous work teams. In order to investigate this question, analysis was undertaken in the same three stages as in research question 2 (p 106). That is, firstly correlations at each timepoint were investigated, using the Preliminary Analyses. Secondly, correlations using change scores were conducted, to investigate whether changes over time in work characteristics and supervisory style were related to changes over time in team processes. Following this, regression analyses were conducted, using the same method as in research question 2 (p 110).

Preliminary Analyses

Reference was made to Tables 4.1a and 4.1b (p 92-93), in order to determine whether work characteristics and supervisory style were related to team processes at each separate timepoint. The results of these correlations are shown below.

Team Task Support: The preliminary correlations show that team task support was positively correlated with TRB-teamwork, interdependence and supervisory style, both at T1 and T2.

Team Efficacy: Tables 4.1a and 4.1b show that team efficacy was found to be related to the same variables as team task support. That is team efficacy was also positively related to TRB-teamwork, interdependence and supervisory style, again at both timepoints.

These analyses also indicated that background variables (age, sex, organisational tenure and job tenure) were not significantly correlated with either team process, at either timepoint.
The results of these correlations suggest that when teams were characterised by a broader role breadth, greater interdependence and coaching, facilitative supervision, team members also experienced greater team task support and team efficacy. However, as was discussed in relation to research question 2 (see p107), these correlations are limited as they do not allow for the investigation of changes over time.

**Correlations between Change Scores**

Thus, as discussed previously (see p108), the second stage of analysis was the investigation of correlations between changes in work characteristics and supervisory style, and changes in team processes. The results of these correlations are shown in Table 4.5 (see p109), and are summarised below.

The results shown in Table 4.5 indicate that significant negative correlations were found between team status and both team processes ($p \leq .001$ for team task support, $p \leq .05$ for team efficacy). As team areas were coded as 1 and non-team areas coded as 0, these findings indicate that non-team areas reported a greater increase in team task support and team efficacy over time than did team areas. The correlation matrix also showed that $\Delta$TRB-teamwork was positively correlated with $\Delta$team task support ($p \leq .05$). However, no other significant correlations were found in relation to team process change scores.

The results of correlations between change scores indicate that where teamworking role breadth improved between T1 and T2, improvements also occurred in team task support. Additionally, the results showed that non-team areas reported greater increases in both team processes over time than did team areas, indicating (further to research question 1, p103) that the introduction of semi-autonomous work teams was related to improvements in team functioning.

However, as was indicated in research question 2 (p108), these change score correlations do not control for differences at T1 and are bivariate in nature, thus examining pairs of variables only. Therefore, as in the previous research question,
regression analyses were undertaken, in order to examine relationships between multiple variables over time, whilst also controlling for T1 scores.

**Regression Analyses**

Two regression analyses were undertaken, using the same method outlined in research question 2 (p110). That is, the first two steps of each regression comprised of the T1 score for the dependent variable, and team status, respectively. Following this, T1 and Δ scores for work characteristics and supervisory style were offered up for inclusion in each regression model\(^3\).

The results of these regression analyses can be seen in Tables 4.7a and 4.7b. Both of the regression models were significant (F=6.97, \(p\leq.001\) for Δteam task support, F=9.38, \(p\leq.001\) for Δteam efficacy) and were able to account for 42% and 49% of the variance in Δteam task support and Δteam efficacy respectively.

The regression analyses indicated that only one variable significantly predicted Δteam processes over and above team status; namely supervisory style. Of the work characteristics variables, TRB-teamwork and interdependence showed some limited predictive ability, but were found to be insignificant when entered in combination with supervisory style.

As there were only two significant predictors (team status and supervisory style), the interaction between team status and Δsupervisory style was also investigated. This interaction was entered as a cross-product moderated regression term (Cohen and Cohen 1983) in the form of "team status \(\times\) Δsupervisory style", in the final step of each regression.

The results of these regression analyses are summarised below, in relation to each team process.

\(^3\) As was the case in research question 2 (p110), T1 and change scores for the background variables were also entered into the regression equations, but were not found to be significant predictors of either team process.
Tables 4.7a and 4.7b - Regressions predicting changes in team processes between T1 and T2.

### Table 4.7a: ΔTeam Task Support

<table>
<thead>
<tr>
<th>Step</th>
<th>( \beta )</th>
<th>( \beta )</th>
<th>( \beta )</th>
<th>( \beta )</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. T1 team task support</td>
<td>-.446***</td>
<td>-.393***</td>
<td>-.553***</td>
<td>-.584***</td>
</tr>
<tr>
<td>2. Team status</td>
<td>-.376**</td>
<td>-.387***</td>
<td>-.443**</td>
<td></td>
</tr>
<tr>
<td>3. T1 supervisory style Δ supervisory style</td>
<td>.362*</td>
<td>.404*</td>
<td>.358*</td>
<td>.330*</td>
</tr>
<tr>
<td>4. Team status x Δ supervisory style</td>
<td></td>
<td></td>
<td></td>
<td>.105</td>
</tr>
</tbody>
</table>

\( \Delta R^2 \) (total \( R^2 = .421*** \)) | .199*** | .138** | .079* | .005 |

### Table 4.7b: ΔTeam Efficacy

<table>
<thead>
<tr>
<th>Step</th>
<th>( \beta )</th>
<th>( \beta )</th>
<th>( \beta )</th>
<th>( \beta )</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. T1 team efficacy</td>
<td>-.427***</td>
<td>-.420***</td>
<td>-.642***</td>
<td>-.708***</td>
</tr>
<tr>
<td>2. Team status</td>
<td>-.181</td>
<td>-.247*</td>
<td>-.434**</td>
<td></td>
</tr>
<tr>
<td>3. T1 supervisory style Δ supervisory style</td>
<td>.620***</td>
<td>.724***</td>
<td>.510***</td>
<td>.405**</td>
</tr>
<tr>
<td>4. Team status x Δ supervisory style</td>
<td></td>
<td></td>
<td></td>
<td>.338*</td>
</tr>
</tbody>
</table>

\( \Delta R^2 \) (total \( R^2 = .489*** \)) | .183*** | .033 | .220*** | .054* |

(* = p<.05; ** = p<.01; *** = p<.001)

### Fig 4d: Interaction Effect for ΔTeam Efficacy

![Graph showing interaction effect for ΔTeam Efficacy](image)

Teams

Non-teams

A = less favourable change in supervisory style (mean \( \Delta = 0.00 \))

B = more favourable change in supervisory style (mean \( \Delta = 1.16 \))
\textbf{ΔTeam Task Support:} The regression model for Δteam task support (see Table 4.7a) indicated that both T1 team task support and team status were able to explain significant amounts of the variance in Δteam task support ($R^2 = .199$, $p \leq .001$ and $R^2 = .138$, $p \leq .01$ respectively). In the case of T1 team task support, the $\beta$ weight for this predictor was negative, indicating that those employees reporting a lower T1 score experienced a greater increase in team task support over time. The $\beta$ weight for team status was also negative, which indicated that non-team areas experienced a greater increase in team task support over time than did team areas. In step 3 of the regression, both T1 supervisory style and Δsupervisory style were significant predictors of Δteam task support ($p \leq .05$ in both cases). The positive $\beta$ weights for these two predictors indicates that those employees with higher T1 supervisory style scores, and with greater improvements in supervisory style over time, also experienced greater increases in team task support over time. The final step of this regression indicated that the interaction between team status and Δsupervisory style was not significant.

\textbf{ΔTeam Efficacy:} The regression model for Δteam efficacy (see Table 4.7b) suggested a similar pattern of results as that found in relation to Δteam task support. That is, employees with lower T1 team efficacy scores, and employees in non-team areas, both experienced significantly greater improvements in team efficacy over time. Also, as with Δteam task support, it was found that employees with higher T1 supervisory style scores, and with greater improvements over time in supervisory style, also reported greater increases in team efficacy.

In addition, the interaction between team status and Δsupervisory style was able to explain a significant proportion of the variance in Δteam efficacy ($R^2 = .054$, $p \leq .05$). In order to investigate the form of this interaction, sub-group analysis was undertaken. That is, employees were split into two equal groups, on the basis of Δsupervisory style scores, and these groups were then split on the basis of team status. The resulting Δteam efficacy scores for each of these four subgroups were plotted as is shown in Figure 4d.\footnote{It is acknowledged that it would be preferable to split employees into three equal groups, so that comparisons could be made between groups more dispersed from the mean. However, as the sample size is small, it was not possible to undertake a three-way split and still retain sufficient subgroup sizes.}
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Figure 4d shows the two effects found previously for team status and $\Delta$supervisory style separately. That is, non-team areas experienced more positive changes in team efficacy than did team areas (irrespective of changes in supervisory style) and changes in supervisory style were positively related to changes in team efficacy (irrespective of team status). Additionally, Figure 4d indicates that changes in team efficacy were affected by changes in supervisory style to a greater extent in team areas than was the case for non-team areas. That is, the size of change in supervisory style had a relatively small impact on the size of change in team efficacy, for non-team areas. By comparison, for team areas, the size of change in supervisory style had a relatively greater impact on changes in team efficacy. More specifically, for both team and non-team areas, more favourable changes in supervisory style were associated with similar (slightly positive) changes in team efficacy. By comparison, where changes in supervisory style were less favourable, non-team areas still reported slightly positive changes in team efficacy, but team areas reported, on average, a decrease in team efficacy. This is not to say that supervisory style caused a decrease in team efficacy for these employees, but rather, suggests that where supervisors become more coaching and facilitative over time, this reduced the likelihood of deterioration in team efficacy for those teams which had been formed for longer (see research question 1, p103).

The regression analyses, along with correlational analyses for research question 3 will now be discussed.

Discussion: Research Question 3

The third research question investigated whether work characteristics and supervisory style were able to predict team processes, following the implementation of semi-autonomous work teams.

It was found that, at T1 and T2 separately, teams characterised by a broader team role breadth, greater interdependence, and more encouraging, facilitatory supervision also reported more favourable team processes.
In addition, the results of correlations between change scores suggested that teams experiencing a broadening of their role breadth over time also reported improvements over time in team task support.

There was also evidence in support of the findings in research question 1 (p103), which indicated that non-team areas experienced a greater increase in both team processes over time than did team areas. This latter finding was also discovered in the regression analyses, and suggests that the implementation of semi-autonomous work teams was associated with more positive team functioning.

The regression analyses suggested that changes in both team processes between T1 and T2 were positively related to changes in supervisory style. This suggests that improving the coaching, facilitatory style of supervisors enabled favourable team processes to be developed. Thus, it appears to be the case that where supervisors became more able to encourage and guide their subordinates, these employees experienced more task support within the team and had more confidence in the abilities of their team.

The regression analyses also found that T1 team process scores and T1 supervisory style scores were able to significantly predict changes in team processes. Although these variables were included primarily to control for T1 differences, the implications of these findings are worth discussing briefly.

Firstly, in both cases, it was found that employees reporting a lower T1 team process score experienced a greater increase in team processes over time. This is likely to be due to these employees having more scope for improvements, whereas those employees reporting highly favourable team processes at T1 may have reached a "ceiling" level.

Secondly, those employees reporting a greater T1 supervisory style score were found to experience a greater increase in both team processes over time. This seems to suggest that where supervisors had a more appropriate style for autonomous teamworking at T1, this style "primed" their subordinates to be better able to develop task support and confidence in their teams.

Finally, it was found that, for team areas, changes in team efficacy were more responsive to changes in supervisory style, as compared to non-team areas. This finding
may be a result of supervisory style being only one of a number of other changes which were occurring for the non-team areas between T1 and T2. As a result, the change to teamworking itself seems to have had a greater impact than changes in supervisory style. By comparison, whether supervisors improved to a small or large extent between T1 and T2 had a relatively large impact on changes in team efficacy for team areas. It could be the case that where these supervisors became more coaching and encouraging over time, this enabled employees in established teams to better maintain positive beliefs in themselves. These results, therefore, suggest that, although the development of appropriate supervision is an important factor to consider when implementing semi-autonomous work teams, it is an even more important consideration for the continued positive functioning of established teams.

In summary, there was cross-sectional evidence that a broader role breadth, greater interdependence and more appropriate supervision were related to positive team processes. Over time, positive change in supervisory style was the strongest predictor of positive changes in both team task support and team efficacy, over and above the implementation of semi-autonomous work teams. In addition, those supervisors who had a more coaching style at T1, may have better enabled their subordinates to develop positive team processes over time. Finally, team areas were more responsive to the development of a more appropriate supervisory style over time than were non-team areas.
Summary: Chapter 4

This study examined the impact of introducing semi-autonomous work teams in a manufacturing environment. The study addressed the effects of implementing teamworking on work characteristics, supervisory style, team processes and employee outcomes. In addition, the relationships between these groups of variables were investigated. The main findings from these investigations are summarised below.

Firstly, it was found that the introduction of semi-autonomous work teams between T1 and T2 was generally beneficial to employees. More specifically, the newly formed teams reported that they became more involved in a wider range of job tasks, were more interdependent, supported each other to a greater extent and felt more satisfied with their jobs. There was also some evidence that these employees had greater autonomy, greater beliefs in the abilities of the team, and were less anxious and depressed, following the adoption of teamworking. Therefore, overall it appears that working in semi-autonomous teams was associated with benefits in terms of work characteristics, team processes and, to a lesser extent, employee outcomes.

However, there was also an indication that it may be difficult to maintain such benefits over time. The original teams reported some decrease in their involvement in teamwork related tasks, the extent to which they supported each other and believed in the team, and their job related well-being. Although these decreases were not large, and these older teams continued to function largely effectively, these results do suggest that, over time, there may be a natural decline in the benefits associated with teamworking.

Turning to the relationships between variables, it was found that positive changes over time regarding involvement in teamwork related tasks and supervisory style were the best predictors of favourable changes in satisfaction and employee well-being over time. Thus, although these was also cross-sectional support for favourable team processes and interdependence being positively associated with employee outcomes, it appears that broadening the tasks which teams were involved in, and developing more coaching supervision were the most important factors in improving satisfaction and well-being over time. In addition, these was some evidence that those employees with more
coaching supervisors and a broader role breadth at T1 were better able to develop positive levels of well-being over time.

Finally, the results of this study also showed that, over and above the introduction of teamworking, developing a more coaching supervisory style was the best predictor of improvements in team task support and team efficacy over time. Furthermore, those supervisors who had a more coaching style at T1 may have better enabled their subordinates to develop positive team processes over time. In addition, it was found that the longer established teams were more responsive to changes in supervisory style than were the more recently formed teams. Thus, although there was some cross-sectional evidence that interdependence and involvement in teamwork related tasks were also positively associated with team processes, supervisory style was the most important factor which influenced the development, and the continued maintenance, of favourable team processes.

The theoretical and practical implications, along with the methodological issues which have been touched on in this chapter, will be discussed in more depth in Chapter 7: Thesis Discussion (p220).

The next chapter in this thesis focuses on the role of the supervisor in more detail, through the investigation of supervisors' perceptions of teamworking and the relationships between these perceptions and supervisory style.
Chapter 5: Supervisors' Perceptions of Teamworking

This chapter investigates the role of the supervisor in more detail, by exploring supervisors' perceptions of effective teamworking. More specifically, the chapter explores the factors that supervisors perceive to be important for effective teamworking, and investigates whether such perceptions are related to supervisory style. These issues are particularly interesting given the importance of supervisory style in affecting team processes and employee outcomes found in the previous chapter. In order to investigate these issues, a cross-sectional study was undertaken at T2, using repertory grid technique.

Thus, this chapter addresses research questions 4 and 5, as follows:

(4) What are the factors which supervisors perceive to be important for effective teamworking?

(5) Are these perceptions related to supervisory style?

The chapter begins with a brief introduction of Personal Construct Theory and the repertory grid technique. Following this, the methodology for this study is outlined. The repertory grid analyses for each research questions are then presented as follows. Firstly, in order to address research question 4, the content of elicited constructs is examined and the structure of supervisors' construct systems are investigated. Following this, comparisons are made between supervisors' repertory grids and their supervisory style, in order to address research question 5. A discussion is given following each research questions, before the chapter concludes with a summary of the main findings.
Chapter 5: Supervisors’ Perceptions of Teamworking

Introduction

The first section of this chapter presents an introduction to Personal Construct Theory and the repertory grid technique. It is not intended that this section should provide an exhaustive literature review of these issues, but rather give an overview of the repertory grid method and the theoretical framework from which it was derived.

Personal Construct Theory

The repertory grid technique was developed by George Kelly, from the Personal Construct Theory (PCT) he proposed during the 1930’s. Kelly’s work in clinical therapy led him to adopt a constructivist approach, whereby events are interpreted by the individual, and the modification of these interpretations (here through therapy) would affect future interactions with the world (Gammack and Stephens 1994). Kelly (1955) believed that individuals acted like “scientists”, driven by the need to make sense of the world and themselves. As such, it is argued that individuals construct theoretical frameworks about the world, which are used to develop hypotheses through which they anticipate events (Fransella 1995). Individuals then “test” these hypotheses through the events they experience. Depending on whether events confirm or disconfirm their anticipations, individuals may change their construction system over time (Fransella 1995, Bannister and Fransella 1986). In addition to anticipating events, individuals’ constructions of the world also govern their behaviour and allow personal meanings about themselves and the world to be derived. In summary,

“Kelly believed that we strive to make sense out of our universe, out of ourselves, out of the particular situations we encounter. To this end each of us invents and reinvents an implicit theoretical framework... In terms of this system, we live, anticipate events, determine behaviour, ask our questions. It is in terms of the same system that we evaluate outcome and elaborate changes in the interpretive system itself. Thus we are ‘scientists’, who derive hypotheses (have expectations) from our theories (our personal construing). We subject these hypotheses to experimental test (we bet on them behaviourally, we take active risks in terms of them). We observe the results of our experiments (we live with the outcomes of our behaviour). We modify our theory (we change our minds, we change ourselves) and so the cycle continues.” (Fransella and Bannister 1977)

Kelly’s PCT is encapsulated in what he refers to as the fundamental postulate and is further elaborated through eleven corollaries. The fundamental postulate states that

“a person’s processes are psychologically channelised by the ways in which he anticipates events.” (Kelly 1955, p46)
Thus, individuals’ thought processes are psychologically focused, depending on the way in which they anticipate events (Gammack and Stevens 1994). In addition, the main corollaries, as described by a variety of researchers (e.g. Fransella and Bannister 1977, Bannister and Fransella 1986, Gammack and Stephens 1994, Easterby-Smith, Thorpe and Holman 1996), argue that individuals: construe or put interpretations on events (construction corollary); organise and categorise these constructions (organisational corollary); sometimes have similar constructions to others (commonality corollary) but generally differ from others in their construction of events (individual corollary); and may be influenced by how they feel others view them (sociality corollary).

Individuals, therefore, develop a system of “constructs” or bi-polar continuums which are used to derive meaning and order. These constructs are specific to a particular context (range corollary). For example, the construct friendly-aggressive may form a meaningful part of an individual’s construction system in relation to the significant people in their life, but is unlikely to be a meaningful construct in relation to alternative types of furniture. These constructs are not simply verbal labels, but represent significant meaning and associations from the perspective of the individual. Furthermore, these constructs may be “core” (i.e. relatively unchangeable and impermeable) or “peripheral” (i.e. more changeable over time and more easily modified), and may also vary in their specificity.

**Repertory Grid Technique**

Kelly developed the repertory grid technique (originally known as the Role Construct Repertory Test) as a method to

> "identify the personally meaningful distinctions with which a view of the world is constructed"  
> (Gammack and Stephens 1994)

Thus, a completed grid forms a representation of the way a person thinks about the topic of interest and more specifically is

> "a set of representations of the relationships between the set of things a person construes (the elements) and the set of ways that person construes them (the constructs)."  
> (Bell 1990)

Broadly, the repertory grid technique requires participants to elicit constructs about a particular topic and to rate “elements” on those constructs. The elements in a repertory
grid are a set or subset of things within a context, and may be real things (for example, significant people in the participants life, a set of different careers) or more abstract categories (for example, “a happy person”, “a threatening person” or “a career I would like”, “the career my parent has”). The element set may be provided by the researcher, by the participants or by a relevant third party. The choice of elements depends on the context under study, but should be meaningful to the topic of interest and be representative of the pool from which they are drawn (Fransella and Bannister 1977).

Following the selection of elements, constructs are elicited from participants, by comparing and contrasting the elements. There are a variety of methods for construct elicitation, though the traditional method is triadic presentation, whereby participants are asked how two of the elements are similar to each other and different from a third. Fransella and Bannister (1977) outlines other methods of construct elicitation including: dyadic presentation (comparison of two elements); eliciting a similarity between two elements then adding each remaining element until a difference is stated; and role playing with a selection of elements. Additionally, the selection of elements for comparison may be random or follow some kind of pattern, for example comparing elements 1, 2 and 3, followed by elements 2,3 and 4 etc., or always including a particular element (most often “myself”). In addition, “laddering” and pyramiding techniques can be adopted in order to elicit superordinate and subordinate constructs respectively (Landfield 1971, Fransella and Bannister 1977).

Following the elicitation of constructs, the participant is asked to rate all elements along each construct. Again, this process may be undertaken in a variety of ways. For example, participants may rate elements along each construct immediately after it is elicited. Alternatively, participants may rate elements at the end of the process, after all constructs have been elicited. The rating of elements may be in the form of a numbered scale, bivariate categories (eg. ticks and crosses) or on some other “fuzzy” rating scheme (Bell 1988). In some cases, constructs and elements may be elicited jointly (eg. Keen and Bell 1981), with each new element leading to a new construct and each new construct leading to a new element. The elements and constructs which form the repertory grid are usually recorded in a table, with the columns being elements and the rows being constructs.
Thus, overall, the repertory grid technique

"is an attempt to stand in others shoes, to see their world as they see it, to understand their situation, their concerns" (Fransella and Bannister 1977)

Applications of Repertory Grid Technique

Up until the 1960's the use of repertory grids was confined largely to clinical settings (Easterby-Smith, Thorpe and Holman 1996). However, since this time their use has expanded to other fields, and the technique is increasingly used in organisational psychology.

Within organisational psychology, Jankowicz (1990) categorises the uses of repertory grids into two categories. Firstly, grids may be used to provide information which feeds into conventional techniques, for example job analysis (Smith 1986), performance appraisal (Stewart and Stewart 1982, Parker, Mularkey and Jackson 1994), training needs analysis (Smith and Stewart 1977), and employee selection requirements (Easterby-Smith 1980, Anderson 1990).


Advantages and Disadvantages of Repertory Grid Technique

As can be seen from the wide range of uses highlighted above, one of the main advantages of the repertory grid technique is it's flexibility (Neimeyer and Neimeyer 1981, Jankowicz 1990). In addition, the technique is useful in articulating constructs which may not arise during traditional interviews, uncovering nebulous relationships between constructs and providing a visual representation which can then be used to aid
communication and focus future analysis (Easterby-Smith et al 1996). Furthermore, Neimyer and Neimeyer (1981) note that repertory grids are applicable to longitudinal and developmental research, are able to tap into multiple levels of construing and elicit individualistic data in a quantifiable form. Most importantly, the repertory grid is a representation of the participant's world, rather than being constrained by a framework imposed by the researcher (Gammack and Stephens 1994, Easterby-Smith et al 1996).

However, the repertory grid technique is open to researcher bias and involves a number of choices (eg element set, form of construct elicitation, rating scale) all of which may influence the resulting grid (Fransella 1977). Furthermore, some researchers question whether repertory grids really reflect how people think and behave (Blowers and O'Connor 1995) and the evidence linking grid results to objective variables is somewhat sparse (Adams-Webber 1979). The largest criticism in recent years, however, is of the increasing use of statistical techniques in the interpretation of repertory grids (eg. Fransella and Banister 1977, Beail 1985, Bell 1988, Phillips 1989). Statistical analyses such as cluster analysis, principal components analysis and summary measures of complexity, have been used in order to study relationships between elements, relationships between constructs, relationships between constructs and elements, and the underlying structure of participants' construing system (Bell 1990). These analyses make assumptions that

"statistical relationships within the grid reflect psychological relationships with a person's construing system" (Fransella and Banister 1977)

and as such, there is the possibility of inferring spurious relationships from statistical repertory grid data. The debate concerning the use of statistics continues, with some researchers believing that any statistical analysis inherently distances repertory grids from PCT theory, stating for example that

"grid method is a Frankenstein's monster which has been rushed away on a statistical and experimental rampage of its own, leaving construct theory neglected, stranded high and dry, far behind." (Beail 1985)

More often, however, researchers agree that the appropriate and sensitive use of statistical techniques can help to develop guiding frameworks for the analysis of grids (Taylor 1990, Blowers and O'Connor 1995). Bell (1990), for example, highlights the need for reliability and validity in the collection, analysis and interpretation of grid data, in order to minimise the potential for inferring inaccurate meanings from grid data.
The study presented in this chapter uses both statistical and descriptive approaches to investigate supervisors' perceptions of effective teamworking. In the following section, the method used in this study is described, before the analyses used to examine research questions 4 and 5 are presented.

Method

This repertory grid study was conducted at T2. As was discussed in Chapters 3 and 4 (see p73, p84), by this timepoint semi-autonomous work team implementation had been completed within the department. In addition, supervisor training and development work had been undertaken in order to develop appropriate styles of supervisory behaviour.

At T2, eight supervisors were employed in the department. Seven of these supervisors worked on a specific shift, supervising one or more teams on that shift. Thus, these supervisors were responsible for the following groups of shopfloor employees: AMCL A shift; AMCL B shift; 35mm/16mm/DPP A shift; 35mm/16mm/DPP B shift; Slitting/Special Products A shift; Slitting/Special Products B shift; Night Shift. The final supervisor was responsible for both the A and B shifts of the Roll Film team. This supervisor worked "day shift" hours, which overlapped with part of both A and B shifts' working hours. The eight supervisors from the department are denoted, throughout this chapter, as supervisors A to H.

Two weeks prior to data collection, supervisors received a letter from the author, which outlined the purpose of the research, and emphasised confidentiality. Each supervisor attended an hour-long repertory grid interview session. At the start of each session, it was explained that the interviews would focus on factors which participants perceived to be important for effective teamworking. The focus on perceptions was emphasised, and participants were reassured that there were no "right" or "wrong" answers.

1 It is important to note that the terms "autonomous work team" and "semi-autonomous work team" were not used by supervisors. Although these concepts formed the underlying rationale behind adopting teamworking in the department, these terms were not specifically adopted. Therefore, throughout this chapter, the general term "teamworking" is used, and refers to the autonomous teamworking initiative in place in the department.
Participants were then familiarised with the repertory grid technique through a brief worked example, comparing three different modes of transport. Following this, consent was gained to record the interview using audio tapes.

The elements for the repertory grids were chosen by the author, and consisted of eight of the nine teams from the department. It was decided to exclude the “Night Shift team” from the element set, as the majority of supervisors had little experience of this team. It was established, however, that the elements used would still be meaningful for the night shift supervisor, as this individual had experience of working on the day shifts, and also attended daytime meetings about team development. A final element was included in the repertory grids. This ninth element was defined by the author as “an ideal team”, and was intended to reflect participants’ preferred position on elicited constructs.

Construct elicitation was undertaken using element dyads. That is, pairs of elements were presented and participants were asked to “Name a way these two teams are different, which you feel influences their effectiveness”. Participants developed construct poles from the stated difference, and rated all elements on the resulting construct. In order to aid participants’ understanding, the construct poles were written onto cards, and were placed at either end of a 7-point scale (also constructed from card). Nine element cards were also used, one for each element, and participants rated these elements by placing the cards along the 7-point scale. This process was then repeated with another element dyad. It should be noted that dyadic element presentation was chosen over triadic presentation, as this was seen as being more straightforward for participants to understand.

The selection of element dyads by the author was initially random. However, as the elicitation process evolved, the presentation of pairs became more strategic, in an attempt to both capitalise on supervisors’ knowledge of different teams, and to produce new constructs that differentiated between teams which had been rated similarly.

At the end of the repertory grid session, participants were asked to rate all the elements on a final construct, provided by the author. This construct, “more effective-less effective” was designed to reflect supervisors’ overall perceptions of effective teams in the department. An example of a completed repertory grid can be seen in Figure 5.1.
**Figure 5.1: An Example of a Completed Repertory Grid**

<table>
<thead>
<tr>
<th>Construct (1)</th>
<th>35mm</th>
<th>16mm</th>
<th>DPP</th>
<th>Slitting</th>
<th>Spec. Prods.</th>
<th>AMCL A</th>
<th>AMCL B</th>
<th>Roll Film</th>
<th>Ideal Team</th>
<th>Construct (7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confident team members</td>
<td>2</td>
<td>5</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>4</td>
<td>Not so confident team members</td>
</tr>
<tr>
<td>Team members involved, interested</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>Team members not involved, interested</td>
</tr>
<tr>
<td>Encouraging supervisor style</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>7</td>
<td>7</td>
<td>4</td>
<td>4</td>
<td>7</td>
<td>1</td>
<td>Directive supervisor style</td>
</tr>
<tr>
<td>Team members open to change</td>
<td>7</td>
<td>3</td>
<td>1</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>6</td>
<td>1</td>
<td>Team members set in their ways</td>
</tr>
<tr>
<td>Team members get on well together</td>
<td>3</td>
<td>5</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>Team members don't get on well together</td>
</tr>
<tr>
<td>More effective</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>Less effective</td>
</tr>
</tbody>
</table>
This study addresses the factors which supervisors perceive to contribute to effective teamworking. As such, the focus for the analysis of supervisors’ repertory grids was primarily on the constructs which were elicited, and the relationships between these constructs. In addition, in order to identify the preferred position on each construct, supervisors’ ratings of the “ideal team” were referred to.

It is likely that supervisors perceived individual teams differently to some extent, depending on their experiences of each team. However, as the focus of this study was on the elicited constructs, detailed analysis of elements (ie. individual teams) was not undertaken. Supervisors’ ratings of individual teams were, however, compared on the final construct (“more effective-less effective”), using Kendall’s coefficient of concordance. This test indicated that supervisors significantly agreed on the rank ordering of teams along this construct (W=0.57 (corrected for tied rankings), p≤.001). This suggests that, although supervisors may have differing experiences of individual teams, overall the supervisors perceived the same teams as being more effective, moderately effective and less effective.

The analysis of constructs was undertaken in three stages. In the first stage, the content of constructs was examined. That is, the types of factor which supervisors perceived to be important for effective teamworking were investigated. In addition, the similarities and differences between the content of each supervisors’ construct set was examined.

The second stage of analysis focused on the structure of constructs. Principal components analysis was used to examine the underlying structures in each supervisor’s repertory grid. In addition, the similarities and differences between each grid’s structure were investigated. These stages of analysis were used to address research question 4.

In the final stage of analysis, which focuses on research question 5, various characteristics of supervisors’ repertory grids (as developed in the first two stages of analysis) were compared against supervisory style, as rated by team members at T2.
Research Question 4: What are the factors which supervisors perceive to be important for effective teamworking?
Research question 4 was considered through the examination of both the content and structure of supervisors’ constructs.

Content of Constructs
Supervisors elicited an average of eight constructs (excluding the final “more effective-less effective” construct), with completed grids ranging from five to eleven elicited constructs. The constructs elicited by each supervisor are shown in Appendix B (p257), along with their rating of the ideal team on each construct.

The overall total of 63 constructs were categorised by the author, using a grounded theory approach (eg. Glaser and Strauss 1967, Henwood and Pidgeon 1992). That is, the categories were not pre-formed from a theoretical basis, but were allowed to emerge from the data itself. Thus, as each construct was examined, an initial set of categories developed. These categories were re-examined and modified, as each new construct was added, until a categorisation was formed which included all constructs. This categorisation process resulted in the formation of five categories, namely: Work Environment and Job Characteristics; Team Composition; Team Processes; Team Member Attitudes and Orientation; and Supervision. In order to ensure the reliability of these five categories, six work psychology experts were also asked to categorise the constructs. It was found that there was consensus between the author and experts in 93% of cases, suggesting that the five categories were indeed reliable. The categorisation of all constructs into these five categories is shown in Appendix B (p253).

These five categories are described in more detail below. Within each category there were cases where more than one supervisor elicited similar constructs. These constructs cannot be seen as identical, as the same construct meaning cannot necessarily be inferred from similarly worded constructs. However, this acknowledged, the taped interviews indicated that these constructs could be seen as referring to the same broad topic.
Chapter 5: Supervisors' Perceptions of Teamworking

The description of categories also includes supervisors’ ratings of the ideal team, and illustrative quotations from the taped interviews. Following these descriptions, differences between the content of supervisors’ constructs are examined.

Work Environment and Job Characteristics

The first category contained constructs which related to the environment in which teams worked, and the characteristics of jobs within teams.

The most popular topic within this category were constructs relating to the variety of tasks teams had (e.g. “variety of tasks-lack of variety”, “wide range of tasks-narrow range of tasks”), and four supervisors elicited such constructs. Within this group, two supervisors indicated that a wider breadth of tasks was preferential. For example, Supervisor F stated that

“having more variety has made the job more interesting for people. Particularly being able to do other things than just producing the actual film”.

However, the remaining supervisors rated the ideal team as being closer to the middle of their constructs, suggesting that too much variety could be detrimental. Supervisor D, for example commented that

“you need a variety of jobs, but you can have too much and get spread a little too thin”.

Three supervisors mentioned the stability of work demands as a factor which could affect team effectiveness (e.g. “consistent work-intermittent work”, “consistent workload-variable workload”). In two of these cases, supervisors stated that it would be preferential to have a continuous, stable level of work, for example

“Its really a consistency thing. You get into a habit of performing at a level but in some areas you have to turn the wick up and down all the time, and that can be quite hard to manage.”(Supervisor D)

The third supervisor, whilst acknowledging that more rather than less stability was favourable, noted that

“when the work demands go up and down sometimes people go to work in another area, and that can be good for them. They get to see the bigger picture.” (Supervisor G)
Two further topics within this category were each elicited by two supervisors. Firstly, two supervisors mentioned the technical nature of machinery used in teams (eg. "high tech machines-low tech machines"). In both cases, supervisors agreed that more high-tech machinery was preferential. Secondly, two supervisors mentioned the interdependence of the team’s tasks (eg. "work together-work separately"), in each case stating that the ideal team should have high interdependence. Whilst rating teams on his interdependence construct, for example, Supervisor H commented that "If they get a big batch of work thrown at them, these teams can work together to get it out. In some areas you can't do that, because of the way the area and machines are set up."

Four final constructs were related to this category, each elicited by only one supervisor. These constructs referred to the physical demands of the job, the reliability of machinery, the number of products teams produced, and the extent to which the teams were required to interact with other areas in the department. Here, supervisors stated, respectively, that less physically demanding jobs, more reliable machines, producing several products and greater interaction with other areas of the department were preferential for effective teamworking.

**Team Composition**

The second category contained constructs which related to the composition of the team. Three topics were revealed, each referred to by at least two supervisors.

Firstly, five supervisors stated that team tenure was a factor that could affect team effectiveness (eg. "newer team-older team", "shorter time as a team-longer time as a team"). Three of these supervisors agreed that the ideal team would be one which had been formed for a longer time, stating for example

"These people are a more settled crew – because they've been together for a longer period."

(Supervisor G)

However, the remaining two supervisors, whilst acknowledging that time is needed to develop effective team functioning, suggested that an overly long team tenure could be detrimental, and as such, rated the ideal team as closer to the middle of their constructs. Supervisor E for example noted that

"The problem with some areas is that they're very well set in their ways and you can't produce a lot of new things in there"
Secondly, two supervisors elicited constructs relating to the size of the team (eg. "larger team-smaller team"). In each case, a medium size team was seen as preferential, with disadvantages being associated with both small teams and larger teams. A comment made by Supervisor D highlights this perception;

"...if the team's too big, you can get little cliques within the team - groups within the group. If its small, its easier for the team to bond, but if its too small then the team gets too tight and its hard if you want to change anything or introduce a new member."

Finally, four supervisors mentioned issues relating to the selection and development of members in the team (eg. "specifically selected for teamworking-best of the rest", "formal team development-poor, lapsed team development"). In each case, it was felt that teams would be more effective if team members had been specifically selected for teamworking, and teams were more effective if they had received formal teamworking training and development. However, the comments made in relation to this topic reflected the manner in which teams had been implemented in the department. Supervisor B for example noted that

"Ideally it's best if individuals are specifically selected for teamworking, but that's not how it worked out here. Only the first teams were selected."

Team Processes

The third category of constructs were those which related to team processes and relationships between team members.

The topic mentioned the most in this category were constructs relating to how well team members get on with each other, and four supervisors elicited such constructs (eg. "team members get on well-team members don't get on well", "get on as a group-don't get on as a group"). On the whole, it was agreed that the ideal team would be one where team members get on very well together. Supervisor A for example said that

"sometimes there's bitchiness and backstabbing - people fall out over petty arguments. When you have this, then people can't get on with doing the work, and there's a bad feeling in the team".

However, one supervisor, whilst agreeing that team members need to get on with each other, did note that

"If they're too close knit and 'matey', then it's sometimes hard work for us to keep their minds on the job in hand." (Supervisor G)
Three supervisors mentioned the extent to which team members trusted and supported each other (eg. "good team support-poor team support"). In each case, it was agreed that more effective teams were those where team members did support and trust each other. Supervisor C for example stated that

"There needs to be support – knowing that the others will help you if you get stuck or if your machine has a problem."

Five further constructs fell within this category, each elicited by one supervisor only. Thus, supervisors also mentioned how well team members communicated with each other, whether team members were honest with each other, whether team members shared tasks and responsibilities, the extent to which shifts cooperated with each other, and the extent to which teams cooperated with other teams. In each of these cases, the ideal team was rated as having a more positive incidence of each of these processes (ie. better communication, more honesty, greater sharing of tasks, more cooperation across both shifts and teams).

**Team Member Orientation and Attitude**

The fourth category was concerned with the attitudes and orientation towards teamworking that were held by individual team members. As these constructs were individual in focus, supervisors rated the extent to which teams, as a whole, contained team members with the relevant attitudes and orientations.

Three supervisors stated that team effectiveness would be influenced by the extent to which team members held a team focus, rather than an individual focus (eg. “working as a team towards goals-working as individuals towards goals”, “working for team betterment-working for individual betterment”). In all cases, supervisors agreed that more effective teams were those which contained members who had a team rather than an individual focus. Supervisor E for example noted that

"there's always individuals who are seeking recognition for themselves, rather than doing the job the best they can for the team – that goes against what teamworking is about really."

Three supervisors also mentioned the degree to which team members were flexible in terms of working in other teams (eg. “team members are flexible-team members are
Two of these supervisors felt that more effective teams were those which had flexible team members. However, one supervisor did state that too much flexibility may be detrimental, in taking the focus away from the team. This supervisor also noted the potential conflict between management’s requirements, stating that

"we want people to be responsible for producing a particular group of products, but at the same time we want to get flexibility between the teams. It's a difficult thing for some people to take in." (Supervisor D)

The confidence of team members was also stated as a factor affecting team effectiveness, and was elicited by three supervisors (eg. “team members confident in own abilities-team members nervous, don’t believe in own abilities”). One of these supervisors felt that the ideal team would be one where team members were more confident, commenting that

"you need people to be confident in their abilities otherwise no one will make decisions." (Supervisor E)

However, the other supervisors rated the ideal team as being in the middle of their constructs, and suggested that problems may arise if team members are too confident. A statement made by Supervisor B highlights this point:

"You need some confidence, otherwise people daren’t have a go at new things and need to be pushed all the time. But if people are too confident, it can be difficult to get them to change - they get set in their ways and feel they know best. In the middle, people see things as a challenge and will have a go and be open to new ideas."

Finally in this category, ten constructs were elicited, which were broadly related to team member orientation. Each of these constructs was unique to one supervisor, but they were all broadly concerned with the extent to which team members thought and behaved in a manner appropriate for autonomous teamworking. Thus, this group of constructs included such aspects as whether team members had feelings of ownership over their jobs, were open to change, took initiative, were interested and involved, and were willing to take on new tasks and responsibilities. In each case, the ideal team was rated as having more appropriate behaviours and beliefs for autonomous work teams (eg. felt greater ownership, more open to change, took more initiative, more involved and interested, more willing to take on new tasks).
The following quotations highlight the perception that appropriate behaviours and beliefs were important:

"It's good if team members are involved and interested. They're more aware of what's going on in the department and they have an interest in the wider picture." (Supervisor B)

"The whole concept we're trying to move to is that people are owners of their own jobs. Some people have now got it, but in some places they still don't appreciate the full picture of where we're trying to get." (Supervisor D)

"Some team members are prepared to take things further, phoning planning and things like that. They'll try and sort the problem out themselves if supervisors aren't there." (Supervisor F)

**Supervision**

The final category of constructs concerned the way in which teams were supervised.

Three supervisors mentioned aspects relating to the style of supervision (eg. "encouraging supervisor style-directive supervisor style", "supervisor lets team manage own jobs-supervisor tells team what to do"). Two of these supervisors felt that the ideal team would be one where supervisors were encouraging, less dictatorial, and allowed team members to manage their own jobs. The remaining supervisor, whilst acknowledging that teams needed encouragement and autonomy, noted that

"Teams do still need rules. It can be seen as nit-picking but you can be too slack over rules, and there does need to be some order, otherwise the team just does what it likes" (Supervisor E)

Two supervisors also elicited constructs relating to the amount of direct support teams received from supervisors (eg. "more supervisor support-less supervisor support"). One supervisor felt that less direct support was preferential, as it promoted the development of team self-management. This supervisor (A) commented that

"The ideal is to have less support. Basically, they should be able to get on with their job and we're just there if for whatever reason they can't do it, or to take away the obstacles."

However, the other supervisor rated the ideal team as being closer to the middle of their construct, noting that

"teams sometimes need active support and you have to step in to help. But if there's too much it interferes with empowerment, so the ideal is really somewhere in the middle" (Supervisor H)
One final construct was also elicited, which related to the stability of supervision over time. This supervisor (G) stated that it was preferential for teams to have one supervisor for a longer time period of time, rather than several supervisors for short time periods, as this allowed a relationship to build up between team members and the supervisor.

Differences in the Content of Supervisors’ Constructs

Thus, all of the constructs elicited by supervisors could be categorised into one of five categories. In addition, in approximately two-thirds of cases, elicited constructs referred to topics mentioned by at least two supervisors. These findings suggest some degree of consensus in supervisors’ perceptions of effective teamworking. However, the content of each supervisor’s set of elicited constructs differed in a number of ways, as is discussed below.

Total number of constructs

Firstly, as was mentioned briefly above, supervisors differed on the total number of constructs they were able to elicit. For example, Supervisor A elicited five constructs, Supervisor G elicited eight constructs and Supervisor B elicited eleven constructs. The total number of constructs elicited can be argued to reflect the complexity of each supervisor’s construal of teamworking. However, it should be noted that such a measure of complexity is quite simplistic, as it does not take into account the similarity of construct meanings to each other. That is, a supervisor could elicit twenty constructs, but these constructs may all relate to a similar issue (team processes, for example).

Ideal Ratings of Constructs

As was highlighted in the descriptions of the five categories, in many cases there was agreement between supervisors on the ideal team rating of similar constructs. For example, supervisors who mentioned trust and support all agreed that the ideal team should contain members who are highly supportive and trusting of each other. However, in approximately 50% of cases, for example in relation to variety, stability of work demands, team tenure and confidence, supervisors had differing views on the ideal team.
Differential ratings of the ideal team highlight differences in perceptions between supervisors on similar constructs. Thus, although the primary focus of this study’s analysis is on constructs, it is important to note that two supervisors eliciting the same or similarly worded constructs may not necessarily have the same perceptions of the ideal team in relation to these constructs.

Distribution of Constructs across Categories

Finally, supervisors also differed on how their elicited constructs were distributed amongst the five categories. These distributions can be seen in Table 5.1.

From Table 5.1, it can be seen that two supervisors (C and G) predominantly elicited constructs relating to the team’s work environment and job characteristics. For example, 62.5% (5 out of 8) of Supervisor G’s constructs related to this category (namely: stability of work demands; physical nature of the job; reliability of machines; interaction with other areas; number of products produced). This distribution of constructs suggests that both Supervisor G and Supervisor C, see effective teamworking as being influenced primarily by the environments in which teams work and the tasks they have to complete.

Two supervisors (A and E) predominantly elicited constructs relating to team member attitudes and orientations. For example, 50% (4 out of 8) of Supervisor E’s constructs were related to this category (namely: team focus; confidence; orientation in terms of taking initiative and broadness of orientation). This distribution of constructs suggests that effective teamworking, for Supervisor A and Supervisor E, is primarily influenced by having team members with appropriate beliefs and behaviours.

The remaining four supervisors’ constructs were each primarily distributed between two categories. 80% (4 out of 5) of Supervisor F’s constructs, for example, concerned team processes and team member attitudes and orientations. Supervisor B’s constructs were also primarily distributed between these two categories. This distribution suggests that these two supervisors construe teamworking as being influenced predominantly through people issues (i.e. team members with appropriate attitudes and beliefs, who also have positive relationships with each other).
Table 5.1: Distribution of Supervisors’ Constructs Across Categories

<table>
<thead>
<tr>
<th>Supervisors</th>
<th>Work Environment and Job Characteristics</th>
<th>Team Composition</th>
<th>Team Processes</th>
<th>Team Member Orientation and Attitude</th>
<th>Supervision</th>
<th>Total Number of Constructs</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0</td>
<td>0</td>
<td>1 (20)</td>
<td>3 (60)</td>
<td>1 (20)</td>
<td>5</td>
</tr>
<tr>
<td>B</td>
<td>1 (9)</td>
<td>2 (18)</td>
<td>3 (27)</td>
<td>4 (37)</td>
<td>1 (9)</td>
<td>11</td>
</tr>
<tr>
<td>C</td>
<td>3 (43)</td>
<td>1 (14)</td>
<td>2 (29)</td>
<td>1 (14)</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>D</td>
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<td>2 (20)</td>
<td>3 (30)</td>
<td>2 (20)</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>E</td>
<td>1 (12.5)</td>
<td>2 (25)</td>
<td>0</td>
<td>4 (50)</td>
<td>1 (12.5)</td>
<td>8</td>
</tr>
<tr>
<td>F</td>
<td>1 (20)</td>
<td>0</td>
<td>2 (40)</td>
<td>2 (40)</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>G</td>
<td>5 (62.5)</td>
<td>1 (12.5)</td>
<td>1 (12.5)</td>
<td>0</td>
<td>1 (12.5)</td>
<td>8</td>
</tr>
<tr>
<td>H</td>
<td>1 (11)</td>
<td>3 (33)</td>
<td>0</td>
<td>3 (33)</td>
<td>2 (22)</td>
<td>9</td>
</tr>
</tbody>
</table>

(Figures in brackets indicate percentage of total constructs)
66% (6 out of 9) of Supervisor H's constructs were equally split between the categories of team composition and team member attitudes and orientation. Thus, for this supervisor, teamworking is predominantly about putting the 'right' people together in 'right' team. Finally, Supervisor D's constructs were split predominantly between the work environment and job characteristics, and the team processes categories, suggesting that this supervisor construes effective teams as having appropriate work designs and positive relationships between team members.

It is interesting to note that only one supervisor (B) elicited constructs which related to all five categories.

In summary, all the constructs elicited by supervisors could be categorised into one of five categories. In two-thirds of cases, similar constructs were elicited by more than one supervisor. However, supervisors differed on their ratings of the ideal team in approximately half of these similar construct cases. In addition, supervisors differed on the total number of constructs elicited, and the distribution of their constructs across categories. The relationships between such differences and team members' ratings of supervisory style will be explored shortly (see Research Question 5, p165).

However, prior to this, it is important to acknowledge that the five categories created above were formed from individual constructs. As such, these categorisations do not address the relationships between constructs in each supervisor's repertory grid. For example, the above categories do not demonstrate whether a supervisor who rated teams as having a higher variety of tasks also rated these teams as getting on better together. As a result, it is difficult to investigate the existence of underlying structures or frameworks in supervisors' construals of teamworking, from the above analysis. Therefore, the second stage of grid analysis now focuses on the structure of supervisors' repertory grids, and the extent to which these structures are shared across supervisors.
Chapter 5: Supervisors' Perceptions of Teamworking

Structure of Constructs
In order to explore the structure of supervisors' construct sets, principal components analysis was used. The completed repertory grids (including the final more effective-less effective construct) were entered into "WebGrid"; an Internet-based version of RepGrid, a computer grid analysis package, developed by Gains and Shaw (1990). The WebGrid principal components analysis (PCA) programme produces a map of each supervisor's constructs and elements, arranged in two-dimensional space. Thus, the PCA analysis provides

"a representation of a grid which can be thought of as a rough but useful map."
(Easterby-Smith, Thorpe and Holman 1996)

An example of such a PCA map can be seen in Figure 5.2.

It was found that the first two components of each map accounted for an average of 76% of the variance in ratings. This suggests that the majority of variance in supervisors' ratings of teams could be depicted in the two dimensions shown on the PCA maps.

Constructs which are grouped close together on these PCA maps are those which have been rated similarly. As such, it is argued that these "groupings" of constructs may reflect an underlying theme in the supervisor's construct system (Gains and Shaw 1990, Easterby-Smith, Thorpe and Holman 1996).

Groupings of constructs were identified from each supervisor's map. These construct groupings are shown in Appendix C (p261). It was found that each supervisor's construct set formed between two and five groupings. In total, 28 groupings of constructs were identified.

As with the investigation into the Content of Constructs (p139), a grounded theory approach was used in order to classify these construct groupings. Four "underlying themes" emerged from this process, which were defined by the author as: Positive Team Environment; Autonomous Work Teams; Stability; and Work Characteristics. As in the first stage of grid analysis, six work psychology experts were asked to assign each grouping to a theme, in order to ensure the reliability of the four underlying themes. Although experts commented that it was sometimes difficult to choose between two themes in the assignment of groupings, it was found that these experts agreed with the
Figure 5.2: An Example of a WebGrid Principal Components Map
author's categorisations in 84% of cases. Thus, whilst it is acknowledged that the interpretation of construct groupings is somewhat subjective, and must be undertaken carefully, this finding suggests an acceptable level of reliability in the author's classification of underlying themes.

Each of the four underlying themes is now described, including examples from supervisors' repertory grids as appropriate. Following this, a discussion of the similarities and differences between the structure of supervisors' construct systems is presented.

**Positive Team Environment**

The first underlying theme reflected construct groupings that focused on the interactions between team members, the attributes of team members, and the general climate within the team. Eleven construct groupings were categorised as relating to this theme.

Groupings within this theme comprised of constructs from all five of the content categories, although these groupings were predominantly formed from "Team Processes" and "Team Member Attitudes and Orientations" content categories. In Supervisor F's PCA map, for example, the following three constructs were grouped together:

- Good team support – Poor team support
- Shifts work together – Shifts don't work together
- Team members are flexible – Team members are not flexible

In other cases, however, Positive Team Environment groupings also included constructs which related to "Team Composition", "Work Environment and Job Characteristics" and "Supervision" topics. The following three supervisor groupings illustrate this. For example, Supervisor H's PCA map grouped the following three constructs together:

- "Fresh" (ideas, enthusiasm) team – "Stale" team
- Formal team development – Poor, lapsed team development
- Working as team towards goals – Working as individuals towards goals

This grouping seems to suggest that the training and development that teams receive is associated with their team environment and team focus.

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2 In all PCA groupings examples, construct poles are reversed as appropriate, to indicate the direction in which construct poles were grouped.
Three constructs relating to this underlying theme were also grouped together in Supervisor C’s PCA map, as follows:

- Work together – Work separately
- Good team support – Poor team support
- Weak team members – Dominant team members

This grouping, therefore, suggests that the extent to which team members have to complete tasks together (i.e. interdependence) is associated with their team support and team member confidence. It is interesting to note that this supervisor associates more dominant team members with poorer team support. A similar finding was suggested by Supervisor B, who grouped less confident team members with better communication (see Appendix C, p261), and commented that:

"With confident, dominant team members, they don't tend to listen to the others. They want to have things their way, and aren't so good at listening to what other members have to say."

A final example relating to this underlying theme was provided by Supervisor B, whose map showed the following construct grouping:

- More effective – Less effective
- Team members involved, interested – Team members not involved, interested
- Newer team – Older team
- Working for team betterment – Working for individual betterment
- Team members open to change – Team members set in their ways

Thus, this grouping of constructs suggests that this supervisor sees more effective teams as those where team members are more involved and interested, have a team rather than an individual focus and are more open to change. Furthermore, these attributes were seen to be more likely to occur in more recently formed teams, suggesting that when teams have been together for a longer length of time, they do not function as positively.

The above examples indicate that several supervisors considered the development of a positive team environment to be important for effective teamworking. However, these examples also show that, within this underlying theme, supervisors focused on different aspects as contributing to such positive team environments.
Chapter 5: Supervisors' Perceptions of Teamworking

**Autonomous Work Teams**
The second underlying theme included those groupings which reflected aspects of autonomous group working, such as self-management, broader orientations and appropriate supervision. Nine construct groupings were allocated to this underlying theme.

Again, these groupings contained constructs from all five of the content categories. However, different combinations of constructs found in supervisors’ PCA maps highlighted different focuses in relation to this underlying theme. Supervisor D’s PCA map, for example, grouped the following constructs together:

*Team members share tasks, responsibilities – Some team members not doing full share*
*Get on well as a team – Don’t get on well as a team*
*Variety of tasks – Fewer tasks*

Thus, this grouping suggests that, for this supervisor, the variety of tasks which teams undertake is related to whether all team members do their fair share and how well team members get on.

By comparison, Supervisor H’s grid showed the following grouping:

*Able to pool machine resources – Restricted ability to pool resources*
*Supervisor style (let team manage own jobs) – Supervisor style (tell team what to do)*
*Team members are multiskilled – Team members have single skills*
*Team members are ideally selected for teamworking – Team members not ideally selected*

Thus, whilst still referring generally to autonomous work teams, the focus for this supervisor was more orientated towards the external factors which are needed for successful autonomous work teams. That is, having the ability to pool machine resources (ie. interdependence), having appropriate supervision, multiskilling team members and selecting team members specifically for teamworking appear to be grouped by this supervisor as prerequisites for autonomous work teams. It is interesting to note that this supervisor was heavily involved in forming and developing autonomous teamworking in the department, and this role appears to be reflected in this construct grouping.
Chapter 5: Supervisors’ Perceptions of Teamworking

A further grouping, shown in Supervisor A’s PCA map, reflects the association between supervisory style and team members’ interactions, attitudes and orientations. This grouping contained the following constructs:

- Team members get on well – Team members don’t get on well
- Team members are flexible – Team members are inflexible
- Team members are willing to take on new tasks, responsibilities – Team members not willing to take on new tasks, responsibilities
- Less supervised – More supervised

A comment made by this supervisor suggested that she felt less direct support was related to the team’s development of appropriate attitudes and behaviours:

“These groups, well here the supervisor lets them get on with it, and I think they have developed the ability to manage themselves because of that. Where the supervisor is more involved, then people carry on depending on them and running to them if there’s something wrong.”

A final example presented here which related to autonomous work teams was found in Supervisor E’s PCA map. This grouping contained the following constructs:

- Team members confident in own abilities – Team members nervous, don’t believe in own abilities
- Larger team – Small team
- Team members take initiative – Old style working (do what told)
- Wider role (planning, goal setting etc.) – Narrow role

This grouping, therefore, relates team size and variety to team member confidence and initiative.

Stability

The third underlying theme identified was related to team stability. Four construct groupings were allocated to this theme. The largest grouping was found in Supervisor G’s PCA map, and included the following constructs:

- Continuous workload - Intermittent workload
- Longer time as a group – Shorter time as a group
- Long term supervisor – Several short term supervisors
- Team produces several products – Team produces one product
- Get on as a group – Don’t get on as a group

This grouping, therefore, relates three aspects of stability with each other; stability of workload, stability of team membership, and stability of supervision. This supervisor
also saw the number of products produced by the team as a contributing factor to stability, commenting that

"When you have only one product, it's like putting all your eggs in one basket, and the team is vulnerable to the demand for that product. What's going on with any one product has less of an impact when the team produces a group of products — it's more likely they will still have things to keep them busy."

In addition, this grouping of constructs seemed to suggest that greater stability, for this supervisor, was associated with the team getting on better as a group.

A second grouping, however, presents a different focus on stability. This grouping, found in Supervisor H's PCA map, is comprised of the following constructs:

- More effective
- Less effective
- Shorter time as a team — Longer time as a team

This association between team effectiveness and team tenure provides an alternative perspective, namely that greater stability for this supervisor is seen as being negatively related to the team's effectiveness.

Two further groupings were found in relation to the underlying theme of stability. The third grouping (Supervisor D) related longer team tenure with a less consistent workload. Finally, Supervisor B's PCA map grouped those teams where members had been specifically selected for teamworking with a less consistent workload. In both of these cases, although these groupings include constructs that relate to the stability of workloads, it is unlikely that they reflect "true" underlying themes for these supervisors. Rather, these two groupings are more likely to be artefacts that occurred as a result of the specific situation in the department under study. That is, the original cellular-based teams, where selection occurred, also happened to be the teams were work demands were the most variable.

Work Characteristics

The final underlying theme found in this study consisted of construct groupings containing constructs from the "Work Environment and Job Characteristics" content category only. Four such construct groupings were identified. In two of these cases, the group contained one construct only. Thus, for Supervisor G and Supervisor D, less
physical job-more physical job and high tech machines-low tech machines respectively, were not grouped with any other constructs. This suggests that, whilst these constructs were considered to be important for effective teamworking, they were not seen by these supervisors to be related to other constructs.

The third construct grouping in this underlying theme was found in Supervisor C’s PCA map, and suggested that teams with a wider range of tasks were also teams with more technical jobs. As with the final examples in the previous underlying theme, it is unlikely that this construct grouping reflects a "true" underlying theme. Rather, it is more likely that this grouping just happens to reflect the work characteristics of teams within this department.

The final grouping which related to the Work Characteristics underlying theme was found in Supervisor G’s PCA map. This grouping contained the following constructs:

More effective – Less effective
Job involves more interaction with other areas – Job involves less interaction with other areas
Reliable machines – Unreliable machines

Thus, this grouping suggests that this supervisor feels more effective teams are those who have to interact with other areas, and those who have more reliable machinery to work with.

Differences in the Structure of Supervisors’ Constructs

Overall, the development of these four underlying themes provides a clearer indication of the structure of supervisors’ construct systems in relation to effective teamworking. This structure highlights that although the content of elicited constructs differed to some extent between supervisors, there was some similarity in the underlying structure of construct systems. However, this study also found that the structure of supervisors’ construct systems differed in a number of ways. Such differences are discussed below.

Total Number of Construct Groupings

As was briefly mentioned above, supervisors differed on the total number of construct groupings which were found in their PCA maps. For example, whilst Supervisor F’s
PCA map showed two groupings, Supervisor H's PCA map showed four groupings and Supervisor D's showed five groupings. As with the total number of constructs elicited (see p146), the total number of construct groupings can be seen as reflecting the complexity in supervisors' construct systems. Thus, a PCA map forming two groupings can be argued as reflecting a simpler construal of effective teamworking than a PCA map which forms five groupings. However, as with the total number of constructs elicited, the number of groupings found can only be seen as a rough measure of complexity, as it does not take into account such factors as the underlying theme behind each grouping, or the similarity of construct groupings to each other.

**Different Focuses within the Same Underlying Theme**

The examples used to illustrate the four underlying themes highlight the fact that, within the same underlying theme, supervisors may have differing focuses. For example, there were different perceptions of how team composition, supervision, team member attributes, team processes and work characteristics may be related to having a positive team environment or to working as an autonomous team. Thus, these differing focuses highlight the fact that supervisors talking about the same underlying theme, may actually be thinking about different aspects of that theme. Conversely, supervisors may talk about different individual constructs in relation to effective teamworking, but may, in fact, be referring to the same underlying theme.

**Similarly Worded Constructs in Different Underlying Themes**

It is also interesting to note that supervisors eliciting the same or similarly worded constructs related them to different underlying themes. For example, as was discussed in the first stage of analysis (see p142), four supervisors elicited constructs which related to how well the team gets on together. However, the PCA maps indicated that these constructs were related to different underlying themes in supervisors' construct systems. More specifically, Supervisor B's "team members get on well together-team members don't get on well together" construct was grouped with "team members trust each other-lack of trust between team members", and as such was allocated to the Positive Team Environment underlying theme. By comparison, Supervisor D's construct "get on well as a team-don't get on well as a team" was grouped with constructs about variety and team members sharing tasks and responsibilities, and
Supervisor A’s “team members get on well-team members don’t get on well” construct was grouped with constructs about team member flexibility, willingness to take on new tasks, and supervisor support. These two construct groupings were seen as relating to the Autonomous Work Team underlying theme. Finally, Supervisor G’s construct “get on as a group-don’t get on as a group” was grouped with constructs that reflected the Stability underlying theme.

These findings suggest that whilst some supervisors consider getting on well together to be part of having a positive work environment, others consider it to contribute towards autonomous teamworking, and others still feel that getting on well together is associated with a stable work environment. This finding, and others of this nature, highlight that supervisors may talk about the same individual construct, but actually be associating that construct with different underlying themes.

**Construct Grouping Containing “more effective-less effective” Construct**

Supervisors also differed in terms of the construct grouping which contained the final construct “more effective-less effective”. The placing of this construct can be seen as reflecting those constructs that are most closely related to overall team effectiveness, in each supervisor’s construct system. It was found that the placement of this final construct for four of the supervisors (A, B, C, D) reflected the Positive Team Environment underlying theme, suggesting that these supervisors saw more effective teams overall as being most closely related to having a positive team environment. For two supervisors (E and F), the final construct was placed within groupings that reflected the Autonomous Work Team underlying theme, here suggesting that these supervisors felt that working as an autonomous work team is most closely related to being more effective overall. Of the remaining two supervisors, Supervisor G’s map suggested that effective teams were most closely related to Work Characteristics, and Supervisor H’s map indicated effective teams as being most closely related to Stability.

The PCA maps also allow elements to be placed in relation to constructs on the two-dimensional map. Similarly to the placing of the final effectiveness construct, the placing of elements reflects the constructs which each element is most characterised by (Easterby-Smith, Thorpe and Holman 1996). Of particular interest to the current
discussion is the placing of the “Ideal Team” element, as this gives an indication of the relative importance of each supervisor’s constructs to the ideal team.

It was found that the placement of the ideal team in the PCA maps produced a similar pattern of results to those found in relation to the final effectiveness construct. That is, in most cases, the ideal team was placed closest to the construct grouping containing the “more effective-less effective” construct.

**Distribution of Construct Groupings across Underlying Themes**

Finally, supervisors differed on how their construct groupings were distributed across the four underlying themes. This distribution can be seen in Table 5.2. As was mentioned previously (see p156/7), three construct groupings may have been formed as a result of the specific characteristics of the department, rather than truly reflecting underlying themes. These three groupings are included in Table 5.2, but are presented in italics and square brackets, to highlight the fact that these groupings can only be tentatively allocated to an underlying theme.

Table 5.2 suggests that the majority of supervisors’ construct systems predominantly reflected the underlying themes of Positive Team Environment and Autonomous Work Teams. More specifically, the construct groupings for Supervisors B and C were predominantly related to Positive Team Environment (60% and 75% respectively), and the construct groupings for Supervisors D, E and H primarily reflected the Autonomous Work Teams underlying theme (40%, 66% and 50% respectively). Furthermore, both Supervisor A’s and Supervisor F’s construct groupings were distributed between these two underlying themes.

An interesting exception to this distribution pattern is Supervisor G, who had no construct groupings which could be allocated to the first two underlying themes. Rather, the majority (66%) of this supervisors’ groupings reflected the Work Characteristics underlying theme.

Finally, it can be seen from Table 5.2 that only one supervisor’s PCA map (Supervisor D) produced construct groupings which could be allocated to all four of the underlying themes. However, this distribution did contain a grouping that may only tentatively be allocated to the Stability underlying theme.
Table 5.2: Distribution of Supervisors’ Construct Groupings Across Underlying Themes

<table>
<thead>
<tr>
<th>Supervisors</th>
<th>Positive Team Environment</th>
<th>Autonomous Work Teams</th>
<th>Stability</th>
<th>Work Characteristics</th>
<th>Total Number of Construct Groupings</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1 (50)</td>
<td>1 (50)</td>
<td>0</td>
<td>0</td>
<td>2</td>
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<tr>
<td>B</td>
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<tr>
<td>C</td>
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<td>0</td>
<td>[1 (25)]</td>
<td>4</td>
</tr>
<tr>
<td>D</td>
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<td>2 (40)</td>
<td>[1 (20)]</td>
<td>1 (20)</td>
<td>5</td>
</tr>
<tr>
<td>E</td>
<td>1 (33)</td>
<td>2 (66)</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>F</td>
<td>1 (50)</td>
<td>1 (50)</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>G</td>
<td>0</td>
<td>0</td>
<td>1 (33)</td>
<td>2 (66)</td>
<td>3</td>
</tr>
<tr>
<td>H</td>
<td>1 (25)</td>
<td>2 (50)</td>
<td>1 (25)</td>
<td>0</td>
<td>4</td>
</tr>
</tbody>
</table>

(Figures in brackets indicate percentage of total constructs)

[Figures in italics and square brackets may be artefacts of the current sample, rather than ‘true’ theme groupings]
In summary, all of the construct groupings found in supervisors’ PCA maps could be categorised into one of four underlying themes. Furthermore, it was found that the majority of these construct groupings reflected the underlying themes of having a positive team environment and working as an autonomous team. However, the PCA map construct groupings suggested that supervisors differed from each other on the number of construct groupings produced, the focus of attention within themes, the allocation of similarly worded constructs to different themes, the placement of the final effectiveness construct, and the distribution of construct groupings across the four underlying themes.

These findings, and those in relation to the content of supervisors’ constructs are now discussed.

**Discussion: Research Question 4**

Research question 4 investigated the factors which supervisors perceived to be important for effective teamworking.

Examination of the content of constructs indicated that all the supervisors’ elicited constructs could be allocated to one of five categories. Thus, supervisors referred to the team’s work environment and job characteristics, the composition of the team, team processes, team members’ attitudes and orientation, and the way teams are supervised, as factors which were important for effective teamworking. Furthermore, in approximately two-thirds of cases, similar constructs were elicited by more than one supervisor, suggesting some degree of consensus between supervisors’ perceptions of effective teamworking.

However, it was also found that supervisors differed from each other in terms of the number of constructs they elicited, their ratings of the ideal team, and the distribution of constructs across the five categories. Thus, although there was some overall consensus between supervisors, this investigation indicated that the complexity, focus and preferred circumstances in supervisors’ perceptions of effective teamworking did differ.
The second stage of grid analysis developed a clearer indication of the structure of supervisors' construct systems. More specifically, it was found that supervisors' construct groupings were related to four underlying themes. These themes suggested that supervisors referred to working in a positive team environment, working as an autonomous team, issues of stability and issues of work characteristics as underlying themes influencing effective teamworking. It is, however, worth noting that three of the construct groupings may have occurred as a result of the circumstances of the department under study, rather than as a reflection of “true” themes. Unfortunately, it was not possible to discuss these, and indeed all other, construct groupings with the participating supervisors, which would have gained a clearer understanding of these groupings from the supervisors’ perspective. It could also be argued that context specific groupings may have been avoided through the use of more abstract elements (e.g. “a good team”, “a bad team”, “a team you would like to supervise”, “your team”). However, it was felt that the use of actual teams as elements better enabled supervisors to draw on their experiences and, as such, resulted in constructs which were salient to the research setting.

Overall, whilst it is acknowledged that the interpretation of construct groupings is subjective, and that these underlying themes cannot be seen as definitive without consultation with the participating supervisors, these themes seem to suggest some degree of similarity between supervisors’ construct structures. In particular, the majority of supervisors’ construct groupings reflected working in a positive team environment and working as an autonomous team as the main underlying themes influencing effective teamworking.

However, it was found that supervisors differed from each other in terms of the number of construct groupings produced, the focus of attention within themes, the association of similarly worded constructs with different themes, the themes which were most closely associated with overall team effectiveness, and the distribution of construct groupings across the four underlying themes. These differences suggest that, although there was some overall agreement between supervisors on the important underlying themes for effective teamworking, supervisors did have different perceptions from each other.
Thus, it can be argued that, overall, this group of supervisors perceived effective teamworking in similar ways. However, the differences between supervisors that were indicated in these two stages of grid analysis have important implications in terms of supervisors' communications with each other, and with their subordinates. More specifically, there is the potential for supervisors: to talk about similar constructs but have differing opinions of the ideal position; to talk about the same underlying theme but have different perceptions of what that theme refers to; to talk about different individual issues but be thinking of the same underlying theme; and to talk about similar individual issues but perceive them as contributing to different underlying themes. These alternative focuses also have implications on how supervisors may interact with their subordinates, particularly in the early stages of team development, when team members own constructions of teamworking are being formed. Thus, it is important to note that teams may develop in different ways, dependent upon the aspects of teamworking that are emphasised by their supervisors.

In summary, these analyses suggest that, overall, supervisors perceive working in a positive team environment and working as an autonomous team to be the most important factors which influence effective teamworking. However, within this general consensus, supervisors placed differing emphases on the work characteristics, team processes, team composition, team member attitudes and supervisory approaches which relate to these underlying themes. Moreover, these differences in perception may have implications for how supervisors interact with each other and with their subordinates.
Research Question 5: Are these perceptions related to supervisory style?

The final stage of repertory grid analysis focuses on research question 5. Here, a variety of characteristics of supervisors’ repertory grids were compared with supervisory style, as rated by team members at T2. These comparisons were conducted in order to investigate whether supervisors’ perceptions of effective teamworking were related to their supervisory style.

Ratings of Supervisory Style

The ratings of supervisory style used were those given by team members completing the T2 survey. As part of this survey, team members completed a scale rating the supervisory style of their supervisor (see Chapter 4: Team Implementation, Method p86, and Appendix A, p253, for more details). Higher scores on this scale indicated a more coaching, encouraging supervisory style, as opposed to a controlling, directive style. Data from all shopfloor team members completing the T2 survey were used (n=65), not only those who also completed the T1 or T3 surveys. Mean scores for each supervisor were computed by combining the scores from all team members that each supervisor was responsible for. As was noted previously (see p135), for the majority of supervisors, these scores included team members from more than one team or shift. The average supervisory style score overall was 3.66 (on a scale of 1 to 5), with the mean scores for supervisors ranging from 3.20 to 4.10. Thus, it is important to note that, at T2, all eight supervisors were seen as having moderately to highly coaching, encouraging styles.

Characteristics of Supervisors’ Repertory Grids

Following the investigation of supervisors’ repertory grids, on the basis of both content and structure, seven defining characteristics were chosen on which to compare supervisors’ repertory grids and supervisory style. As there were only eight supervisors between which comparisons could be made, non-parametric tests were used.

It should be noted that it was not possible to compare supervisors on all the differences which were highlighted in the first two stages of grid analysis. For example, it was
found that supervisors differed on their ratings of the *ideal team*, and that differences were also found in relation to differing focuses within the same *underlying theme*. However, whilst it acknowledged that these differences are both interesting and informative, such differences highlighted idiosyncratic comparisons between supervisors and, as such, could not be systematically compared with supervisory style scores.

The seven characteristics which were chosen to compare supervisors’ repertory grids and supervisory style were as follows. Firstly, comparisons were made between supervisory style and the following four continuous variables: total number of constructs elicited; number of content categories covered; total number of construct groupings; number of underlying themes covered. Comparisons were also made between supervisory style and the following three categorical variables: most favoured content category; most favoured underlying theme; underlying theme in which “more effective-less effective” construct was grouped.

Each of these characteristics is now described in turn, along with the non-parametric test which was used to compare repertory grids with supervisory style, and the results of these tests.

The first four comparisons were between *continuous variables*, and were examined using Spearman’s rank-order correlation. The data for these comparisons, along with the results of the correlations is shown in Table 5.3. For ease of understanding, the eight supervisors are arranged in order of decreasing supervisory style scores.

Table 5.3 shows that there was one significant rank-order correlation, namely in relation to the number of underlying themes covered by supervisors’ construct systems ($\rho = .866, p \leq .05$). However, this distribution does include those construct groupings which may only tentatively relate to an underlying theme (see p156/7), and so may not be entirely reliable. Given this possible limitation, however, the correlations shown in Table 5.3 indicate an overall positive (if insignificant) trend. Thus, these results suggest that supervisors who elicited a larger number of constructs, supervisors whose constructs covered a wider range of construct categories, supervisors whose constructs
Table 5.3: Non-Parametric Correlations between Supervisory Style and Continuous Characteristics of Supervisors' Repertory Grids

<table>
<thead>
<tr>
<th>Supervisors</th>
<th>Supervisory Style – mean score</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>4.104</td>
</tr>
<tr>
<td>B</td>
<td>3.944</td>
</tr>
<tr>
<td>H</td>
<td>3.919</td>
</tr>
<tr>
<td>A</td>
<td>3.831</td>
</tr>
<tr>
<td>F</td>
<td>3.712</td>
</tr>
<tr>
<td>G</td>
<td>3.365</td>
</tr>
<tr>
<td>C</td>
<td>3.205</td>
</tr>
<tr>
<td>E</td>
<td>3.200</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total number of constructs</th>
<th>Content categories covered</th>
<th>Total number of groupings</th>
<th>Underlying themes covered</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>4</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>11</td>
<td>5</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>9</td>
<td>4</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>4</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

Spearman's rho = .566, .206, .537, .866*  

(* = p ≤ .05)
formed a larger number of groupings, and supervisors whose construct groupings covered a wider range of underlying themes tended to be rated more favourably by their subordinates.

The remaining three comparisons involved **categorical data**, and as such were compared against supervisory style using the Kruskal Wallis test. The mean supervisory style scores and rankings, and the test results are shown in Table 5.4.

In the case of the **most favoured construct category**, the investigation of construct content (see p147) indicated that supervisors' constructs were predominantly related to the following categories of construct:

(a) "work environment and job characteristics" (2 supervisors)
(b) "team member attitudes and orientations" (2 supervisors)
(c) "team attitudes and orientations"/"team processes" (2 supervisors)
(d) "team composition"/"team member attitudes and orientation" (1 supervisor)
(e) "team processes"/"work environment and job characteristics" (1 supervisor)

In order to simplify this pattern of findings for the comparison with supervisory style, these five groups were collapsed into three as follows. Group (a) can be broadly seen as focusing on "Work issues", groups (b) and (c) address "People issues", and groups (d) and (e) consider both people and work issues.

Table 5.4 shows that the supervisory style scores for these three categories were not significantly different. However, the mean supervisory style rankings and scores suggest that those supervisors who elicited constructs relating to both people and work issues were rated slightly more favourably than those supervisors who focused solely on people or work issues.
Table 5.4: Non-Parametric Comparisons between Supervisory Style and Categorical Characteristics of Supervisors' Repertory Grids

<table>
<thead>
<tr>
<th>Most favoured construct category</th>
<th>Supervisory Style</th>
<th>Most favoured underlying theme</th>
<th>Supervisory Style</th>
<th>Underlying theme containing effectiveness construct</th>
<th>Supervisory Style</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mean score (mean ranking)</td>
<td>mean score (mean ranking)</td>
<td>mean score (mean ranking)</td>
<td>mean score (mean ranking)</td>
<td>mean score (mean ranking)</td>
</tr>
<tr>
<td>Work issues</td>
<td>3.28 (2.50)</td>
<td>Work characteristics</td>
<td>3.36 (3.00)</td>
<td>Work characteristics</td>
<td>3.36 (3.00)</td>
</tr>
<tr>
<td>People issues</td>
<td>3.67 (4.25)</td>
<td>Positive team environment</td>
<td>3.57 (4.50)</td>
<td>Stability</td>
<td>3.92 (6.00)</td>
</tr>
<tr>
<td>People issues + Work issues</td>
<td>4.01 (7.00)</td>
<td>Autonomous work team</td>
<td>3.74 (5.00)</td>
<td>Positive team environment</td>
<td>3.77 (5.50)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Positive team environment + Autonomous work teams</td>
<td>3.77 (4.50)</td>
<td>Autonomous work teams</td>
<td>3.46 (2.50)</td>
</tr>
<tr>
<td>Kruskal Wallis,H</td>
<td>3.46</td>
<td>Kruskal Wallis,H</td>
<td>0.50</td>
<td></td>
<td>2.75</td>
</tr>
</tbody>
</table>
The **most favoured underlying theme** comparison refers to which underlying theme supervisors' construct systems predominantly related to. Investigations into the structure of constructs (see p160) indicated that supervisors' construct groupings referred primarily to the following underlying themes:

(a) “work characteristics” (1 supervisor)
(b) “positive team environment” (2 supervisors)
(c) “autonomous work team” (3 supervisors)
(d) “positive team environment”/“autonomous work team” (2 supervisors)

These four groups were, therefore, compared against supervisory style. Table 5.4 indicates that the average supervisory style score did not differ significantly on the basis of the underlying theme supervisors’ predominantly referred to. However, there was some evidence that those supervisors focusing mainly on positive team environment and/or autonomous work team themes tended to be rated slightly more favourably than the supervisor who focused primarily on work characteristics.

Finally, supervisory style was compared against the **underlying theme which contained the final effectiveness construct**. From the structure of constructs stage of analysis (p159), it was found that this final construct ("more effective-less effective") was found in construct groupings relating to the following underlying themes:

(a) “work characteristics” (1 supervisor)
(b) “stability” (1 supervisor)
(c) “positive team environment” (4 supervisors)
(d) “autonomous work team” (2 supervisors)

These four groups were compared against supervisory style, using the Kruskal Wallis test, as above. This final comparison was not significant, although Table 5.4 indicates that those supervisors who associated overall team effectiveness most closely with the stability and positive team environment themes tended to be rated slightly more favourably than those supervisors who associated overall team effectiveness most closely with autonomous work teams and work characteristics.

These results are discussed below.
Discussion: Research Question 5

In the final stage of analysis, supervisors' repertory grids were compared with supervisory style, in order to investigate whether supervisors' perceptions about effective teamworking were related to how their style was rated by subordinates. Overall, the non-parametric tests used in connection with this stage of analysis uncovered only one significant relationship, concerning the number of underlying themes referred to by supervisors. However, the small number of supervisors in this study may have contributed to this lack of significant results. In addition, supervisory style was rated largely favourably by team members, meaning that there was little variance between the mean ratings of supervisory style for significant differences to be uncovered. Furthermore, it is likely to be the case that supervisors' perceptions of effective teamworking are only one factor which influences their supervisory style. Stewart and Manz (1995), for example, argue that supervisory behaviours are influenced by supervisors' expectations of the outcome of teamworking, and their self-efficacy for managing teams, in addition to overall perceptions of teamworking. It may also be the case that supervisors mentioned constructs and ideal team positions which they felt they "should" identify, rather than their true perceptions. However, during the repertory grid sessions, every effort was made to ensure that supervisors discussed their personal perceptions, and the repertory grid method is generally argued to gain a better understanding of a topic from the participant's perspective than other interviewing techniques (Fransella and Bannister 1977). Finally, it may be the case that team members' ratings of supervisory style were influenced by other factors, for example the favourability of processes within their team. However, the influence of such confounding factors are minimised by the fact that the majority of supervisors received ratings from employees working in different teams and on different shifts.

Given the above methodological and conceptual issues, however, some general trends were suggested from the comparisons of supervisory style and repertory grids. Firstly, there was some evidence that those supervisors who elicited a larger number of constructs, who covered a wider range of construct categories, whose constructs formed a larger number of construct groupings, and whose groupings covered a wider range of underlying themes, tended to be rated more favourably by their subordinates.
Secondly, there was also some indication that those supervisors who considered both people and work issues to influence team effectiveness were rated more favourably than those supervisors who mainly considered only work or people issues. Furthermore, those supervisors whose constructs formed groupings which related mainly to working in a positive team environment and/or working as an autonomous work team appeared to be rated more favourably than the one supervisor whose construct groupings predominantly referred to work characteristics. Finally, the findings suggested that those supervisors for whom overall team effectiveness was most closely characterised by working in a stable or positive team environment were rated more favourably than those supervisors who characterised overall team effectiveness most closely with working as an autonomous team or the work characteristics of the team. However, it is unclear to what extent this final result was influenced by the particular characteristics of this research setting.

Thus, whilst these trends can only be viewed tentatively, there seems to be some suggestion that a more appropriate supervisory style was related to broader and more complex perceptions of teamworking, which considered both work and people issues as important, and which focused on working in a positive team environment and as an autonomous work team. The integration of such issues into training programmes for those supervising autonomous work teams, therefore, may be influential in the development of appropriate supervisory styles.
Summary: Chapter 5

This chapter used repertory grid technique to investigate the factors which supervisors perceived to be important for effective teamworking. The first two stages of repertory grid analysis examined the content of supervisors' elicited constructs and the structure of supervisors' construct systems respectively. In the final stage of grid analysis, seven characteristics of supervisors' repertory grids were compared with supervisory style. The main findings from these analyses are summarised below.

Supervisors perceived a wide range of factors to be important for teams to work effectively, including the characteristics of their jobs, the composition of the team, interactions between team members, team member attitudes and orientations, and supervisory approaches. However, the findings suggested that supervisors generally perceived working in a positive team environment and working as an autonomous work team to be the most important underlying factors which influenced effective teamworking.

Given this degree of general consensus, however, supervisors did differ in the complexity and focus of their perceptions, which may have implications on the way supervisors interact with each other and with the shopfloor employees under their responsibility.

In comparisons between supervisors' perceptions and their supervisory style, it appears that those supervisors who held broader, more complex constructions of teamworking, which combined both work and people issues as important, and who focussed on working as an autonomous team and in a positive team environment, tended to be perceived by their subordinates as having more coaching, facilitatory styles. These findings have implications for the issues that could be incorporated into supervisory training and development programmes, in order to promote more appropriate styles of supervision for autonomous work teams.

The practical and theoretical implications of the findings in this chapter will be returned to in Chapter 7: Thesis Discussion (p220). However, prior to this, the next chapter investigates the impact on shopfloor employees of changing the membership of teams.
Chapter 6: Team Membership Change

This chapter investigates the impact of a management-initiated reorganisation of team membership, on work characteristics, supervisory style, team processes and employee outcomes. As such, the main focus of the chapter is within the External Relations phase of the CORE model of team development (see p29).

In addition, as was the case in Chapter 4: Team Implementation (p83), this chapter also addresses the nature of relationships between work characteristics, supervisory style, team processes and employee outcomes.

Thus, as was outlined in Chapter 2: Literature Review (p56), this final empirical chapter addresses the following three research questions:

(6) What is the impact of team membership change on work characteristics, supervisory style, team processes and employee outcomes?

(7) Following team membership change, are work characteristics, supervisory style and team processes related to employee outcomes?

(8) Following team membership change, are work characteristics and supervisory style related to team processes?

The structure of this chapter is the same as that of Chapter 4: Team Implementation (p83). That is, firstly contextual and methodological issues are presented. Following this, the analyses for each research question are conducted, and a discussion given at the end of each set of analyses. The chapter concludes with an overall summary of the main findings.
Chapter 6: Team Membership Change

Context

As was discussed in Chapter: Organisational Context (p73) and Chapter 4: Team Implementation (see p85), by the second survey timepoint (T2), semi-autonomous teamworking had been implemented in all work areas of the department. Following the T2 survey, informal discussions with the Operations Manager suggested that the department was continuing to develop teamworking. For example, monthly team meetings were developed for all work areas, in order to give team members the opportunity to discuss ongoing production problems, solve interpersonal disputes and become involved in continuous improvement activities. These meetings were initially led by supervisors, but it was the intention that team members would eventually run these meetings, with supervisors undertaking merely a facilitatory role. As a result of these meetings, some teams began to undertake additional roles. For example, the AMCL teams began to monitor their own fault logistics and the perforating stage of production was also more fully integrated into these AMCL teams.

However, there was also evidence that some of the tasks which were intended to be undertaken by teams were being performed to a lesser degree. For example, initially it was intended that team members would take it in turns to attend meetings with planners, to organise production schedules for the week. However, following initial success, team members soon became reluctant to attend these meetings and this task once again became the responsibility of supervisors.

The third survey (T3) was undertaken ten months after the second survey. Between these two timepoints, several events occurred which may have impacted on the teamworking initiative within the department.

Firstly, four months after T2, the organisation was bought by a financial holding company. It is reasonable to expect that this event would have affected employees within the department. However, the company had changed ownership several times over the previous five years, and as such, it could be argued that uncertainty over the future of the company was not a new concern for employees. Indeed, the survey data indicated that employees’ satisfaction over their job security did not significantly
Chapter 6: Team Membership Change

change between T2 and T3 (T2 $\bar{x}=3.59$, T3 $\bar{x}=3.78$, $t=\cdot.99$, $p=.33$), and in fact increased slightly between these two timepoints. In addition, the Operations Manager of the department stated that, although the sale of the company had impacted on management, through changes in strategy and policy, the impact on shopfloor employees was minimal. The sale of the organisation did not result in changes to work practices for those on the department's shopfloor, and satisfaction over the way the firm was managed did not significantly change (T2 $\bar{x}=3.63$, T3 $\bar{x}=3.77$, $t=\cdot.83$, $p=.41$) between T2 and T3. Thus, overall it is reasonable to suggest that the sale of the organisation had little, if any, long lasting effects on the employees in this study.

Although the sale of the organisation was deemed to have had a minimal impact on the department's shopfloor staff, additional events occurred in the department which were likely to have had a more direct impact on the continued development of teamworking. More specifically, one month after the T2 survey, management within the department made a strategic decision to reorganise the membership of a number of the semi-autonomous work teams.

The decision to change team membership stemmed from fears that the teams had become too cohesive and inward looking; with team members being reluctant to work in other teams when required and tending to become defensive towards criticisms made of them by other teams or support areas. It was also felt that employees had become somewhat complacent, holding the view that their team was working well and did not need to improve or change, even when presented with information to the contrary. Management felt that, if left unchecked, these concerns could lead to a lack of cooperation between teams and could also be detrimental to efficiency.

These issues had become an increasing source of concern due to the fluctuating demand for products produced in the department. That is, the nature of production demands meant that it was increasingly necessary to move employees between teams on a daily or weekly basis, dependent on the production schedule for each work team. Therefore, management felt it was necessary to break down barriers between teams and to promote between-team flexibility throughout the department.
These issues also emerged during the supervisor repertory grid interviews conducted at T2, for the previous study (see Chapter 5: Supervisors’ Perceptions of Teamworking, p129). For example, three supervisors referred to the stability of production demands, and three supervisors mentioned the extent to which team members were flexible in terms of working in other teams. Furthermore, several comments made by supervisors supported the concerns which were held by management. Supervisor A, for example noted

"If we need someone to work somewhere else for a day, they don’t like to do it. They’ll send the temps [staff on temporary contracts] first, before they go themselves.

Supervisor C also mentioned the fact that teams tended to be inward looking, saying

"Each team supports itself, but they don’t all support each other – they feel that would be disloyal to their own team. Teams want to be better than other teams and outdo each other. But at the end of the day, we all work for [this company]. But some people don’t realise that."

It is important to note that variability in work demands and the need to move employees temporarily between teams were not issues which had suddenly arisen at T2. That is, between T1 and T2, there were occasions when it was necessary to move employees between teams for short periods of time. However, by T2, fluctuations in production demands were occurring more frequently and, coupled with employees’ reluctance to work in teams other than their own, management felt that a permanent movement of team members might help to reduce barriers between the teams, and promote the requirement for between-team flexibility.

Thus, as a result of concerns about between-team flexibility, eight employees were permanently moved to new teams, one month after the T2 survey. It was felt that these movements would prevent teams from becoming overly cohesive and resistant to change, and also help employees to become more flexible. As a result of this team membership reorganisation, approximately half of the teams in the department experienced a change in their team membership.

In addition to this one-off permanent movement of team members, management also made greater efforts to formalise the requirement for team members to move temporarily between teams as and when required. Team members continued to have a
"home" team, where they worked primarily and with whom they held their monthly meetings, but management attempted to shift employees' focus away from static, inward looking teams towards developing greater flexibility and cooperation between teams.

In practise, the necessity for temporary movements differed across teams, largely determined by production demands. In general, all teams experienced some instances of temporary movements between T2 and T3, but the majority of temporary movements occurred between the three original cellular-based teams (i.e. 35mm, 16mm and DPP).

Employee comments at the time of the permanent team membership change suggested that the shift in focus towards greater between-team flexibility challenged their previous conceptualisations of teamworking. For example, one employee commented:

"When the new team thing came in, it was meant to be fabulous. It did start well and was working. But then they [management] went and moved everyone around. There are four in our team and they've taken two away. What's the point of having meetings every month when they go and change all the teams... People are getting fed up with it all. They feel they have put the effort in but it's all wasted time..."

Another employee added:

"Now people just think it [team working] is a waste of time and money and the effort they've put in... It affects how much effort people are putting into their team now."

In addition, a comment made by one of the supervisors (supervisor D) acknowledged that management's shifting focus could be difficult for some employees to grasp:

"We've started off with the team building and saying this is your team, trying to get people bonded together. Then the next breath is that yes you're part of this team, but you're also part of a bigger team. I think it's a difficult thing for some of the people to take in really."

Taken together, comments such as those highlighted above, suggest that employees' immediate reactions to the team membership change were somewhat negative, and that this event was unsettling for the teams in the department as a whole.

By the time of the T3 survey, employees had worked within their reorganised teams for nine months. As such, it could be argued that the impact of any initial disruption would no longer be present. However, it could also be the case that the team membership change event permanently undermined employees' beliefs in teamworking. Comments
made by employees at T3 suggested that the team membership change event was still salient in their minds. For example, one employee noted:

"Outside influences can affect the team. Management keep changing things and not giving people a choice. They say this is your team and then they go and change the goal posts."

In addition, another employee commented that:

"It takes time to get a team working together. After January [team membership change] it took six months to get it going again."

Thus, it appears that, for some employees at least, the team membership reorganisation was still an issue at T3.

**Method**

As was the case in Chapter 4: Team Implementation (see p86), data for this study were collected using quantitative self-report surveys. Thus, at both T2 and T3, employees completed questionnaires on site, within work time. Employees attended designated sessions, run by the author, in groups of eight to twelve employees. At the start of each session, the rationale for the survey was explained and confidentiality was guaranteed. Employees then completed the questionnaires, with the majority taking between 45 minutes and one hour.

After all survey sessions had been completed, blank questionnaires and pre-paid envelopes were left at the site, to be given to any employee who had missed the sessions.

**Survey Measures**

The survey measures used were identical to those used in Chapter 4: Team Implementation (see p87). For the full itemisation of all scales, refer to Appendix A (p253).

Cronbach's alpha reliability coefficients, averaged across the two timepoints, are shown in Table 6.1. As was noted in Chapter 4: Team Implementation (see p88), calculation of reliability coefficients was not appropriate for the "team role breadth" subscales.
Table 6.1: Averaged Reliability Coefficients for all Scales across T2 and T3

<table>
<thead>
<tr>
<th>Scale</th>
<th>Cronbach’s Alpha</th>
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<td>Task control</td>
<td>0.86</td>
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<tr>
<td>Interdependence</td>
<td>0.83</td>
</tr>
<tr>
<td>Supervisory style</td>
<td>0.93</td>
</tr>
<tr>
<td>Team task support</td>
<td>0.90</td>
</tr>
<tr>
<td>Team efficacy</td>
<td>0.89</td>
</tr>
<tr>
<td>Motivation</td>
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</tr>
<tr>
<td>Intrinsic satisfaction</td>
<td>0.83</td>
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<tr>
<td>Extrinsic satisfaction</td>
<td>0.77</td>
</tr>
<tr>
<td>Job-related well-being</td>
<td>0.81</td>
</tr>
</tbody>
</table>

Sample

As was stated in Chapter 4: Team Implementation (see p90), the T2 survey was completed by 65 shopfloor employees, which represented a response rate of 79%. The T3 survey was completed by 71 shopfloor employees, giving a response rate of 89%. In order to maximise the available sample, employees were matched across T2 and T3 only, rather than matching subjects over all three survey timepoints. This yielded a matched sample of 55 employees (68%). All subsequent analyses were conducted for this matched sample only.

76% of the matched sample were female. Employee age ranged from 21 years to 64 years, with the average age over the two timepoints being 42 years 5 months. The average organisational tenure was 11 years 10 months and the average job tenure was 6 years 10 months. Of the matched sample, 98% were full-time employees and the majority (94%) held permanent contracts.

Team Membership Change

Information provided by the department’s administrator was used to categorise employees on the basis of their experience of the permanent team membership change event. As was mentioned in Chapter 3: Organisational Context (see p65), the majority of teams in the department crossed two shifts. However, it is reasonable to suggest that changes in team membership would have the most direct impact on those employees working on the shift where changes occurred. Therefore, for the purposes of this study, each sub-team (ie. each team separated by shift) was considered separately.
The categorisation resulted in the following three groups:

(a) **No membership change** (n=21): employees in teams where there was no permanent change in team membership

(b) **Movers** (n=7): employees who themselves had been permanently moved to a new team

(c) **Membership change** (n=27): employees in teams where other employees had moved permanently into or out of the team (but they themselves remained in the same team)

As there were only a small number of employees who had been moved to new teams themselves, group (b) was combined with group (c). This resulted in a two-category variable, which is referred to throughout this chapter as the "team membership change" variable. Thus, this variable consisted of 34 employees who had experienced some kind of team membership change ("movement", value=0) and 21 employees from teams where there had been no membership change ("no-movement", value=1).

**Temporary Movement**

In addition, as was mentioned previously (see p178), following the one-off permanent membership change, some teams experienced more temporary between-team movements than others. More specifically, it was reported that the original three cellular-based teams experienced more temporary movements between T2 and T3 than did other teams. However, this distinction, between more and less temporary movements, could not be formally included in analyses, as all those experiencing more temporary movements (ie. the original three cellular teams) also experienced permanent membership changes, and as such were categorised within the "movement" group. Thus the inclusion of more/less temporary movements would have resulted in an empty cell in the ANOVA analyses. Furthermore, since those teams who experienced more temporary movements were also the original three cellular-based teams, this distinction was further confounded.

However, although these methodological issues prevented the formal investigation of temporary movements, informal reference is made to the "more temporary movements" group (ie. those in the three cellular-based teams following the permanent reorganisation), where appropriate.
Chapter 6: Team Membership Change

Results

The results section for this chapter takes the same form as that in Chapter 4: Team Implementation (see p91). That is, firstly, preliminary descriptive statistics and correlations are presented. Following this, each of the research questions is addressed in turn. A discussion is presented after the analyses for each research question, before the chapter is concluded with an overall summary of the main findings.

All analyses were conducted for the matched sample (n=55) only. In addition, the methodological issues outlined at the start of Chapter 4’s results section (see p91) are applied to the current analyses. More specifically, two-tailed significance levels are used throughout, and the level of analysis is that of the individual, rather than the team.

Preliminary Analyses

Prior to examining the three research questions in this chapter, means, standard deviations and zero order correlations were conducted for all scales at each separate timepoint. These analyses can be found in Tables 6.2a and 6.2b, and will be referred to as appropriate throughout this chapter. It should be noted that, for the most part, the direction and significance of T2 correlations were the same as those shown in Table 4.1b (see p93), providing support that, although slightly different samples were used in Chapter 4 and this chapter, the resulting relationships between variables at T2 are largely the same.
Table 6.2a: Means, Standard Deviations and Zero Order Correlations Between All Scales at T2

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<th>Mean</th>
<th>Std Dev</th>
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(*=p≤.05; **=p≤.01; ***=p≤.001)
**Table 6.2b: Means, Standard Deviations and Zero Order Correlations Between All Scales At T3**

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<tr>
<td>1. team m'ship change</td>
<td>0.38</td>
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(\( \ast = p \leq 0.05; \ast \ast = p \leq 0.01; \ast \ast \ast = p \leq 0.001 \))
Chapter 6: Team Membership Change

Research Question 6 – What is the impact of team membership change on work characteristics, supervisory style, team processes and employee outcomes?

In order to investigate the impact of the team membership change event within the department, three sets of analysis, similar to those in Chapter 4: Team Implementation (see p94) were conducted. Firstly, independent t-tests were undertaken, in order to determine whether there were significant differences between movement and no-movement groups at T2. These analyses were necessary to ascertain whether there were differences between these groups prior to the membership change event.

Secondly, the main analyses for this research question consisted of two-way repeated measures ANOVAs, which were used to investigate changes over time for both movement and no-movement groups.

Finally, the analyses for this research question were concluded with independent t-tests between movement and no-movement groups at T3, to determine the circumstances of these groups at this time.

Prior to these three sets of analyses, however, it should be remembered that, at T2, "team" and "non-team" areas were found to be largely similar (see Chapter 4: Team Implementation, p101). As the sample in the current chapter was not identical to that used in Chapter 4, it was important to undertake a comparison of team and non-team areas at T2, using this sample. The results of the independent t-tests used for this comparison can be found in Appendix D (p264), and indicate that a similar pattern of results was found as is shown in Chapter 4: Team Implementation (see Table 4.4, p102). That is, at T2, there was only one significant difference between team and non-team areas, in relation to job related well-being (t=-2.22, p≤.05). Overall, these results confirm that, at T2, all of the semi-autonomous work teams in the department were characterised by high task control and TRB-basic role, moderately high interdependence and TRB-teamwork, favourable levels of supervisory style, highly positive team processes and favourable employee outcomes.
Chapter 6: Team Membership Change

Comparison between Movement and No-Movement groups at T2
In order to compare the two team membership change groups at T2 (prior to the membership change event), independent t-tests were undertaken. The results of these tests are shown in Table 6.3. These tests indicated that there were no significant differences between the two groups, prior to the team membership change event.
(NB. These results can also be seen in Table 6.2a, with no significant correlations being found between team membership change and other variables.)

Comparison of Change in Movement and No-Movement groups
In the second stage of analysis for research question 6, two-way repeated measures ANOVAs were undertaken. These tests were used to investigate the impact of the team membership change event on both groups. Thus, the ANOVAs comprised of one between-subjects variable (“team membership change”) and one within-subjects variable (“time”). Due to the small sample size, each dependent variable was treated separately.

The subgroups means, F-ratios and significance levels for these analyses are shown in Table 6.4. Interaction effects are also shown diagrammatically, in Figures 6a to 6b. As with the ANOVA analyses in Chapter 4: Team Implementation (see p97), simple main effect tests were also undertaken, to examine change over time for each group separately. Significant simple main effect tests are shown in Table 6.4 by the symbol “†” next to the T3 mean for the relevant group.

The results of these ANOVA and simple main effect tests are outlined below.

Work Characteristics: Table 6.4 indicates that two significant time effects were found, in relation to task control (p≤.001) and TRB-teamwork (p≤.05), with both movement and no-movement groups reporting a decrease in these work characteristics over time. The simple main effect tests indicated that these decreases were significant for both groups separately, in the case of task control, but for the no-movement group only, in the case of TRB-teamwork.
Table 6.3: Independent T-Tests, Comparing Movement and No-Movement groups at T2.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Movement (n=34)</th>
<th>No movement (n=21)</th>
<th>T-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Work Characteristics</strong></td>
<td></td>
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<td></td>
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<tr>
<td>task control</td>
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<td>3.91</td>
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<tr>
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</tr>
<tr>
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<tr>
<td>job related well-being</td>
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<td>3.65</td>
<td>-1.07</td>
</tr>
</tbody>
</table>

(*= p≤.05; **= p≤.01; ***=p≤.001)
Table 6.4: Two-way Repeated Measures ANOVAs, Comparing Movement and No-Movement between T2 and T3

<table>
<thead>
<tr>
<th>Variable</th>
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<th>ANOVA F-ratios</th>
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<td>T3</td>
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<td>Work Characteristics</td>
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<tr>
<td>no movement</td>
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<td>3.53†</td>
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<tr>
<td>TRB - teamwork</td>
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<td>Outcomes</td>
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<td>3.95†</td>
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<td>4.03†</td>
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<td>movement</td>
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<td>movement</td>
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<td>4.31</td>
</tr>
<tr>
<td>no movement</td>
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<td>4.68</td>
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<td>job related wellbeing</td>
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<tr>
<td>movement</td>
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<td>3.42</td>
</tr>
<tr>
<td>no movement</td>
<td>3.65</td>
<td>3.81†</td>
</tr>
</tbody>
</table>

(*) = p≤.05; (**) = p≤.01; (***) = p≤.001
(† = significant simple main effect)
Figures 6a to 6b – Interaction Effects

Fig 6a – Interaction effect for Team Task Support

Fig 6b – Changes over Time for Job Related Well-being
In relation to the other work characteristics, Table 6.4 shows that there were no significant differences between groups, or changes over time, in terms of TRB-basic role or interdependence.

**Supervisory Style:** A highly significant time effect was found in relation to supervisory style \((p<.001)\), with both movement and no-movement groups experiencing a decline in the coaching style of their supervisors between T2 and T3. However, the simple main effect tests indicate that this decline was only significant for the no-movement group.

**Team Processes:** Highly significant time effects were also found for both team task support and team efficacy \((p<.001)\) in both cases, with both groups indicating a decline in team processes over time. Simple main effect tests showed that these decreases were significant for both groups, although the no-movement group reported slightly larger (non-significant) decreases over time than did the movement group. This differential effect was indicated in a significant interaction term in the case of team task support \((p<.01)\), and showed a greater decrease in this team process for the no-movement group, as compared to the movement group (see Figure 6a).

**Employee Outcomes:** Three significant time effects were found in relation to employee outcomes. More specifically, Table 6.4 shows that motivation \((p<.001)\), intrinsic satisfaction \((p<.01)\) and extrinsic satisfaction \((p<.05)\) decreased over time for both groups. The simple main effect tests indicate that these decreases were significant for both groups in relation to motivation, for neither group in relation to extrinsic satisfaction, and for the movement group only in relation to intrinsic satisfaction.

Finally, a significant group effect was found for job related well-being \((p<.05)\). This finding suggested that the movement group tended to have lower job related well-being at both timepoints, compared to the no-movement group. However, the simple main effect tests for this variable suggest that this group effect may be due, in part, to the significant increase over time for the no-movement group. Although the interaction term for job related well-being was not significant, changes over time for this variable are shown diagrammatically in Figure 6b, as this variable showed the only reported significant increase over time.
In summary, these results suggest that both movement and no-movement groups experienced significant decreases in task control, TRB-teamwork, supervisory style, both team processes, motivation and satisfaction between T2 and T3. However, in the cases of TRB-teamwork, supervisory style, team task support and team efficacy, there was some evidence of greater decreases for the no-movement group, as compared to the movement group.

Finally, there was evidence to suggest that job related well-being had improved over time for the no-movement group only.

The interpretations drawn from these results will be addressed shortly (see p194), following the final stage of analysis for research question 6.

**Comparison between Movement and No-Movement groups at T3**

In the final stage of analysis which addresses research question 6, independent t-tests were used to compare movement and no-movement groups at T3. The results of these tests are presented in Table 6.5.

These results indicate only one significant difference between movement and no-movement groups at T3, namely in relation to job related well-being (p≤.05). This finding suggests that, at T3, employees from the no-movement group had higher levels of job related well-being than did employees from the movement group.

(NB. Table 6.2b, indicates a significant positive correlation between team membership change and job related well-being (r=.311, p≤.05). As the movement group is coded as “0” and the no-movement group as “1”, this finding supports the result described above.)

Overall, at T3 both groups were characterised by high levels of TRB-basic role, moderate levels of task control, TRB-teamwork and interdependence, moderately coaching supervision, positive team processes and favourable employee outcomes. It is interesting to note, however, that the movement group reported slightly higher (non-significant) levels of TRB-teamwork, supervisory style and team processes, and the no-movement group reported slightly higher (non-significant, other than for job related well-being) employee outcomes.
Table 6.5: Independent T-Tests, Comparing Movement and No-Movement groups at Time 3.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Movement (n=34)</th>
<th>No Movement (n=21)</th>
<th>T-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Work Characteristics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>task control</td>
<td>3.52</td>
<td>3.53</td>
<td>-0.07</td>
</tr>
<tr>
<td>TRB-teamworking</td>
<td>2.99</td>
<td>2.71</td>
<td>1.38</td>
</tr>
<tr>
<td>TRB-basic role</td>
<td>4.38</td>
<td>4.58</td>
<td>-1.31</td>
</tr>
<tr>
<td>interdependence</td>
<td>3.35</td>
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<td>0.00</td>
</tr>
<tr>
<td><strong>Supervision</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>supervisory style</td>
<td>3.55</td>
<td>3.25</td>
<td>1.69</td>
</tr>
<tr>
<td><strong>Team Processes</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>team task support</td>
<td>3.98</td>
<td>3.56</td>
<td>1.72</td>
</tr>
<tr>
<td>team efficacy</td>
<td>3.84</td>
<td>3.56</td>
<td>1.31</td>
</tr>
<tr>
<td><strong>Outcomes</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>motivation</td>
<td>3.95</td>
<td>4.03</td>
<td>-0.83</td>
</tr>
<tr>
<td>intrinsic satisfaction</td>
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<tr>
<td>extrinsic satisfaction</td>
<td>4.31</td>
<td>4.68</td>
<td>-1.69</td>
</tr>
<tr>
<td>job related wellbeing</td>
<td>3.42</td>
<td>3.81</td>
<td>-2.29*</td>
</tr>
</tbody>
</table>

(*= p≤.05; **= p≤.01; ***=p≤.001)
These results, along with the two previous stages of analyses are discussed below (see p194). However, prior to this, the issue of temporary movements between teams is briefly addressed.

The above three stages of analysis focused on comparisons between those employees who experienced permanent changes in their team membership and those employees working in teams where membership did not change. However, as was discussed above, there were differences in the extent to which teams experienced temporary between-team movements between teams (see p178, p181). Although it has previously been established that differences in temporary movement could not be formally included in the above analyses (see p181), in order to provide an informal exploration of the effects of temporary movements, the following additional analysis was conducted.

The “movement” group was separated into two subgroups, representing those who experienced more temporary movements (ie. the original three teams) and those who experienced less temporary movements. Related t-tests were conducted for these two subgroups, to examine how each subgroup changed over time. Comparisons were then made between the two subgroups, on the basis of t-test significances.

For the majority of variables, the results of these t-tests showed similar patterns, suggesting that the frequency of temporary movements did not lead to differential changes over time. However, in the cases of intrinsic and extrinsic satisfaction, significant decreases over time were found for the more-temporary movements subgroup (t=3.00, p≤.05 for intrinsic satisfaction, and t=2.33, p≤.05 for extrinsic satisfaction), but not for the less-temporary movements subgroup. Thus, whilst it is acknowledged that comparisons between these two subgroups are confounded by “team status” (ie. original teams/newer teams), these findings provide some tentative support that more frequent temporary movements may be detrimental to employee satisfaction.
Chapter 6: Team Membership Change

Discussion: Research Question 6

Research question 6 addressed the impact of team membership change on work characteristics, supervisory style, team processes and employee outcomes. The main results found in relation to this research question are discussed below.

Firstly, it was determined that the movement and no-movement groups were not significantly different on any of the measured variables at T2 (ie. prior to the membership change event). This suggests that any differences following the team membership change were unlikely to be attributable to pre-existing differences.

The ANOVA analyses indicated that, between T2 and T3, employees in both movement and no-movement groups had less autonomy over immediate production tasks, were less involved in teamwork related tasks, had less encouraging, coaching supervisors, supported each other less, believed in the abilities of their team less, and were less motivated and less satisfied. This overall, declining, trend may explained by two possible sources.

Firstly, it may be the case that all the teams in the department experienced a natural decline over time, similar to that found for the original three teams in Chapter 4 (see p104). That is, the novelty of teamworking and the effort employees put into functioning as a team may have decreased over time, and/or their behaviours and perceptions may have been modified as a result of experience, as is suggested by the Reconstruction phase of the CORE model (see p28). In addition, following the initial development of teamworking, the extent to which supervisors coached and encouraged their teams may also have naturally declined, as employees became more familiar with their responsibilities (ie. supervisors may have moved from a “power-building” towards an “empowered” style as described by Stewart and Manz (1995), p42).

Secondly, it could be argued that the team membership change event led to a loss of faith in the teamworking concept for all teams in the department. More specifically, as was indicated previously (p178), there was the suggestion that the membership change event had led employees to conclude that “teamworking” was not what they previously
perceived it to be. In addition to the illustrative comments shown on page 178, one employee summarised this feeling at T3, saying that:

"It [teamworking] was just another management fad...they spent all this time building the teams and then decided that they'd move people about. We're still supposed to be in teams, but I think everyone's just waiting for the next new thing to come along"

It is not possible to determine the extent to which the reported decreases over time were attributable to these two explanations. Although it could be argued that the membership change event would result in a loss of faith in teamworking only for those employees directly involved in the change, it is equally probable that any negative feelings as a result of the membership change were felt throughout the whole department. Overall, it is likely that both of these explanations contributed to the decline over time, and resulted in a decrease in employee effort being placed on maintaining levels of autonomy, involvement and positive team processes. Similarly, a combination of the above explanations could have led to decreases over time in employees' feelings of motivation and satisfaction.

The decline over time in employees' reports of supervisory style may be also be due to a natural decline over time, or as a result of less favourable employee perceptions following the membership change event. However, it could also be the case that supervisors themselves also perceived the membership change event in a negative way, leading them to change their personal constructions of teamworking (see Chapter 5: Supervisors' Perceptions of Teamworking, p129) and as a result put less effort into coaching and encouraging their teams. The available data for this thesis, however, does not allow this possibility to be examined.

It is also important to acknowledge that the overall decline occurring between T2 and T3 may be attributable to other sources not addressed in this thesis. For example, changes in salary, human resources policies or overtime arrangements could all have led to industrial relations conflicts which impacted on employees' perceptions of the department. However, informal discussions with the Operations Manager confirmed that human resources issues, industrial relations and the overall organisational context remained largely similar between T2 and T3. This suggests a reasonable likelihood that the changes reported above were associated with the team membership change event. However, without a control group (ie. similar department where membership change did
not occur), the relationship between team membership change and an overall decline in teamworking benefits cannot be stated definitively.

Interestingly, however, both the simple main effect tests and the t-tests at T3 provided some evidence that the decline described above was smaller for those employees directly involved in team membership changes, in particular regarding TRB-teamwork, and both team processes. Thus, these results show that those employees who were moved to a new team, and those employees who stayed in the same team but had other members move in or out, experienced less of a decrease in their involvement in teamworking tasks, the coaching style of their supervisors, the amount they supported each other and the beliefs they held about their teams’ abilities.

These findings suggest that, although the team membership change event appears to have been perceived negatively across the department, those employees who were directly involved in the changes were better able to maintain effective levels of involvement and team processes. It can be argued that, when faced with a new composition of team members, these teams had to undergo the process of development all over again, and as such remained more focused on the concept of teamworking. Furthermore, as noted by McGrath and O’Connor (1996) (see p31), the arrival of new members may have given teams the opportunity to view things from a new perspective, and to modify previously inefficient interactions. These possible explanations were also noted by one of the supervisors (supervisor H), who commented:

“It benefits teams if you change some of the personnel occasionally – it brings in new ideas and stops the team getting stale.”

Finally, there was some evidence that the coaching, facilitative style of supervisors did not decline to as great an extent for the movement areas, as compared to the no-movement areas. Although this could be due to changes in employees’ perceptions of supervisors, it could also be the case that supervisors in the movement areas had to maintain more active involvement, in order to help these reformed teams to develop again.
However, although there was evidence that the membership change event to some extent counteracted negative changes for the movement group, in terms of involvement, supervisory style and team processes, there was evidence that employee outcomes decreased to a greater extent for this group, as compared to the no-movement group. In particular, the ANOVA analyses showed that intrinsic satisfaction decreased more for the movement group as compared to the no-movement group, and that although job related well-being did not change over time for the movement group, well-being was found to increase for the no-movement group. These results suggest that whereas greater stability over time may be more detrimental to the continued effective functioning of teams, greater stability appears to be less detrimental in terms of employee outcomes.

Furthermore, the informal analyses regarding frequency of temporary movements suggest that permanent movements, coupled with greater frequency of temporary movements, may be particularly problematic in relation to employee satisfaction. However, although Appendix D (see p264) indicates that team status did not significantly differentiate the original teams from the more recently formed teams at T2, the confounding influence of this variable on temporary movements means that the above finding can only be seen as tentative. That is, it is unclear whether differential changes in satisfaction over time are due to the frequency of temporary movements or due in some way to the original three teams having been formed for longer, or being cellular-based in design.

In conclusion, it appears that natural attrition, coupled with the membership change event led to a decline over time in autonomy, involvement, supervisory style, team processes, motivation and satisfaction. However, for those directly involved in the membership change event, these detrimental effects seem to be smaller in the cases of involvement, supervisory style and team processes, but larger in relation to employee outcomes. This suggests that moving employees permanently between teams helps to maintain a focus on working effectively as a team, but may be harmful to employee satisfaction and well-being. Furthermore, there was some tentative evidence that more frequent temporary movements may be particularly problematic in relation to employees’ job satisfaction.
Chapter 6: Team Membership Change

The theoretical and practical implications of these findings are discussed in Chapter 7: Thesis Discussion (p220). In particular, it is interesting to speculate whether these findings would have differed if the requirement for between-team movement had been more clearly stated by management in the early stages of team development.

However, prior to such discussions, the focus of this chapter turns now to the relationships between work characteristics, supervisory style, team processes and employee outcomes.
Research Question 7: Following Team Membership Change, are Work Characteristics, Supervisory Style and Team Processes related to Employee Outcomes?

Research question 6 investigated the impact of team membership change on work characteristics, supervisory style, team processes and employee outcomes. As in Chapter 4: Team Implementation (see p83), the remaining research questions in this chapter focus on the nature of relationships between these groups of variables. These research questions are identical to research questions 2 (p106) and 3 (p119), but are addressed in a different temporal context (i.e. following team membership change).

The next research question (number 7), investigates whether work characteristics, supervisory style and team processes are related to employee outcomes, following team membership change. The stages of analysis used to examine this research question are the same as those used for research question 2 (p106). That is, firstly reference was made to the preliminary correlations (see p182), to examine whether employee outcomes were significantly correlated with other variables at each separate timepoint. Following this, correlations between change scores were conducted, to investigate whether changes over time in employee outcomes were related to changes over time in work characteristics, team processes and employee outcomes. Finally, regression analyses based on these change scores were undertaken to further investigate these relationships.

Preliminary Analyses

In the first stage of analysis for research question 7, the preliminary analyses shown in Tables 6.2a and 6.2b (p183-184) were referred to, in order to determine whether work characteristics, supervisory style and team processes were related to employee outcomes both before (T2) and after (T3) the team membership change event. The results of these correlations are outlined below. As was noted previously (see p182), the significant correlations found at T2 were largely the same as those found in Chapter 4: Team Implementation (see Table 4.1b, p93).
Chapter 6: Team Membership Change

**Motivation:** Tables 6.2a and 6.2b indicate that motivation was significantly positively correlated with supervisory style at both timepoints, and with interdependence at T3 only. In addition, motivation was significantly positive correlated with both team processes, although at T3 only.

**Intrinsic Satisfaction:** It was found that intrinsic satisfaction was also significantly positively correlated with supervisory style at both timepoints. In addition, significant positive correlations were found between intrinsic satisfaction and interdependence, team task support and team efficacy at T2 only, and TRB-basic role at T3 only.

**Extrinsic Satisfaction:** Extrinsic satisfaction was found to be significantly positively correlated with team task support at both timepoints. In addition, significant positive correlations were found between extrinsic satisfaction and both supervisory style and team efficacy, at T2 only, and between extrinsic satisfaction and TRB-basic role at T3 only.

**Job Related Well-being:** Tables 6.2a and 6.2b indicate that TRB-teamwork was positively correlated with job related well-being at both timepoints. Job related well-being was also positively correlated with both team processes at T2 only. Finally, a significant positive correlation was found between job related well-being and TRB-basic role, at T3 only.

In addition to the above findings, the preliminary correlations indicated that background variables were only minimally correlated with employee outcomes, namely: motivation was positively associated with age at T2 only, and intrinsic satisfaction was negatively correlated with job tenure at T2 only.

The results of these correlations provide some evidence of work characteristics, supervisory style and team processes being positively associated with employee outcomes at each separate timepoint. In particular, following the team membership change, involvement in basic role and teamworking tasks, more coaching supervisory styles, greater support between team members in the completion of their tasks and greater beliefs in the team’s abilities were all found to be associated favourably with one or more employee outcome.

However, as has been previously asserted (see Chapter 4, p107), these correlations do not address the impact of changes over time and, as such, the implications which can be drawn from the above findings are somewhat restricted.
Correlations between Change Scores

Thus, in order to investigate the potential relationships between work characteristics, supervisory style, team processes and employee outcomes over time, zero order correlations between changes in scores were undertaken. In a similar approach to that used in Chapter 4 (see p108), these change scores were computed as “change (Δ) score = T3 score minus T2 score.” The correlation matrix formed using these change scores is shown in Table 6.6. The team membership change variable was also included in this correlation matrix, to indicate changes in variables over time related to employees’ experience of the team membership change event.

The results of these change score correlations indicate that no significant correlations were found between Δemployee outcomes and either Δother variables or team membership change. This lack of findings suggests that the changes in employee outcomes reported in research question 6 (p190) were due to factors other than those measured in this study. However, was discussed in Chapter 4, research question 2 (see p108), these correlations do not control for pre-change differences and consider the relationships between pairs of variables only. As such, it may be the case that significant relationships would be found following a more detailed examination of these relationships.

Regression Analyses

Thus, in order to consider multiple variables at the same time, and to control for T2 differences, regression analyses were undertaken. These regressions were conducted using the same method as was described in Chapter 4, research question 2 (see p110). A brief review of this method is given below.

Four regression analyses were undertaken, one for each employee outcome, as the sample size did not permit the use of multiple dependent variables. The dependent variable in each regression was the change score for that employee outcome. Variables were then entered into the regression models in the following steps. Firstly, the T2 score for the dependent variable was entered, to control for pre-change differences. Secondly, team membership change was entered, to assess differences due to employees direct experience of the membership change event. Following this, pre-change (T2) and
### Table 6.6: Means, Standard Deviations and Zero Order Correlations between All Change Scores (T3-T2)

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std Dev</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. team m'ship change</td>
<td>0.38</td>
<td>0.49</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Δtask control</td>
<td>-0.36</td>
<td>0.64</td>
<td>-0.022</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Δtrb-teamwork</td>
<td>-0.21</td>
<td>0.66</td>
<td>0.051</td>
<td>0.282*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Δtrb-basic role</td>
<td>-0.01</td>
<td>0.58</td>
<td>0.142</td>
<td>0.232</td>
<td>0.414**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Δinterdependence</td>
<td>-0.18</td>
<td>0.70</td>
<td>0.019</td>
<td>0.177</td>
<td>0.016</td>
<td>0.254</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Δsupervisory style</td>
<td>-0.27</td>
<td>0.62</td>
<td>-0.178</td>
<td>0.361**</td>
<td>0.286*</td>
<td>0.005</td>
<td>0.270</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Δteam task support</td>
<td>-0.43</td>
<td>0.67</td>
<td>-0.390**</td>
<td>-0.128</td>
<td>0.215</td>
<td>0.226</td>
<td>0.014</td>
<td>0.239</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Δteam efficacy</td>
<td>-0.29</td>
<td>0.62</td>
<td>-0.142</td>
<td>-0.076</td>
<td>0.203</td>
<td>0.145</td>
<td>0.228</td>
<td>0.389**</td>
<td>0.629***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Δmotivation</td>
<td>-0.36</td>
<td>0.61</td>
<td>0.050</td>
<td>0.217</td>
<td>0.176</td>
<td>0.201</td>
<td>0.073</td>
<td>0.214</td>
<td>0.003</td>
<td>-0.039</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Δintrinsic satisfaction</td>
<td>-0.34</td>
<td>0.74</td>
<td>0.003</td>
<td>0.133</td>
<td>0.256</td>
<td>-0.023</td>
<td>0.180</td>
<td>0.216</td>
<td>0.035</td>
<td>0.238</td>
<td>0.160</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Δextrinsic satisfaction</td>
<td>-0.38</td>
<td>0.88</td>
<td>0.034</td>
<td>0.175</td>
<td>0.258</td>
<td>0.124</td>
<td>0.136</td>
<td>0.191</td>
<td>-0.021</td>
<td>0.235</td>
<td>0.234</td>
<td>0.735***</td>
<td></td>
</tr>
<tr>
<td>12. Δjob related wellbeing</td>
<td>0.09</td>
<td>0.43</td>
<td>0.234</td>
<td>-0.018</td>
<td>0.205</td>
<td>0.214</td>
<td>0.266</td>
<td>-0.074</td>
<td>0.112</td>
<td>0.199</td>
<td>0.119</td>
<td>0.220</td>
<td>0.315*</td>
</tr>
</tbody>
</table>

(*= p<.05; **= p<.01; ***= p<.001)
change scores (Δ) for work characteristics, supervisory style and team processes were examined for their impact on changes in each employee outcome.

All scores were standardised before being entered into the regressions, to minimise problems associated with multicollinearity. In addition, due to the sample size, small combinations of variables were considered in the regression equations, with consistently non-significant variables being discarded from further analysis.

Significant predictors within these regression models can be interpreted in the same way as in research questions 2 and 3 (see p111 and p123). However, it should be noted that, as the overall trend between T2 and T3 was a decrease in scores over time (see research question 6, p194), in the majority of cases the average absolute change scores were negative. This means that interpretive confusion may occur, as "a small increase" in research questions 2 and 3 is now equivalent to "a large decrease" in this chapter, and vice versa. Thus, to avoid confusion, β weights will be interpreted in terms of more and less favourable changes. That is, a large decrease/small increase is referred to as a "less favourable change" and a small decrease/large increase is referred to as a "more favourable change".

The regression models for the four employee outcomes are shown in Tables 6.7a to 6.7d, and are described below.

**ΔMotivation:** A highly significant regression model was found for Δmotivation (F=41.65, p≤.001), and this model accounted for 78% of the variance in this dependent variable. However, the majority of this variance (72%) was accounted for by T2 motivation scores. The β weight for this variable was highly significant (p≤.001) and negative, which indicates that those employees with higher levels of motivation at T2 experienced a less favourable change (ie. a larger drop) in motivation over time. The inclusion of team membership change in step 2 was not significant, suggesting that there were no differences in motivational changes over time which could be accounted for by whether employees had direct experience of team membership change.

---

1 As with research questions 2 (p111) and 3 (p123), T2 and change scores for background variables were also examined, but were not found to significantly predict any change in employee outcome.
Tables 6.7a to 6.7d: Regressions predicting changes in employee outcomes between T2 and T3.

### Table 6.7a: Regression Analysis for Δ Motivation

<table>
<thead>
<tr>
<th>Step</th>
<th>β</th>
<th>β</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. T2 motivation</td>
<td>-.848***</td>
<td>-.849***</td>
<td>-.884***</td>
</tr>
<tr>
<td>2. team m'ship change</td>
<td>.054</td>
<td>.103</td>
<td></td>
</tr>
<tr>
<td>3. T2 supervisory style</td>
<td></td>
<td></td>
<td>.292**</td>
</tr>
<tr>
<td>Δ supervisory style</td>
<td></td>
<td></td>
<td>.173*</td>
</tr>
</tbody>
</table>

ΔR² (total R² = .778)  .720*** .003 .054**

### Table 6.7b: Regression Analysis for Δ Intrinsic Satisfaction

<table>
<thead>
<tr>
<th>Step</th>
<th>β</th>
<th>β</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. T2 intrinsic satisfaction</td>
<td>-.497***</td>
<td>-.508***</td>
<td>-.519***</td>
</tr>
<tr>
<td>2. team m'ship change</td>
<td>.075</td>
<td>-.099</td>
<td></td>
</tr>
<tr>
<td>3. temporary movements</td>
<td></td>
<td></td>
<td>-.296**</td>
</tr>
</tbody>
</table>

ΔR² (total R² = .310)  .247*** .006 .057**

(*= p≤.05; **= p≤.01; ***=p≤.001)
### Table 6.7c: Regression Analysis for Δ Extrinsic Satisfaction

<table>
<thead>
<tr>
<th>Step</th>
<th>( \beta )</th>
<th>( \hat{\beta} )</th>
<th>( \bar{\beta} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. T2 extrinsic satisfaction</td>
<td>-.279*</td>
<td>-.299*</td>
<td>-.400**</td>
</tr>
<tr>
<td>2. Team status</td>
<td>.101</td>
<td>-.177</td>
<td></td>
</tr>
<tr>
<td>3. Temporary movements</td>
<td>-.503**</td>
<td>-.517**</td>
<td></td>
</tr>
</tbody>
</table>

\( \Delta R^2 \) (total \( R^2 = .242 \))

\( .078^{**} \) \( .010 \) \( .154^{**} \)

### Table 6.7d: Regression Analysis for Δ Job Related Well-being

<table>
<thead>
<tr>
<th>Step</th>
<th>( \beta )</th>
<th>( \hat{\beta} )</th>
<th>( \bar{\beta} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. T2 job related well-being</td>
<td>-.199</td>
<td>-.272*</td>
<td>-.301*</td>
</tr>
<tr>
<td>2. Team m'ship change</td>
<td>.336*</td>
<td>.381*</td>
<td></td>
</tr>
<tr>
<td>3. T2 supervisory style</td>
<td>.145</td>
<td>.135</td>
<td></td>
</tr>
</tbody>
</table>

\( \Delta R^2 \) (total \( R^2 = .161 \))

\( .039 \) \( .107^* \) \( .015 \)

\( *=p \leq .05; **=p \leq .01; ***=p \leq .001 \)
However, supervisory style was found to account for a significant amount of the variance in $\Delta$motivation ($R^2 = .054$, $p \leq .01$) when entered in step 3. As Table 6.7a indicates, both T2 supervisory style ($p \leq .001$) and $\Delta$supervisory style ($p \leq .05$) were significant predictors. The $\beta$ weights for both of these variables were positive, suggesting that those reporting more coaching supervision at T2 experienced more favourable changes (i.e. smaller decrease) in motivation over time, and that more favourable changes in supervisory style over time were associated with more favourable changes in motivation over time. No work characteristics or team process variables were found to significantly predict changes in motivation.

$\Delta$Satisfaction: In the cases of both intrinsic and extrinsic satisfaction, none of the work characteristics, supervisory style or team process variables were found to significantly predict changes in satisfaction. In addition, team membership change was not found to be a significant predictor. However, as was discussed in research question 6 (p193), there was some suggestion that satisfaction may have been affected by the frequency of temporary movements. Therefore, a dummy variable was created to reflect temporary movements, and its significance in predicting changes in satisfaction was tested. This dummy variable separated those employees who experienced more temporary movements (i.e. the original three teams) from those who experienced less temporary movements (i.e. the remaining teams, including both those who had experienced a permanent change in membership and those where team membership had remained the same). The more temporary movements group was coded as “1” and the less temporary movements group was coded as “0”.

The results of these regression models, which included T2 scores for satisfaction and both team membership change and temporary movements, are described below.

$\Delta$Intrinsic Satisfaction: The regression equation for $\Delta$intrinsic satisfaction was significant ($F=7.00$, $p \leq .001$) and accounted for 31% of the variance. However, the majority of this variance (25%) was accounted for by a significant negative T2 intrinsic satisfaction $\beta$ weight ($p \leq .001$). As with the $\Delta$motivation regression, this indicated that those employees with higher T2 intrinsic satisfaction experienced a less favourable change (i.e. larger decrease) in intrinsic satisfaction over time. Team membership

---

2 This dummy variable for temporary movements was also offered for inclusion in the regression models for motivation and job related well-being, but was not found to significantly predict changes in these two employee outcomes.
change was not found to significantly predict Δintrinsic satisfaction. However, the inclusion of temporary movements, in step 3, was significant (p≤.01). The β weight for this variable was negative, which indicated that those employees experiencing more temporary movements reported less favourable changes (ie. larger decrease) in intrinsic satisfaction over time.

**ΔExtrinsic Satisfaction:** This regression model was also significant (F=3.12, p≤.05), and accounted for 24% of the variance in Δextrinsic satisfaction. The pattern of results found was the same as that found in relation to Δintrinsic satisfaction. That is, those employees with higher T2 extrinsic satisfaction experienced less favourable changes in extrinsic satisfaction over time, and those employees who had more temporary movements also reported less favourable changes in extrinsic satisfaction over time.

**ΔJob Related Well-being:** In the final regression model, it was found that both T2 job related well-being scores and team membership change significantly accounted for significant proportions of the variance in Δjob related well-being. As with other cases, the β weight for T2 job related well-being (p≤.05) was negative, suggesting that those which better well-being at T2 reported less favourable changes over time (ie. larger decreases). Furthermore, the β weight for team membership change was positive, which indicated that more favourable changes in well-being over time (ie. smaller decreases) were associated with the no-movement group as compared to the movement group (as movement was coded as “0” and no-movement coded as “1”). No work characteristics, supervisory style or team process variables were found to be significant predictors. However, this regression model as a whole was not significant (F=2.08, p=.10) and, as such, the reliability of these findings may be questionable.

The implications of these findings, along with the correlation results, are discussed below.
Discussion: Research Question 7

Research question 7 examined whether work characteristics, supervisory style and team processes were able to predict team processes, following membership change. The main results found in relation to the research question are discussed below.

Cross-section evidence was provided which suggests that, following membership change, positive levels of employee involvement, interdependence and supervisory style were associated with favourable employee outcomes. More specifically: a more coaching supervisory style was positively related to motivation, satisfaction and job related well-being; greater interdependence was associated with higher motivation; greater involvement in teamworking tasks was related to positive satisfaction and well-being; and greater involvement in basic role tasks was associated with motivation and extrinsic satisfaction.

Thus, these findings highlight the importance of designing interdependent teams with favourable levels of involvement and coaching, facilitative supervision. However, as was noted in relation to research question 2 (see p116), these correlations only provide a cross-section view of the teams in this study, and as such do not capitalise on the longitudinal nature of the data available. In addition, the direction of causality cannot be determined using these correlational analyses.

Correlations between change scores did not find any variable to be significantly correlated with employee outcomes. This lack of findings raises the issue of whether changes in employee outcomes were related to factors which were not addressed in this thesis. However, these correlations did not control for pre-change (ie. T2) differences, and also compare only pairs of variables. As such, it was necessary to further investigate the relationships between change scores, in order to discover whether significant relationships did exist.

In all of the regression analyses, it was found that higher employee outcomes at T2 were associated with less favourable changes (ie. larger decreases) in employee outcomes over time. Although T2 scores were entered primarily in order to control for pre-change differences, these findings reflect a ceiling effect, in that those with higher motivation, satisfaction and well-being had more scope for decline over time.
The regression analyses, however, identified only one case where work characteristics or supervisory style significantly predicted employee outcomes, over and above membership change. This finding was in relation to motivation, and suggested that those employees with more coaching supervisors at T2, and whose supervisors changed more favourably (i.e. declined less) over time, also experienced more favourable changes (i.e. smaller decrease) over time in motivation.

In the remaining regressions, aspects of team membership change were the only significant predictors of changes in employee outcomes. More specifically, it was found that experience of the permanent membership change was related to less favourable changes in job related well-being, and greater frequency of temporary movements was related to less favourable changes in satisfaction. However, it should be noted that the regression model for job related well-being was not significant, and therefore unlikely to be reliable. In addition, the dummy variable used to examine temporary movements may be confounded by “team status” (see p197).

These findings provide support for those reported in research question 6 (see p197); namely that both permanent and temporary between-team movements may be detrimental to employee outcomes. In addition, the lack of significant predictors, over and above the effects of movements, suggests that the impact of between-team movements may have been strong enough to overshadow other relationships. However, it could also be the case that changes in employee outcomes were affected by variables other than those measured in this thesis.

As with research question 2 (see p118) it should be noted that the regression analyses discussed above were limited by the size of the sample, which prevented all of the variables being entered together.

In conclusion, investigations of this research question provided cross-sectional support that teams with greater interdependence, more involvement in tasks and more coaching supervision also have more favourable employee outcomes. In addition, the analyses supported the assertion that between-team movements may be detrimental to employee outcomes. However, although pre-change and changes scores for supervisory style predicted motivation, no other significant relationships were found between work characteristics or supervisory style and changes over time in employee outcomes. This
suggests that changes in employee outcomes were either affected by variables outside of the scope of this thesis, or alternatively that the effects of both permanent and temporary membership change had a stronger predictive effect than any other variable.

Research Question 8: Following team membership change, are work characteristics and supervisory style related to team processes?

The final research question in this chapter, and indeed of this thesis, addressed whether work characteristics and supervisory style were related to team processes, following team membership change. This research question, therefore, focused on the same relationships as those addressed in research question 3 (see p119), but in a different temporal context. As such, the stages of analyses for research question 8 were the same as those undertaken for research question 3 (see p119). That is, firstly reference was made to the preliminary analyses, in order to examine correlations between work characteristics, supervisory style and team processes at T2 and T3 separately. Following this, change score correlations were examined, to investigate whether change over time in work characteristics and supervisory style were related to changes over time in team processes. Finally, regression analyses were conducted, using the same method as that used in research questions 2, 3 and 7.

Preliminary Analyses

Reference was made to the preliminary correlations shown in Tables 6.2a and 6.2b (p183-184), to determine whether work characteristics and supervisory style were related to team processes at T2 and T3 separately. The results of these correlations are shown below.

Team Task Support: The preliminary correlations indicate that team task support was significantly positively correlated with interdependence and supervisory style at both timepoints, and with TRB-teamwork and TRB-basic role at T3 only.

Team Efficacy: Tables 6.2a and 6.2b show that significant positive correlations were found between team efficacy and TRB-teamwork, interdependence and supervisory style at both timepoints, and between team efficacy and TRB-basic role at T3 only.
These correlations also indicated that no background variables were significantly correlated with either team process at either timepoint.

The results of these correlations suggest a similar pattern of results to those found in research question 3 (see p119), and indicate that those teams with more favourable team processes were also those teams with a broader role breadth, greater interdependence and more coaching, facilitative supervision. However, as has been discussed previously, these correlations do not take advantage of the temporal nature of the data.

**Correlations between Change Scores**

Thus, as in research question 3 (see p120), the second stage of analysis was to investigate correlations between changes over time in work characteristics and supervisory style and changes over time in team processes. These change-score correlations are shown in Table 6.6 (see p202), and are summarised below.

Table 6.6 indicates that \( \Delta \text{team efficacy} \) was significantly positively correlated with \( \Delta \text{supervisory style} \) (p≤.01). In addition, a significant negative correlation was found between \( \Delta \text{team task support} \) and \( \Delta \text{team membership change} \). As the movement group was coded as 0 and the no-movement group was coded as 1, this finding indicates that the movement group reported more favourable changes (i.e. a smaller decrease) in team task support over time than did the no-movement group.

The results of these change-score correlations suggest that those teams where supervisors' coaching style declined to a lesser extent also reported smaller decreases in their beliefs about the team. Additionally, these correlations provide support for the finding in research question 6 (see p196), that team task support decreased less for the movement group as compared to the no-movement group.

However, as has been indicated previously, these change-score correlations do not control for differences at T2, and also only examine pairs of variables. Thus, in order to examine multiple variables over time, and to control for differences at T2, regression analyses were undertaken.
Regression Analyses

Two regression analyses were undertaken, one for each team process, using the same method as was outlined in research question 2 (p110). That is, the dependent variable for each regression was the change score for each team process. The first two independent variables entered into each regression were the T2 dependent variable score and team membership change respectively. Following this, T2 and Δscores for work characteristics and supervisory style variables were offered up for inclusion in each regression model³.

The regression analyses are shown in Tables 6.8a and 6.8b, and are described below. As was discussed in relation to research question 7 (see p203), in order to maintain clarity, the terms “more favourable change” and “less favourable change” are used in the descriptions below.

ΔTeam Task Support: This regression model (see Table 6.8a) was highly significant (F=5.51, p≤.001), and accounted for 37% of the variance in Δteam task support. Step 1 indicates that T2 team task support scores did not significantly predict changes over time in team task support. However, team membership change was found to account for a significant proportion of the variance (R²=.140, p≤.01). The β weight for this variable was negative, which shows that the movement group experienced more favourable changes (ie. smaller decrease) in team task support over time than did the no-movement group. Furthermore, the inclusion of supervisory style at step 3 also significantly predicted Δteam task support (R²=.158, p≤.01). Both T2 and Δsupervisory style were significant predictors, and the beta weights for both these variables were positive. This indicates that those employees reporting higher supervisory style scores at T2, and those who experienced more favourable changes (ie. smaller decline) in supervisory style over time, also had more favourable changes in team task support over time. In addition, the inclusion of these variables led T2 team task support becoming significant. Finally, as in research question 3 (p121), an interaction term was also included in the team process regressions. This interaction term (“team membership change x Δsupervisory style”) was not significant in relation to Δteam task support.

³ As was the case in research questions 2, 3 and 7, pre-change and change scores for the background variables were also entered into the regression equations, but were not found to be significant predictors of either team process change score.
Tables 6.8a to 6.8b: Regressions predicting changes in team processes between T2 and T3.

**Table 6.8a: Regression Analysis for ΔTeam Task Support**

<table>
<thead>
<tr>
<th>Step</th>
<th>β</th>
<th>β</th>
<th>β</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. T2 team task support</td>
<td>-.226</td>
<td>-.200</td>
<td>-.362*</td>
<td>-.410**</td>
</tr>
<tr>
<td>2. team m'ship change</td>
<td>- .375**</td>
<td>- .272*</td>
<td>- .244</td>
<td></td>
</tr>
<tr>
<td>3. T2 supervisory style</td>
<td>.524**</td>
<td>.393*</td>
<td>.426**</td>
<td></td>
</tr>
<tr>
<td>Δ supervisory style</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. team m'ship change x Supervisory style</td>
<td>.</td>
<td>.</td>
<td>.170</td>
<td></td>
</tr>
</tbody>
</table>

ΔR² (total R² = .374) .051 .140** .158** .026

**Table 6.8b: Regression Analysis for ΔTeam Efficacy**

<table>
<thead>
<tr>
<th>Step</th>
<th>β</th>
<th>β</th>
<th>β</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. T2 team efficacy</td>
<td>-.318*</td>
<td>-.329*</td>
<td>-.439**</td>
<td>-.526***</td>
</tr>
<tr>
<td>2. team m'ship change</td>
<td>-.155</td>
<td>-.043</td>
<td>-.012</td>
<td></td>
</tr>
<tr>
<td>3. T2 supervisory style</td>
<td>.431*</td>
<td>.515**</td>
<td>.573***</td>
<td></td>
</tr>
<tr>
<td>Δ supervisory style</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. team m'ship change x Supervisory style</td>
<td>.272*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ΔR² (total R² = .360) .101* .024 .169** .066*

(* = p ≤ .05; ** = p ≤ .01; *** = p ≤ .001)
However, the inclusion of this interaction term did cause team membership change to become non significant, and it is argued that, given a larger sample, the interaction terms would have become significant. Therefore, the form of this interaction is shown in Figure 6c.

Figure 6c was plotted using subgroup means, as was described in research question 3 (p123). The favourable and less favourable changes in supervisory style are plotted to the left of the y-axis, to highlight the fact that supervisory style on averaged decreased over time. This figure shows the two main effects which were described above. That is, changes in supervisory style were positively related to changes in team task support (irrespective of movement), and the no-movement group experienced less favourable changes in team task support over time than did the movement group (irrespective of supervisory style). Additionally, Figure 6c shows that the no-movement group was affected by changes in supervisory style to a greater extent than were the movement group. More specifically, changes in team task support over time were largely similar for the movement group, irrespective of the nature of supervisory style changes. For the no-movement group, by comparison, the size of change in supervisory style had a relatively greater impact on changes in team task support.

$\Delta$Team Efficacy: The regression model for $\Delta$team efficacy was also significant ($F=5.30, p<.001$), and accounted for 36% of the variance in the dependent variable. It was found that T2 team efficacy significantly predicted $\Delta$team efficacy ($p<.05$). The $\beta$ weight for this variable was negative, which suggests that those employees with higher team efficacy at T2 experienced less favourable changes (ie. larger decrease) in team efficacy over time. Team membership change was not found to be a significant predictor at any stage of the model. However, supervisory style did account for a significant proportion of the variance ($p<.01$). Both T2 supervisory style and $\Delta$supervisory style were significant, with the $\beta$ weights for both being positive. As with $\Delta$team task support, these findings indicate that those employees with higher T2 supervisory style scores, and those employees who had more favourable changes (ie. smaller decline) in supervisory style over time, also experienced more favourable changes in team efficacy over time. In addition, the interaction term between team membership change and $\Delta$supervisory style was significant in relation to $\Delta$team efficacy ($p<.05$).
Figures 6c and 6d: Interaction Effects

Fig 6c: Interaction Effect for $\Delta$Team Task Support

![Graph showing interaction effect for Team Task Support](image)

A = less favourable change in supervisory style (mean $\Delta=-0.70$)
B = more favourable change in supervisory style (mean $\Delta=+0.21$)

Fig 6d: Interaction Effect for $\Delta$Team Efficacy

![Graph showing interaction effect for Team Efficacy](image)
Chapter 6: Team Membership Change

Figure 6d shows that the form of this interaction was of a similar form to that found for team task support. That is, the figure shows that changes in supervisory style over time were positively associated with changes in team efficacy over time. In addition, Figure 6d indicates that changes in supervisory style had a relatively greater impact on the no-movement group, as compared to the movement group. Thus, as was the case for team task support, the size of change in supervisory style was more strongly related to the size of change in team efficacy for the no-movement group, as compared to the no-movement group. In particular, when no-movement employees experienced a more favourable change (i.e. smaller decrease) in supervisory style over time, their team efficacy did not change over time.

These findings, along with those from the previous two stages of analysis, are discussed below.

Discussion: Research Question 8

The final research question in this thesis examined whether work characteristics and supervisory style were able to predict team processes, following team membership change.

It was found that, after the membership change event (i.e. T3), teams which reported more interdependence, greater involvement in both teamworking tasks and basic role tasks, and more coaching facilitative supervision also reported more favourable employee processes. In addition, correlations between change scores indicated that more favourable changes (i.e. smaller decline) in supervisory style over time were associated with more favourable changes in team efficacy.

Furthermore, there was support for the findings in research question 6 (see p196) that team task support decreased less over time for the movement group, as compared to the no-movement group. This finding was replicated in the regression analyses, and suggests that direct experience of membership change better enabled employees to maintain positive support for one another in the completion of their tasks.
The regression analyses also indicated that those employees who reported more coaching supervision at T3, and those employees who experienced more favourable changes (ie. smaller decline) in supervisory style over time also experienced more favourable changes over time in both team processes. These findings suggest that, where supervisors were more able to maintain appropriate supervisory styles, their subordinates were more able to maintain favourable within-team support and beliefs in the team. Furthermore, it appears to be the case that those employees with more coaching, facilitative supervisors prior to team membership change were better able to maintain favourable team processes.

Finally, the regression results suggested that changes over time in supervisory style had a relatively greater impact on changes in team processes for the no-movement group, as compared to the movement group. This reflects the possibility that, for the no-movement group, changes in supervisory style were the main contributing factor to the maintenance of positive team processes, whereas, for the movement group, changes in supervisory style were accompanied by changes in team membership, and as such supervisory style had a comparatively less noticeable impact.

In summary, these was cross-sectional evidence that a broader role breadth, greater interdependence and more coaching supervision were related to more favourable team processes, following team membership change. Over time, more favourable changes in supervisory style were associated with more favourable changes in team task support and team efficacy. Furthermore, more appropriate supervision prior to the membership change appeared to related to relatively more favourable changes in team processes.

In addition, there was further evidence that direct experience of team membership change better enabled employees to maintain favourable team processes. To conclude, the no-movement group was more responsive to changes in supervisory style over time than were the movement group, suggesting that changes in supervisory style may be more strongly related to changes in team processes under conditions of relative stability.
Summary: Chapter 6

This study examined the impact of team membership change on work characteristics, supervisory style, team processes and employee outcomes. In addition, the relationships between these variables were investigated. The main findings from these investigations are summarised below.

It was found that team members had less autonomy over their immediate production tasks, were less involved in teamwork related tasks, had less coaching, facilitative supervisors, supported each other less, believed in the abilities of their team less, and were less motivated and satisfied, following team membership change. The cause of these declines cannot be definitively established, but it is argued that they are likely to be due to a combination of a natural decline over time and a negative reaction to the team membership event.

However, the findings suggested that direct experience of team membership change may better enable employees to maintain favourable team processes and role breadth, possibly through maintaining a focus on working as a team and preventing the team from becoming stale. In addition, it appears to be the case that supervisors put more effort into maintaining coaching style for these reformed teams. There was some suggestion, however, that team membership change may be more detrimental to employee outcomes, as compared to greater team membership stability. More specifically, tentative findings suggested that a greater frequency of temporary between-team movements may be particularly problematic in relation to job satisfaction.

Turning to the relationships between variables, there was cross-sectional evidence that, following team membership change, more interdependent teams with a broader role breadth and more coaching, facilitative supervisors were associated with more favourable employee outcomes. However, over time, it was suggested that both permanent and temporary team membership changes were the strongest predictors of changes in employee outcomes. Although supervisory style was a significant predictor of changes in motivation, overall the regression findings suggested that the effects of...
membership change may have been strong enough to overshadow other possible predictors of employee outcome change.

In relation to team processes, cross-sectional analyses suggested that greater involvement in both teamwork related tasks and basic role tasks, greater interdependence and more coaching supervision were associated with more favourable team processes.

Over time, supervisory style was found to be the strongest predictor of changes in both team processes, over and above the impact of team membership change. The direction of these relationships suggested that those employees who had more coaching, facilitative supervisors prior to the membership change, and those employees in teams were the supervisors' coaching style declined to a lesser extent, were better able to maintain favourable team processes.

Finally, there was evidence that changes in supervisory style had a greater impact on team processes for those employees who did not experience any changes in their team membership. This finding suggests that, under conditions of relative stability, changes in team processes over time are particularly responsive to changes in supervisory style.

The methodological issues which have been touch upon in this chapter, along with the theoretical and practical implications of the findings, are discussed in more depth in the following chapter (Chapter 7: Thesis Discussion).
Chapter 7: Thesis Discussion

The final chapter provides an overall discussion of the issues raised in this thesis. The aim of the chapter is to draw together the key findings from each of the empirical studies and to discuss their practical and conceptual implications.

The chapter begins with an overview of the focus of this thesis. Following this, the key findings from the three empirical studies are presented, and their conceptual implications discussed. Consideration is then given to the practical implications arising from the key results. Finally, a discussion of the methodological issues associated with the current studies is presented, and areas for future research are highlighted.
Chapter 7: Thesis Discussion

Thesis Focus

The conceptual focus of this thesis was the implementation and subsequent development of semi-autonomous work teams in a manufacturing production setting. A review of the existing literature identified a number of areas where further research was deemed beneficial. These areas formed a more specific focus for the thesis, and are briefly summarised below. Following this section, the main findings from the studies presented in this thesis are presented.

Firstly, it was noted that, despite substantial research activity in the field of teamworking, clear predictions regarding the outcomes of working in teams remain somewhat elusive. In particular, although increased job satisfaction has been cited as an employee benefit of teamworking in a number of studies (eg. Wall, Kemp, Jackson and Clegg 1986, Cohen and Ledford 1994), consistent findings regarding other employee outcomes are less prevalent. This thesis, therefore, focused on the effects of work teams on motivation and job related well-being, in addition to job satisfaction, in an attempt to contribute to the understanding of the employee benefits derived from teamworking.

Secondly, the teamworking literature indicated that the majority of studies were cross-sectional in nature or based in relatively short periods of time, thereby providing a fairly static view of teamworking. Thus, it appeared that the investigation of teamworking over a longer time frame would be beneficial in gaining a clearer understanding of work team development. In particular, although work teams in "real world" settings change and develop following their initial creation, the research literature highlighted that the majority of work on team development tended to have been conducted in laboratory settings. Therefore, this thesis took a longitudinal approach in studying teamworking (largely based on Argote and McGrath’s (1993) CORE model of work team development), in order to investigate changes over time. In doing so, it was possible to capitalise on a management-initiated reorganisation of work team membership; a research area that has been studied almost exclusively in experimental laboratory settings. As such, this thesis was able to make an important contribution in relation to the impact of team membership change in an applied context.
Furthermore, despite the existence of a number of work team effectiveness models (e.g. Tannenbaum, Beard and Salas 1992, Campion, Medsker and Higgs 1993), few of these models specifically address forms of autonomous teamworking, where the key factors for effectiveness may differ from those for traditional teams. In particular, few models (Cohen 1994 being an exception) make direct reference to the role of first line supervisors, despite problems surrounding appropriate supervision being highlighted as a key contributor to teamworking failures, particularly in autonomous work team contexts (Stewart and Manz 1995). Therefore, this thesis addressed the impact of both team implementation and team membership change on three sets of factors which were felt to be particularly important for semi-autonomous work teams, namely: supervisory style, work characteristics (autonomy, involvement and interdependence) and team processes (team task support, team efficacy). In addition, given the potential importance of first line supervisors in successful teamworking, a more detailed focus of this factor was undertaken, through the investigation of supervisors' perceptions of teamworking and the relationship between these perceptions and supervisory style.

Finally, although most models of work team effectiveness propose causal pathways between inputs, processes and outputs, these relationships have tended to be theoretically rather than empirically based. Thus, within this thesis two types of relationships were investigated. Firstly, the studies examined whether work characteristics, supervisory style and team processes were related to employee outcomes. Secondly, investigation was carried out to determine whether work characteristics and supervisory style were related to team processes. In order to consider the possibility of differing relationships occurring in different temporal contexts, these relationships were investigated both following team implementation and following team membership change.

In order to investigate these issues, three empirical studies were undertaken. The first study (Chapter 4, p83) used quantitative survey data, collected at two timepoints, to investigate the implementation of semi-autonomous work teams, and to examine relationships between variables as highlighted above. The second study (Chapter 5, p129) took the form of a cross-sectional investigation into supervisors' personal constructions of teamworking, using repertory grid technique. This study examined the factors which supervisors perceived to be important for effective teamworking, and
whether these perceptions were related to their supervisory style as rated by their subordinates. In the final empirical study (Chapter 6, p174), the impact of a management-initiated membership change event was investigated, in addition to undertaking further examination of the relationships between work characteristics, supervisory style, team processes and employee outcomes.

In the next section of this chapter, the key findings from these empirical studies are summarised and integrated, and their conceptual implications are discussed. Following this, practical implications arising from these key findings are addressed. To conclude, methodological issues surrounding this thesis are considered, and areas for future research are discussed.

Key Findings and Conceptual Implications

The findings in relation to each of the research questions addressed in this thesis have been discussed previously in some detail, in Chapters 4, 5 and 6. In this section, therefore, the key findings are highlighted, and discussed in terms of their conceptual implications. In order to clarify the main themes emerging from this thesis, the findings are organised in terms of their investigative focus (see research model, p57), rather than the order in which they appeared in the thesis.

Work Team Development

Research questions 1 and 6 (see p94, p185) addressed the impact of both work team implementation and changes in team membership on work characteristics, supervisory style, team processes and employee outcomes.

The results of analyses in relation to research question 1 provided some support for the benefits of teamworking often espoused. More specifically, there was some evidence that employees' job satisfaction and well-being improved, following the adoption of semi-autonomous teamworking. In addition, the teamworking initiative was associated with a broader employee job role, greater interdependence, improved support between
team members in the completion of their tasks, and greater beliefs in the abilities of the team.

However, there was also some indication that a decline in these benefits may occur, once teams have been formed for some time. This decline may be seen as “natural”, occurring once the novelty of team-based working wore off. In addition, this attrition may be the result of habituating their behaviours, as described in the reconstruction phase of the CORE model (p28), leading, for example, to the reduced need for interdependence and between-member support, as employees become more familiar with their tasks. Alternatively, it may be the case that employees’ perceptions were modified over time, as greater involvement and autonomy, and supportive team member interactions became the norm. As such, it could be argued that some decline over time in perceived work characteristics, team processes and employee outcomes is to be expected. However, it could also be the case that these effects were due to more problematic issues, such as teamworking not living up to employees’ expectations, or because of conflict either within the team or between the team and other agents in the organisation.

Evidence of a decrease over time in autonomy, involvement, facilitative supervision, team processes, motivation and satisfaction were also found in relation to research question 6 (see p194). Although, again this may be due to a natural decline, there was some evidence that these negative changes over time occurred, at least in part, in response to the team membership change event. More specifically, it was suggested that management’s shift in focus from relatively static teams to more flexibility between teams challenged employees’ conceptualisations of teamworking. As a result, team members may have lost faith in the concept of teamworking, and exerted less effort on working together effectively. In addition, decreases over time in the coaching style of supervisors may have been due to unfavourable changes in employees’ perceptions, or alternatively as a result of supervisors’ reactions to the team membership change event.

However, the findings for research question 6 also highlighted that team membership change was associated with differential impacts, dependent on employees’ direct experience of the membership change event. More specifically, findings suggested that those employees who were moved to a new team, or who had new members move into or out of their team, may have been better able to maintain effective levels of
involvement and team processes. This supports the viewpoint that team membership change can be beneficial in maintaining employees' focus on teamworking, and preventing teams from becoming stale, through the injection of "new blood" (eg. McGrath and O'Connor 1996). In addition, it could be the case that, for those teams who did not experience membership change, fears of the anticipated consequences of membership change were greater than the actual consequences. Finally, there was evidence to suggest that supervisor style declined to a lesser extent, for those teams who directly experienced the membership change. This may be a reflection of employees' perceptions of their supervisor, or may indicate that, when faced with reformed teams, these supervisors made greater efforts to maintain a coaching, facilitatory style, in order to help these reformed teams develop effectively.

However, although direct experience of team membership change was associated with some benefits, there was evidence that this group of employees had less favourable responses in terms of satisfaction and well-being. Thus, it appears that greater team stability may be detrimental in terms of team processes, supervisory style and involvement, but may be associated with favourable employee outcomes. Furthermore, there was some tentative evidence that the problematic deterioration in satisfaction was due to the frequency of temporary between-team movements (see p197). This latter finding supports the assertion by Arrow and McGrath (1993) and others (see p33) that, whereas some membership change may be beneficial, repeated membership change may become detrimental for team members.

It is important to note that, although the above interpretations make sense conceptually, and were supported to some extent with qualitative data, without the existence of control groups, these interpretations cannot be seen as definitive. For example, the initial improvements after teamworking implementation, followed by a decline, may simply be due to a Hawthorne effect, with employees reacting to increased levels of attention from management (and indeed this researcher). Similarly, without comparisons with teams in a context where team membership change did not occur, the extent to which the effects found in research question 6 were due to membership change cannot be definitively established. This acknowledged, however, informal discussions with management and employees during data collection did suggest that no other significant events occurred (for example changes in pay, industrial disputes) which were likely to have influenced these findings.
Overall, the findings in relation to research questions 1 and 6 support the view that team-based working is potentially beneficial, but that teams do change over time, both under conditions of relative stability and as a result of externally initiated events. Consequentially, these results suggest that the development of team effectiveness models that incorporate changes over time would provide a more complete framework in which to study teamworking.

**Relationships Between Variables**

The second set of issues which arose from this thesis refer to the relationships between the variables outlined in the research model (see p57). More specifically, research questions 2 (p106) and 7 (p199) investigated whether work characteristics, supervisory style and team processes were related to employee outcomes, and research questions 3 (p119) and 8 (p210) examined whether work characteristics and supervisory style were related to team processes. Each of these relationships is outlined below.

Research questions 2 and 7 provided some cross-sectional evidence that more positive motivation, satisfaction and well-being were associated with greater interdependence, broader task involvement, more favourable team processes and more coaching, facilitatory supervision. These findings, therefore, support those in the literature regarding the benefits of positive work characteristics, supervisory style and team processes in relation to employee outcomes (eg. Hackman and Oldham 1980, Campion et al 1993, Cohen, Chang and Ledford 1997).

However, issues of more potential interest arose from investigations into the existence of these relationships over time. In particular, research question 2 indicated that, where team role breadth broadened and supervisory style became more coaching and facilitative over time, employees also reported improvements in job related well-being and satisfaction respectively. In addition, there was also some evidence that those with a broader role breadth from the outset, were better able to develop favourable well-being over time. These findings suggest that the continued development of team role breadth and supervisory style may lead to move favourable employee outcomes over time.
However, research question 7 indicated that, following team membership change, the above relationships were not identified. This lack of robust relationships may be due to the small sample size, and also raises the question of whether employee outcomes were influenced by factors not addressed in this thesis. However, it was found that direct experience in team membership change predicted job related well-being, and frequency of temporary movements predicted job satisfaction. These findings provide support for the effects discussed above (see p225), and also lead to the possibility that the experience of both permanent and temporary between-team movements may have effects strong enough to overshadow other potential relationships which would be uncovered under relatively stable team membership conditions.

Research questions 3 and 8 addressed whether work characteristics and supervisory style were related to team processes, following both team implementation and team membership change. These investigations provided evidence of more robust relationships in comparison to those described above.

Firstly, these investigations provided cross-sectional support for greater involvement and interdependence, and more facilitative supervisory styles being associated with greater team task support and team efficacy. These findings support the pathways, proposed in model work team effectiveness models, between inputs and processes (eg. Tannenbaum et al 1992, Yeatts and Hyten 1998).

In addition, more detailed investigations suggested that supervisory style was the key factor in developing positive team processes over time. These findings suggested that those supervisors who developed more coaching, facilitative styles over time, and those supervisors with more facilitatory styles initially, were better able to develop and maintain effective team processes over time. It is interesting to note that these relationships between supervisory style and team processes occurred in the contexts of both team implementation and following team membership change, implying that more favourable supervisory styles contribute to effective team functioning under both of these conditions.

Finally, it was shown that, in conditions of relative stability (ie. teams which had been previously undergone team formation, and teams which were not directly involved in membership change), changes in supervisory style had relatively more impact on
changes in team processes, as compared to conditions of relative instability (i.e. teams undergoing implementation, and teams directly involved in membership change) (see p121, p214). This reflects the possibility that, in relative stability, changes in supervisory style were the main contributing factor to changes in team processes, whereas, in periods of relative instability, changes in supervisory style were accompanied by other changes (e.g. changes in team membership) and as such may have comparatively less impact. As such, these findings point to the importance of supervisors in maintaining positive team processes, particularly under conditions of relative stability. Indeed, it appears that supervisors could be playing a key role in minimising the natural decline over time outlined above.

Overall, the findings regarding relationships between variables place a particular emphasis on the importance of the first line supervisor in developing and maintaining positive employee outcomes and team processes, and these results support the assertion that appropriate supervision is a key contributor to successful semi-autonomous teamworking (e.g. Manz and Sims 1991, Stewart and Manz 1995). These findings, therefore, point to the importance of explicitly including supervision in team effectiveness models, particularly in those models which specifically address forms of autonomous teamworking.

**Supervisors' Personal Constructions**

The final theme arising from this thesis builds on the central importance of supervision discussed above. These findings, resulting from the investigations for research questions 4 and 5 (see p139, p165), focus on supervisors' personal constructions of teamworking.

It was found that supervisors perceived a range of issues to be important for effective teamworking, including the characteristics of employees’ jobs, the composition of the team, interactions between team members, team members’ attitudes and orientations, and supervisory approaches. More detailed investigation of the underlying structure of supervisors' construction systems revealed that supervisors generally considered developing a positive team environment and working as autonomous teams to be the most important themes relating to effective teamworking. However, although there was
some general consensus, this study discovered that supervisors often held different viewpoints with regard to the construction of the "ideal" team, and on their primary focus within the underlying themes. Furthermore, there was some evidence that those supervisors who held more complex constructions, incorporating a more diverse range of issues, tended to receive more favourable ratings of their supervisory style by subordinates.

Conceptually, this latter finding supports Stewart and Manz' (1995) view that supervisory style is determined, at least in part, by supervisors' perceptions of teamworking. In addition, this study contributes to the research literature in providing information on the kinds of issues supervisors perceive to be important. Finally, the fact that supervisors differed in their focus and viewpoints has implications for the study of both team development and communication in teamworking contexts. For example, the fact that supervisors may use the same words but be referring to different underlying issues, or may use different words but actually mean the same thing has consequences for communication and potential conflict between agents in teamworking contexts. Thus, a more complete view of the mechanisms of effective communication, both between supervisors and between supervisors and their subordinates, may understood through considering similarities and differences in agents' construction systems.

In addition, supervisors' personal constructions of teamworking are likely to affect not only the overall style they adopt, but also the aspects of teamworking on which they place most emphasis when developing and maintaining work teams. As such, it could be argued that the way in which teams develop, and perceptions of teamworking which are formed by team members, will be influenced to some extent by supervisors' personal construct systems.
Practical Implications

The key findings discussed above also have implications for the practical application of autonomous work teams. The most important practical implications are addressed below.

Firstly, this thesis provides support for the idea that autonomous work teams are generally beneficial. However, organisations thinking of adopting team-based working need also to be aware that highly effective teams may be difficult to maintain over time. Thus, consideration needs to be made regarding mechanisms which would best promote prolonged employee effort in teamworking initiatives. In the light of the findings discussed above, a key consideration is the development of coaching and facilitative supervision (see below). In addition, the findings in this thesis suggest that some between-team movements may be beneficial in maintaining effective team functioning over time (see below). Furthermore, other possible mechanisms, not specifically addressed in this thesis, include team related pay or reward schemes, periodic refresher training courses and specific emphasis on the development of team member interpersonal and self-management skills (see eg. Stevens and Campion 1994).

Secondly, the thesis suggests that some degree of team member movement may be beneficial in counteracting the natural declines in teamworking benefits, by maintaining team members' focus on the teamworking concept and preventing teams from becoming overly cohesive and "stale". However, between-team membership change, and greater frequency of temporary movements in particular, may be problematic in terms of employee outcomes. In addition, it appears that shifting the focus of teamworking from relatively static teams to between-team flexibility has the potential to undermine previously successful teamworking initiatives. This is not to say that managers should attempt to avoid moving employees between established teams, not that this is likely to be possible given increasingly turbulent markets, but rather that negative reactions may be lessened if the concept of between-team flexibility were more clearly incorporated into the teamworking initiative from the outset. Although it is acknowledged that balancing focus and commitment between the team and the organisation is difficult to achieve (eg. Allen 1996), it is likely that those organisations successfully achieving this balance would be more able to benefit from team membership change.
Furthermore, given the findings described in this thesis, the role of the first line supervisor appears to be a key determinant in the development and maintenance of positive team processes and employee outcomes. In particular, in the case of team processes, supervisory style may be particularly influential in minimising the natural decline over time under conditions of relative stability. These findings suggest that organisations adopting autonomous work teams should place particular emphasis on training and development for first line supervisors. Such training is particularly important in clarifying the apparent paradox of managing individuals who are supposed to manage themselves (Manz and Sims 1986). In addition, although it is acknowledged that personal constructs are by their very nature personal, and cannot be imposed on individuals, training courses which promote the importance of autonomous teamwork and developing positive team environments, and which consider both work and people issues to be contributors to effective teamworking, may increase the likelihood that supervisors develop more effective coaching, facilitative styles.

To conclude, effective communication on the roles and boundaries of key agents in autonomous teamworking contexts (ie. team members, supervisors, managers) could help to clarify the responsibilities of these agents, and reduce role conflict.

Methodological Issues and Areas for Future Research

The studies presented in this thesis contribute to the available research regarding the impact of autonomous forms of teamworking. However, a number of issues warrant further research, both to improve upon and to extend the work presented here. The main methodological issues and areas for future research are, therefore, described below.

Need for Replication

The main methodological issue, regarding the robustness and generalisability of the results presented in this thesis, arises from the relatively small sample size used in the quantitative analyses. Although it should be noted that an acceptable response rate was achieved for all three surveys, there is a need for the replication of these studies using a
larger sample. Such replications could provide more sophisticated statistical support for the findings highlighted in this thesis, in addition to determining whether these results are generalisable to other manufacturing environments and indeed other organisational settings such as service industries.

**Causality**

Further research would also be beneficial in clarifying the direction of causality, in relation to the investigations of relationships between variables. The cross-sectional survey data analyses did not allow for the direction of causality to be determined, and the possibility that more motivated and satisfied employees tend to perceive their teams, supervisors and work environments more positively cannot be discounted. However, the regression analyses did provide some support for causality, in particular where pre-change scores were significantly related to changes over time. For example, it was found that those employees reporting higher initial supervisory style scores also experienced more favourable changes in team processes over time, suggesting that more coaching, facilitative supervisors led to more beneficial developments in team processes. However, overall, further work would be advantageous in clarifying causality issues.

In addition, the use of alternative research designs would help to clarify the possibility of alternative explanations of the findings described above. In particular, although the current studies attempted to compare alternative treatment groups which were similar in other respects, and gained qualitative information to rule out the existence of other significant events, research designs which incorporate control groups could better determine the existence of alternative causal explanations.

**Different Methodological Approaches**

In addition to the adoption of alternative research designs, future work which used alternative methodological techniques would also contribute to the generalisability of the results presented in this thesis. More specifically, the majority of data used in this thesis were collected using traditional survey techniques. This data collection approach raises two methodological
issues. Firstly, survey data is often criticised on the grounds of common method variance. Although the majority of quantitative analyses reported here focused on comparisons between data collected at separate timepoints, thereby minimising the problems of common method variance, further research, using a triangulation of different methods (for example observation of team member and supervisor behaviours, or ratings by supervisors or managers of team effectiveness), would be beneficial in strengthening these findings.

Secondly, as the survey data were based on self-reports, the issue of subjectivity also needs to be addressed. It can argued that employees’ perceptions of their team, rather than the objective team environment are likely to have a more direct impact on team processes and employee outcomes. In addition, in the case of supervisors’ personal constructions of teamworking, objective data would be largely meaningless. However, there would be some benefit in extending the current research to include more objective data, for example technical data on production environments, objective observation rating techniques or organisational records of absence and health.

Widening the Research Focus
This thesis focused on a number of factors which were felt to be particularly important for effectiveness in work teams with some degree of autonomy. However, it would be advantageous to expand the focus of inquiry to other factors often highlighted in work team effectiveness models. For example, it would be interesting and informative to extend research of this kind to include other work characteristics, such as task demands (Yeatts and Hyten 1998), technical uncertainty (Wall, Jackson and Davids 1992) and task variety (Hackman and Oldham 1980), and to consider a wider range of team processes, for example team cohesion (Tannenbaum et al 1992), communication (Salas, Dickinson, Converse and Tannenbaum 1992) and social support (Campion et al 1993).

In addition, it would be valuable to consider the impact of other categories of variable such as team composition, organisational context and individual factors. For example, evidence regarding the introduction of teamworking in the current organisation (see Chapter 3: Organisational Context, p58) suggested a relatively positive organisational context. However, it would be interesting to investigate whether similar findings
occurred in contexts which differed, for example, in terms of managerial support for teamworking (Pasmore, Francis, Haldeman and Shani 1982), training and development (Swezey and Salas 1992) or human resources practices (Parker, Mullarkey and Jackson 1994).

Similarly, largely due to the homogeneity of the current sample, this study did not specifically address features of team composition such as gender diversity (Williams 2000), expertise (Cohen 1994) and team size (Campion et al 1993), although it is acknowledged that the incorporation of such issues would contribute to the findings reported here.

Finally, individual factors such as preference for teamworking (Campion et al 1993), experience of work tasks (Hackman 1997), locus of control (Spector 1982) and individual need for challenging work (eg. growth need strength, Hackman and Lawler 1971) are likely to affect team members’ perceptions of and reactions to their work environment, and the effort they apply to effective team functioning.

In addition to widening the focus of potential “input” factors, a particularly important area for future research is the consideration of the findings reported here in relation to organisational outcomes. Attempts were made, during the completion of this thesis, to obtain objective organisational data on which to examine the impact of teamworking. However, suitable data was not available which would justifiably reflect the impact of semi-autonomous work teams, without being confounded by other factors (eg. machine reliability, production demands). In addition, the fact that the teams in this thesis all produced different products, which were measured in different ways, added to the difficulties in obtaining comparable performance measurements.

These difficulties raise the issue of the measurement of organisational outcomes, and the choice of suitable measures which would reflect the impact of teamworking. Thus, whilst it is acknowledged that work in this field would benefit from the inclusion of objective organisational outcomes, such as performance, quality and safety, the question of suitable outcome measures needs to be addressed further.
Further Investigation of Key Findings

The studies presented in this thesis essentially "scratched the surface" of a number of interesting issues, which would benefit from future research.

Firstly, supervisor perceptions of teamworking were investigated after all the teams had been formed, when perceptions were likely to be at their most similar. Greater understanding of supervisors' personal constructions may be gained from investigating how perceptions change over time, particularly following organisational change, and how personal constructions of teamworking differ between supervisors of autonomous work teams and those of more traditional teams. It would also be interesting to investigate, in more detail, how supervisors' perceptions affect their supervisory style and how these perceptions affect the development of team member construct systems regarding teamworking.

Secondly, it would also be advantageous to continue research into autonomous work team development, focussing in particular on the existence of natural declines in teamworking benefits under conditions of relative stability. The studies presented in this thesis were based on data collected at relatively dispersed timepoints and, as such, more in-depth investigations of teams, using more frequent timepoints may reveal some of the finer detail which has not been addressed in this thesis. For example, although potentially time consuming, future work which measured or observed a small number of teams on a weekly, or even daily basis, would help to gain a clearer understanding of how teams change and develop. This kind of methodological approach has often been adopted in laboratory setting, but work of this kind is also needed in applied settings.

Finally, more research is clearly needed into the effects of team membership change in applied settings. Whilst this thesis contributed to hereto sparse research in this area, it is acknowledged that categorisation of membership change used was rather crude. That is, teams were categorised purely on the basis of direct experience / no direct experience of the team membership change event. Whilst this categorisation was largely enforced by the sample size, more fine grained distinctions, such as whether team members moved into or out of the team, whether team members themselves were moved, and the size of membership change relative to team size, would clearly contribute to understanding in this field. Thus, although there are difficulties inherent in the study of membership
change in applied settings (see p30), the author suggests that teamworking researchers take fuller advantage of membership change events as they occur in field settings, or that the existence of such changes are at least controlled for in teamworking studies.

Concluding Remarks

Overall, this thesis provides some interesting contributions to the teamworking literature, particularly in highlighting the ways in which work teams change and develop over time. In addition, the thesis calls attention to the importance of supervisory style and supervisors' personal constructions of teamworking as key determinants of the development of favourable team processes and employee outcomes. This work has important implications, in terms of conceptual frameworks, future research and practical applications of autonomous teamworking.

Whilst it is acknowledged that there are some methodological issues associated with the studies presented here, further research would help to strengthen the robustness and generalisability of the findings discussed above, and could also expand upon the key issues resulting from the current investigations.
References


McGrath, J. E., & Hollingshead, A. B. (1993). Putting the 'group' back into group support systems: Some theoretical issues about dynamic processes in groups with technological


Appendix A: Survey Measures

Task Control
To what extent:

1. Do you decide on the order in which you do things?
2. Do you decide when to start a piece of work?
3. Do you decide when to finish a piece of work?
4. Do you set your own pace of working?
5. Can you control how much you produce?
6. Can you vary how you do your work?
7. Do you plan your own work?
8. Can you control the quality of what you produce?
9. Can you decide how to go about getting your job done?
10. Can you choose the methods to use in carrying out your work?

[Response scale – not at all; just a little; moderate amount; quite a lot; a great deal]

Team Role Breadth
How often are the members of your team involved in the following?

TRB-Basic Role
1. Setting up machines when there is a changeover of product
2. Ensuring quality standards are maintained
3. Solving quality problems
4. Ensuring your team’s work area is safe to work in

TRB-Teamwork
1. Deciding how your team goes about getting its work done
2. Setting targets and goals for your team
3. Contacting your customers and suppliers
4. Presenting information from your team to senior management
5. Presenting information from your team to other colleagues
6. Training new team members
7. Deciding on rest breaks for your team members
8. Solving disputes between your team members
9. Deciding the physical layout of your team’s work area
10. The day-to-day maintenance of the machines in your team
11. Solving minor breakdowns of machines  
12. Suggesting new ways of doing things in your team  
13. Discussing problems with other teams  

**TRB-Outside Role**  
1. Deciding on long term plans for your team  
2. Deciding on long term plans for your department  
3. Deciding on long term plans for your company  
4. Selecting new team members  
5. Disciplining your team members  
6. Giving team feedback and appraisals  
7. Solving major breakdowns of machines  
8. Deciding how to spend your team's budget  

[Response scale – never; rarely; sometimes; usually; always]  

**Interdependence**  
Please indicate whether you agree or disagree with each of the statements below, using the scale given:  

1. I cannot get my tasks done without information or materials from other members of my team  
2. Other members of my team depend on me for information or materials needed to perform their tasks  
3. My work goals come directly from the goals of my team  
4. Everything that I do is related to the goals of the team  
5. Feedback about my performance in my job comes primarily from the information about how well the team is doing  
6. My performance is judged by how well my team performs  

[Response scale – strongly disagree; disagree; neither agree nor disagree; agree; strongly agree]  

**Supervisory Style**  
My supervisor:  

1. puts suggestions made by the team into operation  
2. makes sure I get the help I need to work effectively  
3. offers new ideas for solving job-related problems  
4. encourages people to exchange opinions and ideas  
5. encourages us to plan a difficult job before we attempt it  
6. encourages us to think about how we are going to do a job before we begin it  
7. encourages us to set goals for our team performance  
8. encourages us to praise each other for doing a good job  
9. encourages us to expect a lot from ourselves
10. encourages us to be aware of our level of performance
11. encourages us to share improvements with other teams

[Response scale – strongly disagree; disagree; neither agree nor disagree; agree; strongly agree]

Team Task Support
Please indicate whether you agree or disagree with each of the statements below, using the scale given:

1. I have full confidence in the technical skills of my team members
2. I can rely on the other members of my team not to make my job more difficult by careless work
3. I can rely on the other members of my team to help me out when I am overloaded with work
4. If I got into difficulties at work, I know the other members of my team would try to help me out
5. The people in my team can be relied upon to do as they say they will do
6. Members of my team co-operate to get the work done
7. Everyone in my team does their fair share of work

[Response scale – strongly disagree; disagree; neither agree nor disagree; agree; strongly agree]

Team Efficacy
Please indicate whether you agree or disagree with each of the statements below, using the scale given:

1. My team has confidence in itself
2. Members of my team have great confidence that the team works effectively
3. My team can take on nearly any task and complete it successfully
4. My team feels that it can solve any problem it encounters
5. No task is too tough for my team

[Response scale – strongly disagree; disagree; neither agree nor disagree; agree; strongly agree]

Motivation
For each question, please tick the box that best fits how you would describe yourself.

1. I feel a sense of personal satisfaction when I do this job well
2. I take pride in doing my job as well as I can
3. I feel unhappy when my work is not up to my usual standard
4. My opinion of myself goes down when I do this job badly
5. I try to think of ways of doing my job effectively
6. I like to look back on a day's work with a sense of a job well done

[Response scale – strongly disagree; disagree; neither agree nor disagree; agree; strongly agree]
Job Satisfaction
How satisfied are you with:

**Intrinsic Satisfaction**
1. The freedom to choose your own method of working
2. The recognition you get for good work
3. The amount of responsibility you are given
4. The opportunity to use your ability
5. Your chance of promotion
6. The attention paid to suggestions you make
7. The amount of variety in your job

**Extrinsic Satisfaction**
1. Your fellow colleagues
2. Your immediate boss
3. Your salary
4. Relationships between different levels in the organisation
5. The way your firm is managed
6. Your hours of work
7. Your job security
8. The physical working conditions

[Response scale – extremely dissatisfied; very dissatisfied; moderately dissatisfied; not sure; moderately satisfied; very satisfied; extremely satisfied]

Job Related Well-being
These questions concern how you feel at work. During the past month how much of the time has your job made you feel:

1. Tense
2. Miserable
3. Depressed
4. Optimistic
5. Calm
6. Relaxed
7. Worried
8. Enthusiastic
9. Anxious
10. Contented
11. Gloomy
12. Happy

[Response scale – never; occasionally; some of the time; most of the time; all of the time]
## Appendix B: Supervisors’ Constructs

<table>
<thead>
<tr>
<th>Construct Pole (rated 1)</th>
<th>Ideal Team Rating</th>
<th>Construct Pole (rated 7)</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team members more dedicated</td>
<td>1</td>
<td>Team members less dedicated</td>
<td>TMA</td>
</tr>
<tr>
<td>Team members get on well</td>
<td>1</td>
<td>Team members don’t get on well</td>
<td>TP</td>
</tr>
<tr>
<td>Team members are flexible</td>
<td>1</td>
<td>Team members are inflexible</td>
<td>TMA</td>
</tr>
<tr>
<td>Team members are willing to take on new tasks, responsibilities</td>
<td>1</td>
<td>Team members not willing to take on new tasks, responsibilities</td>
<td>TMA</td>
</tr>
<tr>
<td>More supervised</td>
<td>7</td>
<td>Less supervised</td>
<td>S</td>
</tr>
</tbody>
</table>

### Supervisor A

<table>
<thead>
<tr>
<th>Construct Pole (rated 1)</th>
<th>Ideal Team Rating</th>
<th>Construct Pole (rated 7)</th>
<th>Category</th>
</tr>
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<tbody>
<tr>
<td>Specifically selected for teamworking</td>
<td>3</td>
<td>“Best of the rest”</td>
<td>TC</td>
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<tr>
<td>Consistent work</td>
<td>1</td>
<td>Intermittent work</td>
<td>WEJC</td>
</tr>
<tr>
<td>Team members communicate well</td>
<td>2</td>
<td>Poor communication</td>
<td>TP</td>
</tr>
<tr>
<td>Confident team members</td>
<td>4</td>
<td>Not so confident team members</td>
<td>TMA</td>
</tr>
<tr>
<td>Encouraging supervisor style</td>
<td>1</td>
<td>Directive supervisor style</td>
<td>S</td>
</tr>
<tr>
<td>Team members involved, interested</td>
<td>1</td>
<td>Team members not involved, interested</td>
<td>TMA</td>
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<tr>
<td>Newer team</td>
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<tr>
<td>Working for team betterment</td>
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<td>Working for individual betterment</td>
<td>TMA</td>
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<tr>
<td>Team members open to change</td>
<td>1</td>
<td>Team members set in their ways</td>
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<tr>
<td>Team members trust each other</td>
<td>2</td>
<td>Lack of trust between team members</td>
<td>TP</td>
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<tr>
<td>Team members get on well together</td>
<td>1</td>
<td>Team members don’t get on well together</td>
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</tr>
<tr>
<td>Construct Pole (rated 1)</td>
<td>Ideal Team Rating</td>
<td>Construct Pole (rated 7)</td>
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<td>Work together</td>
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<td>Work separately</td>
<td>WEJC</td>
</tr>
<tr>
<td>Good team support</td>
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<td>Poor team support</td>
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</tr>
<tr>
<td>Weak team members</td>
<td>4</td>
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<td>Technical jobs</td>
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<td>Not so technical jobs</td>
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<tr>
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<td>Narrow range tasks</td>
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<tr>
<td>Supervisor D</td>
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<tr>
<td>Team members share tasks, responsibilities</td>
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<td>Some team members not doing full share</td>
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<td>Get on well as a team</td>
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<td>Don’t get on well as a team</td>
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<tr>
<td>Variety of tasks</td>
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<td>Fewer tasks</td>
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<tr>
<td>Team members feel ownership over jobs</td>
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<td>Team members have narrow focus</td>
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<tr>
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<td>3</td>
<td>Team members not flexible</td>
<td>TMA</td>
</tr>
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<td>Long time as a team</td>
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<td>Short time as a team</td>
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<td>Consistent work load</td>
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<td>Variable work load</td>
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<td>Team members not honest with each other</td>
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<td>Larger team</td>
<td>4</td>
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<tr>
<td>High tech machines</td>
<td>2</td>
<td>Low tech machines</td>
<td>WEJC</td>
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<table>
<thead>
<tr>
<th>Construct Pole (rated 1)</th>
<th>Ideal Team Rating</th>
<th>Construct Pole (rated 7)</th>
<th>Category</th>
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**Supervisor E**

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<tr>
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<td>Team members nervous, don’t believe in own abilities</td>
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<tr>
<td>Larger team</td>
<td>3</td>
<td>Small team</td>
<td>TC</td>
</tr>
<tr>
<td>Team members take initiative</td>
<td>1</td>
<td>Old style working (do what told)</td>
<td>TMA</td>
</tr>
<tr>
<td>New group</td>
<td>4</td>
<td>Old group</td>
<td>TC</td>
</tr>
<tr>
<td>No rules (supervisor style)</td>
<td>4</td>
<td>Rules (supervisor style)</td>
<td>S</td>
</tr>
<tr>
<td>Working for business, team motives</td>
<td>1</td>
<td>Working for personal motives</td>
<td>TMA</td>
</tr>
<tr>
<td>Wider role (planning, goal setting etc)</td>
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<td>Narrow role</td>
<td>WEJC</td>
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**Supervisor F**

<table>
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<tr>
<th>Good team support</th>
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<tr>
<td>Team members problem solve</td>
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<tr>
<td>Variety of tasks</td>
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<td>Lack of variety</td>
<td>WEJC</td>
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**Supervisor G**

<p>| | | | |</p>
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<td>More physical job</td>
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</tr>
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<td>with other areas</td>
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<td>interaction with other</td>
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<td>Unreliable machines</td>
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<td>Get on as a group</td>
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<td>Don’t get on as a group</td>
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# Appendix C: Supervisors' PCA Groupings

<table>
<thead>
<tr>
<th>PCA Groupings of Constructs</th>
<th>Underlying Theme</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Supervisor A</strong></td>
<td></td>
</tr>
<tr>
<td>Team members more dedicated - Team members less dedicated</td>
<td>PTE</td>
</tr>
<tr>
<td>More effective - Less effective</td>
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</tr>
<tr>
<td>Team members get on well - Team members don't get on well</td>
<td>AWT</td>
</tr>
<tr>
<td>Team members are flexible - Team members are inflexible</td>
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<tr>
<td>Team members are willing to take on new tasks, responsibilities - Team members not willing to take on new tasks, responsibilities</td>
<td></td>
</tr>
<tr>
<td>Less supervised - More supervised</td>
<td></td>
</tr>
</tbody>
</table>

| **Supervisor B**            |                   |
| Specificially selected for teamworking - “Best of the rest” | (ST) |
| Intermittent work - Consistent work | |
| Team members communicate well - Poor communication | PTE |
| Not so confident team members - Confident team members | |
| Encouraging supervisor style - Directive supervisor style | AWT |
| More effective - Less effective | |
| Team members involved, interested - Team members not involved, interested | |
| Newer team - Older team | |
| Working for team betterment - Working for individual betterment | |
| Team members open to change - Team members set in their ways | |
| Team members trust each other - Lack of trust between team members | PTE |
| Team members get on well together - Team members don’t get on well together | |

| **Supervisor C**            |                   |
| More effective - Less effective | PTE |
| Selected first - Selected later | |
| Work with other teams - Competitive towards other teams | PTE |
| Work together - Work separately | |
| Good team support - Poor team support | |
| Weak team members - Dominant team members | |
| Technical jobs - Not so technical jobs | (WC) |
| Wide range of tasks - Narrow range of tasks | |

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### PCA Groupings of Constructs

<table>
<thead>
<tr>
<th>Supervisor D</th>
<th>Underlying Theme</th>
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<tbody>
<tr>
<td>Team members share tasks, responsibilities –</td>
<td>AWT</td>
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<tr>
<td>Some team members not doing full share</td>
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</tr>
<tr>
<td>Get on well as a team - Don’t get on well as a team</td>
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</tr>
<tr>
<td>Variety of tasks - Fewer tasks</td>
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<tr>
<td>Team members feel ownership over jobs – Team members have narrow focus</td>
<td>AWT</td>
</tr>
<tr>
<td>Team members are flexible – Team members not flexible</td>
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<tr>
<td>Long time as a team - Short time as a team</td>
<td>(ST)</td>
</tr>
<tr>
<td>Variable work load – Continuous work load</td>
<td></td>
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<tr>
<td>More effective - Less effective</td>
<td>PTE</td>
</tr>
<tr>
<td>Team members honest with each other -</td>
<td></td>
</tr>
<tr>
<td>Team members not honest with each other</td>
<td></td>
</tr>
<tr>
<td>Larger team - Smaller team</td>
<td></td>
</tr>
<tr>
<td>High tech machines - Low tech machines</td>
<td>WC</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Supervisor E</th>
<th>Underlying Theme</th>
</tr>
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<tbody>
<tr>
<td>More effective - Less effective</td>
<td>AWT</td>
</tr>
<tr>
<td>“Broad” way of thinking – “Traditional” way of thinking</td>
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<tr>
<td>Team members confident in own abilities –</td>
<td>AWT</td>
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<td>Team members nervous, don’t believe in own abilities</td>
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<td>Larger team - Small team</td>
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<tr>
<td>Team members take initiative - Old style working (do what told)</td>
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<tr>
<td>Wider role (planning, goal setting etc.) - Narrow role</td>
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<td>New group - Old group</td>
<td>PTE</td>
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<td>No rules (supervisor style) - Rules (supervisor style)</td>
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<td>Working for personal motives - Working for business, team motives</td>
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<table>
<thead>
<tr>
<th>Supervisor F</th>
<th>Underlying Theme</th>
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<tbody>
<tr>
<td>Good team support - Poor team support</td>
<td>PTE</td>
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<td>Shifts work together – Shifts don’t work together</td>
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<td>Team members are flexible – Team members are inflexible</td>
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<tr>
<td>Team members problem solve - Team members don’t problem solve</td>
<td>AWT</td>
</tr>
<tr>
<td>More effective - Less effective</td>
<td></td>
</tr>
<tr>
<td>Variety of tasks - Lack of variety</td>
<td></td>
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</table>
### PCA Groupings of Constructs

<table>
<thead>
<tr>
<th>Supervisor G</th>
<th>Underlying Theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less physical job - More physical job</td>
<td>WC</td>
</tr>
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</table>
| More effective - Less effective  
Job involves more interaction with other areas –  
Job involves less interaction with other areas  
Reliable machines - Unreliable machines | WC |
| Continuous workload - Intermittent workload  
Longer time as a group - Shorter time as a group  
Long term supervisor - Several short term supervisors  
Team produces several products - Team produces one product  
Get on as a group - Don’t get on as a group | ST |

<table>
<thead>
<tr>
<th>Supervisor II</th>
<th>AWT</th>
</tr>
</thead>
<tbody>
<tr>
<td>More supervisor support - Less supervisor support</td>
<td>AWT</td>
</tr>
</tbody>
</table>
| “Fresh” (ideas, enthusiasm) team – “Stale” team  
Formal team development - Poor, lapsed team development  
Working as a team towards goals - Working as individuals towards goals | PTE |
| More effective - Less effective  
Shorter time as a team - Longer time as a team | ST |
| Able to pool machine resources - Restricted ability to pool resources  
Supervisor style (let team manage own jobs) –  
Supervisor style (tell team what to do)  
Team members are multiskilled – Team members have single skills  
Team members are ideally selected for teamworking –  
Team members not ideally selected | AWT |

PTE = Positive Team Environment  
AWT = Autonomous Work Teams  
ST = Stability  
WC = Work Characteristics

(Underlying themes in brackets may be artefacts of the current sample, rather than ‘true’ underlying themes)
Appendix D:
Independent T-Tests, Comparing Team and Non-Team Areas at Time 2
(T2 to T3 matched sample)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Team areas (n=19)</th>
<th>Non-team areas (n=36)</th>
<th>T-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Work Characteristics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>task control</td>
<td>3.50</td>
<td>3.92</td>
<td>-1.91</td>
</tr>
<tr>
<td>TRB-teamworking</td>
<td>3.23</td>
<td>3.02</td>
<td>1.04</td>
</tr>
<tr>
<td>TRB-basic role</td>
<td>4.32</td>
<td>4.56</td>
<td>-1.63</td>
</tr>
<tr>
<td>interdependence</td>
<td>3.54</td>
<td>3.51</td>
<td>0.15</td>
</tr>
<tr>
<td><strong>Supervision</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>supervisory style</td>
<td>3.81</td>
<td>3.68</td>
<td>0.70</td>
</tr>
<tr>
<td><strong>Team Processes</strong></td>
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</tr>
<tr>
<td>team task support</td>
<td>4.08</td>
<td>4.35</td>
<td>-1.50</td>
</tr>
<tr>
<td>team efficacy</td>
<td>3.98</td>
<td>4.07</td>
<td>-0.47</td>
</tr>
<tr>
<td><strong>Outcomes</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>motivation</td>
<td>4.30</td>
<td>4.38</td>
<td>-0.41</td>
</tr>
<tr>
<td>intrinsic satisfaction</td>
<td>4.66</td>
<td>4.88</td>
<td>-0.83</td>
</tr>
<tr>
<td>extrinsic satisfaction</td>
<td>4.45</td>
<td>4.80</td>
<td>-1.54</td>
</tr>
<tr>
<td>job related wellbeing</td>
<td>3.31</td>
<td>3.67</td>
<td>-2.22*</td>
</tr>
</tbody>
</table>

(*=p≤.05; **=p≤.01; ***=p≤.001)