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**A grounded theory study of
interprofessional teamworking in the
Operating Room: what makes a “great
day” at work?**

Margaret Scott

PhD

2021

**A grounded theory study of
interprofessional teamworking in the
Operating Room: what makes a “great
day” at work?**

Margaret Scott

A thesis submitted in partial fulfilment of
the requirements of the University of
Northumbria at Newcastle for the degree
of Doctor of Philosophy

Research undertaken in the Faculty of
Health and Life Sciences, Northumbria
University

April 2021

Abstract

Background

The operating room (OR) environment is a unique context within the clinical setting, which brings together interprofessional healthcare providers in a confined space where patient care is directed at a concentrated focal point. The notion that a team of experts do not simply merge to form an expert team is reflected through reported failures in teamwork in the OR. Interactions between and among interprofessional healthcare providers within the OR context are critical in optimising the way in which the team works together. There is limited empirical research exploring teamwork in the OR through the perceptions of interprofessional healthcare providers who have experience of teamworking in this unique context.

Aim

The aim of the research was to address the gap in knowledge and develop a more comprehensive understanding of teamwork in the OR. Specifically, the research aimed to explore interprofessional teamwork in the OR exclusively, through the perceptions of individuals who had personal experiences of working in such teams.

Methodology and Methods

This research was guided by Strauss and Corbin's (1990) approach to grounded theory, influenced by the theoretical perspective of symbolic interactionism. The sample population comprised of a group of individuals in an established interprofessional role, who could contribute to understanding 'teamwork as imagined' and 'teamwork as done' within the OR. Using a theoretical sampling strategy, data were collected via 14 in-depth semi-structured interviews, three observation periods and informal interviews, with accompanying detailed field notes.

Data were analysed using open, axial and selective coding techniques, supported by constant comparative analysis until theoretical saturation was achieved.

Findings

The analysis generated four data categories. *Antecedents of Familiarity* is the core category that helps to describe the social processes of interactions of interprofessional healthcare providers during OR encounters. The three sub-categories, *Shared Understanding*, *Positive Disposition* and *Professional Communication*, provide further explanation of the micro, meso and macro contexts that facilitate and/or impede interactions during teamwork. To reflect participant perceptions of the complex nature of teamwork in the OR, a grounded theory was constructed and integrated into *The Interprofessional Collective Effort (ICE) Model of OR teamwork* and the underpinning *PerfORM taxonomy*. Given the importance of interactions among and between interprofessional healthcare providers in the OR, the new theoretical insight gained from this model provides a more comprehensive understanding to guide educators, leaders/managers and policymakers in planning strategies to support interprofessional teamwork in the OR. Original contributions to the existing knowledge base around OR teamworking are offered, alongside a basis from which to address emerging implications for academic disciplines, research areas, interprofessional education and collaborative team training.

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To my brother George, who always supported and believed in me and to whom this thesis is dedicated.

Declaration

I declare that the work contained in this thesis has not been submitted for any other award and that it is all my own work. I also confirm that this work fully acknowledges opinions, ideas, and contributions from the work of others.

Ethical approval for the research presented in this thesis was sought and granted by the Faculty Ethics Committee on 23.09.2015.

I declare that the word count is 73,198 across Chapters 1-8 of the thesis.

Name: Margaret Scott

Signature:

Date: 03/05/2021

Chapter 1: Introduction to the Research

1.1 Chapter Introduction

This chapter will begin with an overview of the context and background that frames the thesis. In addition, a personal and professional rationale for the study is presented, briefly situating the concept of teamworking in the operating room (OR) context. The primary research question and the objectives underpinning the research are outlined and an overview of the research approach and design provided. For clarity, conceptual clarification of some of the key terms used will be provided. The chapter concludes with an overview of the organisation of the thesis, providing a brief summary of the content of each chapter.

1.1 Background and Rationale

There is a common belief that through combining the efforts of individuals within a team, the aggregated individual contributions will be surpassed (West, Borrill & Unsworth, 1998). Teams are increasingly seen as the unit of performance in many organisations (Lawler, Mohrman & Ledford, 1992) and, as organisations grow in size and become more complex, groups of people are required to work together in co-ordinated ways to achieve objectives that contribute to the overall effectiveness of their organisation (Carter et al., 2008). Guzzo and Salas (1995) attribute an increase in teamworking to intended improvements in organisational productivity and, although not appropriate for every task or every function within an organisation, one

sector where teamworking has demonstrated particularly important benefits is healthcare.

As teamworking is associated with improved efficiency and reduced costs (West & Markiewicz, 2004; Ferguson, 2008; Kilner & Sheppard, 2010), these particular outcomes have the potential to benefit healthcare organisations battling with high demands and limited resources. Other advantages of working as part of a team have been widely acknowledged in healthcare, including: improved quality of care (Oandasan et al., 2006; McCallin & Bamford, 2007; Xyrichis & Ream, 2008), increased patient safety (Ferguson, 2008; Kilner & Sheppard, 2010), increased job satisfaction (Martin & Ciurzynski, 2015), decreased workload (Oandasan et al., 2006), and the increased likelihood of retaining staff (O’Leary et al., 2012). The expectation of modern healthcare is that it is delivered in a fluid and highly adaptive manner by teams who work across professional and care boundaries in a seamless way (Politi & Street, 2011; Weller, Boyd & Cumin, 2014). Providing such care and offering a quality service requires positive, collaborative working relationships among healthcare team members (Almost et al., 2016). However, poor collaboration and communication errors are among the greatest sources of preventable adverse events affecting patient outcomes, including increased likelihood of hospitalisation, injury or death (Baker, Massey & Smith, 2004; Capella et al., 2010; Vilensky & MacDonald, 2011). Opportunities for communication errors and information loss exist at each juncture of care, including when patients move across care boundaries (Evans, 2009).

Over the last three decades, the importance of teamworking in healthcare has been emphasised in numerous public policy documents (General Medical Council (GMC), 1998; Department of Health (DH), 2000a; 2000b; 2008a, 2008b; Nursing and

Midwifery Council (NMC), 2015), with George (2000) describing teamworking as an essential prerequisite to modern clinical care. Teams that operate within the healthcare domain require special consideration, as this context is characterised by particularly high levels of stress, complexity and workload, and the stakes are high for decision and action errors (Salas, Rosen & King, 2007). However, over recent years emerging evidence suggests that not all healthcare organisations prioritise the development of teamworking, and not all healthcare teams are effective (Carter et al., 2008).

One clinical area that has a long history of teamworking is the operating room (OR). Sharma et al. (2018) acknowledge that the OR constitutes a complex setting where anaesthetic, surgical and nursing staff must collaborate to ensure a safe and successful patient outcome, and where teamwork remains the foundation of every successful and safe surgery. Weller and Boyd (2014) support Carter et al. (2008) in stating that there is now abundant evidence that failures in teamwork in the OR are frequent and affect patient care. However, it is unclear what all the contributing characteristics are that influence team interactions, given the high-acuity and complex nature of such an environment. Uhlig (2009, p. 439) suggests that one way of understanding what optimum teamwork looks like is to ask what happens already, on our 'great days' in the OR. Uhlig further claims that even when a patient is extremely sick, or the operation is difficult, everything is easier on a great day. A concise definition of a 'great day' at work is not evident within contemporary literature. A 'great day' at work seems to be reliant on several contributing factors, including social interactions that are meaningful, co-workers who are happy in their work and through creating an environment/atmosphere that makes a positive difference to someone else. In essence, it feels good to do great work. However, it

is worth acknowledging that having a ‘great day’ at work might not be a universal experience. The perfect workplace does not exist and the occasional ‘bad day’ at work is normal and unavoidable (Opie, 1997).

This thesis explores the phenomenon of teamworking within the OR and explains how individual interactions contribute to team performance. An appreciation of how various professionals interact and communicate will shed light on the current perspectives, challenges and successes of those involved. By identifying the main components of a ‘great day’, and what positively affects the experience of a working day in the OR, it may be possible to increase the occurrence of those components, to emulate more great days. Understanding the current social processes among and between the professional groups that form an OR team may help to guide educational curricula, improve practices with regard to interactional processes during surgical interventions, enhance collaborative efforts, and ultimately promote patient safety. While there is a plethora of evidence that supports teamworking in the OR, the experience of a great day and what constitutes a great day in the OR has not been explored.

1.2 Personal and professional research interest (declaration of self)

My research interest in operating rooms and teamworking in particular emerged from my own experiences working in this clinical setting. I entered the nursing profession after leaving school, qualifying in the late 1980s, some forty years after the NHS was established. The NHS at this time was going through a period of rapid change, fuelled by the relentless progress in medical science, an ageing population and financial constraints.

Alongside this personal journey, the notion of teamwork in healthcare was gaining considerable momentum from not only a national but also a global perspective, with the imperative for effective teamwork being acknowledged and consistently emphasised by healthcare policymakers (World Health Organisation (WHO), 1988; Institute of Medicine (IOM), 2000; Department of Health (DH) 2000a; 2000b; 2000c; 2008a; 2008b). No longer was it acceptable for individuals to work in professional isolation, as teamwork became a defining feature of health service reform, essential for safe and effective care delivery. In the United State (US), an influential IOM report argued that the majority of care was delivered by a team of people (Kohn, Corrigan & Donaldson, 2000), further promoting effective team functioning as one of five values for creating safer hospitals. This was echoed by the DH (2000b, 2000c) and reflected in The NHS Plan (2000b), which emphasised the need to break down hierarchical ways of working between staff and the unnecessary boundaries that existed between professions, so that teams could tackle inefficiencies in working practices and achieve their true potential. Finn, Learmonth and Reedy (2010) suggest that in the United Kingdom (UK), the mantra is that healthcare is predominantly delivered by teams. However, ‘the need to improve teamwork’ is well recognised forming a critical component of safe healthcare delivery (Kohn, Corrigan & Donaldson, 2000, p.37). New Public Management (NPM), with its assumptions that private-sector management techniques could be translated into public sector reform, has strongly influenced the embracing of teamworking within healthcare (Finn, Learmonth & Reedy, 2010). As a result, policymakers, practitioners and academics have highlighted the potential of teamwork as the means through which efficient and safe outcomes can be achieved, with integrated patient-centred care being provided across institutional and organisational professional

boundaries (DH, 2000b; 2002). Indeed, the idea of teams is now widely accepted in the culture of healthcare as something inherently positive. However, Cott (1998) cautions that the value of teamwork is taken for granted by healthcare professionals, regardless of the lack of systematic analysis of its effectiveness. Despite the widespread acceptance of the value of teamwork by healthcare professionals and the pervasiveness of the ideology of teamwork, there is a dearth of evidence that systematically explores the patterns of relationships and shared meanings that develop among staff in OR teams as they go about their work.

1.3 Positioning the team within teamwork

Teamwork is a vital link between individuals and organisations, with effective teamworking offering the potential for simultaneously increasing productivity and employee satisfaction (Campion, Medsker & Higgs, 1993). Systematic psychological research on the nature and effects of workgroups dates back to at least the Hawthorne studies of the 1920s and 1930s (Mathieu et al., 2017), with scientific interest in and the study of teams emerging in the 1950s (Carter et al., 2008). From the 1990s, around the time the NHS considered the notion of teamworking and its benefits, to the present, the volume of research and the nature of topics addressing workgroups and teamworking expanded significantly. Mathieu et al. (2017) chronicle the shift over the past century from a focus on individuals within teams to a focus on the team itself, and on teams within organisations, further describing the relationship between team tasks and structures. Traditionally, healthcare teams were uni-disciplinary, meaning that team members held similar functional knowledge and carried out similar clinical tasks (West & Lyubovniova, 2013). The last decade has seen a move towards considering the role of team members' characteristics and composition, and team dynamics in terms of processes and emergent states. Again,

this shift is evident in healthcare teams that are now increasingly interdisciplinary or interprofessional (West & Lyubovnikova, 2013). Such teams comprise of members from different functional and clinical backgrounds, working towards shared goals, to fulfil complex and interdependent tasks that require varying degrees of specialist skills and medical knowledge (Hollenbeck, Beersma and Shouten, 2012).

Although directives within healthcare (DH, 1999; 2000a) have encouraged collaboration of professional groups and promised to transform OR teamwork, practitioners continue to work intuitively with lay notions of effective teamworking that bypass the rich, technical theories of ‘teams’ (Bleakley, 2013). There is evidence to suggest that further investigation into teamworking is vital, particularly in relation to research that models dynamic team relationships in context, as they operate in complex systems (Mathieu et al., 2017). One such environment that provides this opportunity is the OR, which is renowned for being complex, error-prone and vulnerable to adverse events, with considerable evidence that failures in teamwork in the OR are frequent and affect patient care or threaten patient safety (Weller & Boyd, 2014). Anderson and Stewart (2015) note that teamwork is important in the operating room, with team members relying on each other’s expertise for successful task completion, but state that little is known about how relationships can affect team performance.

1.4 Relationship between teamwork and team performance in the OR

The Productive Operating Theatre Programme, also known as *The Productive Operating Theatre: Building Teams for Safer Care* (TPOT), was developed by the NHS Institute for Innovation and Improvement (NHSI) (2009) to support

organisations to redesign and streamline the way they worked. Evidence suggested that operating theatres could be more efficient and safer for patients. The aim of the programme was to deliver long-term sustainable change through transforming the workplace and processes within, and to support surgical theatre teams to work more effectively together. The NHSI believed that the benefits of the programme would arise from the fact that theatre teams themselves would identify the problems and implement solutions that were more likely to be relevant and sustained. The focus on quality and safety was also intended to support operating theatres to run more productively and efficiently, thereby leading to financial savings.

Moore et al. (2013) explored the impact of TPOT and, while there were recognised benefits such as strong leadership within theatre management and nurses being able to work with an active clinical champion in a leadership role, there were many challenges. TPOT required teamwork between theatre nurses, scheduling staff, anaesthetists and surgeons, and this coordination was challenging, making implementation more difficult. There was clear participation in the programme from theatre nurses and notable involvement with anaesthetists, but distinctly less involvement from surgeons. Even if there was a strong clinical champion, genuine teamwork between surgeons, anaesthetists and theatre nurses was difficult and appeared to be the “exception rather than the rule” (Moore et al., 2013, p.14), with many feeling that they would not have the support to overcome these difficulties.

Moore et al. (2013) concluded that there was too little depth and insufficient breadth in the programme. In terms of sustainability, it was noted that when current champions leave or move into other roles, or senior management is disrupted by restructurings, the programme faltered.

Despite widespread acceptance of the value of teamwork by healthcare professionals and the pervasiveness of the teamwork ideology in healthcare, there remains scope to systematically examine the pattern of relationships and shared meanings that develop among staff that come together to form a team in the OR. Cott (1998) recognises that there is a significant body of evidence that addresses the meaning of teamwork but not specifically as it relates to the pattern of relationships in the team, or from the perspectives of the team members themselves.

It is without doubt that operating theatre services are at the centre of the hospital system and cover a wide range of activities, whether scheduled or unscheduled, complex, or routine surgical interventions. Such services are delivered by skilled teams who are fluid and agile to meet the needs of the service and to provide the highest possible standard of patient care.

1.5 Defining team and teamwork within the uni-disciplinary to interdisciplinary continuum

To avoid focussing on semantics or distracting from the true essence of the research, there follows a brief and introductory definition of terms and their meanings in the context of this research.

1.5.1 Team

Team as “a group of people who are set to work together on a task” (and the application of team to teamwork is defined as to what this group does in relation to the task (Rydenfält, Borrell & Erlingsdottir, 2018). Team implies organisational aspects, while teamwork implies action. It also means that for something to be teamwork, there must be a corresponding team.

1.5.2 *Teamwork*

Teamwork has been defined as “a dynamic process involving two or more health professionals with complementary backgrounds and skills, sharing common health goals and exercising concerted physical and mental effort in assessing, planning, or evaluating patient care. This is accomplished through interdependent collaboration, open communication and shared decision making. This in turn generates value-added patient, organizational and staff outcomes” (Xyrichis & Ream, 2007, p.238).

Rydenfält, Borrell and Erlingsdottir (2018) suggest teamwork is very inclusive and less descriptive to capture more of all those situations in which the term “teamwork” is used to describe the organisation of work.

1.5.3 *Discipline*

Refers to the field one is associated with, such as nursing, medicine or political science, to name a few (Reeves et al., 2010).

1.5.4 *Profession*

While there are many accepted definitions, ‘profession’ is the label attached to the outcome of specific education and training such as nurse, surgeon, operating department practitioner, anaesthetist or physician’s assistant (anaesthetics).

1.5.5 *Multidisciplinary team*

Refers to the retention of role boundaries by professions with individuals that are practicing alongside one another (Coyle, Higgs, McAllister & Whiteford, 2011).

1.5.6 *Interdisciplinary team*

Refers to a team whose members work closely together and communicate frequently to provide optimum patient care. The team is organised around solving a common set of problems (Flin, O’Connor & Crichton, 2008). Each member of the team

contributes their knowledge and skill set to augment and support the contribution of others' (Flyvbjerg, 2006). To allow for the holistic management of each patient's complex health problems, each member's assessment must consider the others' contributions. Importantly, each team member adheres to their role and accountabilities while maintaining continuous lines of communication with each other, placing themselves somewhere in the centre of the continuum of interactions and responsibilities (Hall & Weaver, 2001). This collective effort, or type of teamwork, is often seen in complex, high-acuity, patient care situations and is referred to as *interprofessional* working or collaboration in clinical practice (Haynes et al., 2009).

1.5.7 *Transdisciplinary*

Refers to a team who have insight and knowledge in relation to the working methods and competence of other professions. The team have reached such a level of shared understanding that goal setting appears seamless, the commonality of a shared reference framework is evident, and there is swift interplay between team members (Vyt, 2008).

1.6 **Overview of the Research**

1.6.1 *Research Question*

“How do staff working in the Operating Room (OR) context perceive teamwork and how do their personal experiences contribute to a “great day” at work?”

1.6.2 *Research Objectives*

- To explore the interdisciplinary experiences of team members within the OR to elicit perceptions of what teamwork involves.

- To discover team activities, behaviours, qualities or characteristics that may be perceived to be integral to teamworking in the OR.
- To explore the potential for contexts in which teamwork is perceived to flourish, leading to a “great day” at work.
- To develop a propositional grounded theory that offers an original contribution to understanding teamworking in the OR.

1.6.3 *Research Approach and Design*

The research question posed was relatively broad, allowing it to be sufficiently flexible and open-ended to enable theory development (McCann & Clark, 2003). A Grounded Theory (GT) design (Glaser and Strauss, 1967) was used to progressively narrow and focus the question during the research process as concepts and their relationships emerged (Strauss & Corbin, 1998). GT is underpinned by the social science approach of symbolic interactionism (SI) (Mead, 1934). SI holds central the notion that reality exists in the meanings individual social actors derive from their interpreted social interactions, which influences their behaviour with others (Blumer 1969). SI shifted the goal of social research from an objective study of an empirical reality to a deep understanding of the symbolic practices that make a shared reality possible. As a qualitative interpretive framework, symbolic interactionism is dependent on the procedural techniques of analytic induction or GT. Glaser and Strauss (1967) proposed GT as a practical method for conducting research that focuses on the interpretive process by analysing “the actual production of meaning and concepts used by social actors in real settings” (Gephart, 2004, p.457). Its purpose in this thesis is to generate a substantive theory that contributes to understanding staff perceptions of their interactions within teams in the OR and what factors influenced these interactions.

1.7 Organisation of the thesis

This thesis is organised into eight chapters. This section represents and summarises the entire body of work by providing an abbreviated synopsis of the content of each chapter.

1.7.1 *Chapter 1*

Chapter 1 introduces the incentive to undertake this study, providing a context and rationale from both a personal and professional perspective. In addition, the background information locates this study in historical and current contexts.

1.7.2 *Chapter 2*

Chapter 2 presents a comprehensive literature review that informs the understanding of teamwork, particularly within the context of the operating room. The literature review is based on a phased approach, whereby initial and focused stages are presented, demonstrating consistency with the key principles of GT research. The chapter identifies a gap in the literature, which the research question aims to address.

1.7.3 *Chapter 3*

Chapter 3 provides a detailed account of the chosen methodology and the approach taken to develop the conceptual framework underpinning this thesis.

1.7.4 *Chapter 4*

The research journey is described in chapter 4. This includes an explanation of how data were systematically and simultaneously collected, analysed and interpreted, giving due consideration to ethics, analytical procedures, sampling strategies and trustworthiness. Examples of reflexivity are integrated throughout this chapter.

1.7.5 Chapter 5

Chapter 5 presents the findings and introduces the core category and three further categories, which represent participants' perceptions of teamwork within the OR context. The findings are supported by participant quotations, which are extracted directly from the data. To ensure that each participant's voice is represented, no extant literature is used throughout this chapter.

1.7.6 Chapter 6

Chapter 6 focuses on an in-depth interpretation, in which the research question and aims are presented alongside a summary of the research findings. The underpinning conceptual framework is re-presented, to include the theoretical perspectives. This interpretation addresses the study's aims to explore experiences and perceptions of teamwork within the OR context and to generate an understanding of why and how these experiences and perceptions occur.

1.7.7 Chapter 7

The GT is presented as the *Interprofessional Collective Effort (ICE)* model of Operating Room teamwork. This model is grounded in the research findings, providing an abstract representation of participants' perceptions and interpretations of teamwork within the context of the OR. Interpretations are represented further through *perfORm*, a taxonomy that describes and embodies different clusters of behaviours and attitudes, associated with the emergent properties, which synthesise the findings in chapter 5 with the literature reviewed in chapter 2.

1.7.8 Chapter 8

Chapter 8 provides a summary of key aspects of the thesis, reiterating significant points that have been highlighted throughout the previous chapters. This final

chapter discusses the study's implications and original contribution to knowledge, discusses the study's limitations and areas for further research, and concludes with some final thoughts in relation to the way forward for teamworking.

1.8 Chapter Conclusion

This introductory chapter has established the primary motivation for engaging in the research, providing a detailed personal justification to support this. Relevant background information in relation to my professional teamworking position in the OR, and my subsequent position as a researcher, have been highlighted. Contextual knowledge is also gained by a review of relevant literature that forms the theoretical background for the study. A more detailed literature review is presented in chapter 2.

The research question and objectives were presented, alongside definitions relating to the use of the terms 'teamwork', 'team', 'multidisciplinary', 'interdisciplinary' and 'transdisciplinary', alongside a brief overview of the research approach and design.

An overview of the organisation of the thesis provided a summary of the content.

The following chapter presents a comprehensive review of relevant literature to consider the significance of what is already known about this topic in terms of contemporary evidence.

2 Chapter 2: Literature Review

2.1 Chapter Introduction

Chapter 1 established the rationale for the research presented within this thesis, outlining the primary research question and objectives. This chapter serves two purposes: first, the literature review locates the thesis within a contextual timeframe and provides an overview of teamwork in the OR at the present moment. Second, the review offers a clear and balanced overview of contemporary leading concepts, theories, and data relevant to teamworking in the OR. Conceptually, the literature review supports the validity of the research proposal, grounding it within existing research. In addition, the literature review offers an account of what is already known about the research area, how this knowledge has been developed, and what gaps, if any, exist within the evidence base. An iterative and recursive approach was adopted to appropriately blend the literature reviewed and to accord with grounded theory research (Glaser & Strauss, 1967).

2.2 Justification for Phased Approach to Literature Review

Grounded theorists suggest that a literature review *should* be conducted, but tensions arise in relation to *when* it should be conducted and how extensive it should be (Cutcliffe, 2000; McGhee, Marland & Atkinson, 2007). Glaser and Strauss (1967) originally argued against engagement with existing literature prior to primary data collection, contradicting most methodologies (Dunne, 2011). They regarded an early literature review as having the potential to stifle the process of developing a grounded theory. This purist stance remains supported, on the premise that the

researcher must not enter the field under study with a preconceived statement, extensive review of the literature or interview protocols (Glaser, 1998; Holton, 2007). In this respect, grounded theorists adopt a respectful yet critical stance towards extant theories and require “extant concepts to earn their way into your narrative” (Charmaz, 2006, p. 126). Charmaz (2006) suggests that through delaying the literature review, ideas can be developed rather than imported and forced to fit. Over time, the stance of Strauss changed significantly and, together with Corbin, advocated an early literature review. Strauss and Corbin (1998) noted a need to identify a credible research area to satisfy the ethics committees, and this is further emphasised in an era of evidence-based healthcare (McCallin, 2003; Cutcliffe, 2005). Glaser (2001) describes ‘bundling’ or background reading to meet the requirements of ethics committees, illustrating possible directions the researcher may follow, while not restricting the freedom to discover other patterns.

It is important to articulate the advantages of undertaking an early literature review when using grounded theory, rather than critiquing the workability of the purist position (Dunne, 2011). This provides justification for adopting a phased literature review in this thesis as well as acknowledging the core ethos of grounded theory. It is suggested that an early literature review has the potential to provide a convincing rationale for a study, including a justification for a specific research approach (McGhee, Marland & Atkinson, 2007; Coyne & Cowley, 2006), alongside ensuring that the study has not already been done while simultaneously highlighting gaps in existing knowledge (Chiovitti & Piran, 2003; Cresswell, 1998). Furthermore, Urquhart (2007) believes that a preliminary review can orientate the researcher, contextualise the study (McCann and Clark, 2003a) and reveal how the phenomenon has been studied to date (Denzin, 2002; McMenamain, 2006). Coffey and Atkinson

(1996, p. 157) posit that it is “not very clever to rediscover the wheel”, proposing that reviewing the literature to begin with can avoid this, alongside preventing criticism for being “empty headed” rather than “open minded” (McGhee, Marland & Atkinson, 2007, p. 336). There is also recognition that a researcher brings to the research not only life experiences, but knowledge gained from literature that may include the area of inquiry (Corbin & Strauss, 2015), all of which may have a broad influence on the research journey and an opportunity to recognise the researcher’s voice in the research product (Ramalho et al., 2015).

Together, such influences are compelling in favour of exploring the literature in the substantive area before commencing data collection and analysis. There is a growing consensus within the literature on grounded theory methodology that a middle ground must be reached (Dunne, 2011), while staying true to the original ethos of grounded theory, or ensuring ‘groundedness’ (Ramalho et al., 2015). There is a need to balance the genuine concerns about contaminating the researcher and the imposition of external frameworks alongside the potential advantages and practical need for early engagement with existing literature (Dunne, 2011). Ravitch and Riggan (2012) suggest that there is a tendency to view the literature review as a product rather than an iterative process of meaning and decision making that is guided by, as it informs, the conceptual framework of the study.

2.2.1 *Initial Phase of Literature Review*

To practically address the issues in relation to reviewing the literature in grounded theory, it was essential to refer to grounded theory methodology and review the approach adopted by other scholars within the field. In terms of university timescales and requirements, the submission of both project and ethical approval required cautious and essential engagement with an initial review of the literature

(Stern, 2007; Ramalho et al., 2015), while remaining true to the ethos of grounded theory methodology. The option to delay the literature review until data collection and analysis was complete did not provide a practical solution to fulfil timescales and requirements at the outset of the research journey. A phased middle ground approach (Dunne, 2011) was taken, whereby a preliminary analysis of extant literature and basic orientation to the area of inquiry (Elliot & Higgins, 2012) was adopted. This allowed for contextualisation of the study, rather than a traditional and comprehensive literature review required for the final work (Charmaz, 2014); an adjunct that added to the validity of prior knowledge, experience and understanding in the research area. Corbin and Strauss (2008), state that it is how these preconceptions are used that is important, rather than trying to dispense with them.

A preliminary review of the literature set the scene for the research process (Corbin & Strauss, 2008) and fulfilled the university's requirements. Additionally, it provided an opportunity to narrow the focus of the teamwork topic, identifying the OR as an area that had previously been overlooked; formulate and justify the research question; select a theoretical framework; and justify the research methodology (McGhee, Marland & Atkinson, 2007).

Ensuring that the research findings emerge from the data and not the literature is critical to the core ethos of grounded theory. This approach is founded on the need to reduce the likelihood of preconceived ideas "subtly infiltrating or more obviously hijacking" the development of the grounded theory (Dunne, 2011, p. 118). The approach thereby facilitates the natural emergence of constructs and ideas as a direct result of data analysis.

2.2.2 Literature Search Strategy

Boote and Beile (2005) note how pivotal a thorough and sophisticated literature search is, advocating that it is the inspiration and foundation for substantial and useful research. Benefits of a comprehensive and thorough literature review are many, including: distinguishing what has already been undertaken and what needs to be undertaken, identifying relationships between theories, concepts and practice, identifying the main research methodologies and designs that have been utilised, and identifying contradictions and inconsistencies (Onwuegbuze, Leech & Collins, 2012). There are many approaches presented on how the literature search can be undertaken, which Onwuegbuze, Leech and Collins (2012) claim can be misleading, as the literature review process represents more than collecting and summarising literature. To ensure that the literature review is not underdeveloped, it is important to have a comprehensive understanding of the theoretical context that relates specifically to the research topic (Hart, 2018). It is necessary to ensure that the primary facets of the topic are represented and included within the literature search.

The literature search was therefore guided by the research question: “*What do OR staff perceive teamwork to involve and how do their interactions with one another contribute to team performance?*” The search strategy for empirical literature began with an examination of several databases including CINAHL, Proquest, MEDLINE, Scopus, Web of Science, PubMed and PsychINFO. Search terms were initially narrow and used the Boolean operator “AND”, i.e., ‘perceptions AND teamwork AND operating room’. The search was then broadened to include aspects of interactions between and among healthcare teams, paying attention to the gaps in understanding that relate to this research study. Keywords such as *collaboration, teamwork, operating theatre, communication, interprofessional, and competence*

were keyed in separately and in various combinations with the databases. Searches were limited to English-only articles in peer reviewed publications, including theses and dissertations published between 1999 and 2019. This strategy yielded thousands of potential studies. In addition to these inclusion criteria, only those studies that examined interactions during teamwork situations with some reference to healthcare were included, decreasing this number significantly. To select only those articles most relevant to this investigation, editorials were omitted, focussing on empirical data in the form of research studies (Table 1). Abstracts and full texts of search results were reviewed manually for relevance and tags were used to code the literature (Table 2). Further sifting of the literature on teamwork, and a re-appraisal of what literature was relevant to the research question was undertaken. Studies that were most applicable to interactional processes in the OR were ultimately chosen, resulting in themes and sub-themes that emerged from the synthesis of all the selected literature. A discussion of these themes is presented in the following sections of the chapter.

Table 1: Process of extracting, identifying, and reviewing literature on perspectives of teamwork in the operating room

Activity	Sources	Details	Notes
Search 1	Major databases	Taylor and Francis Online; Elsevier; SAGE Journal Online; Emerald; J-STOR; SpringerLink; ProQuest; EBSCOhost; Education Resources Information Centre (ERIC); CINAHL; Proquest; MEDLINE; Scopus; Web of Science;	Search conducted within date range 1999 – 2019. Using search terms ‘teamwork’, ‘teamwork’, ‘team collaboration’, ‘operating room teams’, ‘team performance’

		PubMed and PsychINFO	
Search 2	As above	As above	Limited to work published in scholarly (peer reviewed) journals, books, theses; and dissertations.
Search 3	As above	As above	Limited to work published in English and with available full text
Search 4	Google Scholar	Further searches	

2.3 Inclusion Stages

- Review of titles and abstracts for relevance to perceptions of teamwork, excluding those clearly outside the scope of the review (e.g., simulation);
- Literature tagged as in Table 2, identifying relevant studies for inclusion;
- Full text reviewed identifying themes and to confirm relevance.

Table 2: Tags used to code the literature

E	Empirical	P	Professional
C	Conceptual	I	Impact to include student
R	Research	O	Other
F	Framework	U	Unsure
D	Discipline-based	Rx	Reject (exclude)

2.4 Empirical Literature

Searching literature associated with interactional processes frequently yielded studies associated with teamwork. A plethora of literature addresses the meaning of teamwork but not specifically as it relates to the pattern of relationships in the team (Campbell-Heider & Pollock, 1987) or from the perspective of the team members (Evers, 1982). Furthermore, there is little research exploring how differing meanings

of teamwork and team fluidity are renegotiated or perpetuated as staff interact with each other on an hour-by-hour basis in the OR. As such, this section of the literature review begins with a discussion of teamwork and alternative versions of interprofessional work.

2.5 Overview of teams and teamwork

This section will explore theories and models that have developed about teams, teamwork, and team dynamics. This provides an insight into the characteristics inherent within group interaction and the expectations regarding the performance of these characteristics against which teamwork and team performance is compared and assessed.

2.5.1 Teamwork models

Essentially, a team can be considered as a group; thus, a basic understanding of group processes is important when studying teams. Team dynamics are the unconscious psychological forces that influence the direction of a team's behaviour and performance (Yardley, 2014). Team dynamics are created by the nature of the team's work, personalities within the team, their working relationships with other people, and the environment (Myers & Briggs, 1995). When individuals come together to form a team, they often take on distinct roles and behaviours. Group dynamics describes the effects of these roles and behaviours on other team members, and on the collective team (Lewin, 1947).

2.5.2 Models of team dynamics

Many of the models used to describe team dynamics describe the psychological aspects of group dynamics. Fisher (1970) distinguishes theories of group

development into those based on linearity and those based on iterative cyclic development:

2.5.3 *Linear progression*

One of the most classic linear theories is Tuckman's stage model (1965) of '1. Forming, 2. Storming, 3. Norming and 4. Performing', whereby group members seek self-insight through group interaction and reflection. During initial formation (1), individual members brought together as a team seek to create social and task structures to guide their interactions. As creating consensus on a unified approach is difficult, the shift towards storming (2), in which different members vie for influence, ensues. As members reconcile their differences and agree on a course of action, norms (3) are set to guide subsequent interactions. As the norms become embedded, members can focus on performing (4) to achieve common goals and the group operates based on mutual accountability. A later final stage of adjourning was added to Tuckman's model, which signalled the group concluding its existence (Tuckman & Jensen, 1977).

Wheelan's (2005a) model of team development has much in common with Tuckman's (1965) stage model. Wheelan proposes four stages: dependency and inclusion, counter dependency and fight, trust and structure, and work. In the final stage, work, the group is considered to be an effective team, however, Wheelan (2005a) stresses that this is not always a seamless and steady process for the group. There exists a potential for the group to regress to a previous stage, and some groups may be unable to progress through the whole sequence of stages, never reaching maturity. However, Wheelan (2005b) claims that most groups manage to progress.

2.5.4 *Cyclic development*

Rather than the smooth linear progression inherent in the stage approach, the punctuated equilibrium model (PEM) approach views group development as a more stable process, punctuated by a discontinuous shift that occurs at the midpoint of a group's lifecycle. Gersick's (1988) model claims that groups rapidly form a structure, establish roles and follow a pattern of interaction that persists to the midpoint of their lifecycle. At that point, there is a dramatic shift, as groups reorganised the task, reallocated role responsibilities and redoubled efforts to meet goals. Although these two dominant perspectives on group development are often regarded as being in opposition, recent work suggests that aspects of both can be observed as groups naturally develop (Chang, Bordia & Duck, 2003).

2.5.5 *Recent theory on normative development*

More recent advances in teamwork development adopts a perspective on how groups evolve (Kozlowski et al., 1999), and suggests that teams should bring together skills and develop adaptive processes to be effective. Key aspects of understanding how teams develop over a length of time pays attention to specific content; processes and outcomes relevant at different phases of teamwork as skills are drawn together (Kozlowski & Ilgen, 2006). As teams form, individuals become focused on fitting into the team and understanding their role in its collective goal. Such a process of socialisation results in outcomes of interpersonal knowledge regarding team members and team orientation as a basis for norms, goal commitment, and team climate. With social space resolved, individuals then have the capacity to shift to a focus on acquiring task knowledge. A process of skill acquisition produces outcomes of task mastery and self-regulation skills. Having established task proficiency, the focal level of developmental activity shifts to dyads and a process of

role negotiation that generates outcomes of role identification and role synchronisation. As dyadic interactions become embedded and routine, the focal level of development shifts to the team. A process of network development produces a flexible network of role interdependencies that enables continuous improvement and adaptability. One key feature of the normative perspective to team development inherent in the approach taken by Kozlowski et al. (1999) is the assumption that team developmental processes can be deliberately influenced and shaped.

2.5.6 *Summary*

Several teamwork theories have been proposed, which prescribe general, rather than domain-specific, reasoning processes or heuristics for teamwork. It appears that several factors influence teams, teamwork and team dynamics, including behaviours, skill acquisition, role identification and role synchronisation. Teamwork is complex, fluid, dynamic and more than a simple union of simultaneous coordinated activities for teams to act coherently.

2.6 **Advancing the Notion of Teamwork to Healthcare**

The literature reviewed in the previous section provides limited consideration of the critical role played by context in shaping teams and teamwork. Healthcare delivery systems exemplify complex organisations, with teams and teamwork recognised as being central to organisational effort. The coordination and delivery of safe, high-quality care demands reliable teamwork and collaboration through complex interactions in the sociotechnical care delivery system (Rosen et al., 2018). This section reviews a range of literature to explore the evidence base that informs contemporary understandings of teams and teamwork in the context of healthcare.

2.6.1 *Teamwork and team functioning*

Historically, studies on teamwork have predominantly focused upon some aspect of team process such as communication or decision-making (Heinemann, Farrell & Schmitt, 1994; Opie, 1997), power (Drinka & Ray, 1987) or conflict within teams (Sands, Stafford & McClelland, 1990), all of which continue to be relevant. But it is apparent that none of these specify exactly what teamwork is, nor provide consistent tests of the various influences on teamwork. Instead, they provide discussions of various factors that promote or detract from effective teamwork. However, as healthcare organisations have become – and continue to be – increasingly complex and dynamic, the reliance on teams and focus on team composition has become much more apparent (Baker, Day & Salas, 2006).

Additional, research identifies the skills that define team performance in healthcare. However, simply installing a team structure does not automatically ensure that it will operate effectively. Morey et al. (2002) suggest that teamwork is sustained by a commitment to a shared set of team knowledge, skills, and attitudes, rather than a rigid assignment that carries over from day to day. There is a notable difference between teamwork and task work, both of which are required for teams to function effectively in complex environments. Furthermore, in healthcare, knowledge of and skills to carry out the task are not enough (Baker, Day & Salas, 2006). Teamwork depends on each member of the team being able to anticipate the needs of others, adjust to each other's actions, and having a shared understanding of the situation in context.

It is evident from the literature that the virtues, advantages and benefits of teamwork in healthcare are substantial and are widely acknowledged. Earlier studies demonstrate that higher team functioning is associated with better patient outcomes

and increased quality of care (Davenport et al., 2007; McCallin & McCallin, 2009; Xyrichis & Ream, 2008), enhanced efficiency (Ferguson, 2008), increased patient safety (Oandasan et al., 2006; Ferguson, 2008), cost savings (Grumbach & Bodenheimer, 2004), increased job satisfaction (Xyrichis & Ream, 2008; Makary et al., 2006), decreased workload and lower incidents of burnout (Oandasan et al., 2006; Makary et al., 2006; Xyrichis & Ream, 2008). It has been theorised that these benefits accrue because better functioning teams are able to cope more appropriately with complex tasks, combine expertise to produce more integrated care plans and coordinate their actions based on better quality decisions (Grumbach & Bodenheimer, 2004; Wagner, 2004).

2.6.2 *Understanding Teams and Teamwork*

Despite the widespread acceptance of the value of teamwork by healthcare professionals and policymakers, and the pervasiveness of the ideology of teamwork, the scientific understanding of teams and teamwork is ongoing. Valentine, Nembhard and Edmondson (2012) note that there is no one unifying theory of the exact dimensions of teamwork that systematically examines the pattern of relationships, perceptions and shared meanings that develop among professional staff who come together as a team. Instead, teamwork encompasses a broad set of behaviours that people use to accomplish interdependent work (ibid.), as well as affective, cognitive and motivational states that emerge during the course of the work (Ilgen et al., 2005). Behavioural processes include actions such as coordinating, use of others' expertise, helping and communicating. Mutual respect and psychological safety are examples of emergent states. Both behaviour processes and emergent states are distinct from permanent traits, group structure, or individual characteristics, and from task work (e.g., interactions with equipment and surgical

instrumentation) (Bowers, Braun & Morgan, 1997). As “teamwork” is used as an all-encompassing term to refer to several behavioural processes and emergent states, measures of teamwork can be expected to be diverse (Valentine, Nembhard & Edmondson, 2012).

More than half a century of research on team effectiveness (Kozlowski & Ilgen, 2006) provides a foundation for identifying process factors, as well as models and frameworks outlining team performance, effectiveness and relationships, which have historically tended to focus on teams generally, rather than healthcare teams. Salas, Rosen, and King (2007) suggest that this existing wealth of scientific understanding can be applied and combined with what is known about healthcare teams to provide a richer and deeper understanding of healthcare teams in context.

The models and frameworks of team effectiveness most frequently acknowledged in the literature illustrate the relationships between input variables, such as individual and team characteristics, process variables that consider communication, coordination and decision-making, and outcome variables that account for productivity, team member satisfaction and safety (Hackman, 1987; Salas et al., 1992, 2007a; Marks, Mathieu and Zaccaro, 2001). Salas et al. (2007a) acknowledge that such models demonstrate the dynamic and multi-dimensional nature of teamwork and the importance of such variables in achieving team effectiveness. Salas and Cannon-Bowers (2001) add to the evidence base by recognising the importance of what teams ‘think’, ‘do’ and ‘feel’. To produce a better than average level of team effectiveness, Salas, Rosen and King (2007) suggest that it is essential that team members dynamically exhibit the critical knowledge, skills and attitudes while engaging in teamwork in complex operational contexts. Effective team

performance requires that team members be competent in both task work and teamwork (Morgan et al., 1986).

2.6.3 *Applying existing knowledge of teamwork to the healthcare context*

Until recently, the attention in healthcare was devoted to clinical task work, disregarding the importance of teamwork (Hamman, 2004; Leonard, Graham & Bonacum, 2004). However, a willingness to look at other industries for transferrable learning and guidance has led to increased attention being placed on teamwork and the dynamics of interactions within healthcare (Porter-O'Grady, 2010).

These established models and frameworks have provided a platform of team performance and effectiveness for current and future research within the healthcare domain, enriching and advancing the present understanding of teams. Theoretical models of how teams adapt within organisations, drawing on a range of experiences (Burke et al. 2006) and self-regulation (DeShon et al., 2004) explain how teams regulate internal processes to meet the changing, dynamic nature of complex work environments. Shared cognition research on, for example, mental models and common goals (Mohammed, Ferzandi & Hamilton, 2010), describes how teams can continue to maintain high-level team effectiveness under stressful, time constrained circumstances (Entin & Serfaty, 1999) by maximising coordination and implicit communication patterns (Wittenbaum, Vaughan & Stasser, 1998; Cooke et al., 2007). Ezzaine et al. (2012) note a lack of evidence on how teamwork should be nurtured in the healthcare setting, but state that the importance of teamwork and team effectiveness is gaining significant attention. Strategies to improve teamwork in healthcare are a direct result of numerous drivers, such as increased patient autonomy and expectations, emphasis on quality and safety, and the ability to do more for patients in a complex and dynamic environment. In just over a decade, the

true benefits of effective teamwork in healthcare have been acknowledged, as have the difficulties associated with building such teams.

2.6.4 *Applying interrelated domains of equal relevance to teamwork*

What can be extrapolated and applied from existing models and frameworks of team effectiveness is that there are two interrelated domains of equal relevance: individual competencies, including specific knowledge, skills and attitudes (KSAs); and effective team characteristics. KSAs include team leadership, mutual performance monitoring, backup behaviour, adaptability, shared mental models, team/collective orientation and mutual trust (Baker, Day & Salas, 2006).

Team members that share a commitment to KSAs have been shown to outperform teams that do not possess these attributes (Leonard & Tarrant, 2001; Salas et al., 2001). Baker, Day and Salas (2006) state it is important to note that individual team members bring these KSAs to each team task they engage in; the competencies are not unique to the team or the task. They further suggest that as long as team members possess KSAs, they can be interchangeable, and the team will still perform as a highly reliable and efficient system. If team members are afforded opportunities to work together on a more permanent basis, then KSAs can be refined, which Salas, Sims, and Klein (2004) suggest emerge as a characteristic of effective teams.

2.7 **Promoting effective teamwork**

Healthcare delivery is inherently interdependent and increasingly complex, requiring more than just task work. The following section will explore the evidence that informs the present understanding of effective teamwork within the context of healthcare.

2.7.1 *Organisational and individual factors that influence teamwork*

Several researchers have sought to describe how effective teamwork in healthcare is promoted by individual, team, or organisational factors (Undre et al., 2006; Gillespie et al., 2010; Aveling et al., 2017). Gillespie et al. (2010), using a grounded theory approach, aimed to extend understanding of the relations between organisational and individual factors that influence teamwork in the OR. With their purposive sample of 16 participants (surgeons, anaesthetists and nurses), the researchers used semi-structured individual and group interviews. Thematic analyses uncovered individual experiences in association with teamwork in the OR, generating three main themes key to effective communication and cohesion. First, they found that interdisciplinary diversity in teams added to complex interpersonal relations. Teamwork was affected by professional culture and mores, revealing disparity in professional orientation, which contributed to uni-professional identification (Bleakley et al., 2006). The second theme illustrated the pervasive influence of the organisation on team cohesion, with findings describing a lack of confidence in the organisational context. Bureaucratic decision-making, resource allocation and policy design was ostensibly far removed from the frontline activities of surgical teams in the OR. A culture of blame pervaded, and it appeared that the organisation did not promote a culture of collaboration. The final theme described education as central to changing this culture and improving teamwork and communication. Participants were unanimous in their assertion that interdisciplinary education needed to be embedded into medical and nursing undergraduate curricula, and is vital to changing culture, improving communication between professions and enhancing professional understandings (Gillespie et al., 2010).

2.7.2 *Perceptions of ideal teamwork and team behaviours in the OR*

Aveling et al. (2018) adopted a mixed-methods approach using thematic network analysis to examine perceptions of ideal teamwork and factors influencing team behaviours in the OR. Through purposive and snowball sampling, 34 semi-structured interviews with 26 representatives of all surgical disciplines were conducted, alongside direct observation of 58 surgical procedures, orientated to examine surgeon-team interactions. Data analysis was categorised into: perceptions of ideal teamwork and factors influencing behaviour, with four and three main themes emerging respectively. Participants held largely shared perceptions of ideal teamwork, characterised by flow (*everyone is on the same page*), competence (*high technical competence and high relational competence*), and appropriate leadership (*taking charge when needed and coordinating group activities*). But views on which interpersonal behaviours best supported these characteristics were conflicting (*authoritarian leadership behaviour, managing tension levels and information sharing*) (Aveling et al., 2018). Even when the desired goal of ideal teamwork was shared, diverging views of optimal interpersonal and leadership behaviours could generate frustration and misunderstanding, undermining teamwork. The authors identified three sets of factors influencing team behaviours in the OR: local organisational culture, variable technical case and technical competence demands, and organisational fitness. Aveling et al. (2018) suggest the findings make clear the central role of organisations in cultivating and reinforcing consensus on ideal team behaviours, and both the nontechnical and technical abilities of OR team members. Team behaviours are contextually dependant, with beliefs about optimal team behaviours not necessarily shared. Interventions to promote effective teamwork

require established consensus regarding best practice and the ability to adapt as circumstances require.

2.8 Cognitive structures and strategies that facilitate teamwork

It is suggested in the literature that there are several cognitive structures and strategies that positively impact the abilities of groups to work together harmoniously. This section will discuss the cognitive factors that enable groups to come together to work effectively in the context of complex and dynamic environments, drawing on OR literature, where appropriate.

2.8.1 Shared Mental Models (SMM)

In complex and dynamic environments, such as the OR, teams are often faced with uncertainty, rapidly evolving and ambiguous situations, where one correct solution is not always evident or possible. Teams that work in such high-risk environments can coordinate their activities efficiently and effectively, when each member of the team is able to predict one another's requirements, adjusting strategies based on changes in environmental demands (Espevik, Johnsen & Eid, 2011). To facilitate such coordination, team members must collectively share mental model of the system in which interactions take place, often requiring flexibility, adaptability and resilience in term of team response (Salas et al., 2007a). Langfield-Smith (1999) argues that, to understand how collective knowledge structures are formed, it is a basic requirement that one must understand the interaction between cognition and social processes. Representing one type of team cognition, shared mental models are organised mental representations of the key elements within a team's relevant environment, shared among team members (Mohammed, Ferzandi & Hamilton,

2010). Other shared mental models can, and are most frequently referred to, as the shared representation of tasks, equipment, working relationships and situations (Mohammed & Dumville, 2001). It is suggested that probably all these types of shared mental models need to be shared in effective teams (Van den Bossche et al., 2011).

A dynamic, fluid and complex environment gives rise to commensurate team task demands that members have to resolve through a coordinated process that combines their cognitive, motivational and behaviour resources (Kozlowski & Ilgen, 2006). Wittenbaum, Vaughan and Stasser (1998) argue that coordination is an essential component of successful team performance, underlining that successful teams coordinate their efforts by communicating implicitly. It is therefore suggested that the success of implicit coordination relies on the team's ability to share a common understanding of the situation (Cannon-Bowers, Salas & Converse, 1993; Klimoski & Mohammed, 1994; Mathieu et al., 2010; Mathieu, Heffner & Goodwin 2005; Mathieu et al., 2000).

Klimoski and Mohammed (1994) applied their understanding of the way individuals make sense of their environment through 'knowledge structures' to conceptualise cognition as a group-level phenomenon, with Cannon-Bowers, Salas and Converse (1990) extending the concept of individual mental models to the team performance domain. Shared mental models (SMMs) refer to the overlapping mental representations of knowledge by team members and are the mechanism that allows implicit coordination to occur (Cannon-Bowers, Salas & Converse, 1993). SMMs are socially constructed cognitive structures that represent shared knowledge or beliefs about an environment that enable team members to form accurate explanations and expectations of the task (Druskat & Pescosolido, 2002). This in

turn enables team members to coordinate their actions and adapt their behaviour to the demands of the task and to other team members (Cannon-Bowers, Salas & Converse, 1993). It is assumed that SMMs negate the need for explicit communication, as team members can predict task need and the actions of other team members, adapting their own behaviour accordingly (Petrosoniak & Hicks, 2013). Wittenbaum, Vaughan and Strasser (1998) add that groups that communicate implicitly are more successful at coordinating their efforts – but they caution that although such coordination implicitly saves time, it may also increase the possibility of failure. Druskat and Pescosolido, (2002) purport that SMMs are particularly important when a team's work is enacted in unpredictable time-pressured environments, where frequent communication is limited or not possible. Several studies have indicated that SMMs are an integral component of increased team effectiveness (Volpe et al., 1996; Mathieu et al., 2000, 2005, 2010, Banks & Millward, 2000; Petrosoniak & Hicks, 2013).

Moreover, Entin and Serfaty (1999) support earlier claims by Orasanu (1990) that effective teams with a SMM coordinate their activity not only by communicating less frequently (implicit), but through changing their patterns of communication from pulling (requesting), to pushing (presenting) information when the environment changes and workload increases. Effective teams will increase the push of information from team members and reduce the need for information from the team leader during periods of increased workload.

SMMs feature supporting and coordinating mechanisms that are viewed as important features of performance monitoring, backup behaviour and adaptability. SSMs

assume that highly effective teams can operate in this way because they understand the system in which they are working on several levels (Salas, Sims & Burke, 2005). To make these possible, multiple shared models must be operational at the same time (Cannon-Bowers, Salas & Converse, 1993), of which there are four types (Cannon-Bowers et al., 1995). Some problems are solved through one type of mental model, while other problems are solved by integrating several mental models (Rouse & Morris, 1986).

The four types of SMMs as proposed by Cannon-Bowers et al. (1995) are: equipment, task, interaction and (most recently) the team member (team). The latter model contains information that is specific to the team and constitutes a SMM of the individual team members' knowledge, skill, attitudes, preferences, strengths and limitations. It has been suggested that the importance of SMMs of team members increases when teams operate in dynamic situations that require high levels of flexibility and adaptability (Cannon-Bowers, Salas & Converse, 1993). The other SMMs, relating to technology/equipment, the task at hand, and team interactions, have frequently been emphasised in previous research (Volpe et al., 1996; Urban et al., 1995; Stout et al., 1999).

Espevik, Johnsen and Eid (2011) highlight that despite repeated statements concerning the importance of a SMM of team members, few empirical studies of this have been published. However, in an early study, Espevik et al. (2006) coincidentally discovered that familiar team members performed better and demonstrated more efficient communication patterns, compared to a team with one unfamiliar team member. This result emerged after controlling for the other three types of proposed SMMs.

2.8.2 *Shared Mental Models with team members*

Espevik, Johnsen and Eid (2011) subsequently tested whether Navy teams that were familiar with one another had different levels of shared mental models when compared with teams that were unfamiliar, using a factorial design. Factorial design allows for the investigation of the main and interaction effects between two or more independent variables. Team member SMMs were measured by coordination of performance, communication and level of psychological arousal during high workload conditions. Participants (n=100) formed teams of three, categorised as members of familiar (n=13 teams, all participants had completed the first year of basic officer training together) or unfamiliar (n=15, all participants were cadets and had no previous history of working together, either as individuals or as members of other teams) teams. Each team completed a Navy-developed scenario in a high-fidelity simulated environment, where none of the participants had previous simulated experience. The scenario was threat-based (Espevik et al., 2006), with four events in the low and four events in the high workload condition. The scenario was deliberately designed to increase realistic stressors that gave the teams an increasing workload and a greater need for coordination and communication. Performance measures were based on transcripts from the simulator, video and voice recordings, and heart rate monitoring data from each participant. They were examined using criteria-based evaluations of efficiency, consisting of mission success, accuracy and latency (Cannon-Bowers & Salas, 1997). The number of team process statements was registered as the total number of statements per minute. Each statement was classified as either: a request for information, a transfer of information, an action, or problem solving (Entin, Serfaty & Johnston, 1998). Two independent raters (both unfamiliar with the SSM theory and the scenario)

categorised the information exchange in the teams. A common understanding of the categories was established by rating several videos together, establishing inter-rater reliability. In this study, familiar teams rated higher in performance levels, and had faster reaction times, better accuracy and greater mission success, outperforming unfamiliar teams. The researchers concluded that the difference in performance was caused by a better communication/coordination process enabled by SMMs of team members in the familiar teams. Familiar teams also performed well during periods of high workload and responded more appropriately to new encounters (Espevik, Johnsen & Eid, 2011). Interestingly, the researchers noted that it could be possible for familiar teams to monitor each other more effectively through verbal cues (e.g., tone of voice), guiding subsequent appropriate actions. This study gives further support to the idea that SMMs of team members is a mechanism that improves processes, performance and communication in teams, as claimed by Mathieu et al. (2000), expanding previous knowledge, in which the focus has been on the other three types of SMMs (Espevik, Johnsen & Eid, 2011).

2.8.3 *Constructive conflict in building SMMs*

Van den Bossche et al. (2011) add valuable insight in relation to SMMs, finding constructive conflict to be a significant behaviour in the process of building SMMs. This strengthens the theoretical assertion that for the development of SMMs, both mutual understanding and mutual agreement are necessary (Baker, 1999). Mere co-construction behaviour is not enough, corresponding with the observations of Jeong and Chi (2007) regarding the challenges in reaching shared cognition. The mental models of teams are probably only 'shared' as distributed and not 'shared' as agreed (Van den Bossche et al., 2011). While SMMs have a positive bearing on team performance, efficiency and communication, it is evident that challenges remain.

Mental models in teams may be much more complex than is described by SMMs (Kozlowski & Ilgen, 2006).

Literature regarding SMMs does not address the fact that, while effective teams may not have identical knowledge structures (Kozlowski & Ilgen, 2006), they may function efficiently; or that ‘sharedness’ refers to the degree to which team members’ mental models are consistent or converge but does not signify identical mental models (Mathieu et al., 2005; Cannon-Bowers & Salas, 2001).

2.9 Team coordination

An emergent theme from the literature in relation to SMMs and the team’s ability to adapt to stressful situations was the notion of effective coordination. The literature reviewed in this section provides insight into adaptation mechanisms that allow teams to maintain and improve their performance through coordination. It is suggested that effective teams can draw on SMMs of the situation and the task environment, and shift to a different mode of coordination.

2.9.1 Implicit and explicit team coordination and the role of familiarity

Team coordination is an emergent phenomenon involving the use of strategies and behaviour patterns aimed at achieving a coherent and unified set of actions for the successful completion of emergency work or fast-paced tasks, such as those experienced in the OR. Consequently, coordination is about ‘the integration of organisational work under conditions of task interdependence and uncertainty (Okhuysen & Bechy, 2009, p. 469). However, in fast-response situations, achieving integration is often challenging and there are instances where team coordination falls short or fails, resulting in errors that are costly, or impair safety, reliability and

productivity in organisations (Reason, 1990; Zhao, 2011). Organisations often spend significant resources and efforts to avoid errors, which can occur at individual, team or organisational level. To advance the discussion in relation to coordination, Okhuysen and Bechky (2009) suggest that both explicit and implicit mechanisms should be considered. The growing interest for the interaction of explicit and implicit coordination is due to the necessity of a better understanding of how teams adapt to changing and complex situations (Burke et al., 2006; Rico et al., 2011). Historically, explicit coordination has focused on planning and communication as the basic mechanisms of team coordination because they are intentionally used by team members to manage their interdependencies (Espinosa et al., 2007). Rico et al. (2008) suggests that despite the undoubted importance of explicit coordination mechanisms, the prevalence of past research offers a static picture, revealing only one aspect of team coordination. The concept of implicit coordination broadens our understanding of the way team members coordinate their contributions during interaction. As previously highlighted, SMMs refer to the overlapping mental representation of knowledge by team members and are the mechanism that allows implicit coordination to occur. The importance of implicit coordination strategies used by effective teams suggests that SMMs are useful constructs to explain the anticipatory behaviour of team members in the absence or scarcity of communications (Entin & Serfaty, 1999). This allows for behaviours to be adjusted, without having to communicate directly with each other or plan the activity (Cannon-Bowers, Salas & Converse, 1993).

2.9.2 *Team coordination in the OR*

Manser, Howard and Gaba (2008) conducted an observational study to explore coordination processes of cardiac anaesthesia teams involved in caring for patients

undergoing coronary artery bypass surgery. 24 cases of cardiac surgery were observed, and coordination processes were recorded by a trained observer using a newly developed observational tool. Data collection focused on the anaesthetic team, including coordination activities directed either towards another member of the anaesthetic team or any other member of the OR team. If directed towards the anaesthetic team, coordination activities performed by other members of the OR team were also recorded. Observational data were statistically analysed using the statistical computer programme SPSS. The results showed that explicit coordination increases in unexpected situations or with high interdependency levels, which increases group efficacy. The analysis of coordination sequences in high-performance teams shows a clear balance between implicit and explicit processes, indicating that the shared representation of the situation on the part of the team determines its successful coordination, highlighting the advantages of a stable (or familiar) team.

2.9.3 *Team coordination and familiarity*

Team familiarity refers to team members' shared experience of working together (Espinosa et al., 2007) and is a highly relevant mechanism for capturing the informal practices that contribute to team coordination and performance (Espinosa et al., 2007; Okhuysen, 2001). Team familiarity captures the informal elements of coordination because it is closely tied to the temporary unfolding and iterative process of interaction between team members (Okhuysen & Bechky, 2009). Cooke et al. (2007) suggest that team familiarity positively contributes to and enhances team performance by improving team member coordination. Team coordination errors have been seen to decline as team familiarity increases because team members have gained a greater understanding and knowledge of each other and of the task,

which leads to heedful implicit coordination (Weick & Roberts, 1993; Klimoski & Mohammed, 1994). Support for this argument is abundant in SMM literature, where shared team knowledge emerges through interaction dynamics and processes as team members get to know the expertise, needs and expectations of one another (Cannon-Bowers & Salas, 2001; Mathieu et al., 2000; Espinosa et al., 2007). Coordination through team familiarity improves to the extent that team members share their knowledge structures and become adept at predicting and adapting to their teammates' behaviour (Rico et al., 2011), resulting in fewer team coordination errors (Sieweke & Zhao, 2015).

2.9.4 *Familiarity and Team Performance*

Team familiarity is defined as: team members' shared experience working together (Huckman, Staats and Upton, 2009; Sieweke & Zhao, 2015). Research has suggested that team familiarity significantly enhances team performance by improving team member coordination (Sieweke & Zhao, 2015). Team members who repeatedly collaborate with one another may develop social capital, whereby networks of relationships enable effective functioning (Putnam, 1995), and improve their ability to coordinate actions (Goodman & Leyden, 1999). With recurring interactions, team members build rapport and so avoid the process losses that occur in newly formed groups (Steiner, 1972). Reagans, Argote and Brooks (2005) found that operating teams who had more experiences of working together completed procedures earlier than teams with less experience, because they were better able to coordinate their actions. Teams composed of individuals who have experience working together have a more accurate and shared sense of who knows what on the team (Faraj & Sproull, 2000; Lewis 2003), which may increase the quantity and quality of knowledge sharing (Monteverde, 1995). Reagans, Argote and Brooks

(2005) suggest two complementing explanations for why familiarity improves coordination while working together. First, knowing who knows what is critical for defining roles and responsibilities inside the team and for assigning the most competent person to each role, as well as the development of relationship-specific heuristics that enhance how well people performing distinct roles interact with each other. Secondly, Finnesgard et al. (2018) affirm that teams that consistently work together benefit, suggesting that familiarity fosters improved communication channels and a common language (Narayanan, Balasubramanian & Swaminathan, 2010), enhances learning experiences and encourages team members to raise concerns. The ability for team members to raise concerns is associated with the notion of psychologically safe environments, where team members may be more likely to share mistakes and take risks, resulting in more experimentation and more innovative thinking (Edmondson, 1996; Lee et al., 2004).

In the OR, a study of the surgeon/assistant-surgeon dyad has associated increased familiarity with reductions in the length of time to carry out an operative procedure and postoperative morbidity (ElBardissi et al., 2013; Maruthappu et al., 2016).

Conversely, pair inexperience and instability have been linked to prolonged operative duration and hesitant surgical behaviours that interrupt operative flow (Kim et al., 2010; Kurmann et al., 2014). However, neither of these studies considers collective team familiarity or team coordination.

2.9.5 Sharing experiences as a team

Uzzi, (1997) notes that collectively, as team members share experiences, they may build trust, yielding performance benefits. Strong ties between team members and

not just dyads within teams may lead to more creativity in terms of problem-solving (Sosa, 2011). Shared experiences may also increase the willingness of team members to act on useful knowledge from others (Kane, Argote & Levine, 2005). Thus, team familiarity may enable the formation of a learning system that promotes the ongoing application of new knowledge (Lewis, Lange & Gillis, 2005).

2.9.6 *Fixed teams*

In their quantitative study, Stepaniak et al. (2012) examined OR teams that remained fixed for the day, rather than the conventional approach of OR teams that vary throughout the day. Data were collected from two teaching hospitals, and included patient-related demographics and intraoperative data, and staff-related survey data on teamwork and the safety climate. The operating procedure duration of fixed and conventional OR teams were analysed by comparison means tests and by regression methods to control for the effects of surgeon, surgical experience and procedure type. Both hospitals yielded the same results, confirming that familiarity among the collective operating team demonstrated reductions in operative time and improved safety metrics when collective team stability was preserved. This highlights tangible benefits in terms of team familiarity and efficiency but it does not explain the relationship-specific interactions among team members. Staats (2012) also acknowledges that despite the attention that has been given to team familiarity and its possibilities, the underlying interactions remain relative mysteries.

2.9.7 *Familiarity and team coordination*

There is no doubt within the literature that team familiarity positively contributes to team performance (Huckman, Staats & Upton, 2009; Reagans et al., 2005), presumably through improved team coordination (Sieweke & Zhao, 2015).

Although, the association between team familiarity and team performance is well

established, there is a dearth of empirical knowledge that examines the direct link between team familiarity and team coordination (Sieweke & Zhao, 2015). Okhuysen and Bechky (2009) state that this research gap is significant when team familiarity is involved in the creation of all integrative conditions for coordinated activity. This is particularly important when it is assumed that team familiarity influences error rates in teams, with more familiar teams committing fewer errors (Weick & Roberts, 1993).

2.9.8 *Team familiarity on team coordination errors*

Contributing to the empirical evidence base, Sieweke and Zhao (2015) examined the impact of team familiarity on team coordination errors. To test their hypothesis, panel data on teams from the National Basketball Association (NBA) were used, arguing that basketball is an ideal context for investigating team coordination errors because it is a sport in which team members are highly interdependent (Timmerman, 2000). Sieweke and Zhao claim that what constitutes errors in the NBA does not change across teams over time, assuring the reliability of the data and enabling examination of the occurrence of team coordination errors over time at the team level. Their findings support the claim that team coordination errors are a separate category of errors that deserve further research, as they represent a significant proportion of errors that occur in teams, resulting from inter-individual interaction processes. Even if employees have the proper knowledge, skills and attributes (KSAs) to correctly perform their singular tasks, they might still commit collective errors when trying to coordinate interdependencies to achieve a common goal (Bell & Kozlowski, 2011; Hofmann & Frese, 2011).

Furthermore, the study contributes to existing research on the influence of team familiarity on team performance, examining the rarely studied link between team

familiarity and team coordination (Harrison & Rouse 2014). Okhuysen and Bechky (2009) and Espinosa et al. (2007) suggest that familiarity enhances coordination among individuals, however Sieweke and Zhao (2015) claim that team familiarity might actually cause team coordination errors in the long run, even though it initially improves coordination. Too much familiarity might negatively affect coordination, particularly in dynamic task environments, where there is a degree of unpredictability and teams need to consider novel contingencies. Interestingly, Sieweke and Zhao (2015) challenge the potential negative effect of employee turnover on coordination (Okhuysen & Bechky, 2009), suggesting that their study serves as a reminder of the deleterious effects of too little turnover within stable teams.

Sieweke and Zhao (2015) discuss the generalisability of their findings and consider whether findings from sports teams can be transferred to non-sport organisational contexts. They suggest that the context in which sports teams operate is comparable with non-sports contexts to some extent and recommend further research in other dynamic task environments.

2.10 Team Leadership

To advance the discussion of team performance and coordination of effort in terms of collective success, this section introduces a range of literature to contextualise team leadership within the OR.

2.10.1 The expanding role of team leader

While it has long been argued that leaders play a key role in enabling individual and organisational performance (Follett, 1926; Bass, 1990), work has recently expanded

to examine the role that team leaders occupy in promoting, developing, and maintaining team effectiveness (Hackman & Wageman, 2005; Kozlowski et al., 1996; Serfaty, Entin & Deckert, 1993; Zaccaro, Rittman & Marks, 2001).

Edmondson (2003) suggests that a team leader is often the only person who sees the “whole picture” in a team. Team leaders are part of the formal coordination structure and are responsible for defining the team’s vision, strategy and processes (Kozlowski et al., 1996; Morgeson, DeRue & Karam, 2010), guiding members to coordinate the interdependent work, primarily via explicit mechanisms such as planning, overt communication and setting rules in uncertain, fast-paced situations (Edmondson, 2003; Zala-Mezö et al., 2009). Additionally, a team leader monitors the team and is able to intervene in team processes if team performance declines (Edmondson, 2003). More specifically, taxonomies of team leadership have identified functions such as defining the team’s mission, establishing expectations and goals, providing feedback, monitoring the team and solving problems (Hofmann, Morgeson & Gerras, 2003). Leadership has been consistently identified as a key component for the successful functioning of teams (Zaccaro, Rittman & Marks, 2001; Lim & Ployart, 2004).

2.10.2 *Leadership in the OR*

Rydenfält et al. (2015) acknowledge the importance and necessity of appropriate leadership in complex environments where interdisciplinary healthcare professionals work together, such as in the OR. This changeable environment presents certain challenges, so those who lead within it must be flexible, open-minded and progressive. Conversely, how leadership is conducted in practice and who actually leads in the OR team has been sparsely researched, with evidence to date focusing on the implicit assumption that leadership resides with the surgeon (Rydenfält et al.,

2015). Suliman, Klaber and Warren (2013) boldly suggest that the OR remains a well-controlled setting where the surgeon is irrefutably considered the leader. Hu et al. (2017) confirm this notion, whereby surgeons not only value basic principles of leadership, but are indeed *de facto* team leaders and transcend such principles within the OR context.

Through postmodern analysis of the organisation of surgery, Fox (1994) adds to the debate by reflecting the rival perspectives held by surgeon and anaesthetist in relation to 'their' patient while in the OR. The notion of surgeon as leader is challenged in the efforts of the anaesthetist to construct a distinct position on the patient. Surgeons and anaesthetists engage in what Fox (1994) refers to as *fabricating* their own version of the reality of the patient in order to achieve objectives specific to their specialism, while sustaining the necessary collaboration without which there could be no surgical intervention. Furthermore, Fox (1994) suggests there is an anaesthetic discourse on *fitness*, which defines the perspective of the specialism on the surgical patient, juxtaposed against the surgeon's perspective that is organised by *disease* or *illness*. The discourses, while rival, act symbiotically for the majority of interactions between the anaesthetist and the surgeon (Fox, 1992). While symbolic interactionism has supplied the belief that the meanings attached to the social world are constructed (Silverman, 1985), postmodern perspectives add to this position a primary concern with power and control as processes (Fox, 1994). Foucault (1979) rejects the idea that power struggles can ever be won finally and absolutely, or that power can be 'held' by a state or a class, e.g., the surgeon; and instead argues that techniques of power never resolve struggles over control and domination. Rather, power achieves its effects through continuous strategies, such as surveillance and assessment of individuals. Furthermore, Fox (1993) adds that

organisation, is understood in the postmodern view as a response to challenges or threats to power, to 'knowledge' or to hegemonic discourse. In a qualitative study, Fox (1993) examined how surgeons used power and authority to manipulate ward round inter-actions in order to sustain their perceptions of surgery and healing. In conclusion the study implies that power and authority have traditionally been used to preserve the dominance of hegemony of the medical position in healthcare decision-making over other team members. This study supports the sentiments of Foucault (1988, 1991) who argues that certain disciplines are shown to be privileged in institutional and other social contexts with the effect of disempowering other disciplines in the same institutional or social space. The work of Foucault (1978, 1991) and Fox (1993, 1994) goes some way to understanding the emergence of the surgeon as *de facto* team leader within the OR. Fox (1992) explores and discusses at length how the clinical double-act of surgeon and anaesthetist contributes an important element to the surgical discourse within the OR context, but there is limited consideration given to contemporary surgical discourse in light of 'team' effectiveness, performance and group interaction processes within this unique and technologically advancing social space.

2.10.3 *The Surgeon as Leader*

Several studies attempt to characterise the behaviours of the surgeon as leader, departing from the traditional view that technical ability, knowledge, and diagnostic acumen are the only important skills necessary for the surgeon in the OR. It is becoming increasingly accepted that the surgeon's non-technical skills, such as their ability to effectively lead, are key requirements for success. Henrickson Parker et al. (2012) identified through an observational study what leadership behaviours surgeons use in the OR. The study hypothesised that case complexity would

influence surgeon's leadership behaviour. 22 different OR teams were observed during the intraoperative phase, whereby field notes focused only on capturing the operating surgeon's leadership behaviours. A total of 258 behaviours were collected for analysis and the 7-element leadership taxonomy was used as a reliable method of coding observed behaviours. As theorised, the study concluded that significantly more leadership behaviours were observed during more complex cases, suggesting that this may occur in response to requirements of both the situation and the team. The researchers added that because there were significantly more leadership behaviours per hour during more complex procedures, surgeons may practice a version of functional leadership, directing others when the team seems to require direction. The study showed that surgeons infrequently engaged in building commitment and motivation, which team leadership models allude to being team-orientated behaviours. Although, guiding and supporting (n=85; 33%) behaviours were observed most frequently, these leadership behaviours were still related to accomplishment of the surgical task or to social conversations, rather than team building. Certain leadership behaviours shown by the surgeon clustered mostly around effectively and efficiently accomplishing the surgical task and communication, rather than as a deliberate mechanism to ensure optimal team performance. The researchers suggest that traditional models of leadership may not be applicable within highly technical, task-focused environments (Henrickson Parker et al., 2012). Although not coded, the style with which certain leadership behaviours were expressed was apparent during observations, which the researchers claim can impact upon team performance. This study did not attempt to link leadership directly to any patient outcomes or team performance measures, but rather to systematically describe and categorise surgeons' observed leadership behaviours.

Several limitations – common to most research conducted in a naturalistic setting such as the OR – were acknowledged; including the inability to observe and document the leadership behaviours of all OR team members concurrently.

2.10.4 *Surgeon as leader and mood creator within the OR*

Through their observations of ORs and structured interviews of OR team members, Leach et al. (2011) concluded that surgeon leadership was capable of establishing a particular mood in the OR. The effects of positive leadership created an environment that encouraged others to manifest extra-role cooperative behaviour and thus allowed the team to dynamically respond to various concerns in the system. This work has been advanced by Barling, Akers and Beiko (2018), whose study was the first to assess the simultaneous effects of positive and negative behaviours associated with leadership on interoperative team performance, extending the body of research on surgeons as leaders within the OR context. The researchers observed 150 operations during which the surgeons' use of leadership behaviours was analysed using multilevel modelling. This controlled for the fact that the data were not independent, as some surgeons were involved in more than one surgical procedure. Interestingly, the study found no evidence that surgeons adopted a transformational leadership style, with the researchers suggesting that any benefits to team performance that typically accumulate from transformational leadership may have been suppressed in the presence of over-controlling and/or abusive surgeon behaviours. Bass (1995) asserts there are four dimensions/behaviours to transformational leadership: charisma, individual consideration, intellectual stimulation and inspiration. Leaders who exhibit transformational behaviours are linked to positive outcomes such as leadership effectiveness, communication, quality improvement, innovativeness and team performance. In situations where resources

were limited, transformational leadership behaviours were dismissed in favour of a more authoritarian style of leadership. These findings support the work of Hu et al. (2017), who found that surgeons' passive leadership behaviours predated negative team performance when explored in isolation, adding that surgeons who adopted passive leadership traits also failed to encourage team cohesion. Barling, Akers and Beiko (2018) suggest that the effects of passive leadership may be suppressed by the presence of more visible negative behaviours associated with abusive supervision and over-controlling leadership. They conclude by suggesting that significant negative effects on OR performance only surface when negative behaviours, associated with abusive and over-controlling leadership, are demonstrated, while transformational leadership behaviours do not positively influence team performance.

Although it has been acknowledged on several occasions that surgeons' intraoperative leadership is important (Giddings & Williamson, 2007; General Medical Council, 2006), there is limited empirical evidence to suggest what leadership behaviours optimise team performance, other than the work of Barling, Akers and Beiko (2018). Henrickson Parker et al. (2011) state that leader behaviours that have emerged from the evidence base has focused on the task and team, with little or no consideration given to established leadership theory. Although Barling, Akers and Beiko (2018) suggest that leadership behaviours have the potential to enhance team performance, insight about which leadership behaviours benefit surgical teamwork and which do not, is limited and ill-defined (Gandolfi & Stone, 2017; Henrickson Parker et al., 2011).

2.11 Theories of relevance

Theories exploring the nature of social interactions and the meanings that human beings ascribe to various situations have resulted in a vast amount of research. Cott, (1998) states the perceptions or meaning that staff members attach to teamwork are explained by linking them to the structure of the team using a combination of symbolic interactionist (described on p.12) and social network perspectives. The meaning of teamwork is not only work done by a team but as Cott (1998) suggests, refers to the interpretation or perceptions of individual team members as to the effect of being part of a team for themselves personally and for their work. In this study, the meanings that OR team members attach to teamwork arise through social interactions that occur between and among the professions and how such interactions are perceived. Several potential theories could have been examined, the theories that are considered here are those which are applicable to the OR context and have previously been cited in healthcare literature.

Symbolic interactionism was the initial perspective for this grounded theory study. As the study progressed, it became apparent that other theories could enhance the fundamental principles and application of symbolic interactionism in the context under investigation, providing the potential to enhance the emerging theory and its relevance. Thus, three theoretical approaches that begin to explain aspects associated with group interactions and teamwork have been summarised in this review. A side-by-side comparison of these theoretical perspectives allows for consideration of the unique contribution of each, and how these theories can be integrated into a more rounded view of an inherently multifaceted concept. Social Identity Theory (Tajfel & Turner, 1979), Negotiated Order Theory (Strauss, 1978) and Relational Coordination (formally introduced by Gittell (2000)). These theories

are deemed to be a good fit for this work as each aims to describe how different groups interact and come together. Although these theories may appear to have explanatory power, each falls short of fully being able to describe aspects of the interactions among professionals within the OR context, thereby lending support for the emergence of a grounded theory, alongside symbolic interactionism. These theoretical concepts combine to provide a powerful but not exclusive set of lenses to examine OR teamwork.

2.11.1 *Social Identity Theory*

Despite wide acknowledgement of the value of teamwork and collaboration by healthcare professionals, and the pervasiveness of the ideology of teamwork in healthcare organisations, tensions between professionals involved in teamwork within the OR context remain (O'Daniel & Rosenstein, 2008). Coles (1995) confirms that even though healthcare professionals speak of being part of a team, they have a tendency to work autonomously or in professional silos, viewing themselves as a collection of groups with distinct professional identities (Weller, 2012).

Rooted in social psychology (Mead, 1934; Tajfel & Turner, 1986) social identity theory (SIT) emphasises when and how individuals will define themselves as part of a collective or team (Ashford & Mael, 1989; Hogg & Terry, 2000). Turner (1987) suggests the process whereby individuals become team members is a cognitive and emotional process of alignment, not purely a behavioural response. Lembke and Wilson (1998) claim that only when there is a cognitive understanding of the team and an emotional investment in what the team represents can the behaviour of the team be truly fused. A by-product of such unity provides the conditions for identification with a team purpose, enhancing motivation and increasing

productivity. The cognitive transition alluded to by Lembke and Wilson (1998) that is necessary for teamwork moves beyond familiarisation and determining how best to work together. Gersick (1988, 1989) refers to the concept of “punctuated equilibrium”, whereby a radical transformation of team effort is guided by the team purpose beyond member familiarisation, interdependence of tasks and understanding the skills or contribution others make to the collective purpose. Requirements such as time constraints indicate that the social environment must provide the information that determines the need for cooperation and a desire to be involved in the team. To develop a team cognition requires a radical shift in awareness and a change in the level of analysis of information that enables team effectiveness.

SIT promotes a complex perspective of the team and its purpose or shared goal. This differs significantly from the behaviour of individuals who are aware only of their own performance, as noted by Coles (1995). If individuals adopt social identity, they are better able to understand the tasks and behaviours required for a team output, this social identification moves beyond feeling and thinking at an individual level, to feeling and thinking like a representative of a social group (Tajfel & Turner, 1986).

Groups with a dominant social identity are expected to be highly productive because the team members are committed to a common group identity, demonstrated by directing their behaviour towards the reason for having a group, or team. Lembke and Wilson (1998) suggest that in the teamwork genre, the purpose has become organisational profit or kudos. From a SIT perspective, teamwork is motivated not by the individual but by the benefits intimately linked to the social identity of the team. What SIT does address is the team as a unit, which Lembke and Wilson (1998) claim is unlike most other theories of teams. However, social identification

has neglected to include a critical antecedent of specifically team-based identification: “the relative importance that individuals tend to place on individual interests and pursuits versus group interests and shared pursuits” (Gundlach, Zivnuska & Stoner, 2006, p.1608). Thus, SIT does not wholly explain positive interactions that occur during an operative procedure within the OR context.

2.11.2 *Negotiated Order Theory*

Strauss’ (1978) negotiated order theory provides a theoretical lens, which illuminates the nature of interprofessional interaction and negotiation that occurs within the OR. This theory was developed to provide an explanation of organisational life, emphasising the role of individual interactions and negotiations in creating and maintaining social order within an organisation. Reeves et al. (2009) advocates that negotiation between various individuals shapes the formal rules and structure within the organisation and recognises that for organisations to develop and maintain social order, micro-level negotiation is the key factor. Day and Day (1978) suggest this theory represents one of the more exciting developments in the study of organisations. With its roots in symbolic interactionism and attention to the rich detail of organisational life, this perspective has also advanced understanding of process, emergence, social change and the basis of social conflict in complex organisations. Since negotiated order theory emerged, it has been usefully employed as a method to understand how different organisational arrangements suppress or encourage negotiations, shaping organisational life (Hall & Spencer-Hall, 1982). Svensson (1996) suggests that the negotiated order perspective is a more appropriate theoretical framework for studying nurse-doctor interactions than traditional models of medical dominance, which are deterministic and provide an inappropriate basis for understanding contemporary relationships in an organisational context.

Negotiated order theory has gained popularity in the examination of interrelation, collaboration and conflict in the healthcare context, in which the role of individual interactions and negotiations takes precedence in the creation and maintenance of social order (Svensson, 1996; Goldman et al., 2016; Miller & Kontos, 2013; Reeves et al., 2009). This is perhaps a rather narrow application of the method, with Strauss (1982) suggesting that alongside the analysis of negotiations and their patterning, there is a need to consider both the 'structural contexts' and 'negotiation contexts'. A focus on both contexts and their respective properties increases the likelihood of negotiation being located within the larger social arena. Kling and Gerson (1978) add that by placing negotiation at the centre of an analytical perspective, the health service can be viewed as social worlds – macro-level negotiation – including occupational worlds such as medicine, nursing and management. Each social world has its own complexities and is divided into subsections; for example, in medicine, this includes the various directorates or specialities. Currie (1999) purports that such an approach to organisational work and the subsection within social worlds directs us to reveal the ideological underpinning of work groups, particularly when negotiation is encouraged by ambiguity and uncertainty, when rules and policies are not inclusive, when changes are introduced, and when there are disagreements (Maines & Charlton 1985). All of these are crucial to the direction of work within the organisation and to the fate of organisations themselves (Strauss, 1982).

For this study, the structure of the OR team is conceptualised as a network of different kinds of relationships or ties among team members as they go about their everyday work. Following the negotiated order perspective within symbolic interactionism (Strauss et al., 1963), such patterns within relationships are conceptualised as the outcome of ongoing bargaining and negotiation between actors

from different professions as they come together to carry out the surgical work or intervention. Lazega (1992) suggests that such a structure, for example within the OR team, is negotiated through a series of conflicts and compromises between the team members as they attempt to establish a firm basis for the concerted effort or action. Cott (1998) highlights the tension within negotiated order perspective, which fails to recognise or account for the differences in status, authority and power that have historically prevailed within the OR context.

2.11.3 *Relational Coordination*

There is evidence within the teamwork literature that addresses the problem of coordination, either implicitly or explicitly (Gittell, 2000). Indeed, the most simplistically accepted definition of a team is that of a work group whose tasks are interdependent (Hackman, 1987). Relational coordination goes beyond theories of sense-making, transactive memory and expertise coordination, all of which have contributed to understanding the micro-dynamics of coordination. Gillett (2006) acknowledges that this view of human identity as socially constructed cannot be fully understood without a relational perspective that gives due consideration to the way people work together (Fletcher, 1998, 1999). Relational theory of coordination emerged from an environment not dissimilar to the healthcare context, where tasks are deemed highly interdependent, are performed under conditions of uncertainty and constrained by time, creating a significant challenge for effective operational coordination. Gittell (2006) suggests that if effective coordination is to occur, participants, for example the OR team, must be connected by relationships of shared goals, shared knowledge and mutual respect. Such relationships matter, as they form the basis for collective identity and for coordinated collective action. Relationships of shared goals, shared knowledge and mutual respect help to build a sense of ‘we’,

which according to Gittell (2006), facilitates the effective coordination of work. Such relationships are viewed as being particularly important for coordination when people must adjust to each other due to the interdependencies between their tasks, and due to the uncertainties associated with the task or the environment that creates the need for adjustment. Embracing connections with one another strengthens collective identity and allows for coordinated collective action in times of task or environmental uncertainty (Gittell, 2006).

Work processes within the OR are highly interdependent, requiring reciprocal, iterative interactions among the team. Such work processes are time constrained, with episodes of unpredictability, which Gittell (2000) claims, if organised effectively, supports relational coordination. Relational coordination among professionals has been shown to improve care delivery by enhancing the exchange of relevant information and feedback and by strengthening shared goals and the degree of mutual respect across diverse professional boundaries (Hartgerink et al., 2013). However, relational coordination requires team members to be aware of their relationship to the overall work process and to other participants in that process. Relational coordination is essentially a network of communication and relationship ties among a team of professionals and can be thought of as a form of organisational social capital with the potential to enhance organisational performance (Nahapiet & Ghoshal, 1998; Leana & Van Buren, 1999), and improve care delivery (Gittell, 2000).

Gittell, Godfrey and Thistlethwaite (2012) purport that the theory of relational coordination produces higher levels of quality and performance efficiency by enabling participant to control their task interdependencies with fewer mistakes or failures and less wasted effort. There is also the opportunity within this theory to

improve job satisfaction by enabling participants to effectively carry out their work task in a context that promotes resilience when faced with adversity through good social support (Gittell, 2008; Gittell et al., 2008). In terms of organisational structures, those that can predict high levels of relational coordination connect across workgroups engaged in a common work process, rather than reinforce the silos that separate them (Gittell, Seidner & Wimbush, 2009). Gittell and Douglass (2012) advocate that traditional bureaucratic structures typically inherent in organisations, should be replaced with more relational structures, acknowledging that such a radical departure is difficult, given that communication and relationship patterns are deeply engrained in organisational cultures and professional identities.

Although there is evidence that relational coordination improves quality of care and promotes efficiency (Gittell et al., 2000, 2008; Gittell, Seidner & Wimbush, 2009; Cramm & Nieboer, 2012), the underlying mechanisms that promote relational coordination among professionals delivering hospitalised care remains poorly understood (Hartgerink et al., 2013). While relational coordination seeks to explain the relationships among roles, rather than on those among individual actors, it is insufficient to fully describe the interactions and perceived interaction of others that contribute to the OR context. Nancarrow & Borthwick (2005) acknowledge that multidisciplinary teamwork creates an increasing interdependence between professional groups, but this does not automatically lead to enhanced communication, coordination, or mutual respect among professionals from different disciplines.

2.12 Clarifying the Gap in the Literature

Despite the vast amount of evidence from the wide range of contemporary literature discussed so far, there remains a gap in knowledge around understanding teamwork in the OR. This gap arises from a lack of empirical research to explore teamwork from the perception of individual team members who have experienced teamwork in the OR context. The majority of empirical research currently informing teamwork in healthcare originates from the drive for efficiency, productivity, safe patient care and levels of job satisfaction, with a limited range of literature that exclusively considers the individual perspectives of OR team members. It is therefore clearly vital to address this view and elicit the meaning of teamwork in terms of the interpretation or perceptions of individual team members.

Although the wider literature review, focusing on additional key concepts relevant to teamwork provides some further insight, there is a tendency to consider aspects and factors of teamworking, rather than teamwork from the perspective of the individual team member. Further empirical research is necessary to build upon what is already known about teamwork, to explore individual perceptions of teamwork in the OR. These include perceptions that have arisen from and have been constructed through unique personal experiences in a complex dynamic work environment, where professional boundaries are permeable, individuals may be members of multiple teams, and team membership frequently changes. SIT suggests the process whereby individuals become team members is a cognitive and emotional process of alignment and not purely a behavioural response. The review of the literature throughout this chapter supports the process suggested by SIT.

2.13 Chapter Conclusion

This chapter has described how a stepped approach was taken to conduct the literature review presented. The initial literature review influenced the direction of the study in terms of current concerns in the field of enquiry and supporting the application for ethical approval. Following the data analysis, and the development of emerging themes, more specific literature relating to these themes was examined. This is discussed in chapters 6 and 7. A wide range of literature was reviewed throughout the process, offering insight into teamwork and, in certain instances, teamwork within the OR context. Furthermore, the literature review allowed for gaps in research knowledge to be clearly identified.

Chapter three will describe the philosophical principles and methodological approach and will present an overview of the key research methods that were chosen to address the research question and aims of this study.

3 Chapter 3: Methodology and Methods

3.1 Chapter Introduction

In this chapter, the relevant philosophical paradigms and theoretical tenets are considered, alongside research methodology and key research methods, offering clarity and justification to the theoretical framework that underpins the thesis. A theoretical framework should clarify a researcher's implicit theory, which is influenced not only by the research question but functions as a plan to inform the rest of the design (Miles & Huberman, 1994; Robson, 2011). Theoretical considerations are a crucial component of the research process, providing a foundation to underpin the research methodology and research methods used (May, 2011; Ravitch & Riggan, 2012). Grant and Osanloo, (2014) suggest that a theoretical framework will inevitably add strength, structure and an organised flow to the development of the research.

The philosophical, ontological and epistemological positions, and how these relate to the theoretical perspective and influenced the research design are discussed through the development of the overarching conceptual framework. This process was supported by assuming a reflexive stance, whereby the researcher's beliefs and assumptions about the nature of reality and how it is investigated will be evidenced (Holloway & Wheeler, 2010; Guba, 1990).

The chapter outlines the key tenets of interpretivism, social constructionism and symbolic interactionism, along with the selected research methodology of grounded theory. The subsequent sections describe key data collection methods used in this research, which included participant observations and interviews. An explanation of

the analytic approaches used to manage the research data is provided and concludes the chapter.

3.1.1 *Ontology and Epistemology*

Historically and philosophically, the concepts of ontology and epistemology refer to different phenomena, which are closely related. However, the distinction between them should be upheld as all research commences with a researcher's conception of the world, which itself is influenced by the experience a researcher contributes to the research process (Grix, 2002). Research strategies are based on ontological assumptions. Such strategies implicitly or explicitly make various claims about the kinds of phenomena that can or do exist, the relations between them and the conditions of their existence (Blaikie, 2007).

A relationship is present between that which exists (ontology) and what human beings can know (epistemology). Knowledge therefore entails a relationship between the world and human beings. This implies that the relationship between the observer or the researcher and the social and political world is reciprocal. Interaction takes place between the researcher and reality, as knowledge is neither acquired nor exists in a vacuum. The nature of the interaction arguably may be active or passive to a greater or lesser degree. A researcher's ontological and epistemological orientation then influences the methodology adopted and a researcher must acknowledge their own ontological and epistemological assumptions (Marsh & Stoker, 2010, p.210). Hay (2007, p.118) supports this view, asserting that "ontological assumptions inform epistemological assumptions" and "both inform methodological choices".

3.1.2 *Ontological and Epistemological Position*

A particularly important part of the theoretical framework that underpins any study is the philosophical paradigm held by the researcher. There are many different paradigms within qualitative research, some of which differ radically in their assumptions and implications (Denzin & Lincoln, 2011; Pitman & Maxwell, 1992).

The researcher's ability to understand their own philosophical paradigm is vital to the decision-making process of implementing a specific research approach. Drawing upon explicit paradigms supports a clear philosophical and methodological stance in terms of design decisions, which can be explained and justified (Maxwell, 2005).

An established paradigm provides an accepted and well-developed approach to research (Maxwell, 2005), the aim of which is to answer the primary research question under investigation (Miles & Huberman, 1994).

The primary research question of this study is:

How do staff working in the Operating Room (OR) context perceive teamwork and how do their personal experiences contribute to a "great day" at work?

This research question emphasises the perceptions of staff who have experienced working in the OR environment, and who can speak about what teamwork involves.

This indicates that the key aim of the research was to gain the individual's perception of teamwork in the OR. Teamwork in the OR is a complex phenomenon, which has different meanings for different staff members, dependent on their personal experience and perceptions, and how they are subjectively constructed as a result.

Through my personal and professional experience, as highlighted in chapter 1, what I may consider teamwork in the OR to involve is undoubtedly different to what another member of the OR team may consider teamwork to be. This highlights the

subjective nature of teamwork and requires investigation by a research methodology that takes this into account. Underpinning this research is the philosophical belief that this research stems from the interpretivist paradigm, which usually seeks to understand a particular context. The core belief of the interpretive paradigm is that reality is socially constructed (Willis, 2007). Interpretivism, as an epistemological position, distinguishes between the methods of the natural sciences and methods applicable to the social sciences. Marsh and Stoker (2010) identify interpretivism as an epistemological position that aligns with the methods of the social sciences that are regarded as subjective in nature.

3.1.3 *Epistemological Position and Interpretivist Thinking*

Interpretivism includes “accepting and seeking multiple perspectives, being open to change, practicing iterative and emergent data collection techniques, promoting participatory and holistic research, and going beyond the inductive and deductive approach” (Willis, 2007, p.583). Proponents of interpretivism do not accept the existence of universal standards for research; instead, the standards guiding research are “products of a particular group or culture” (Smith, 1993, p.5). Interpretive researchers do not seek the answers for their studies in rigid ways. Instead, they approach the reality from subjects, typically from people who own their experiences and are of a group or culture, such as the staff working in the OR. Interpretivism is much more inclusive as it accepts multiple viewpoints from different individuals within different groups. The interpretive paradigm often seeks answers for research by forming and underpinning multiple understandings of the individual’s worldview. According to Willis (2007), the idea of multiple perspectives arises from the belief that external reality is variable. Willis indicates that “different people and different groups have different perceptions of the world” (p.194). The acceptance of multiple

perspectives in interpretivism often leads to a more comprehensive understanding of the situation (Klein & Meyers, 1998; Morehouse, 2011), viewing the world through a “series of individual eyes” and participants who “have their own interpretations of reality” to encompass the worldview (McQueen, 2002, p.16). Spence (1982) adds that an interpretive understanding of society is where we try and grasp the thoughts of others within our own thoughts. Tickle, Brownlee, and Nailon (2005) suggest that training or other experiences reflect changes in the cognitive processes of the individual and can lead to changes in epistemological beliefs, which evolve and change over time (Cano, 2005). The interpretive turn, as coined by Rabinow and Sullivan (1979), describes the epistemological shift away from positivism towards interpretivism. Through personal and professional life experiences, my epistemological beliefs are akin to the interpretive turn, enabling me to consider the social world as ‘a subjectively experienced construct’, rather than as a collection of external facts (Mottier, 2005). Cano (2005) recognises the interpretive turn as moving away from naïve and simplistic beliefs to more realistic and complex philosophies. Interpretive approaches aim to understand reality as it is perceived at the subjective level of individual consciousness and within the context of the researched, rather than the researcher (Burrell and Morgan, 1979).

3.1.4 *Epistemology within a relative ontology*

Individuals who deny the existence of an objective reality assume a relativist ontological position (Guba & Lincoln, 1994). Relativists claim that concepts such as truth and reality must be understood (Bernstein, 1983). From a relative ontological perspective, it is believed that the world consists of multiple individual realities influenced by context (Mills, Bonner & Francis, 2006).

Epistemologically, constructivism emphasises the subjective interrelationship between the researcher and participant, and the co-construction of meaning (Hayes & Oppenheim, 1997; Pidgeon & Henwood, 1997). Researchers, in their “humanness”, are part of the research effort rather than objective observers (Mills, Bonner & Francis, 2006, p.26), their values must be acknowledged by themselves and by others as an inevitable part of the outcome (Guba & Lincoln, 1989; Stratton, 1997).

Constructivism as an ontological stance holds that social phenomena are socially constructed and subject to revision by observers or researchers (Bryman, 2012).

Constructivism seeks to understand the contextual meanings individuals attribute to their experience of social reality, constructed through interaction with others, which results in the inductive generation of theory or thematic understanding. This can also be understood as an interpretive perspective (Morgan, 2007), where research seeks to understand the subjective interpretations participants give to their perceptions, feelings, thoughts, and emotions (Drew, 1988) in a world of multiple realities devoid of universal truth.

The terms constructivism and social constructionism tend to be used interchangeably and are subsumed under the generic term ‘constructivism’ (Andrews, 2012).

Constructivism proposes that each individual mentally constructs the world of experience through cognitive processes, while social constructionism has a social rather than an individual focus (Young & Colin, 2004). The latter is most pertinent in this research.

3.1.5 *Social constructionism*

The origins of social constructionism can be traced in part to an interpretivist approach to thinking (Andrews, 2012) and, although they may share common

philosophical roots, social constructionism is distinct from interpretivism. The experience of society as subjective reality is achieved through socialisation. This involves being given an identity and a place in society. Burr (2003) suggests that our identity originates not from within but from the social realm. Socialisation takes place through significant others who mediate the objective reality of society and render it meaningful, enabling it to be internalised by individuals (Berger & Luckmann, 1991). This is done through the medium of language. Burr (2003) comments that within social constructionism, while language is an imperfect means of transmitting thoughts and feelings, it makes thought possible by constructing concepts. Language makes thoughts and concepts possible, not the other way around. Language predates concepts and provides a means of structuring the way the world is experienced. Berger and Luckmann (1991) maintain that conversation is the most important means of maintaining, modifying, and reconstructing subjective reality. Subjective reality is comprised of concepts that can be shared unproblematically with others. There is shared meaning and understanding, so much so that concepts do not need to be redefined each time they are used in everyday conversation. Rather, reality becomes assumed and taken for granted. Words imply a whole world within which these propositions make sense. In attempting to make sense of the social world, social constructionism views knowledge as being constructed, as opposed to being created. Knowledge is derived from conceptualisations and interpretations of individuals in relation to their own actions and experiences, the actions of others, and the context in which these occur (Blaikie, 2007). Social constructionism accepts that there is an objective reality. It is concerned with how knowledge is constructed and understood, placing great emphasis on everyday interactions between people and how they use language to construct their reality. Knowledge is created and sustained

through social practices and interactions that are founded on the externalisation, objectification, and internalisation of phenomena (Berger & Luckman, 1966). In relation to teamwork within the OR, this theoretical perspective is reflected in the literature review in Chapter 2. Political and professional assumptions reaffirm teamwork as a core philosophy that has been externalised through the sharing of ideas with others, objectified as subsequent ideas become objects of the inner consciousness, and internalised as the idea is then perceived and accepted as reality (Berger & Luckman, 1966).

3.1.6 *Symbolic Interactionism*

The philosophical roots of symbolic interaction began with the premise that the individual and society are inseparable and interdependent and are both constituted through shared meaning. Mead (1934, p. 81) suggests that interaction pivots on key points, based on the triadic relation of: a gesture of one individual, a response to that gesture by a second individual, and completion of the given social act initiated by the gesture of the first individual. According to Blumer's (1969, pp.2-5) sociological interpretation of Mead's (1934) theory, symbolic interaction is associated with three basic tenets. The first tenet is a critical but not defining characteristic of symbolic interaction, that people act towards 'things' based on the meanings that the 'things' hold for them (Blumer, 1969). Second, the meaning of such 'things' are generated over time through human interaction (Blumer, 1969). This is a key point for symbolic interaction and one that distinguishes it from analytical realism. Mead (1962) argues that people imagine not only the likely positions of other people but also the objects and places with which we interact. The final tenet offers that meanings are handled in, and modified through, an interpretive process used by the person in dealing with the 'things' s/he encounters (Blumer 1969). Meaning and the

concepts of action, interaction, self and perspectives are themes of symbolic interactionism that feature in the assumptions detailed by Corbin and Strauss (2008 pp.6-8), highlighting the interconnectedness of each of these themes with Blumer's (1969) three premises of symbolic interaction and "sketching a picture of human society" (Blumer 1969, p.72).

Departing from the positivist approaches, symbolic interactionism considers the function of society from the 'bottom up', moving the emphasis to a micro-level theoretical framework and perspective. Such a theoretical perspective addresses how society is created and maintained through repeated interactions among individuals, shifting attention to the interpretation of subjective viewpoints and how individuals make sense of their world from their unique perspectives (Carter & Fuller, 2016).

Symbolic interactionism shifts the goal of social research from an objective study of an empirical reality to a deep understanding of the symbolic practices that make a shared reality possible. Carter and Fuller argue that scientific truth results from both the act of observation and the emerging consensus within a community of observers as they make sense of what they have observed from their unique perspective.

Participants are purposive in their actions and will act or react to environmental cues, objects, or other people according to the meanings these hold for them. These meanings evolve from social interaction, which is symbolic because of the interpretations attached to the various forms of communication such as language, gestures and the significance of objects. These meanings are then modified, suspended or re-grouped in the light of changing situations (Schwandt, 1994).

Adopting symbolic interactionism as a philosophical underpinning is to understand how the participants' behaviours have been shaped through social interaction in a particular context. The goal is to understand the behaviour and the meanings people

give to their experience in a natural setting, to discover the basic psychosocial process (Glaser, 1978). Conceptualising human behaviour in context supports the examination of behaviour in relation to the social circumstances, rules, laws and conditions that govern the shared meanings of objects and affect human behaviour (Chenitz & Swanson, 1986). Symbolic interactionism holds central the notion that reality exists in the meanings that individual social actors derive from their interpreted social interactions, influencing their behaviour with others (Mead, 1934; Locke, 1996). This theoretical perspective is significant and influences my personal view of the world, providing an important contribution to the philosophical principles that underpin and inform this research.

This research aims to uncover what teamwork involves and to explore how individual experiences within the social context of the OR contribute to developing their perception of this. The OR could be considered as a micro-level, 'bottom up' social context, which is in keeping with the interpretivist paradigm. Mead (1934) suggested that individuals may interact with the environment and behave reflexively despite the inability of objects to respond. Through an interactionist process, perceptions evolve through social interactions, leading to the creation of subjective knowledge (Blumer, 1969). The interpretive tradition of symbolic interactionism (Mead, 1934; Blumer, 1969) was an appropriate theoretical perspective to underpin the philosophical principles of this research, and congruency between ontological and epistemological assumptions were instrumental in guiding me to select the chosen research methodology. Charmaz (2014) suggests that a combined theoretical perspective adds to the researcher's theoretical insights and addresses concerns around preconception.

3.2 Conceptual framework

Acknowledgement of formal theoretical perspectives is pivotal to understanding how the researcher views the world and is an essential aspect of the conceptual framework. Conceptual frameworks are not constructed in a philosophical vacuum but relate to a research paradigm that regulates the research process (Weaver & Olsen, 2006). Howell (2013) emphasises the importance of the relationship between the researcher's philosophy and the methodological stance taken to address the primary research question (Ravitch & Riggan, 2012). As highlighted, the combined philosophical principles of interpretivism, social constructionism and symbolic interactionism were influential in terms of informing the methodological process of classic GT and subsequent methods. Conceptual frameworks are not random, free-floating theoretical devices, but are instead theoretical maps that help plot, anchor and illustrate the paradigmatic, ideological, theoretical, and methodological perspectives of the research. Miles and Huberman (1994) suggest that the conceptual framework provides structure to support the research methodology and methods, alongside acknowledging that the researcher's position in the research process, which must be carefully considered in terms of influencing and interpreting the research findings.

The terms 'conceptual framework' and 'theoretical framework' are often used interchangeably, but they have different meanings. Maxwell (2005) holds the view that the conceptual framework justifies the research both substantively and methodologically, a stance supported by Marshall and Rossman (2006), and Ravitch and Riggan (2012), who add that the conceptual framework is an argument for the study's importance. The overall coherence of a conceptual frameworks is constructed over time, and it is not something that is predetermined, chosen or found

(Maxwell, 2005). It is an important learning tool, which helps to organise work while acknowledging the malleability of the process that evolves as the research develops (Miles & Huberman, 1994).

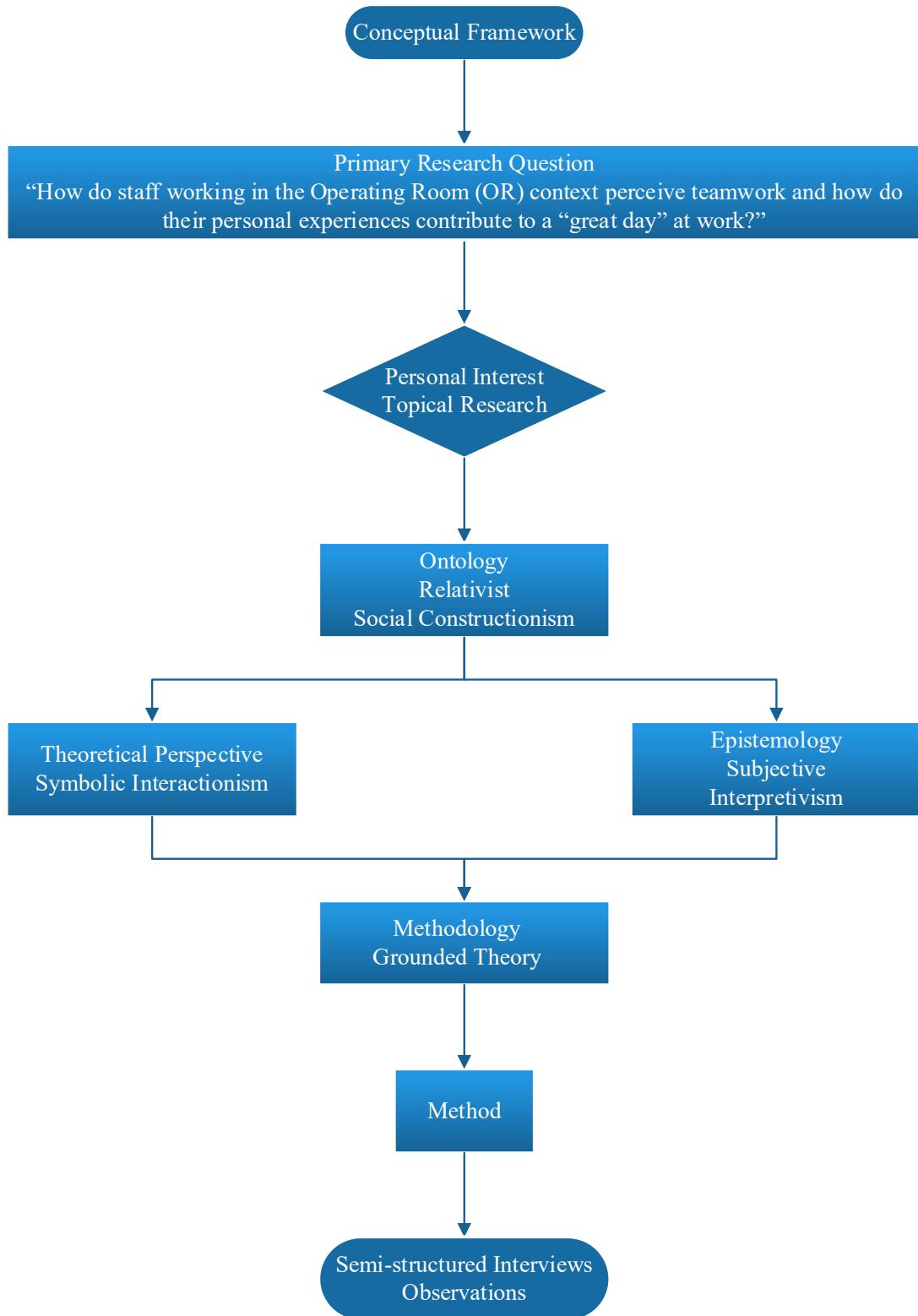
Conceptual frameworks provide the direction that is missing in the theoretical framework, but conceptual frameworks are complex and multidimensional, playing a significant role in the shaping of empirical research (Ravitch & Riggan, 2012).

Miles and Huberman (1994) state that the conceptual framework is a key part of the study's design, relying on the system of concepts, assumptions, expectations, beliefs and theories that inform and underpin the research (Ravitch & Riggan, 2012). The conceptual framework maps out the ontological, epistemological and methodological foundations, outlining the significance of the research in terms of how it relates to existing knowledge, practice, policy and the social effect on people's everyday lives (Marshall and Rossman, 2006).

Similarly, to Miles and Huberman (1994), Ravitch and Riggan (2012), and Antonenko (2015, p.57) suggest that conceptual frameworks are "tentative theories that are custom designed by the researcher, based on personal assumptions and epistemological beliefs, experiential knowledge and existing (formal) theories for each individual study". Antonenko (2015, p.59) refers to "the trifacta of inquiry", which describes a conceptual framework as a tool to connect the context of practice, theory and methodology. Ravitch and Riggan (2012) echo such sentiments, emphasising that a conceptual framework has three primary concerns: personal interest, topical interest, and the theoretical framework. The approach taken to construct the conceptual framework underpinning this research is established on the 'trifacta of inquiry', or three primary concerns (Antonenko, 2015; Ravitch & Riggan, 2012). It is important to note that the conceptual framework underpinning this

research was not linear. The conceptual framework emerged through iterative development and refinement through all stages of the research process, occurring simultaneously with data collection and analysis, while addressing the three key concerns as detailed by Ravitch and Riggan (2012). Two key concerns, personal and topic interest, have been addressed throughout the discussion presented in Chapters 1 and 2. The third concern, of providing a clear structure in terms of process, and organising the researcher's thinking by defining the relationship between the conceptual framework and what they view to be its component parts, has been addressed earlier in this chapter and are represented diagrammatically (Figure 1).

Figure 1: Conceptual Framework



3.2.1 *Methodological choices*

Howell (2013) emphasises the importance of the relationship between the researcher's philosophy and the methodological stance taken to address the primary research question. As highlighted, the combined philosophical principles of interpretivism, social constructionism and symbolic interactionism were influential in terms of informing the methodological process underpinning the development of this research. Given the multiple research methodologies available, choosing the most appropriate one is not easy. Miles and Huberman (1994) note that even when limited to qualitative interpretative methods, there are still numerous options to consider, each with their strengths and potential pitfalls. Denzin and Lincoln (2005, p.20) referred to this as an 'embarrassment of choices', each different in varying degrees, in terms of their epistemological underpinnings, theoretical assumptions and approach.

While a wide range of qualitative methodologies could be used to explore perceptions of teamwork in the OR, it was important to ensure that the chosen method was appropriate to answer the question, *how do staff working in the OR context perceive teamwork and how do their personal experiences contribute to a "great day" at work?* When adopting an interpretive approach, the researcher is involved in constructing knowledge of individual perceptions and interpretations of reality. It is only by adopting an insider or 'emic' approach (Blaikie, 2007) that researchers can demonstrate understanding of the participant's world view, and construct their subjective reality into a meaningful representation, rather than a collection of external facts. This idea is supported by Denzin and Lincoln (2003, p.9), who describe the interpretivist researcher as the 'bricoleur', who relates to the research process and uses reflexive skills to develop a dynamic and representative

construction of the multiple realities of the participants within their context. The aim of this type of research is to see the world through the eyes of the members of the context being examined (Barnes 1996), and to document the social interactions among those members (Arnould & Wallendorf, 1994).

3.3 Research Methodology

Grounded theory methodology is an example of interpretivist inquiry developed from the standpoint of symbolic interactionism, which explores the processes of interaction between the social roles of people and their behaviours (Chenitz & Swanson, 1986; McCann & Clark, 2003). Grounded theory differs from other qualitative methodologies in that the primary goal is to develop a theory about social processes rather than to describe a phenomenon (Bryant & Charmaz, 2007; Glaser, 2001; Glaser, 1978; Strauss & Corbin, 1998). To generate knowledge of teamworking in the OR, a grounded theory methodology was selected as the most appropriate research strategy. Other interpretive research methodologies were considered; for example, phenomenology, which primarily enables a description of the lived experience (Merriam, 2009) and ethnography, which seeks to understand cultures and behaviours within them (Omery, 1988). However, this was not a study of culture or lived experiences per se. A methodology was needed that focused on understanding social processes to generate an explanatory theory about teamwork in the OR. Grounded theory (Glaser and Strauss, 1967) was chosen as it offered the procedural tools to develop a theory that reflected the perceptions of the participants and would have the explanatory power to address the research question (Birks & Mill, 2011). In this research, I was interested in explaining the social processes and

human behaviours that govern the shared meanings of participants from different professional backgrounds, who work together as a team within the OR context; to understand the social worlds of participants. The OR provides an environment where professions are exposed to a variety of symbols, objects and language patterns that are often unique to that context. Gaining an understanding of the meanings attached to these symbols, objects and language patterns will help contribute to a theory that considers social interactional processes within OR teamworking.

3.3.1 *Origins and Overview of Grounded Theory*

Grounded theory is the discovery of theory from data systematically obtained from social research (Glaser and Strauss, 1967). Glaser and Strauss (1965) originally developed grounded theory to enable the development of new, contextualised theories, rather than relying on analytical constructs, categories, or variables from pre-existing theories. Theories would be specific to the context in which they had been developed. This methodology evolved in response to Glaser and Strauss's criticism of research approaches of the time. It was a radically different approach that departed significantly from hypothesis-testing research, which they believed overshadowed the need to generate ideas and theory 'grounded' in the data (Cooney, 2011). They asserted that a dual process of first generating *then* verifying a theory should receive equal attention within social research, rather than the desire to generate theory secondary to verifying, if at all (Kenny & Fourie, 2014). Grounded theory offered a new approach and vision that was more appropriate to the world beyond academia, where theory would be stimulated through interaction and social processes encountered by human participants (Creswell, 2007), aligning to the theoretical perspectives of symbolic interactionism and social constructionism

(Charmaz, 2014). The developed theory is ultimately grounded in the behaviour, words and actions of those under study (Goulding, 1998).

To discover an underlying theory arising from the systematic analysis of data, Glaser and Strauss (1967) designed several discrete methodological techniques unique to grounded theory. They specified that data collection and data analysis occur simultaneously and should be organised through the specific procedures of theoretical sampling, coding, constant comparison, saturation, and memo writing (Kenny & Fourie, 2014). Such defined techniques identified the need for researchers to collect, code, compare, and organise data into increasingly abstract categories, allowing the emergence of a growing theory, grounded in the data (Glaser & Strauss, 1967). A researcher would approach the study inductively with no preconceptions, to uncover the principal concern of participants in their social world.

As original or 'classic' grounded theory (Glaser and Strauss, 1967) became more popular as a legitimate research method, it continued to mature. This progression precipitated professional and methodological divergence and separated the original creators in terms of procedures. Strauss departed from several of the earlier 'classic' methods, instituting several changes and refining certain features. Strauss, with Corbin, maintained the essence of the grounded theory in terms of its primary goal being that of theory generation, but suggested a more structured tri-level approach to the data analysis process. Strauss and Corbin (1990) also challenged the tenet of abstaining from literature prior to embarking on the study, highlighting the difference between an "open mind" versus an "empty mind" (Jones & Alony, 2011, p.99). Consequently, this transition from some of the original tenets of grounded theory shaped the Straussian grounded theory as an alternative. The initial shift from the 'classic' grounded theory methodology provoked further evolution and changes,

with several versions and iterations emerging that departed from the original grounded theory espoused by Glaser and Strauss (1967). Dey (2004, p.2) suggests “there is no such thing as ‘grounded theory’ if we mean by that a single, unified methodology, tightly defined and clearly specified”. What has evolved is different interpretations of grounded theory detailed in several versions, such as those espoused by Glaser (1978), Strauss (1987), Strauss and Corbin (1990), and Charmaz (2000), alongside hybrid approaches, all of which have been fashioned by ongoing methodological debates. Selecting a grounded theory methodological approach needs careful consideration and engagement with methodological literature. At the outset of the research journey, I experienced uncertainty around which methodological approach to adopt. Perhaps the most useful statement that supported my decision making and personal worldview was that of Mills, Bonner and Francis (2006, p. 25 and 27): “grounded theory can be seen as a methodological spiral that begins with Glaser and Strauss’ original text... Depending on the researcher’s ontological and epistemological beliefs, there are several points of departure along a spiral of methodological development”.

3.3.2 *Justification for choice of Straussian Grounded Theory*

I considered other versions of grounded theory such as the original ‘classic’ grounded theory, Glaserian grounded theory and constructivist grounded theory, before ultimately deciding to adopt a Straussian approach. What was crucial for me was that the differences were not in the language or general processes but in how the processes were to be carried out. Furthermore, these processes reflected different methodological assumptions that needed to be illuminated and understood before I was able to make a truly informed choice. I felt that Straussian grounded theory was the most legitimate and best suited version to support my research inquiry and my

personal worldview. A Straussian approach allowed me to acknowledge the fact that I was unable to truly detach myself from the research, unlike Glaserian grounded theory, where this is an expectation. As such, my personal and professional interest in the topic of how professions interact as a team within the OR provided the impetus for this research. Rejecting prior experiential knowledge, insight and understanding of OR teamwork would have been extremely difficult, if not impossible. In the Straussian approach, the research problem does not have to be emergent or discovered during data collection; it can be a predetermined research problem derived from the relevant literature or prior knowledge and experience (Corbin & Strauss, 2008). Additionally, Straussian grounded theory reflects a shift toward social constructivist ontology and is more compatible with contemporary thinking, thus providing an appropriate approach to support my research question and personal worldview (Corbin & Strauss, 2008; McCann & Clark, 2003b). Broader environmental and contextual factors (macro conditions) that influence the phenomenon under study are considered by Straussian grounded theory. This was particularly appealing, acknowledging that that the researcher and the researched co-create the theory. The Straussian approach allowed me to consider the value and importance of broader environmental and contextual factors within the OR, which Strauss and Corbin (1998) recognise as macro-social factors that influence actions. I perceived the explicit guides for data analysis required by the Straussian grounded theory approach to be helpful, providing structure rather than being too restrictive. The aim of Straussian grounded theory is to produce a theory that is both relevant and able to guide action and practice, while also acknowledging that this is the broad goal of all grounded theory approaches (Strauss & Corbin, 1998).

3.4 Research Methods

3.4.1 *Sampling - Initial and Theoretical*

Sampling in qualitative research is an issue that is sometimes misinterpreted, with the terms 'purposeful', 'selective' and 'theoretical' sampling often used interchangeably (Coyne, 1997). It is important to note that theoretical sampling is generally accepted as a critical feature of grounded theory and that there is a need to differentiate from purposive sampling (Webb, 2003; Cutcliffe, 2000; Becker, 1993). Glaser (1978) acknowledges that in the initial stages of the study it is common that data collection will begin by talking to the most knowledgeable people or selecting a participant according to the needs of the study. Morse (1991) adds that with primary selection, researcher control is maintained because the researcher has a relationship with prospective informants, is aware of which members of the group have the knowledge required, knows who would be "good to talk to", and knows who would probably be willing to participate. Thus, theoretical sampling does involve the purposeful selection of a sample in the initial stages, to assist with maximising the possibilities of obtaining data and to get a line on relevancies where the phenomenon occurs (Glaser, 1978; Coyne, 1997). Furthermore, Morse (1991) states that primary selection is the ideal method for purposeful or theoretical sampling in grounded theory, in which the process is controlled by the emerging theory, claiming that such efficiency ensures that the sample size is as small as possible.

Taylor and Bogdan (1998) explain that theoretical sampling is a procedure of selecting additional cases to be studied to gather new insight or expand and refine concepts already gained. Theoretical sampling is often used in conjunction with the three levels of coding as described by Strauss and Corbin (2008). During the first level of open coding, sampling is purposeful and systematic; the second level of

axial coding incorporates sampling in a more structured systematic approach to help validate relationships amongst the data. Axial coding is defined by Strauss and Corbin (1990, p.90) as “a set of procedures whereby data are put back together in new ways after open coding, by making connections between categories. This is done by using a coding paradigm involving conditions, context, action/interactional strategies, and consequences”. The final level, selective coding, specifically seeks a more deliberate agenda of sampling to help test and integrate categorical findings until the point of data saturation (Strauss & Corbin, 2008). Similarly, Becker (1993) refers to theoretical sampling as an ongoing, concurrent triad of joint collection, coding and analysis that cannot be predetermined and is determined only by the emerging theory. The elaboration of theoretical sampling indicates that this type of sampling is selected according to the developing categories in the emerging theory, rather than due to concern for variables such as age (Coyne, 1997). Coyne (1997) acknowledges how simultaneous data collection and analysis are critical elements of the theoretical sampling method and of robust grounded theory research practice. Ideally, sampling decisions should be driven by the emergent analysis, ending when theoretical saturation is reached (Charmaz, 2006). Saturation is the point where no new or relevant data emerges regarding a category, and relationships between categories are established (Strauss & Corbin 1998). Theoretical saturation is achieved through constant comparison. Constant comparison is a method of data analysis that looks for differences and similarities in the data. Data that are similar are grouped together under a key word or category. As the data is reviewed, each new piece of data is compared and contrasted to previous data and sorted into the most relevant category. Once all data has been appraised it may be possible to collapse some of the categories, as patterns or themes to the data emerge. Constant

comparison is an iterative and inductive process of reducing the data through constant recoding (Glaser & Strauss, 1967). The key concepts of theoretical sampling and constant comparison demonstrate a symbiotic relationship, whereby data are collected and analysed simultaneously, subsequently informing decisions about which data should be collected next, as determined by the theory being constructed (Suddaby, 2006).

3.4.2 *Data Collection: Interviews*

Grounded theory studies rarely use interviews as their sole form of data collection, but instead are supported via interviews with individual participants, alongside observational methods, to be used at a single point, over time, or in similar/different contexts (Foley & Timonen, 2015; Laitinen, Kaunonen & Astedt-Kurki, 2014). Observation, as a data collection method, can span research paradigms and can explain social processes and phenomena often through developing typologies (Walshe, Ewing and Griffiths, 2011). Interviews can be designed to obtain thick, rich data utilising a qualitative investigational perspective (Creswell, 2007). Glaser (1998) cautions against the use of interview guides, claiming they can be based on preconceived ideas about what will emerge. Andrews et al. (2012) echo this, suggesting that a set of pre-framed questions is very restrictive and forces the outcome, as opposed to allowing the data to speak for itself. Two key interview approaches use in grounded theory include unstructured or semi-structured methods (Foley & Timonen, 2015). Maltby et al. (2010) detail a third approach, which involves a structured interview, but note that this lacks flexibility, since it can lead to closed questioning techniques. Unstructured interviews, although informal and conversational in nature, can lack focus. However, Corbin and Strauss (2008) state that the unstructured interview can give rise to the richest data, extracting the basic

parameters of a phenomenon. They acknowledge that this interview technique requires higher order researcher skills and advocate the flexibility of a semi-structured approach in the first instance. Charmaz (2006) supports this approach to focus the data and expand on key components of the experience(s) and social situation under study.

Creswell (2007) notes that although open-ended interviewing provides rich and thick data, coding can be a cumbersome process, particularly in terms of fully and accurately reflecting an overall perspective of all interview responses. However, the advantages of sifting through the narrative responses can reduce researcher biases within the study, particularly when many participants are involved (Gall, Gall & Borg, 2003).

3.4.3 *Data Collection: Observation*

Participant observation is one technique for data gathering that allows for a more in-depth understanding of the participants' experiences, using processes that combine observation, questioning and listening (Borbasi, Jackson & Wilkes, 2005). The aim of participant observation is to understand the observed reality as it is (Dewalt & Dewalt, 2002; Bryman, 2012) and the hidden meaning of the phenomenon being researched (Corbin and Strauss, 2004). Interviews produce the results of the experiences of the participants but not the social context (McCann & Clark, 2003a). Through observation, comparisons can be made with what participants 'do' and what they 'say they do' (Kemp, 2001; Mulhall, 2003; Corbin and Strauss, 2008).

The role of the researcher as observer has been widely classified according to the level of involvement in the field (Laitinen, Kaunonen & Astedt-Kurki, 2014).

Dewalt and Dewalt (2002) detail three levels of participation: 'passive', 'moderate'

and ‘active, whereas Bryman (2012) classifies involvement differently to include ‘participating’, ‘partially participating’, ‘minimally participating’ or ‘non-participating’. Leininger and McFarland (2006) define similar levels of involvement but emphasise the relevance and importance of listening and reflection. Furthermore, Sandelowski (2002) states that observation is not confined to looking but embraces all the researcher’s senses during the fieldwork encounter, to include smells, sights, sounds, emotional tensions and feel of culture. Baker (2006) supports the notion that observation is a complex research method, requiring the researcher to play several roles and to use several techniques, including using all senses.

3.4.4 *Constant Comparative Analysis and Theoretical Sampling*

In grounded theory, constant comparative analysis means that sampling is an emergent process and cannot be determined wholly prospectively; sampling, data collection and data analysis occur concurrently (Glaser & Strauss, 1967). Constant comparison of data is a systematic method, which provides structure in the exploration of the content and meaning in the data (Glaser & Strauss, 1967). This is a fluid process, which combines data collection, coding and analysis with theoretical sampling in order to generate theory (Conrad et al., 1993). Constant comparison goes together with theoretical sampling. This principle implies that the researcher decides what data will be gathered next and where to find it, based on provisional theoretical ideas. By comparing, the researcher can do what is necessary to develop a theory inductively; namely coding, delineating categories and connecting them. In this way, it is possible to answer questions that have arisen from the analysis and reflection on previous data. Boeije (2002) recognises that all kinds of aids, such as memo writing, close reading and re-reading, coding, displays, data matrices and diagrams support the principle of comparison.

Both ‘constant comparison’ and ‘theoretical sampling’ disregard longstanding positivism assumptions about how the research process should operate. Constant comparison contradicts the myth of a clean separation between data collection and analysis (Suddaby, 2006). Theoretical sampling discounts the ideal of hypothesis testing in that the direction of new data collection is determined not by a preceding hypothesis but by ongoing interpretation of data and emerging conceptual categories (Suddaby, 2006).

3.4.5 *Data Analysis – open, axial, and selective coding*

Fundamentally, data analysis in qualitative research manages words, language and the meanings these infer (Miles & Huberman, 1994), and its capacity to generate rich descriptions and understandings ascribed to social life (Walker & Myrick, 2006). However, the challenge lies in making sense of large amounts of empirical textual data, with multiple meanings at both the individual and social levels. In grounded theory, data analysis has a well-defined process, regardless of which methodological approach is selected. It begins with basic description and moves onto conceptual ordering, then progresses to theorising (Patton, 2002). This process is critical, reflective and iterative in nature, leading to dynamic analysis of the data, whereby coding is not a linear process but instead occurs simultaneously with data collection. Williams and Moser (2019) refer to coding as a cyclical process that is both an art and science, requiring the researcher to understand intimately the data by continuously reading and re-reading it to allow theory to evolve. Data analysis is accomplished through an elaborate set of coding processes – but in grounded theory, coding is not simply part of data analysis, it is the “fundamental analytic process used by the researcher”, whereby the researcher is an actor in the process of data

analysis (Corbin & Strauss, 1990, p.12). It is what carries the researcher and their data from transcript to theory (Walker & Myrick, 2006).

One of the most significant disconnects between Glaser and Strauss, aside from their philosophical stances, is in their different perspectives to the procedures used in terms of data analysis. Straussian coding procedures facilitate the creation and construction (rather than the emergence) of the theory. Straussian coding has evolved to divide the data analysis process into three phases: open, axial and selective (Walker & Myrick, 2006). Although Strauss and Corbin (1990) have admitted that the boundaries between these three phases are somewhat blurred, and that open, axial and selective coding might even be carried out concurrently, they also describe how each phase requires different interventions on the part of the researcher. Initially, their coding process appears straightforward; however, as the researcher moves deeper into their methods, the procedures that must be used become increasingly complex and detailed. Despite differences between Glaser (1978) and the Straussian approach to the coding procedures, the two approaches share fundamental characteristics, namely: theoretical sampling, theoretical saturation, constant comparative analysis, memoing, and developing a theory (Birks & Mills, 2011; Glaser, 1992; Strauss and Corbin, 1990).

Open coding is the initial step in the coding process, whereby coding for incidents to identify emerging concepts from the data is advocated (Glaser, 1978; Strauss & Corbin, 1990). In open coding, the researcher identifies distinct concepts and emergent themes for categorisation. Strauss and Corbin (1998, pp.65-68) suggested coding by "microanalysis, which consists of analysing data word-by-word" and "coding the meaning found in words or groups of words", which involves breaking down and categorising the data into practicable segments. Remaining closely

focused on the original data and using ‘in vivo’ codes, which emphasise the important verbatim words or group of words, distinguishes between emergent concepts and imposed ones (Birks & Mills, 2011). Early coding necessitates reflexivity, as researchers need to be mindful of making the right analytical decisions from the outset. This is pivotal, as initial decisions influence future decisions, particularly in relation to theoretical sampling (Strauss & Corbin, 1990).

The second level of coding is axial coding. In contrast to open coding, which focuses on identifying emergent themes, axial coding further refines, aligns and categorises the themes. Data that has been broken down and categorised is put back together, with connections made between and across categories (Birk & Mills, 2011). Axial coding is defined as “the act of relating categories to subcategories along the lines of their properties and dimensions” (Strauss & Corbin, 1998, p.123). Axial coding adds depth and structure to categories identified. Charmaz (2006) explained that axial coding re-assembles data that has been broken up into separate codes by line-by-line coding. This allows for codes to be clustered based on their explanatory relationship to one another. Charmaz (2006) warns that axial coding applies a rigid and formal frame to the data analysis, recommending instead the less formalised approach of reflecting on categories and sub-categories to establish connecting links between these to make sense of the data. Strauss and Corbin (1990) describe how the paradigm model as an analytical device supports putting data back together in new ways. The researcher uses a systematised cause-and effect schema to explicate relationships between categories and sub-categories. With the completion of open coding and transition to axial coding, collected data can be sifted, refined and categorised, with the goal of creating distinct thematic categories in preparation for selective coding (Strauss, 1998).

The principal objective of selective coding is to explain the storyline, by integrating all the interpretive work of analysis (Scott, 2004). Selective coding is where all the categories are unified around a core category (Corbin & Strauss, 2008). Strauss and Corbin (1990, p.116) define selective coding as "the process of selecting the central or core category, systematically relating it to other categories, validating those relationships, and filling in categories that need further refinement and development". Through selective coding, the categories are integrated and developed into the theory.

3.4.6 *Memo writing, diagramming and conditional matrices*

There are several ways to support the research process and ongoing data analysis, which can go beyond written or typed text. Alternative representation, such as memos, diagrams and matrices can be used to gain insights into the setting and its participants (Buckley & Waring, 2013).

Memo writing is a key feature of a grounded theory approach, which Glaser suggests will aid conceptualisation and theory building (1998, p.12). Writing memos concurrently provides opportunities to map out possible sources to sample theoretically, while at the same time creating an audit trail of the decision-making processes for later use. Birks, Chapman and Francis (2008), and Milliken and Schreiber (2001) add that recording actions, feelings, thoughts and impressions preserves ideas and provides a tangible means of reviewing the research process, including decisions made and actions taken. Strauss and Corbin (1998) advise that memos should be dated; contain a heading, including short quotes and references; and the researcher should remain conceptual (not get caught up in the detail), stay flexible, and keep multiple copies of memos. In contrast, Glaser (1998) recommends that memos be freeform and handwritten. Over time, as the researcher gains

experience and becomes more theoretically sensitive, the memos develop to be more precise (Glaser 1998). Machin (2009) advocates the use of a reflective diary to assist with identifying issues that affect research processes and data interpretation, which can be viewed as a useful adjunct to memo writing. Expressed emotions and feelings are often preceded or succeeded by actions and inactions; they are part of the same flow of events (Chaberlain-Salaun, Mills & Usher, 2013). Acknowledging these connections is particularly important when concurrently collecting and analysing data. Identifying participants' emotions and feelings during data collection and analysis can provide the researcher with clues as to meanings that participants ascribe to events and situations relating to the phenomena under study (Corbin & Strauss, 2008). This process heightens sensitivity to the data and to the research process. Memos are a useful step in transforming data to a level of theoretical abstraction, as the researcher constantly analyses ideas as they interact with the data (Charmaz, 2014).

Diagramming has been an integral part of grounded theory since its emergence and as such can enhance the conceptualisation process by encouraging the researcher to see theoretical codes related to properties, conditions, strategies and consequences (Glaser, 1978). Diagrams can support the researcher in making sense of relationships that may not have previously been explicit. Used in this way, diagrams become an integral part in theory building through actively encouraging clarity of thought and supporting developing conceptualisation through a clearer understanding of the data (Buckley & Waring, 2013). Allatt and Dixon (2004) suggest that visual data can aid the researcher to 'see' the previously unnoticed and support a thick description. Implementing diagramming techniques can offer a methodological tool to advance the theory generation in terms of developing a conditional matrix (Strauss

& Corbin, 1990). To support the identification of relationships between conditions, consequences, actions and interactions, Strauss and Corbin (1990) recommend the diagrammatic tracing of conditional paths on a conditional matrix (Partington, 2000). The conditional matrix represents a set of levels that are diagrammatically embodied as eight concentric circles, with each level corresponding to a different aspect of the world, pertaining to the phenomenon (Strauss & Corbin, 1990). Strauss and Corbin (1990) suggest that diagrams can demonstrate the logical sorting of relationships between categories and their subcategories, and integrative diagrams, which are used to show conceptual linkages.

Furthermore, Strauss and Corbin (1990) support the use of diagrams throughout the research process. They suggest that memos and diagrams help gain analytical distance from materials and support the move from working with data to conceptualising. They argue that these two procedures are crucial to the process of grounded theorising (Strauss & Corbin, 1998). Morse (1994, p.39) emphasises that within grounded theory, “Diagramming is used to enhance understanding and identifying the basic social process that accounts for most of the variation in the data”. When undertaking higher levels of analysis in grounded theory, researchers are encouraged to use both integrative diagramming and the conditional matrix to illustrate the complex interplay between the different levels of conditions (Buckley & Waring, 2013). However, Partington (2000) recognises that the Straussian step-by-step method may be difficult to follow in practice, except in a loose, non-rigid fashion. Strauss and Corbin (1998), and Corbin and Strauss (2008) are clear that researchers should trust their instincts and not focus too closely on the analytical procedures or get caught up in what is the ‘right’ or ‘wrong’ way. Procedures and

techniques should be used flexibly, according to the realities of their studies (Strauss & Corbin, 1998).

3.4.7 *Theoretical Sensitivity*

Glaser and Strauss (1967) cite theoretical sensitivity as a two-part concept, which firstly reflects the level of insight the researcher has into both themselves and the areas that they are researching. The implication here is deeply personal, referring to a 'quality' of the researcher (Strauss & Corbin 1990, p.41). Chamberlain-Salaun, Mills and Usher (2013) state that 'self' is implicit in all the essential grounded theory methods, and it is through the act of memoing and developing theoretical sensitivity that the symbolic interactionist concept of self predominates. Memos record the reflexive process, "the internal discussions between the 'I' and 'me'", while providing an audit trail of "the thinking that goes into decisions and actions" (Charon 2007, p.119). Secondly, the varying degrees of theoretical sensitivity will mirror the researcher's intellectual history. This will be influenced by and be dependent upon several sources, such as exploration of literature and previous reading, personal and/or professional experience with or relevant to an area. The researcher's own emotions, feelings and associated actions, alongside internal and external perspectives, enable interpretation of the research data to be explored and challenged.

Theoretical sensitivity acknowledges and accounts for the fact that I am a sum of all I have experienced and, as I become immersed in the data, my level of theoretical sensitivity to analytical possibilities will increase. My own level of theoretical sensitivity will need to be reflected upon, given my 'intellectual history' and previous practice experiences within the OR, the phenomenon being described and the perspective(s) shaping the accounts given.

3.4.8 *Theoretical Saturation*

Glaser and Strauss (1967) developed the concept of theoretical saturation as the end point of theoretical sampling and data collection. However, theoretical saturation has rarely been defined and lacks a common description as to how it is reached, giving rise to uncertainty and inconsistencies in its use (Rowlands, Waddell & McKenna, 2016). Strauss & Corbin (1990, p.187) suggest that theoretical saturation is achieved when certain elements are satisfied: no new data emerge regarding a category, “the category development is dense insofar as all of the paradigm elements are accounted for ... and the relationships between categories are well established and validated”. The research is theoretically complete when it “explains with the fewest possible concepts and with the greatest possible scope, as much variation as possible in the behaviour and problem under study” (Glaser 1978, p.125). Glaser and Strauss (1967) confess that judgements about theoretical saturation are never precise, as the researcher is constantly readjusting theoretical notions. Theoretical saturation requires the researcher to have the “personal quality” of “theoretical sensitivity” and is a “matter of degree”. They argue that there will always be the potential for the “new to emerge” (Strauss & Corbin, 1998, p.41 and 136), and suggest that saturation should be more concerned with reaching the point where there are diminished returns from additional data collection, and where the ‘new’ does not necessarily add anything more to the overall theory or story. This emphasises the need for conceptual rigour, consistency between the theoretical position and the analytical framework adopted and transparency of process.

3.4.9 *Reflexivity – Sharing the Experience*

Reflexivity is commonly viewed as the process of a continual internal dialogue and critical self-evaluation of the researcher’s positionality, as well as active

acknowledgement and explicit recognition that this position may affect the research process and outcome (Bradbury-Jones, 2007). Berger (2013) reflects on the necessity of acknowledging the tensions between the roles of practitioner and researcher, when the researcher is part of the research and shares the participants' experience. Reflexivity is recognised as a crucial quality control strategy in the process of generating knowledge by means of qualitative research (Ahmed, Hundt & Blackburn, 2010), and understanding how it may be impacted by the characteristics and experiences of the researcher is of paramount importance (Berger, 2013).

A major threat to validity can be researcher bias (Kolb, 2012) and reactivity, which is the effect the researcher has on the setting or the study (Bickman & Rog, 2008). Reflexivity refers to the process by which a researcher acknowledges and reflects upon their role in the research process (Draper & Swift, 2010). In being reflexive, the researcher must incorporate continuous awareness of reflecting, examining and exploring their relationship through all stages of the research process (Conrad *et al.*, 1993). Consequently, there is an increasing need to focus on self-knowledge and sensitivity; to better understand the role of the self in the creation of knowledge; to carefully self-monitor the impact of researcher biases, beliefs and personal experiences on the research; and to maintain the balance between the personal and the universal (Berger, 2015). Being reflexive is to balance knowledge of oneself, avoiding the temptation to become overly self-absorbed (Holloway & Biley, 2011). Treating observations and interviews as both a resource and a topic is another aspect of a reflexive research style. Reflexivity is an important consideration in this study, as from a symbolic interactionist perspective, I am also an actor in the social situation of participants while undertaking the research. Berger (2013) highlights how this means turning the researcher's lens back onto oneself, to recognise and take

responsibility for one’s own situatedness within the research, and the effect it may have on the setting and participants being studied, questions being asked, data being collected, and its interpretation.

Reflexivity is crucial throughout all phases of the research process (Berger, 2013) and is an essential means to developing and demonstrating rigour (Engward & Davis, 2015). The process of reflexivity identifies and acknowledges the limitations of the research in relation to location and topic, and the process itself. This means questioning preconceived categorisations of what is being researched, those being researched, and how the research is being done (Engward & Davis, 2015).

Developing a balanced approach to reflexivity is detailed by Alvesson and Skolberg (2009), who describe four levels that should be considered and demonstrated throughout the research journey (Table 3).

Table 3: Application of the Four Levels of Reflexivity

LEVEL OF REFLEXIVITY	FOCUS	DEMONSTRATED EVIDENCED
1. Data Collection	Problematising the empirical material, accounts in interviews, observations of situations.	Asking questions about how the data were generated, what influence the researcher may have in the design of the data collection tools and gathering process. Data collected using unstructured interviews and observations, field notes and memos. Constant Comparative Analysis.
2. Analysis of Data	Underlying meaning. The grounded theory process requires the parallel task of data collection and coding.	Researcher engagement with the interpretive act, reflecting on and asking questions about how the research is analysing data potential personal and a priori perspectives, coding, inclusion/exclusion, memos, respondent validation or

		peer review. Constant Comparative Analysis.
3. Critical Interpretation of the Context	Examination of personal values, stance, influence, and role within the research.	Clarification of political-ideological contexts, such as questioning potential ideological and power relationships. Experience of the phenomena, the role of professional insight and response to data and what I bring to data analysis. Theoretical Sensitivity.
4. Communication – the words and language used.	Selectivity of the voices represented in the text.	Reflecting on how language is used in the production of the research text, including claims to authority ‘communicative generalisation’.

The Alvesson and Skolber (2009) model was used to detail the researcher’s thinking and actions during the research journey. The model was a useful means to assist in recognising and addressing aspects that may or may not implicitly or explicitly influence the research process.

3.5 Chapter Conclusion

In this chapter, a detailed discussion of the theoretical framework that influences this research has been presented as an integral component of developing the underpinning conceptual framework (Ravitch & Riggan, 2012; Antonenko, 2015). The philosophical and theoretical beliefs of interpretivism, symbolic interactionism and social constructionism, which informed the methodological choice of Straussian grounded theory, were discussed. This interpretive research approach to uncover subjective knowledge reflected my personal worldview, alongside acknowledging my prior knowledge and topical interest. Although the original purpose of the chapter was to demonstrate my rationale for the choice of methodology and make clear the methodological framework, the internalisation of the actual process

afforded a great depth of understanding and clarified, challenged, and adjusted my views. The process of thinking, reflecting and writing about methodology allowed the opportunity for internal dialogue with the interpretative paradigm and with the chosen methodology, as phenomena in themselves.

The following chapter presents a comprehensive description of the research process undertaken in the study.

4 Chapter 4: The Research Journey

4.1 Chapter Introduction

In the previous chapter, the theoretical and philosophical tenets that influence this thesis were outlined, alongside discussion of the chosen research methodology of Straussian grounded theory and the key principles deemed central to grounded theory research.

This chapter discusses the research methods that were implemented and begins by discussing the application of ethical principles during the research process. The sampling strategy is discussed in terms of the target sample population, the utility of a sampling questionnaire and the resultant sampling matrix, which provided a basis for theoretical sampling. The process of theoretical sampling is described, and concerns related to theoretical saturation and constant comparative analysis are outlined. Data collection strategies are discussed prior to an explanation of the data analysis stages, which ultimately guided the construction of categories and properties. Examples of reflexive endeavour to ponder key issues are considered. Overall, the chapter provides a clear and comprehensive audit trail, contributing to the credibility and trustworthiness of the study.

4.2 Research Ethics

4.2.1 Ethical Principles

Internal ethical approval was obtained from the university research ethics committee (appendix 1), and permission from the Research and Development unit at the NHS Trust being studied was granted before any data collection commenced (appendix 2).

Research involving staff who are recruited because of their professional role does not require Research Ethics Services (RES) review (RES, 2019). The role of any ethics committee is to inform researchers of potential ethical concerns. As research is dynamic in nature, researchers remain responsible for addressing any ethical challenges that may arise throughout the research process, protecting the participants by the application of appropriate ethical principles (Orb, Eisenhauer & Wynaden, 2001). Field and Morse (1992) note that ethical guidelines and codes do not have answers to all ethical issues that may present during the research, and ethical dilemmas that are not part of the study may subsequently arise. Neuman (2011, p.143) states that “it is the moral and professional obligation of the individual researcher to be ethical even when research participants are unaware of or unconcerned about ethics”.

The study was guided using well-established ethical principles, specifically autonomy, beneficence, and justice, with the welfare of the participants the primary concern. Such principles advocate that each participant should be treated with respect, fairness and sensitivity (Orb, Eisenhauer & Wynaden, 2001).

4.2.2 *Informed Consent - Respecting the Autonomy of Participants*

Informed consent is underpinned by the principle of respect for people and is the recognition of participants’ rights, including the right to be informed about the research, the right to freely decide without bias whether to participate, and the right to withdraw from the research at any time without consequence (Capron, 1989).

This principle is honoured by informed consent, which means balancing between over-informing and under-informing participants (Kvale, 1996). Long and Johnson (2000) note that researchers have a duty to provide accurate and clear information

that is easy to understand, which allows potential participants to make an informed and autonomous decision about whether to participate.

All potential participants were provided with the research study information sheet (appendix 3). The document included information that supported informed decision-making concerning participation in the interview process, allowing participants to exercise their rights to autonomy and to voluntarily accept or refuse to participate in the research. It also highlighted that participants were free to withdraw from the study at any time. Potential participants were given a period of reflection, whereby they could consider the key principles and requirements of taking part or obtain further information if required.

Once individuals agreed to participate in the interview process, they were asked to complete a consent form (appendix 6). As informed consent is dynamic and involves the negotiation of trust, continuous renegotiation (Field & Morse, 1992; Kvale, 1996; Orb, Eisenhauer & Wynaden, 2001) was required at the beginning of each interview, when participants were asked if they were still prepared for their experiences to be heard.

Walshe, Ewing and Griffiths (2011) highlight that issues of consent can be complex in observation studies, where practical and ethical decisions need to be made with reference to how and whether to obtain written or verbal consent from participants. For the observation of participants within the context of the OR, all participants were provided with an information sheet (appendix 2) and where possible, were asked to sign a consent form. Written consent in advance of the observation from all participants is considered 'gold standard' (Walshe Ewing & Griffiths, 2011), but for pragmatic reasons, consent was obtained at the start of the observation episode.

However, although the OR can be classified as a 'bounded' setting (Walshe, Ewing & Griffiths, 2011), where only OR professionals are likely to be present, gaining written consent provided a degree of challenge due to the nature of the OR and the roles and responsibilities of each professional group. Where signing a consent form 'in the moment', or just prior to an episode of observation was not possible, verbal consent was given by participants, which was followed up at a later point, where written consent was gained. Consideration was given to ongoing consent, both during lengthy periods of observation that spanned changes to the OR team, and since multiple observations were planned. While patients were not directly involved in the study, their presence within the OR environment was inevitable. As this was a potential ethical concern, a Disclosure and Barring Service (DBS) check was obtained, alongside informing all patients, via a poster at the entrance to the operating department, that a researcher was present and that patients were able to request that the observer, or researcher, leave the OR (appendix 14).

4.2.3 *Confidentiality - Maintaining Privacy and Data Protection*

Crow et al. (2006) suggest that the concepts of confidentiality and anonymity are related yet distinct, with confidentiality commonly viewed as akin to the principle of privacy (Gregory, 2003; British Educational Research Association [BERA], 2018). Anonymity can be considered a vehicle by which confidentiality is operationalised (Wiles et al. 2006). Assuring participants of confidentiality means that what has been discussed will not be repeated, or at least, not without permission (Wiles et al. 2006). Prior to their participation, the notion of confidentiality and anonymity was discussed with each participant. To some extent, it would be difficult to maintain complete anonymity and confidentiality in this study, because as a researcher I have a duty to report on the findings of this research. Crow et al. (2006) encourage

researchers to ensure they do not disclose identifiable information about participants. The identity of participants can be largely protected through various processes designed to anonymise them. Throughout the study, three key principles in relation to confidentiality were followed:

First, maintaining confidentiality of all data by ensuring that each participant was allocated a unique identifier code and that data was separated from identifiable individuals, including verbatim quotes, throughout the study. The unique code linking data to individuals was stored securely on a password protected device.

Interviews were recorded using a digital voice recorder and recordings were uploaded to my personal university secure, password protected, network drive. All data storage, use and handling complied with the Data Protection Act 1998 (Pre-General Data Protection Regulations (GDPR) and Data Protection Act 2018).

Second, interview data were transcribed by a third party, who only had access to the unique identifier code. The transcriber was selected due to previous experiences of being involved with research teams, where agreements of good practices in relation to confidentiality were easily established. All data files were sent and returned securely between the transcriber and myself via an internet-based computer transfer service. Transcribed data was again uploaded to my personal university secure network drive. Hard copy data from both transcribed interviews and observations was stored in a locked cabinet accessible to me only. Issues arising from individual interviews were not discussed with the research team in ways that might identify an individual. Furthermore, it was not deemed necessary to disclose what an individual had said in an interview. Finally, assurance was offered to participants that in the event of publication or dissemination of the work, individuals and/or places would be anonymised to protect their identity (Crow et al. 2006). Given the nature of the

research and the environment being studied, it was important to consider circumstances and occasions in which the researcher may feel the need to break confidentiality and to inform participants of these as part of the consent process (Ritchie & Lewis, 2003; Crow et al. 2006).

4.2.4 *Participant Support and Raising Concerns*

The ethical principles of beneficence and justice centre on doing good for others, preventing harm, recognising the vulnerability of participants, and recognising their contribution to the study (Maltby et al., 2010; Orb, Eisenhauer & Wynaden, 2001).

A concern for many researchers, particularly with a clinical background, is the potential that data collection could cause harm to participants, or that poor or inappropriate care is observed or disclosed during the interviews (Walshe, Ewing & Griffiths, 2011). Information relating to care that is believed to be sub-standard demands consideration about what may be regarded as ‘reasonable’ care by both the participant and the researcher (Walshe, Ewing & Griffiths, 2011). There is an obvious duty of care on the researcher, to do no harm, to avoid distress and to ensure privacy. It was important to think through issues that could arise and to respect the safety and wellbeing of the participants considering the various professional, regulatory, and legal frameworks that underpin their practice.

Consideration was given in advance in relation to accessing appropriate participant support, reporting care and disclosure procedures if thought necessary, and to whom (e.g., researcher supervisors, Nursing and Midwifery Council professional standards, 2015, or Occupational Health). Participants were advised that disclosure of information that raised professional concerns during data collection would be managed according to my professional responsibilities as a registered nurse. The Nursing and Midwifery council (2015, section 16), succinctly highlights the duty

placed upon a registrant in relation to unacceptable practices that put the safety of people or the public at risk. Participants were also informed that they could report issues regarding the researcher, so contact details for the principal supervisor were provided. However, no situations that could be considered as unacceptable practice or behaviour arose during data collection.

4.3 Sampling

4.3.1 Sampling and Recruitment

The sampling strategy used in this study followed a four-point approach advocated by Robinson (2014), which considers a sample universe, sample size, sampling strategy and finally, sampling sourcing.

4.3.2 Sample universe

In terms of the sample, it was important to consider a population with experience of the phenomenon under consideration, which could provide relevant and richly textured information (Sandelowski, 1995). Acknowledging difference within the phenomenon is vital “in order to have representative coverage of variables likely to be important in understanding how diverse factors configure as a whole” (Sandelowski, 1995, p.182). The sample therefore included all professional groups, who contributed to teamworking in the OR and thus had the appropriate experience to provide relevant information.

4.3.3 Access to the Operating Room

Access to the OR context within a large organisation and the recruitment of participants was supported using gatekeepers. Fetterman (1998) highlights the value of gatekeepers as a means of developing professional understanding and trust

between researchers and participants, and as a method of protecting potential participants from the risk of coercion by the researcher. DeLaine (2000) cautions that gatekeepers have the potential to control and coerce or even exclude participants and influence data in pursuit of their own or their employing organisations' objectives. To reduce the risk of gatekeeper influence, one gatekeeper facilitated access to meetings with OR personnel, where I could establish my own credibility and champion the research among potential participants. It was also essential that the information and invitation documents indicated the inclusive nature of the study, as well as emphasising that participation was voluntary. Contact between gatekeepers was initially valuable and pivotal to access, but as the research progressed, it was essential to renegotiate and establish relationships with secondary gatekeepers. Secondary gatekeepers held more detailed information in relation to specific areas of practice, events and situations, and were able to provide and authorise access. In accordance with ethical protocol, all OR personnel were contacted via a personal email, which included a letter of invitation to participate (appendix 4) and a research study information sheets (appendix 3).

4.3.4 *Inclusion criteria*

Inclusion criteria were relatively unrestrictive but did specify conditions that the sample population must contribute to teamworking within the context of the OR environment. The sample population, or 'universe', was deemed geographically homogenous since the sample was drawn from the same location, which is the OR environment. Life history homogeneity was also relevant, given the nature of the OR context and the potential for participants to share, or have shared past working life experiences (Robinson, 2014). Although the OR context is geographically homogenous and there may be some evidence of life history homogeneity, the

inclusion criteria remained relatively unrestrictive. This relaxed approach to inclusion criteria allowed for maximum variation and diversity, and favoured heterogeneous sample whereby rich, thick data and wide-ranging concepts could be uncovered (Hutchinson, 1993). Glaser and Strauss (1967) support the notion that sampling in grounded theory requires researchers to actively search for participants with suitable experience and knowledge, thereby facilitating theoretical sampling and complying with the basic tenets of grounded theory (Charmaz, 2006; 2014).

4.3.5 *Sourcing the Participants from the Real World*

The sample population consisted of individuals, across a diverse range of healthcare professions, who routinely worked in the OR, who had identified themselves as having experience of teamwork, and were prepared to participate in the research. It was assumed that these healthcare professionals would be able to offer a comprehensive insight and talk at length about their personal experiences of OR teamwork. Although it was important to locate an appropriate target sample population, it is essential to move beyond this in grounded theory research (Corbin and Strauss, 2008). Within the sample group, it was essential to actively search for information-rich participants with maximum variation of characteristics and experience, whereby wide-ranging concepts could be uncovered in relation to the phenomena under investigation (Hutchinson, 1993). This required the initial identification of characteristics across the sample population to inform and refine individual sample selection (Morse, 2007). To promote this approach, a sampling questionnaire was developed.

4.3.6 *Sampling Strategy Questionnaire*

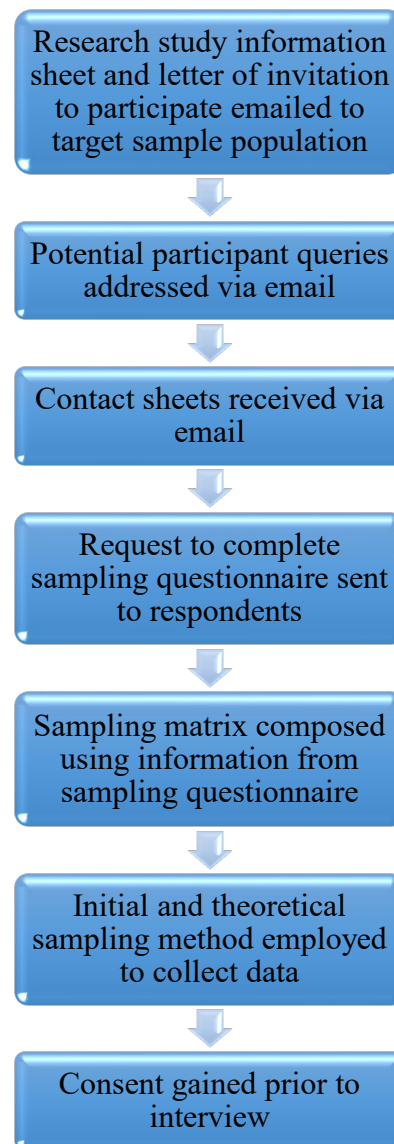
The overall aim of developing a sampling strategy questionnaire was to select and recruit participants, based on their experiences with the social processes in question

(Streubert & Carpenter, 2007), using predetermined characteristics and criteria of relevance (appendix 5). For the purposes of this study, all members of staff who work within the operating department of one large hospital trust were eligible to participate. Inclusion criteria incorporated baseline information related to role, highest qualification, length of service and length of time qualified, which could support initial and subsequent theoretical sampling decisions. Participants were not excluded based on age or experience with the operating department. The sampling questionnaire was developed and informed by theoretical sensitivity, from my own professional experience (Glaser, 1978), and insight that emerged from the initial literature review (Charmaz, 2014). By using this sampling strategy, the maximum amount of data could be obtained to unearth categories (Strauss & Corbin, 1990).

Beyond the initial sampling questionnaire, it was deemed appropriate to collate this information and explore a method that would support a systematic approach to theoretical sampling. The use of a sampling matrix provided the necessary structure to inform and guide theoretical sampling decisions. Reed, Procter and Murray (1996) advocate the use of a matrix in theoretical sampling, as a method of systematically identifying and selecting participants, adding that a sampling matrix aids the researcher to make informed and coherent choices. Machin, Machin and Pearson (2012) suggest that a sampling matrix guides the selection of participants based on their relevance to the study and the emerging theory, further identifying this as a valid technique to seek maximum variation from the sample and assist theoretical sampling.

The actual process of gaining access to the participants within this study is highlighted in Figure 2.

Figure 2: Sampling Process



4.3.7 Organising the Sample Population/Universe Matrix Plan

The sampling matrix (appendix 8) was constructed from responses to email sampling questionnaires (appendix 5) sent to prospective participants (N = 194), working within one large healthcare Trust, geographically spread across four sites of relevance. It was anticipated that participants would have experience of working in a team member within the OR context. Of the 18 individuals who returned their initial

sampling questionnaires, 14 proceeded to consent to participate. The information gathered from the sampling questionnaire was distilled into a sampling matrix (Reed, Procter & Murray, 1996; Machin, Machin & Pearson, 2012), to present the range of experience and roles of the participants.

4.3.8 *Initial Sampling*

Identifying the most appropriate participant for the initial interview required consulting the sampling matrix to support an informed decision (Glaser, 1978; Chun Tie, Birks & Francis, 2019). The sampling matrix (Table 4) encompassed a diverse range of OR individuals who had specific knowledge and insight into the phenomenon under study. Therefore, selecting the initial participant involved considering who was knowledgeable about the topic of interest and had a broad range of experiences (Bryman, 2012). The participant selected for initial interview was a female Band 6 (Agenda for Change) Operating Department Practitioner (ODP), whose role was to provide anaesthetic assistance to the anaesthetist and to co-ordinate operating theatre activity as and when necessary. Agenda for Change is a statutory framework for pay and conditions. Under Agenda for Change, jobs are evaluated and placed into bands using the job matching and evaluation scheme (DH, 2004). The ODP had 10 years' experience within the OR context, with no experience of working outside of that context other than during initial ODP training. Her role required her to provide anaesthetic support, when requested, to the Accident and Emergency department on site, and she was actively involved in teamwork education and training. This participant was educated to diploma level and was currently studying to 'top-up' to degree status.

The initial participant was selected based on their ability to answer the research question and offer exclusive insight around experiences in relation to the

phenomenon under investigation. This is considered to be a key element of grounded theory (Corbin & Strauss, 2008; Richard & Morse, 2007), whereby participants are in a unique position to contribute to the research, supporting the development of a more inclusive insight into, in this case, the complexity of a great day in the OR context (Charmaz, 2014). I assumed, based on my theoretical understanding and previous working life experience that this individual would be able to offer a rich, comprehensive and important perspective of what constitutes a great day in the OR, and subsequently direct the collection and/or generation of data from other participants (Glaser & Strauss, 1967; Mason, 2002; Charmaz, 2006). The sampling strategy used in this research followed the method encouraged by Charmaz (2006, p.100), suggesting that ‘initial sampling in grounded theory is where you start, whereas theoretical sampling directs you where to go’. McCrae and Pursell (2016) support such an approach, describing initial sampling as the seed to inform theoretical sampling.

4.3.9 *Theoretical Sampling*

Theoretical sampling provides the means of focusing data collection by illuminating variation and identifying gaps that require further elaboration (Breckenridge & Jones, 2009). To facilitate theoretical sampling, data analysis needs to be timely. It is advocated in grounded theory studies that preliminary analysis is completed before further data collection and, although this can be challenging and not always practicable in the complex field of research (Birks and Mills, 2011), it was the approach I adopted. Initial data analysis was completed as soon as practically possible after each interview, allowing for emerging codes to be identified, which in turn stimulated further data collection through reflexive decision-making, supporting the ongoing process of theoretical sampling (Charmaz, 2006; 2014). Building time,

capacity and momentum to simultaneously collect, code and analyse the data, in order to decide what data to collect next was challenging. Accessing participants whose priority was their full-time work within the OR was problematic, and the process of transcribing and analysing data impacted on the pace and impetus of the research. This was compounded further, when participants were selected according to the developing categories in the emerging theory, rather than a concern for variables such as role or other characteristics. This prolonged the data collection period, as accessing the relevant participant became more difficult. This highlights that theoretical sampling was highly dependent on the emerging data analysis, which could not be predetermined (Becker, 1993). Analysis and sampling in grounded theory are critical elements of the method, and it was essential to understand that sampling was controlled by the needs of the emerging theory and not by a list of variables (Becker, 1993). In the earlier stages of the research, the sampling matrix provided participant information to support theoretical sampling decisions. As the research progressed, analysis of previous interviews became more significant in guiding theoretical sampling decisions and the sampling matrix became less useful. Sampling became increasingly theoretical with 'far out' examples being selected to challenge the emerging theory (Strauss & Corbin 1990). Glaser (1987) highlights that theoretical sampling allows for flexibility during the research process, whereby adaptability and creative decision making are encouraged to discern the most appropriate direction of data collection that are responsive to real-world conditions while meeting the needs of the study. A reflexive approach to the decision-making process was utilised to support ongoing sampling (Charmaz, 2006), alongside documenting the rationale behind some of the sampling decisions made, to add transparency to the research audit trail. In this research, theoretical sampling was

initially directed and informed by aspects of the sampling matrix and the subsequent analysis of the data.

4.3.10 *Flexibility of theoretical sampling*

As the research progressed, theoretical sampling was used to test, elaborate and refine a category, and further sampling helped to develop the categories and explore relationships and interrelationships (Coyne, 1997), alongside reflexive decision making. This involved changing the interview questions as the study developed. As Strauss & Corbin (1990, p.183) state, ‘some questions or foci with which you entered the interview or observational site will quickly get dropped or seem less salient or at least get supplemented’. Glaser (1978, p.39) points out: ‘while in the field, the researcher continually asks questions as to fit, relevance and workability about the emerging categories and relationships between them’. This flexible approach to theoretical sampling was adopted. The initial interview topic guide that supported data collection was refined as the research progressed. Questions were adapted accordingly (appendix 11 and 12), to inform proceeding interviews and observations following earlier data analysis to further develop categories and explore interrelationships. This reflects the iterative nature of the theoretical sampling process.

As theoretical sampling and data analysis continued to advance, the decision was made to re-interview three participants to determine whether the theory that was emerging would hold up (Strauss & Corbin, 1990). A second interview allowed me to focus on codes that emerged from the initial transcripts for the purpose of elaborating and deepening the analysis, challenging the emerging theory. This is not participant validation but an attempt to verify, confirm and qualify. This strategy allowed probing of those participants that provided the greatest “theoretical

relevance and purpose” (Glaser, 1978, p.42), as they yielded the best concept indicators for comparison and category development. This approach is advocated by Machin, Machin and Pearson (2012), who identify the sampling matrix as a valid approach, which supports researchers to implement theoretical sampling through seeking optimum variation from the sample.

4.3.11 *Participant Characteristics*

It is important to consider characteristics of the participant sample to support trustworthiness, particularly in relation to enabling others to determine significance of the research findings to individuals in similar situations or contexts (Aguinis & Solarino, 2019). Table 4 provides a summary of the final sample, which included 14 participants from the target sample population, all of whom were identified through the initial and theoretical sampling processes discussed in the previous section. The table provides information regarding each participant’s role, their highest qualification, length of time in service, length of time qualified, whether they worked in more than one OR, or other areas of the organisation, with other teams or departments, and if they were involved with teamwork education. The sample was not gender significant.

Table 4: Characteristics of Participants

PARTICIPANT	Role	Q – 1 Highest qualification	Q – 2 Length of service	Q – 3 Length of time qualified	Q – 4 Works in more than one OR	Q – 5 Works elsewhere in the organisation	Q – 6 Goes outside of OR to work with other teams/ departments	Q – 7 Involved in teamwork education
Anaesthetic Assistant Participant 1	Operating Department Practitioner – Band 6	Diploma	10 years	10 years	No	No	Yes	Yes
Anaesthetic Team Leader Participant 2	Registered Nurse – Band 7	Degree	25 years	25 years	Yes	Yes	Yes	Yes
Recovery Participant 3	Registered Nurse – Band 6	Registration	40 years	40 years	No	Yes	No	Yes
Anaesthetic Assistant Participant 4	Operating Department Practitioner - Band 6	Diploma	20 years	20 years	No	Yes	Yes	Yes
Theatre Team Manager Participant 5	Registered Nurse - Band 8	Master’s in business studies	18 years	42 years	Yes	No	No	Yes
Anaesthetic Trainee Participant 6	ST 5 (Higher and Advanced Training)	Bachelor of Medicine and Surgery (MBBS)/Fellow Royal College of	3 months	7 years	Yes	Yes	Yes	Yes+

		Anaesthetists (FRCA)						
Scrub Nurse Participant 7	Nurse - Band 6	Degree	20 years	22 years	Yes	Yes	No	Yes+
Consultant Anaesthetist Participant 8	Consultant Anaesthetist	FRCA	3.5 years	14 years	Yes	No	Yes	Yes+
Consultant Anaesthetist Participant 9	Consultant Anaesthetist	Fellow Royal College of Anaesthetists Ireland (FRCAI)	6 years	30+ years	Yes	Yes	Yes	Yes+
Physician's Assistant Anaesthetics Participant 10	Physician's Assistant Anaesthetics	Master's in physician's assistant (Anaesthetics)	12 years	12 years	Yes	Yes	Yes	Yes+
Consultant Anaesthetist Participant 11	Consultant Anaesthetist	FRCA FF (Faculty Fellowship)	19 years	30 years	Yes	Yes	Mostly (Intensive Care Unit)	Yes+
Consultant Surgeon Participant 12	Consultant Surgeon	Fellow Royal College of Surgeons (FRCS)	21 years	30+ years	Yes	Yes	Yes	Yes+
Student Nurse Participant 13	Student Nurse – placement as part of pre-registration programme	General Certificate of Secondary Education	8 weeks	0 years	No	No	No	Yes+
Orthopaedic Team Leader Participant 14	Operating Department Practitioner – Band 7	Diploma	3.5 years	10 years	Yes	No	No	Yes

Yes+ denotes human factors training, which focusses on non-technical skills.

4.4 Data Collection

4.4.1 *Methods of Data Collection*

Researchers may collect grounded theory data from interviews, observations, documents, or a combination of these sources (Glaser & Strauss, 1967). For this research, data were gathered through observations and interviews over a 10-month period, from October 2016 to July 2017. This combination of data collection and associated techniques provides an opportunity to explore both collaborative interactions and the participants' accounts and perceptions of their action.

Observations focused equally on verbal and non-verbal interprofessional, intra-professional and social interactions.

4.4.2 *Observation of participant behaviour*

It is difficult to find definitions of *observation* in the literature, but what appears to be consistent in a broader context, is the need to “study and understand people within their natural environment” (Baker 2006, p.173) and to learn about cultural rules and expectations (Hammersley & Atkinson, 1995). Glesne and Peshkin (1992) suggest observation is a process where the researcher can examine participants in their own environment to collect data. Glaser (1978) recommends observation of participants in their natural setting to capture their interactions and the meanings attributed to actions and incidents. Observational research techniques are particularly beneficial when the focus of the research is on understanding behaviours, actions, structures and roles. Interviews allow someone to say what they do but observations allow researchers to see directly what someone does (Walshe, Ewing & Griffiths, 2011). Preparation to maximise observational opportunities included engaging a secondary gatekeeper, as previously mentioned. Meeting the clinical research gatekeeper in person, in advance of data collection, allowed them to determine my suitability to

carry out observations within in the OR context. The gatekeeper was thoroughly briefed about the study, so that they were able to explain the relevance of the study to others and further champion the research.

It is important to describe the observation style and role adopted by the researcher. Baker (2006) cautions that some researchers do not specify what role they play during observations, which can lead to an absence of indexing terms or broad subject headings. The observation in this research was conducted in what Spradley (1980) describes as a 'moderate role', which equates to the role of 'peripheral membership' proposed by Alder and Alder (1987). Adopting a moderate role that was acceptable and enabled me to blend in was important, while allowing opportunities to clarify the meaning of events as well as being perceived as personable. Both roles are characterised by observing and interacting closely without participating in the activities, which Spradley (1980, p.60) suggests maintains "a balance between an insider and an outsider, between participation and observation".

Baker (2006) states that the question of "who, what, where and when?" is the crux of observational studies. Alder and Alder (1994) use a funnel analogy to describe the process, wherein the stages of observation become gradually more focussed, directing the researcher's attention to elements that have emerged as theoretically essential. This is supported by the work of Alvesson and Skolberg (2009), which proved helpful during the parallel iterative tasks of data collection and coding, providing a mental framework for 'drilling down', so that emerging questions and themes could be addressed through subsequent data collection, reflecting the flexibility of theoretical sampling.

Direct observations of participants in their usual work context (the OR) were undertaken manually across a range of different shift patterns to capture social interactions among teams, both within routine working hours (mainly planned, elective surgery) and 'out of hours' (emergency surgery). Observations were not limited solely to the OR but included any social exchange in corridors, rest rooms and the recovery area within the OR department. These included interactions with one another, both inter and intra-disciplinary, and interactions with the objects and equipment on display. In addition to these, body language such as hand gestures, eye rolling and mirroring, indicating engagement and frustration, were noted.

Observations revealed general modes of behaviour, interaction and experience.

Although a systematic observation schedule was not followed in the truest sense, an 'instrument' was devised to support note taking and to develop the lines of focus that emerged (appendix 18). This is vastly different to, and should not be confused with, a theoretical framework. Corbin and Strauss (2008) believe that it is best not to begin a study using a theoretical framework; they recommend that if one is used, it should be identified. Detailed field notes were taken during observations; documenting factors relevant to the research question and aims (Machin, Machin & Pearson, 2012). Short statements describing behaviours or interactions, and between whom, were noted. The field notes were transcribed for analysis within 3 days of the observation period (appendix 19).

The notes were reviewed with the expectation that repeated ideas, concepts or elements would become apparent, and could then be tagged with codes. Grounded theory places considerable value on the contextual settings. Gaining detailed knowledge of the context, the OR, and the day-to-day events within that context, are important dimensions in a study utilising grounded theory (Glaser and Strauss,

1967). Participant observation was used in conjunction with interviewing to collect data in the participant's words (Bogdan & Biklen, 2006) with the intention of informing development of data categories.

Observation of naturalistic behaviour in the OR setting was used to affirm the emerging categories from the in-depth interviews and to look for instances that extended, challenged or substantiated these. While interviews provide a rich source of information, sometimes actions speak louder than words (Alder & Alder, 1994), so observations became a complementary part of the data collection process, capturing nuances, feelings and experiences that participants were not always fully aware of or able to articulate.

4.4.3 *Data Analysis and Synthesis*

As constant comparative analysis is an evolving process (Charmaz, 2000), observational field notes were transcribed and used as an analytical tool to assist with finding key phrases and words, alongside verbatim transcriptions of interview data (Strauss and Corbin, 1998). Themes and questions that emerged from early interviews were explored and tested in subsequent interviews, demonstrating reflexive evolution of the interview guide. Contrasting data first against itself, then against evolving original data, and finally against extant theoretical and conceptual claims, facilitates the emergence of knowledge that “provides us with relevant predictions, explanations, interpretations and applications” (Glaser and Strauss 1967, p.1). Themes were compared using the constant comparison methods advocated by Strauss and Corbin (1998), suggesting further that the art of comparison is a creative process, dealing with the interplay between data and researcher when gathering and analysing data.

4.4.4 *Coding*

Coding was the first step of data analysis; it helped to move away from statements to more abstract interpretations of the interview data (Charmaz, 2006). Grounded theory advocates using several coding techniques to examine observation notes and interviewees' accounts at different levels. *Open coding*, also known as line-by-line coding, provided a good starting point to identify initial phenomena and produce a list of themes of importance to the interviewee (appendix 16). Conceptual labels were attached to almost every line in the interview transcript to capture what had been said. These labels corresponded closely to the interview context and, when taken from the interviewee's own words, are known as *in vivo code*. Codes were assigned to participants' words and statements to develop concepts, constituting the start of the analytical process.

4.4.5 *Simultaneous Analysis*

In relation to the analysis of both (interview and observational) data sets, each interview and observation was accompanied by a memo, clarifying ideas and incorporating codes and their possible meanings (appendix 13). Memos were also useful for describing the intensity of actions or reactions that had some bearing on the experience and their consequent theoretical implications. The memos were then sorted 'like with like', based on emerging themes rather than individual characteristics.

The detailed and meticulous process of line-by-line coding helped to open the text and interpret the transcript in new and unfamiliar ways, also tested my own assumptions. A line-by-line analysis was conducted on the first four interviews, to identify the full range of possible codes (appendix 16).

Strauss and Corbin (1998) suggest using initial or ‘sensitising questions’, to help the researcher grasp what the data might be indicating. Suggested questions are “Who are the actors involved?”, “What are the actors’ definitions and meaning of these phenomena or situations?” (Strauss & Corbin, 1998, p.77). Charmaz (2003) advocates a similar approach by asking “What is going on?”, “What are they doing?”, “What is the person saying?”, “What do these actions and statements take for granted?” and “How do structure and context serve to support, maintain, impede or change these actions and statements?” (Charmaz, 2003, pp.94-95). Boeije (2002) adds that important questions regarding comparison in this first phase of analysis should include:

- “Which codes are used to label the categories in this particular interview?
“What characteristics do fragments with the same code have in common?”
- “What is the core message of the interviewee?”
- “Is the storyline consistent? Are there any expressions that contradict?”
“How are all the fragments related?” (Boeije, 2002).

The next phase, *axial coding*, was more abstract than open coding. Once a sense of recurring themes was noted consistently in the data, line-by-line coding was abandoned. Codes were then grouped together to form clusters that might have conceptual value in identifying patterns, similarities and differences. Axial codes were applied to several lines or paragraphs in a transcript and require the researcher to select the most telling codes to represent the interviewee’s voice. Using open codes as a starting point, the process of axial coding helped to verify the adequacy of the initial concepts developed. Following the identification of multiple initial codes,

the data were revisited to re-sort, prioritise and reduce, to include only those codes that had explanatory potential.

This allowed for codes to be clustered based on their explanatory relationship to one another. These were then labelled to generate concepts, which were initially grouped into descriptive categories (appendix 17).

Through reflecting on and re-evaluating the descriptive categories for their interrelationships, and through a series analytical steps, the codes were gradually subsumed into higher order categories

4.4.6 *Data Management*

The use of NVivo as a repository for the whole doctoral process, to include transcribed interviews, literature review, memos and field notes (Bringer, Johnston & Brackenridge, 2004; di Gregorio, 2003) was particularly useful. However, to allow for immersion, reflection and iteration, data analysis and coding was managed manually.

4.4.7 *Comparison within a single interview*

Initially, comparison was conducted within one interview. In open coding, every line of the interview is studied to determine what exactly has been said and to label each line with an adequate code. By comparing different parts of the interview, the consistency of the interview was examined. If one fragment was given the label 'reciprocating', then the interview was studied for other fragments that should have been given the same code. If a reference was made to the same category more than once during an interview, the fragments relating to this category were compared in order to find out whether new information about the category was given or whether the same information was repeated. The fragments were then subjected to further

comparison to find out what they had in common, how they differed, in what context the participant made the remarks, and which dimensions or aspects of teamwork were highlighted.

The aim of this internal comparison in the context of the open coding process is to develop categories and to label them with the most appropriate codes. In this way, it is possible to formulate the core message of the interview with the codes attached to it, and to understand the interview, including any difficulties, highlights and inconsistencies. It represents an attempt to interpret the parts of the interview in the context of the entire story as told by the participant (Boeije, 2002).

4.4.8 *Comparison between interviews and observations*

All observations and additional interviews conducted were treated as described above. Following the initial interview and subsequent data analysis, six further participants were selected for interview. Logistics and availability of participants proved challenging. It was therefore necessary to acknowledge the demands of their everyday working life and reduce the burden placed on the participant (Newington & Metcalfe, 2014). The comparison in this step is between interviews within the homogenous group. In this study, 'homogenous' refers to people who share the same experiences – here, people who contribute to teamwork in the OR. Six participants were then selected for interview, using a strategy that supported a sequential approach to theoretical sampling (Draucker et al., 2007), further guided by characteristics and criteria evident within the sampling matrix. After obtaining more data, participants were selected more carefully, in order to answer the questions raised by the comparison process. The sampling therefore became more closely tied to theoretical ideas and hypotheses, which were provisional and needed to be verified in other cases.

Comparisons that are highly regarded increase the internal validity of the findings. For Boeije (2002), one criterion for qualitative research is that the researcher tries to describe and conceptualise the variety that exists within the subject under study. Variation or range exists because of comparisons, and of looking for commonalities and differences in behaviour, reasons, attitudes and perspectives. Constant comparison is also connected with external validity. When sampling has been conducted well, in a reasonably homogeneous sample, there is a solid basis for generalising the concepts and the relations between them to units that were absent from the sample, but which represent the same phenomenon. Boeije (2002) believed that the conceptual model could be transferred to different substantial fields that show similarities with the original field.

4.4.9 *Establishing Trustworthiness*

Trustworthiness refers to the conceptual soundness from which the value of qualitative research may be judged (Marshall & Rossman, 2016). Trustworthiness is the focus for qualitative researchers who frame their studies in an interpretive paradigm, which differs to the conventional, positivist criteria of internal and external validity, objectivity and reliability (Denzin & Lincoln, 1994; Lincoln & Guba, 1985; Padgett, 1998). The issues of validity, reliability and objectivity, used in evaluating positivist research, are regarded as having relatively little significance by many qualitative researchers for assessing the value of interpretive studies (Carcary, 2009). Lincoln and Guba (1985) moved away from the terms of internal and external validity, reliability and objectivity suggesting that in establishing trustworthiness, alternative issues such as transferability, credibility, confirmability and dependability need to be addressed.

Establishing trustworthiness and considering study limitations are major factors in accurately reflecting the integrity of the research project (Glesne & Peshkin, 1992). Although it is difficult to prove absolute exactness, various strategies have been identified in the literature to improve trustworthiness through triangulation (Kolb and Hanley-Maxwell, 2003).

4.4.10 *Triangulation*

Triangulation is a technique used to increase fidelity of interpretation of data by using multiple methods of data collection (Glesne & Peshkin, 1992). Triangulation usually depends on the convergence of data gathered by different methods; it can also be achieved by using the same method over time. Primarily, the goal of triangulation is to enhance validity and trustworthiness (Glesne & Peshkin, 1992).

4.4.11 *Audit trail*

A strategy proposed for establishing the trustworthiness of qualitative inquiry is the development of a research audit trail (Carcary, 2009). Bowen (2009) recognised that an audit trail, or decision trail (Koch, 1994), is a process involved in a qualitative research project that involves the systematic recording and presentation of information about the material gathered. An audit trail provides a record of the research process as well as the theoretical, methodological and analytical choices made by the researcher (Bowen, 2009). It is defined as ‘a systematically maintained documentation system’ of the research project covering all aspects, including data collection and analysis (Schwandt, 2001, p.8). An audit trail is created to clarify each step and document the decisions in moving from raw material to final interpretation of the data, so that the process of theory development is both visible and verifiable (Bowen, 2009). The trail provides a logical, progressive means of ensuring that concepts, themes and ultimately the emergent theory, can be seen to

have appeared directly from the data, thereby confirming the research findings and grounding them in the evidence. The logic of each decision can be followed, and the findings traced back to the data. Koch (1994) stated that the trustworthiness of a study may be established when the events, influences and actions of the researcher can be logically traced by the reader, and whether the findings can then be relied upon as a platform for further enquiry (Carcary 2009).

Creswell and Miller (2000) stated that: by recording all research activities in a log, developing memos, maintaining research journals, and documenting all data collection and analysis procedures throughout the study, this has the potential to develop a detailed audit trail. The value of audit trail development is twofold; first, the audit trail is a simple but useful strategy for determining the trustworthiness of qualitative inquiry. Second, the research audit trail allows confirmation of the research findings by other researchers, which is critical when used as the basis for further research studies.

4.4.12 *Distinctiveness of the research proposal*

Discrepancies in the perception of teamwork are known to exist in the OR (Gillespie et al., 2012), resulting in less than optimum teamwork. Exploring staff perceptions of their interactions within teams, and the factors that influence these interactions, will generate new insight into the potential for ‘great days’ to become routine and a sustainable part of everyday working.

4.5 **Reflexivity: Throughout the Research Journey**

Throughout the research, a reflexive approach was taken to ponder and contemplate a wide range of issues, striving to maintain the theoretical stance of symbolic

interactionism (Blumer, 1969; Mead, 1934), and to ensure the trustworthiness and credibility of the study (Charmaz, 2014). Examples of this, relating to the development of theoretical sensitivity, positionality of self when studying the familiar, pre-existing knowledge, interactions and access, are outlined in the following section.

4.5.1 *Reflexivity - Theoretical Sensitivity*

Reflexivity was a key feature throughout this research and is embedded within the development of theoretical sensitivity during data analysis (Glaser, 1978; Glaser 1992). Hall and Callery (2001) claim that “theoretical sensitivity emphasises the reflexive use of self in the processes of ... doing analysis” (p.263). Mallory (2001) supports the reflexive use of self by focusing on the researcher-participant relationship and the effects of this interaction on data analysis, and the development of theoretical sensitivity, rather than just data collection.

Corbin and Strauss (2008) describe how personal experience is brought into the analysis in a way that maintains primacy of the empirical data. The most instructive example of this is the analytic practice of theoretical comparison, where incidents from the researcher’s experience are compared with incidents in the data to bring out properties and dimensions of the concept of which both incidents are examples. The incidents from personal experience are not used as data but are only to help the researcher see ways the conceptual phenomenon in question can vary. The properties and dimensions revealed through such comparisons “give us ideas of what to look for in the data, making us sensitive to things we might have overlooked before” (Corbin & Strauss, 2008, p.76).

4.5.2 Reflexivity – Positionality of Self when Studying the Familiar

Treating observations and interviews as both a resource and a topic is another aspect of a reflexive research style, relevant to this research. Reflective thinking seems to occur on two levels: one being the process, which might be viewed crudely as the ‘effective component’, and the second being self-awareness, the ‘affective component’.

It is important that researchers identify their position or role within the research study, as this is crucial to the relationship between the researcher and the researched.

Reflexivity builds on trends in critical qualitative research in which researchers critically examine positionality, considering the situated nature of knowledge and their identities in relation to the research participants (Kohl & McCutcheon, 2015).

Complex and nuanced engagements with positionality are most often critically examined through self-reflexive processes. While reflexivity can take multiple forms, it analyses the influence of social position and the politics of identity on the interactions between researcher and research participants, and the role of power and identity in everyday lives and research (Dowling, 2006).

Insider research is the study of one’s own social group or society (Naples, 2003, p.36). A similar overview is provided by Corbin, Dwyer and Buckle (2009), who claim that insider research is undertaken by members of the same group who share characteristics, roles or experiences, and are familiar with those being researched. Insider research is often discussed in contrast to outsider research, which Greene (2014) highlights as research that is undertaken by those who do not have *a priori* knowledge of the community under study, nor its members. It has been argued that the insider-outsider dichotomy is a false one (Chavez, 2008); and that the role of the researcher should be conceptualised on a continuum, rather than an either/or

dichotomy (Trowler, 2011). Rabe (2003) supports this argument, suggesting that the outsider or insider status of the social researcher is neither static nor one-dimensional, but is rather a continuum whereby the researcher will shift between the different positions associated with being an insider and an outsider. Researchers have to manage occupying a space of betweenness – always both an insider and an outsider – regardless of the similarities or differences that exist between them and their research participants (England, 1994).

To address the challenges associated with the insider/outsider dichotomy, a reflexive approach was used, whereby I developed a self-conscious awareness about who I was as a researcher, the decisions I made in the research process, and their potential relationship or impact on the research setting (Gerrish and Lacey, 2006). Reflexivity is about developing transparency in the decision-making process at multiple levels. Importantly, reflexivity provided the means for me to question my own assumptions, giving due consideration to both the traditions and philosophical backgrounds of the participants and myself, and accepting that there are no privileged ways of enquiring into phenomena because the participants, like myself, are socially situated and constructed. I needed to give careful consideration to if and how *a priori* understandings may silently influence my research. Chavez (2008) adds that one clear disadvantage of insider research, compared to outsider research, is the lack of detachment from the field.

As reflexivity is an essential means of developing and demonstrating rigour, validity and trustworthiness (Cutcliffe & McKenna, 2002), the application of the Alvesson and Skolber (2009) model, alongside the completion of a research journal, supported the identification of issues that affected the research processes, data interpretation and decision making. Using a journal is a positive addition to a doctoral study, as it

enables researchers to maintain effective reflexivity through recording thoughts, feelings and activities, allowing for opportunities of situating oneself in relation to the research process. Although the use of a research journal to document and explore thoughts, feelings and progress is supported, the value of documenting analytical reflections to assist in the development of conceptual understanding is of utmost importance (Jasper, 2005). The development of theoretical memos and the recording of methodological and analytical decisions subsequently enhance the audit trail (Corbin & Strauss, 2008). This stream of consciousness writing (Van Heugten, 2004) allowed the opportunity to interview oneself and talk with others about experiences encountered, thus providing a way of moving forward conceptually and a means of adopting a more analytic strategy. The process of a continual internal dialogue and critical self-evaluation, as well as active acknowledgement and explicit recognition, allowed me the space to determine and ponder my position, and how this could subsequently affect the research process and outcome (Bradbury-Jones, 2007). Keeping a journal for 'self-supervision' and creating an audit trail of my reasoning, judgment and emotional reactions was a useful strategy for maintaining reflexivity (Padgett, 2008).

At times throughout the research journey, I was so embedded in the process, it was difficult to determine how my insider/outsider status changed and how this impacted on the research. Reflexive note taking allowed me the time to contemplate and develop the self-awareness and insight to 'turn back' on my initial reactions (McGhee, Marland & Atkinson, 2007), paying attention to the impact of my own history and understanding of the reactions of the participants. Reflexivity also provided a means to recognise and take responsibility for my own situatedness

within the research, and the effect that it may have on the setting and participants, questions being asked, data being collected and its interpretation (Berger, 2013). Kohl and McCutcheon (2014) claim that simply acknowledging, as opposed to unpacking, one's positionality is not only self-indulgent but also does little to further our thinking in how one's positionality influences the research process at multiple scales. Consequently, I needed to focus on self-knowledge and sensitivity; better understanding the role of *self* in the creation of knowledge; carefully self-monitoring the impact of my biases, beliefs, and personal and professional experiences on the research; and maintaining a balance between the personal and the universal (Berger, 2013).

4.5.3 Reflexivity - Pre-Existing Knowledge

Having shared the teamwork experience with study participants in a previous working life positioned me in the role of the 'insider' and, as such, offered certain advantages (Padgett, 2008 & Blythe et al., 2013); I knew how to dress and orient myself with the research environment and participants. However, entering the OR to undertake observations after several years' absence was not without concern in terms of how I would be received, my professional boundaries, and my integrity. I wondered whether my status as a former OR manager would affect the research. My trepidation at returning to the OR environment was noted on the first page of my reflexive journal:

First Observations (O1): some nervousness about being back in an environment where I held a senior position many years earlier. How will the staff react? What will it feel like being in the OR environment that was once so familiar and meeting

ex-colleagues and new staff? What are my expectations and the expectations of others?

Such concerns were unsubstantiated, as having a pre-existing knowledge of the research environment and the participants within it freed me from the effects of culture shock, and I was able to blend into OR situations without disturbing the social setting (Aguiler, 1981). I noted that being an ex-colleague made for some interesting interpersonal encounters, which featured as a journal entry:

First Observation (O1) Consultant Orthopaedic Surgeon: "Margaret, where have you been? On holiday?" I was taken by surprise, that after an absence of many years, that someone had remembered me and not only that, but it was only as if a short period of time had elapsed since our last encounter. I laughed and then explained the reason for my presence and the purpose of the study. The staff in the OR were supportive of the study and welcomed me. I was made to feel valued and that I had a contribution to make. I felt that this was based on my previous role/behaviour/attitude, and not who I had become. At one point I was asked to "move the operating light", which I did gladly, but then contemplated shortly afterwards as to whether this was a conflict of interest in terms of my status as a researcher. Was this merely part of being embedded within the context?

Mruck and Mey (2007), argue that to be involved personally in a research topic is not necessarily a problem and may even have advantages: personal experiences can lead to insights and perspectives that may remain inaccessible to outsiders. With regard to participants, insider researchers can ask meaningful questions and read

non-verbal cues, as well as the ability to project a more truthful, authentic understanding of the culture under study (Merriam et al., 2001). Ribbens (1989) suggests that researchers should listen and hear what is being said, which may not always be what is being verbalised. Parr (1998) adds that this not only means paying attention to verbal cues such as intonation, nuances, pauses and inflection, but it is also necessary to pay attention to body language. Interestingly, the relevance of non-verbal cues was more apparent during periods of observation and featured heavily in notes captured during those times:

First Observations (O1): I am amazed at the communicative functions of non-verbal behaviours. Although familiar with the OR environment, I was ignorant to the automatic 'power' of facial and body movement as a means of non-verbal communication. Had my absence from the OR environment allowed me the time and space to reliably recognise the importance of nonverbal expressions? Was I so attuned to the environment when I worked in the OR that I did not appreciate the true relevance and power of non-verbal cues? Does the fact that everyone wears the same clothing, and face masks cover the mouth, have any bearing on the reliance of non-verbal cues? Something to note in future observations, perhaps probe further in interviews.

4.5.4 Reflexivity – Interactions

In relation to data collection, it was important for me to have an explicit awareness of the possible effects of the relationship between those being researched and myself, which could be viewed as unequal in terms of power (Blythe et al., 2013).

Sandelowski (1991) notes that power can be considered present at a dynamic level in all human interactions, and in all environments where formal research occurs

(Elwood & Martin, 2000). Blythe et al. (2013) state that for the insider researcher, interaction is more natural, and they are less likely to stereotype and pass judgement on the participants under study. Familiarity with the group and social setting offers the insider researcher an equal footing, knowing how to approach individuals; thus, their colleagues are usually open to talk, often welcoming the opportunity to discuss issues with someone who understands (Bell, 2005). Furthermore, Chavez (2008) claims that insiders can understand the psychological, emotional and cognitive attitudes of participants as well as having a profound knowledge of the historical and practical happenings of the context under study. My previous role and experiences within the OR greatly facilitated the recruitment of participants.

Reflexivity enabled me to acknowledge and understand that in all research practice, researchers must accept the tensions and potential limitations of accessing any defined sample population, due to the exclusion of other potential participants who may also have experiences to share (Tuckett, 2004). Throughout the research process, it was important to maintain a reflexive stance, when considering the sample population, and to ensure that the rationale for sampling decisions was documented to maintain a clear audit trail and facilitate trustworthiness.

4.5.5 *Reflexivity – Access*

Merriam et al. (2001) suggest that assumptions are made that being an insider means easy access, particularly when compared to outsider researchers, who may not have contacts within the social group and possess less knowledge of how membership is attained. From a personal perspective, there were several advantages associated with being an insider researcher one of which was the ability to access the field more quickly and intimately, referred to as expediency of access by Chavez, (2008).

Corbin Dwyer and Buckle (2009), also suggest another benefit of being a member of

the group under study is that of acceptance. Being an insider researcher was initially an advantage, whereby gaining access to the field was relatively easy. Gaining permission to the research context to undertake observations and recruit participants was supported by a consultant anaesthetist who acted as a ‘gatekeeper’, facilitating introductions and email access to potential participants.

Selecting the initial participant for interview required a reflexive approach and discussion with others who were able to guide me appropriately and support the decision-making process. Cutcliffe (2000) suggests that the first interviewee sets the ‘tone’ or highlights the direction for further theoretical sampling. If the first interviewee only has a limited experience of the social process being studied, then subsequent theoretical sampling could potentially reflect that limitation. It was therefore important to select an appropriate participant for the initial interview. After some thought and deliberation, the first participant was selected based on their ability to provide a rich and comprehensive understanding of a great day in the OR, and a reflexive journal entry was made:

Prior to the first interview: the participant is known to me; we have a previous working relationship and therefore a “shared experience”. I feel that the first participant is representative of the individuals who make up the researched group in terms of experiences and shared social processes. The participant has 10 years of OR experience, has been promoted during this time and has studied to degree level.

Lincoln and Guba (1985) support this as a valid approach to theoretical sampling, suggesting that the first participant acts as a ‘gatekeeper’, and only after the initial

set of data has been analysed can the next participant be selected to achieve maximum variation.

Participants in the research were very receptive and cooperative, demonstrating a willingness to share with me their perspective and experiences. This was evident during interviews and observations with staff from different professional disciplines, where there did not appear to be any issues in relation to my role as a researcher. Participants talked freely, during observations and interviews but what became apparent to me after transcription and analyses of the second interview, was that I tended to make assumptions, rather than probing for more thorough responses:

Following transcription of second interview: it has become apparent that occasionally I am making assumption, or that because of my prior knowledge and experience the participant is making assumptions that I already know what they are talking about. “You know what I mean..., or we have already talked about this before...”. Sentences are occasionally left unfinished, acting under the assumption that “you know how it is with...”. I realise that there is potential to omit rich data, or there is a lack of opportunity for the participant to tell their full story. The object of the exercise is to elicit the experiences of the research participants and not merely to gain answers to the interview schedule questions. I need to consider ‘probing’ or asking the participant to explain the meaning behind the assumptions. As I am now aware that assumption can be made by both the participant and myself, I will be able to recognise this in future interviews and use different approaches/tactics. Consider using – “So, if I’m hearing you right, you’re saying....”.

The concurrent data collection and analysis, and reflexive diary entries, provided the self-assurance I needed to adjust my approach to how I collected data. My previous working life allowed me to approach the research with some knowledge about the subject and to address certain topics more easily or even be aware that I should address them at all. I had to be constantly alert and rigorously reflect on how my presence could shape the conversation, and also explain that, while we may have a shared experience, I wanted to learn about their experiences and perceptions. Being able to confidently probe, hear the unsaid, or recognise what would have been a lost opportunity was reassuring, in terms of gaining rich data and truly representing the participants' perspective. I had a desire to promote what Mishler (2005) refers to as *the voice of the lifeworld*. Daly (1992) acknowledges this particular tension, explaining that when the researcher and participants share experiences, the assumption of the researcher's familiarity with participants' realities carries the risk of participants withholding information that they assume to be obvious to the researcher, and researchers taking for granted similarities and overlooking certain aspects of participants' experiences. Aguilera (1981, p.15) argues that insider knowledge is the result of "subjective involvement – a deterrent to objective perception and analysis". The perception of the insider researcher is narrowed, as too much is familiar, and can potentially limit the analysis of social and cultural structures and patterns. The researcher may become normalised to the extent that this threatens to impede analysis (Greene, 2014). Likewise, DeLyser (2001) notes that greater familiarity can lead to a loss of objectivity, thus there is an increased risk of the researcher making assumptions. Etherington (2004) commends the kind of critical subjectivity that keeping a reflexive account allows, particularly in health

research, where researchers have generally been socialised into professional ways of thinking that can affect how they approach their research data.

By being reflexive during the grounded theory research process, I have attempted to create an open style that guarded against a unidimensional approach to the collection, analysis and understanding of the data (Alvesson & Skolberg, 2009), but that could be equally challenged by others in terms of validity and trustworthiness.

4.6 Chapter Conclusion

This chapter has provided a detailed description of the research methods implemented throughout the research process, outlining all stages involved, from obtaining ethical approval, to data collection and analysis methods. In qualitative research, the possibility of several varying interpretations of the data can lead to misrepresentation or misinterpretations. It is of utmost importance that researchers take appropriate steps in presenting a transparent, credible and rigorous audit trail, arriving at decisions that support a robust understanding, and enhance the validity of the researcher's interpretations. Ethical considerations, sampling and the use of different methods of data collection, alongside data analysis, have been explored in detail to provide insight into the research process, presenting an account that contributes to the trustworthiness of this study. Reflexive activity throughout the research process has also been given due consideration, which has been illustrated by drawing on some key examples, enhancing transparency and contributing to a robust audit trail. The interpretation of the data is presented in the following chapter.

5 Chapter 5 - Findings

5.1 Chapter Introduction

The previous chapter presented an extensive discussion of the methods that were used throughout the research process, clearly detailing the audit trail to strengthen the trustworthiness and integrity of the study. This chapter presents the key findings that emerged from the constant comparative data analysis.

Four distinct categories emerged from the data (Table 5): *Antecedents of Familiarity*, *Shared Understanding*, *Positive Disposition*, and *Information Flow*. *Antecedents of Familiarity* being the core category that connected the other three to inform the grounded theory that emerged.

Table 5: Data Categories and Properties

<p>Core Category</p> <p><i>Properties</i></p>	<p>Antecedents of Familiarity</p> <p><i>Leading to Influence</i></p> <p><i>Motivation</i></p> <p><i>Connecting and the Sense of Belonging</i></p> <p><i>Collective Competence</i></p> <p><i>Contextual Understanding</i></p>
<p>Category 1</p> <p><i>Properties</i></p>	<p>Shared Understanding</p> <p><i>Parallel Processing</i></p> <p><i>Mental Models</i></p> <p><i>Common Goals</i></p>
<p>Category 2</p> <p><i>Properties</i></p>	<p>Positive Disposition</p> <p><i>Individual Happiness</i></p> <p><i>Respecting and Valuing</i></p> <p><i>Reciprocating and Sharing</i></p>
<p>Category 3</p> <p><i>Properties</i></p>	<p>Information Flow</p> <p><i>Professional Communication</i></p> <p><i>Standard of Care</i></p> <p><i>Beyond Talk</i></p>

Although categories will be discussed separately in this chapter, they are inter-dependent. This inter-dependency will become clear as the discussion progresses throughout the chapter and the remaining thesis.

Discussion in this chapter is formative, presenting the data in an explanatory way to build understanding of the participants' perceptions. Discussion of the findings in relation to existing knowledge from the literature is undertaken in the following chapter. The presentation of categories is supported by quotes from the observations and interviews undertaken. In keeping with grounded theory methodology, data were pooled into one set, therefore interview and observation data have not been separated out for the purposes of analysis or presentation. However, the source of the data is identified within brackets after each quote, which also identifies the participant number, their job title/status and the line numbers in interview transcripts.

5.2 Antecedents of Familiarity (core category)

The core category of *Antecedents of Familiarity* includes the properties *Leading to Influence, Motivating, Connecting and the sense of Belonging, Collective Competence* and *Contextual Understanding*.

Table 6: *Antecedents of Familiarity: Properties*

Core Category	Antecedents of Familiarity
Properties	Leading to Influence Motivating Connecting and the sense of Belonging Collective Competence Contextual Understanding

5.2.1 *Leading to Influence*

Several approaches to leading and leadership were experienced within the OR context, some of which were perceived to facilitate effective teamworking and others not:

“The staff, you can see... When you see who’s in charge that day, they make an assumption from the minute they see that person’s name on the bit of paper or up on the board. They know what kind of day they’re going to have. Because they know whether it’s going to be manic and haphazard, or they know that it’s going to be controlled. So... And then know that if there’s a problem, it’s going to be solved or it’s not going to be solved. And that’s the difference... You know, you just know that you’re going to have... Whether you’re going to have a good day, or a bad day based on... Based on that leadership. You really do”. (Participant 1 – Senior Operating Department Practitioner, lines 513-522).

Most participants offered their perspective of leadership within teamwork, with varied understandings of the application of the process and how vital the process was in influencing team cohesion. Each role within the OR team was associated with sets of responsibilities and the corresponding skills, capabilities and capacity required to perform the functions and fulfil the job – leading being one. Participants designated a leader through the responsibilities highlighted with their job role, rather than as someone who is selected by the collective team.

In some instances, the process of leading was perceived as an effortless entity, moving freely between team members and influencing the team to accomplish their objectives in a cohesive, coherent and self-managing way. Sharing responsibility and ownership, rather than having a formally appointed leader, seemed to influence the progression of *common goals*:

“So, if you’re working very well together, it doesn’t matter who the leader is, because everyone’s got the same goal” (Participant 8 – Consultant Anaesthetist, lines 23-26).

Creating an environment that encourages team members to resolve problems themselves, and to rely on their own resources rather than seeking expertise from outside of the team, was perceived to strengthen the team in terms of its ability to adapt and become more resilient. This collaborative process of informing and influencing one another resonates with having a *shared understanding*:

“...if you’ve got a good team, you can work seamlessly without a designated leader. So, we all interact well enough that people know what the next step is. A bit like, eh...it would be like reading each other’s minds. At times, when you’ve got a good team, you know the flow is there without someone dictating” (Participant 7, Senior Scrub Nurse, lines 49-51).

In some instances, the data suggested that leadership was a group activity, which could be understood in a holistic sense rather than as simply the accumulation of individual contributions. This allows leadership to be seen as a phenomenon emerging from and situated in practice, rather than as something that a designated leader does – moving away from a leader-centred approach and towards leadership being a collective activity:

“The patient didn’t survive, but the team worked amazingly well. It was just the fluidity of the team, everyone, sort of, pitched in with ideas on what we could do. It was very much a team approach to resuscitation. It wasn’t just one person saying, “This is what we need to do, this is what we do.” Everyone was pitching in with ideas of what we could try and anyway we could help this guy.” There was no leader, as such and I think we were stronger and better as a result” (Participant 10, Physician’s Assistant Anaesthetics, lines 164-168).

It was suggested that such fluidity within the collective team in terms of leadership and attaining team outcomes, was dependant on each individual team member’s ability to lead generally and at certain junctures throughout the operating procedure. It was perceived that effective leadership required a degree of foresight, which was

present in some individuals and absent in others. This absence of foresight placed an additional load on one team member to lead and direct the team:

“The baton passes around. And it passes around a little bit, depending on who’s in theatre. So, you would be... Mentioning no names, an anaesthetist that’s now retired that could drive a list like nobody’s business. I mean, when [name] was there, I didn’t used to bother pushing it. Because it would just happen. Other people, I do need to push it. You know, so I have to be thinking if we’re getting towards the end of the case do I...? You know, send for the next one...? So, we don’t have the portering delays. Other people, I know that I don’t need to do that, depending on who is in theatre, because they’ll do it. So, it’s... It’s a mix and match of styles. Plus, the leadership changes, depending on what stage of the operation you’re at” (Participant 12, Consultant Surgeon, lines 121-129).

Other participants perceived that some team leaders lacked the necessary confidence to direct or inspire the team and rather than the team fail, another member of the team, or the collective team spontaneously adopted and/or distributed the role, leading the team forward to achieve their collective outcome:

“So, in theory, there’s a team leader. Who’s usually one of the band sixes [grade of staff]. Who will lead that [operating] list. Occasionally you don’t get a band six team leader, you get a band five team leader. And then depending on the combination of the staff, then that can be sometimes the surgeon driving the list, rather than the team leader. Or the anaesthetist driving the list, rather than the team leader. Depending on the personalities of the staff. Because we have some of our band five staff who are very keen to lead, and then others who are, kind of, pushed into it. And maybe don’t have the confidence to... To drive that process” (Participant 14, Team Leader, lines 216-222).

This reflects a degree of role interchangeability between professions in relation to leadership, perhaps reflecting leadership as a professional skill common to all health professionals.

Conversely, there were occasions where the designated team leader’s perceived lack of leadership ability negatively influenced the team’s ability to unite and move forward in achieving the collective team aims:

“And then it’s just one person in the team, maybe the leader who isn’t a good leader. And the team seems to fail at the team brief, because there’s no leader” (Participant 5, Theatre Manager, lines 130-132).

Equally, the designated team leader can create a difficult working environment for the team. Participants perceived that they could pre-empt the type of day that would ensue for the team by having prior knowledge and experience of the individual’s lack of leadership capacity and ability to problem-solve:

“The staff, you can see... When you see who’s in charge that day, they make an assumption from the minute they see that person’s name on the bit of paper or up on the board. They know what kind of day they’re going to have. Because they know whether it’s going to be manic and haphazard, or they know that it’s going to be controlled. So... And then know that if there’s a problem, it’s going to be solved or it’s not going to be solved. And that’s the difference... You know, you just know that you’re going to have... Whether you’re going to have a good day, or a bad day based on... Based on that leadership. You really do” (Participant 1, Senior Operating Department Practitioner, lines 513-522).

This notion was further developed, suggesting that poor leadership could create chaos and confusion within the team, which was perceived as divisive in terms of team harmony and efficiency. Furthermore, allocation of individual team members to collective teams by a designated leader was on occasion, seen as a deliberate strategy to disrupt team harmony and make achievement of team outcomes less efficient and more difficult. This demonstrated that individuals within designated leadership roles could enable or constrain the team effort, either intentionally or through their lack of leadership ability:

“And then there’s sometimes people who think they’re leaders and they’re not. And they just cause chaos. You know they are trying to anticipate all this... And just end up confusing everybody. It ends up being inefficient” (Participant 6, Senior Anaesthetic Registrar, lines 411-414).

Leaders who constrained the team effort or sabotaged the team's cohesion were perceived as deliberately undermining team harmony through isolating the appropriately skilled members of the team who worked well together from one another. This opinion appeared to be based on the views that others held of the individual, which formed and became their leadership 'reputation'. It was apparent that appointing a team member to a position of formal leadership could not guarantee positive, constructive leadership behaviour. Predetermined assumptions were made based on the leader's 'reputation' as to how the team would perform and harmonise, rather than considering the internal team climate exerting a conditioning influence on leader behaviour in terms of how they functioned. It was also suggested that this type of interaction could cause the team to fall apart at a basic level, rather than support the team to function as cohesively as possible:

“You know, you can see, when you've got the experience – this is what I try to enforce to the band sevens, when they're supposed to be in charge. Why have you got that person in there, because they're not going to work well together... But they have this way of thinking, well, they've got to be in there sometimes, it's their role. But they're not in the best place for the team. The team is not going to work well with that person in, but there's just no telling them” (Participant 5, Theatre Manager, lines 112-116).

The same participant emphasised the deliberateness of such an approach, suggesting a disconnection between assigned leadership and what those leaders actually do in the practice setting. It was perceived that their approach tends to begin with the premise that their leadership style is a choice that, once made, leads to a team who lack cohesiveness or are unable to collaborate as effectively:

“We need to have people who are in the right place at the right time, doing the right things safely and that's not always the case because of rubbish leadership. It's a deliberate ploy that has dire consequences for the team” (Participant 5, Theatre Manager lines 105-106).

Furthermore, it was recognised by other participants as not only having a detrimental effect on efficiency but the collective team effort and attitude:

[Talking in relation to lack of leadership] “It’s slower. There’s less communication. There’s less engagement and it’s just long and hard. There’s no pleasure in working in that team” (Participant 11, Consultant Anaesthetist, line 206).

This was also noted by another participant, although there was no direct reference to leadership, rather social connections and collaborative working:

“Your work-friendship circle and your teammates are a massive thing. Because if you don’t get on with the people that you’re in theatre with then that day will just be very long and hard” (Participant 7, Senior Scrub Nurse, lines 157-158).

When designated leaders were perceived as ineffective or had the potential to upset the team harmony, natural leaders would intervene to pursue the team goal whether intentional or not, assuming the leadership role with little or no resistance from the designated leader:

“There are some very good senior nurses in theatres. There are some who are probably not quite so good on... Well, it’s a mixture, isn’t it? There are people who are good leaders themselves. There are people who are not terribly good leaders, but seem to... But are actually quite happy for somebody else to take the lead. And that may be a surgeon or an anaesthetist or another member of theatre staff. And I suppose there’s people who feel they should be in charge, aren’t actually terribly good leaders, and make a bit of a pig’s ear of it. By being disorganised and hacking everybody off” (Participant 9, Consultant Anaesthetist, lines 133-139).

Delayed decision making was recognised as having the potential to impact on team efficiency due to uncertainty around designated leadership. Occasionally, some teams found it difficult to make collective decisions because the responsibility and control had not been delegated or devolved to the team, or a designated leader within the team. This lack of consensus required the decision-making process to be

escalated to a more senior team member outside of the OR. This demonstrated reliance on the knowledge and expertise of others who were not directly involved with the event or activity, and an apparent reluctance to use their own perspective in the decision-making process. Before the senior team member could make an informed decision, important information was conveyed by a method of oscillating between the OR and the decision maker. This distorted method of gathering information was perceived to delay decisions and create team inertia. Over-dependence on a senior member of staff outside of the OR may suffice during periods of team stability and routine workloads, but delayed decision making during unexpected events, where time is critical, could have detrimental consequences:

“There were a couple of cases where the decisions get delayed. There were ultimately made, but there was... There was back and forth. And it wasn’t as clear cut [as to who the leader was] as maybe it could have been. Because the decisions were getting passed up and up and up. And there had to be that stopping point. But, for me, when I was seeing, sometimes, sort of, band eights making decisions, when maybe the band six could have made that decision, it felt like either the band six or seven didn’t feel that they had that... That power, that control that maybe they should have. Which I don’t think really... Well, it definitely wasn’t as efficient as it could have been” (Participant 13, Student Nurse, lines 350-355).

Leading by example was perceived as a way of influencing others to behave and respond in a way that is believed to be valuable and appropriate in achieving team objectives. Through actions, standards are set, and expectations are such that this influences others to emulate behaviour to meet the standards. Setting standards through positive actions is perceived to increase productivity, but needs to be clearly articulated to team members so that they can support the actions that are necessary to achieve team objectives:

“I don’t ask anybody to do anything that I wouldn’t do. And that’s what I expect of my team. That everybody does everything. And I think that tends to work well. By showing... Well, sort of, leading by example, so to speak.

And by having... Being able to show that you are more than willing to get your hands dirty at the end of the day. And not just disappear off when the cleaning is to be done” (Participant 7, Senior Scrub Nurse, lines 206-210).

5.2.2 *Motivating*

Most participants recognised motivation as a fundamental element in keeping the collective team, or individual team members, consistently interested and committed to achieving team objectives. Motivation has intrinsic and extrinsic facets, occupying an important position in encouraging the collective team to make positive contributions to achieving objectives. There was some recognition of individuals that were adept at self-motivating, who were perceived as being able to instil and inspire others to achieve outcomes:

“Well, we have good teams, and we have bad teams. I think the main characteristic that makes a team work well is motivation. You’ve got individual members on the majority of the team motivated to motivate the people that aren’t motivated. And within that there’s subgroups that aren’t motivated, and there is a subgroup that is massively motivated. So, when it goes well, I don’t notice that it’s gone well. It’s hard to put your finger on what makes a good team and what makes a bad team. Your day is just more satisfying in a good team” (Participant 9, Consultant Anaesthetist, lines 55-61).

This was further demonstrated when one participant perceived that an individual was able to influence the level of motivation in others by energising and guiding the collective team towards achieving goals:

“I’ll tell you what goes down really well as well, is having a... You’ve got a surgeon, you’ve got an anaesthetist, but you’ve also got... If you’ve got xxx in site A, he hosts the team brief fantastically. And he energises and motivates his own nursing staff, which then gels with the medical staff. It’s really noticeable when he’s there. He directs the surgeons; he directs the anaesthetists. The team is already working together” (Participant 11, Consultant Anaesthetist, lines 195-200).

Having the ability to motivate was not only recognised as being able to energise and strengthen the team effort, but was associated with improved and sustained performance:

“I think I got them motivated. I got them all buzzed up and... You know, so everybody was wanting to work efficiently, thinking ahead, rather than daydreaming” (Participant 12, Consultant Surgeon, lines 72-74).

Motivation was perceived as an enabler in flattening hierarchical gradients between medical and nursing staff, promoting enhanced interdependency and teamwork:

“Whereas a motivated team, there’s no us and them. The doctors and the nurses are recognised as part of the team and it all just works perfectly” (Participant 9, Consultant Anaesthetist, line 79).

Motivation also seemed to fluctuate and was perceived to be dependent on social circumstances outside of the work environment:

“I think it can be dependent on which theatre team you have, or the characters within the theatre team. Some of them are more driven than others. I think it can... And it depends on motivators. You know, what they’ve got, what baggage they’re carrying on that day and what... What they’re focused on. And just how motivated they are” (Participant 12, Consultant Surgeon, lines 93-97).

Lack of motivation was aligned to an unvarying and routine workload, while individuals who were perceived to be self-motivating were more likely to have a positive attitude, and to change and adapt more easily:

“Part of the problem within site B is nurses don’t ever go anywhere else. So their work is very limited. It’s... It’s very routine. In the rest of the Trust, it’s much more global and interesting, and therefore it motivates people more. You go to site A, it’s all dynamic. And part of the... Not the problem is that the best people... The motivated people went to site A when they moved. They wanted the challenge of change as a nurse. Nothing much changes here [site B]” (Participant 9, Consultant Anaesthetist, lines 95-99).

Beyond self-motivation and having the ability to energise others, other external factors influenced collective team motivation and enhanced efficiency and performance. Encouraging the team to work in a mutually beneficial way and rewarding them for their endeavours was recognised as being motivational, highlighting that teams respond to incentives. Conversely, it was suggested that organisational policy caused dissatisfaction, and motivating the collective team proved more difficult in such circumstances, creating a team that was perceived to be less efficient:

“What motivates teams at the weekend, which is interesting, is the nurse can go home at the end of the day. We can do five operations by 3.30 at the weekend. We can do three jobs [operations] by 5.30 during the week. Because people are willing to work through lunch. They don’t want their 35-minute lunch break or their 15-minute lunch break. The thing that demotivates the nurses is there’s a clock-on, clock-off process with the hand scan system. They’re not given that at the weekend. They’re being paid a set amount to get the work done. And that massively improves our efficiency” (Participant 9, Consultant Anaesthetist, lines 141-147).

It was further suggested that a motivated team was unified in a common goal and that team members were perceived as individuals with unique views rather than professionals from different disciplines:

“Whereas a motivated team, there’s no us and them. The doctors and the nurses are recognised as part of the same team” (Participant 11, Consultant Anaesthetist, line 79).

Motivation appeared to create a working environment that fostered teamwork to reach *common goals*. It was perceived that motivation was driven by relationships and a need to work well together, rather than by role and status. Motivation through affiliation with other team members would suggest a productive work atmosphere that strives towards team unity and team success through a *shared understanding* and *common goals*.

5.2.3 *Connecting and the Sense of Belonging*

Most participants perceived that connecting with team members on a social level through everyday interactions allowed bonds to form and an affinity to develop. Shared experiences provided a common platform in terms of ‘getting to know’ and understand one another, suggesting that the social connections were intertwined and interdependent. This depth of insight into one another’s character and behaviours appeared to promote team efficiency and harmony:

“But when you’ve got, say, four or five people that work really well together, then surely it is in the best interest of the patient to have those people working together, and rather than them fighting all the time. Because we know how each other works, really. We’re anticipating their needs; we’re anticipating the patient’s needs. It makes life easier for everybody” (Participant 7, Senior Scrub Nurse, lines 171-175).

However, the same participant revealed that on occasion, such close attachments with one another were deliberately broken. Such hesitance in relation to breaking social bonds is an indicator of the power of the need to feel connected. Dissolving team connections, however temporary, was perceived to adversely alter the status quo within the operating room:

“And sometimes if you’ve got a team that works well together, they’ll look at that and go “Oh, they’re getting a little bit close. I’d separate those off.” And so, at times, that upsets the whole balance of the theatre” (Participant 7, Senior Scrub Nurse, lines 168-170).

The data suggested that social connections and thus significant interpersonal relationships that were positive and developed over time through everyday interactions:

“So, for instance, people who have worked with consultants who like things done in a particular way... She tends to allocate people, you know, who know these people and have worked with them a long time” (Participant 1, Senior Operating Department Practitioner, lines 147-150).

Positive social connections were also perceived as having the potential to cultivate collaboration, trust in one another, and to reduce workplace stress:

“So, if you’ve worked in the team before, people know what you’re like. People, you know... You know what other people are like. You know what people are like with patients, you know what they’re good at. It’s far less stressful when we know each other” (Participant 6, Senior Anaesthetic Registrar, lines 450-453).

Working interdependently with others was not always perceived as easy. The data suggested that not all team members were prepared to connect to the vision or goal of the collective team, disrupting the team harmony. This lack of connection with other team members was perceived as divisive and negatively influenced the team effort, resulting in the perception of an inefficient team:

“There’s definitely people that put the spanner in the works and slow things down. I know that when I get a couple of the surgeons that I work with, the older ones, that want the anaesthetic room, they try and sabotage the process” (Participant 9, Consultant Anaesthetist, lines 213-215).

The same participant developed this insight further, suggesting that self-interest to achieve personal goals was more powerful than committing to the achievement of collective team goals or their desire to connect as one. This social disconnection was perceived as lacking mutual respect for other team members:

“Put a saboteur in the mix, and there are saboteurs, invariably they’re the ones that will be going home at five o’clock because they don’t care if it runs until seven... The I’m alright Jack attitude” (Participant 9, Consultant Anaesthetist, lines 219-221).

Connecting with one another went beyond individual social connections. Sharing performance objectives from the outset, among a collective team with

complementary and appropriate skills, suggested that team members were willing to invest in, and commit to a common vision:

“Teamwork to me means every individual cog in the wheel needs to function and be integral to that wheel, in order to make our day work. So, the teamwork starts even from the cleaners, as far as I’m concerned”
(Participant 11, Consultant Anaesthetist, lines 43-46).

The team was prepared to adhere rigorously to a cohesive, inclusive working approach, operating flexibly to achieve their common goals even when faced with adversity. Being connected and having a sense of belonging would appear to unite team members around their purpose as they strive to deliver. In turn, purposeful and meaningful work seems to create ownership, engagement, accountability and commitment to the team:

“Nobody wants to go to work to do a bad job. And if you’ve got good... Even if you’ve had a bad patient outcome, which is, you know, always disappointing, but if you’ve all worked well together and you know that you’ve done absolutely everything that you can, and everyone has worked to the best of their ability, you know, you’re satisfied. In fact, we’re all satisfied” (Participant 6, Senior Anaesthetic Registrar, lines 521-526).

Connecting in this way allowed the team to make several decisions and to problem-solve rapidly, increasing productivity with mutual accountability for the results. The ability of the team to connect, act and react when it mattered most demonstrates heightened interprofessional performance:

“This is a while ago now, and I’d grossly over-booked the list, because I’d put an extra case on that just had to be done, because she was very symptomatic. So, I knew there were too many cases. And I said to the anaesthetist I know there’s too much on. I’m sorry. I couldn’t cancel anybody. And then I put this extra one on. “So, guys, we’re going to have to be efficient. We’re going to have to get the cases cracked through.” So, we had six cases on. And there was no downtime. The anaesthetist was quick, there was no waiting for patients, and everybody knuckled under, and we were finished by quarter to twelve. Which was quicker than we would do normally” (Participant 12, Consultant Surgeon, lines 52-60).

Furthermore, connecting with the team was not only perceived as improving efficiency and productivity but increased overall job satisfaction:

“At times, as well it’s the surgeon that you’re working with. So, if you’ve got a very pro-active surgeon, things can sort of... The team tends to ... It’s just the gel of the team that assists in a day-to-day... Just a day... A good day in theatre, so to speak” (Participant 7, Senior Scrub Nurse, lines 56-59).

By contrast, a team without the ability to connect or having a sense of mutual accountability for the collective team outcomes tended to remain within one mode of working. This lack of shared commitment to a common purpose was perceived as inefficient and rigid:

“They’ll not set up from the morning case for the afternoon. They’ll go for lunch first and then come back. And they won’t send for the patients in the team brief as the team brief is happening. They’ll use an excuse – the list might change. Well, it won’t. We’ve already spoken about it on a briefing break. There’s lots of little tricks to slow the list down” (Participant 9, Consultant Anaesthetist, lines 230-234).

In this scenario, the team were perhaps working in a multi-disciplinary rather than interprofessional way.

5.2.4 *Collective Competence*

It was evident that demonstrable competence is multifaceted, combining theoretical and practical knowledge, cognitive skills, values, attitudes and behaviours that are demonstrated through actions in a constantly changing OR. This required flexibility in the way an individual or the team acts then reacts to maintain and improve individual and team performance:

“So, what I find is if there’s an emergency, if there’s less people and it’s out of hours, you tend to be more efficient. And I don’t know why that is. But

you can have a more junior team, but things go well and get done, you know how competent and capable each member of the team is... I think you cut out a lot of the middlemen” (Participant 6, Senior Anaesthetic Registrar, lines 455-459).

Through interpreting the situation in context, and having prior knowledge and experience, individual team members can react to a situation following behaviours they have previously found to succeed. Coordination of interdependent interactions, informed by knowledge and dyad experiences, was perceived to be implicit:

“You know, I’m sorry I’m rather old-fashioned, but the joy and happiness of working with a scrub nurse that knows what I’m doing, knows the operation, and that I don’t really need to ask for anything because they’ve given it to me already. And that is just... It’s like a dance, it’s almost like poetry. It’s lovely” (Participant 12, Consultant Surgeon, lines 221-224).

Competence was also associated with attributes, skills and knowledge aligned to specific job roles. Having a set of context-specific core job qualities seemed to indicate a standard or level of competence expected within job performance:

“So, you get a flavour of, you know, who does what and how to do things. So, you don’t have to keep, necessarily, saying, “Can you do this? Can you do that?” Because they’re already doing it. And you know that they’re going to do it” (Participant 9, Consultant Anaesthetist, lines 511-514).

When the team come together to act in an emergency context, having insight into each other’s job roles and levels of competence seems to be implicit. Individual team members are clear about one another’s level of competence and expected contribution to the collective team. Individual role performance within this context was also perceived to increase efficiency and flow among the collective team, creating a calm environment within an emergency context. This suggests that competence and fluidity of the interprofessional team is dependent on both technical and performance capabilities, in addition to theoretical and practical knowledge.

Knowing the skills, capabilities and capacity of one another's roles, rather than knowing the characteristics or personality of the individual suggests that the level of competence is inherent to the role, particularly in the emergency context:

"They had the consultant coming in, getting scrubbed up. They had the patient being brought in, it was very, very calm but very efficient and very flowing. And everyone knew exactly what they were doing. Which meant the patient was very... Was put at ease. The partner was put at ease as well. And generally, there was a very good feeling in the room, even though it was an emergency case, everything was very positive... Very positive. And it had a positive outcome. And I think particularly thinking about teamwork that was... That was exactly what was needed at the time" (Participant 13, Student Nurse, lines 105-111).

The ability to work efficiently in terms of job role and performance appears to be based on contributing factors that underpin competence, including contextual knowledge, experience, familiarity, and prior exposure to similar contextual situations:

"But there are certain people that I would pick every time. Over other people. And it's not just because of experience, there's other reasons. But because I know them and I know they'll go and do the job, regardless of the situation. They can cope with anything that's thrown at them" (Participant 7, Senior Scrub Nurse, lines 270-271).

Furthermore, perceptions of individual team members having or lacking the appropriate level of skills and knowledge associated with their job role was viewed as affecting the stability of the working day for others:

"Again, another thing that can affect your day, is the skills and knowledge your anaesthetist may have. It's whether they are a trainee – some trainees are really good. There's some aren't so good, they just haven't got it, they haven't got what it takes" (Participant 4, Senior Operating Department Practitioner, lines 285-287).

One participant associated competence with commitment, acknowledging that other skills are important for good practice and cohesive teamwork:

“We work as one, rather than individuals and that’s what makes a great day, in my opinion. So, I... I have a core group of people that I would more than happily pick, I know exactly what they are about, they’re competent and committed. And that core team of people would be somebody I would pick if I needed surgery” (Participant 7, Senior Scrub Nurse, lines 274-276).

The data suggested that competence could be distributed, with individuals fixed at a certain point within that distribution. This participant’s perception implied that individual competence is static and can neither improve nor deteriorate:

“But, you know, competence is a normal distribution. And most people are somewhere in the middle, and some people are excellent, and some people are diabolical. And it would be nice to be able to shift it to a skewed distribution and make everybody excellent, but we live in the real world” (Participant 12, Consultant Surgeon, lines 253-255).

In addition, remediation was lacking for those individuals perceived to be unable to perform the duties of their role, or to perform them to the standard required by the team. Failure to deal with underperformance was unsettling for team members who were able to meet or exceed team expectations. There was evidence to suggest that underperformance was a wider organisational issue:

“They’re not managed at all well. And that’s part of the problem with the NHS, is we don’t manage the under-performers very well. They’re just allowed to continue in post, which is demoralising for everyone else who works hard. Or they’re moved laterally, and the problem just carries on somewhere else” (Participant 9, Consultant Anaesthetist, lines 240-242).

Conversely, competence and experience were explicitly linked, suggesting that competence can be developed over time. Furthermore, collective team competence and experience was perceived as an opportunity to share decision making. Those with more experience were able to make sense of novel and non-routine events, facilitating team functioning and adaptation:

“I’m glad it wasn’t a bad outcome, because if it had been a bad outcome, it would have been awful, but the saving grace was the consultants, because they were both very experienced and with experience comes competence. And they held it together, if you see what I mean? Like, the heroes of the thing” (Participant 6, Senior Anaesthetic Registrar, lines 251-256).

This was further advanced by one participant, who perceived shared decision making to be a collaborative process, based on the competence and experience of other team members. This would suggest that through sharing experiences and allowing other team members to contribute to decision making, that the best available evidence will be offered to support the choices made. Further, suggesting that the ability to share and co-construct working knowledge underpins the decision-making process and the development of innovative solutions:

“Again, when I’m working with competent people with experience, if I’m in charge then let’s use everybody around me to make a decision” (Participant 14, Team Leader, lines 99-100).

Being able to understand and anticipate without the need for conscious reasoning was perceived to enhance interactions, strengthen interpersonal connections and reduce frustration:

“It’s intuitive. I like nurses that watch the operation, so they know what happens next and I get really annoyed with trolley polishers” (Participant 12, Consultant Surgeon, lines 230-231).

5.2.5 Contextual Understanding

Having a contextual understanding of the environment, equipment and the potential of the team was significant, with participants perceiving this to be instrumental in creating familiarity and effective team performance. It was evident from the data that familiarity with individual team members, the collective team and the

environment, afforded the accumulation of mutual experiences and the opportunity to establish and develop patterns of work:

“It makes life... I think it makes life much easier, if you know the strengths and skills, and even the preferences of the people you’re working with” (Participant 8, Consultant Anaesthetist, lines 101-102).

The notion of having similar common experiences was perceived to be a critical component of positive interprofessional collaboration between team members, allowing for optimal team performance when the team needed to react to unexpected situations:

“It’s essentially a nice working environment. Familiarity again. Because even if you’re working with somebody that you don’t get along with, if you’ve worked with them before it’s easier. If you see what I mean? So having set teams – and that’s what’s good about the emergency team, it tends to stay the same all day” (Participant 6, Senior Anaesthetic Registrar, lines 504-509).

The influence of familiarity within the team and a collective ability to draw on previous experiences was recognised as an important predictor of performance. Such interactions among team members who were familiar with one another, and who were able to understand the context of the situation and their role within it, enabled them to work more collaboratively:

“I had a death a couple of weeks ago – but because everyone was so... You know, worked together so well as a team because we had the experience of working together before, then... You know, it doesn’t... It doesn’t hurt you so much. It doesn’t make you feel so bad about the clinical outcome... You know, you’ve lost a patient. And you know, years ago, that would have broken my heart. But now we want... I actually get out of it... It’s completely different. And I know that’s experience. But because everyone pulls together in those situations and works nicely together, and we know each other then those things... You know, you actually think of the positive rather than the negative” (Participant 1, Senior Operating Department Assistant, lines 488-497).

Furthermore, familiarity within the team; with individual preferences; the environment and cumulative experience, were identified as having the potential to promote a synergy among the team, creating a positive effect on interprofessional teamwork:

“They’re all hard-working. Good knowledge base. Most of them probably have been in theatres for a good while and know, you know them and they know you, the ins and outs. They stick together through thick and thin, and they support one another. I would turn to them if I had a problem” (Participant 7, Senior Scrub Nurse, lines 282-283).

Conversely, being unfamiliar with an individual’s preferences was identified as a factor in the breakdown of collaboration, causing dissonance between team members:

“And, yeah, it just went downhill from there. It was like... He didn’t tell us that he wanted certain equipment. He didn’t tell us what sutures he wanted. We don’t work with you every day. We work with you once every 12 weeks, we’re unfamiliar with your likes and don’t likes. But every time, we just ended up arguing because he was like, ruh-ruh-ruh... All day. You know, it was just horrible” (Participant 14 – Team Leader, lines 184-192).

The inability of junior team members to draw on previous experience or understand the context in which they were working was viewed as stifling good collaboration and performance. This raises a question about the degree to which experience mediates or moderates performance:

“Because I know that people who I’ve worked with for a long period of time, who have the experience, I know I don’t have to micromanage them. When you’ve got a junior team, you know, sometimes people are more confident than they actually are. And will just go off... “Well, I’ll do this.” But then go head-long into things that can make life for them and for the whole team more difficult” (Participant 3, Senior Recovery Nurse, lines 72-76).

As interprofessional teams within the OR are dynamic, fluid and, on occasion unstable, previous experiences within stable teams were used as a frame of reference

to compensate for unfamiliarity. Drawing on prior knowledge and experience allowed strategic decisions to be made when faced with issues of uncertainty.

However, team performance was perceived to be suboptimal under such circumstances:

“You know, we haven’t got the right drugs, we haven’t got the right needles, we didn’t know each other – but it was only because of experience that we both, you know, had this logistical approach that we were safe. If you see what I mean? It was really clumsy, and by far the most un-slick...So familiarity was a bit of an issue for me. But on top of that what I wasn’t aware of at the time was the staff that were in theatre weren’t used to working in that theatre either... So, it was an emergency situation with two people that were kind of unfamiliar with one another” (Participant 6, Senior Anaesthetic Registrar, lines 186-189).

5.2.6 Category Summary

The category *Antecedents of Familiarity* suggests that the more knowledge team members share with one another, the more synergy the team is likely to achieve. This cumulative effect increases team efficiency and subsequently harmonises effective team performance. The core category, *Antecedents of Familiarity*, considers how the structures of teamwork interact to affect team performance, identifying moderating variables as the emergent properties that support teams to remain flexible in responding to change within the context of the OR. Within the core category, there are five moderating properties, including *connecting and the sense of belonging, collective competence, contextual understanding, leading to influence and motivating*, and there is evidence to suggest that knowledge sharing helps a team respond with speed and efficiency when faced with adversity, without duplicating effort and wasting team resources. Conversely, lack of insight and poor knowledge sharing within the subcategories of *Antecedents of Familiarity* may induce a situation whereby the team is more vulnerable to suboptimal performance.

5.3 Category 1: Shared Understanding

The category of Shared Understanding includes the properties of *parallel processing*, *mental models* and *common goals*.

Table 7: Shared Understanding: Properties

Category	Shared Understanding
Properties	Parallel Processing (thinking ahead) Mental Models Common Goals

5.3.1 Parallel Processing

Participants perceived that by collectively having a similar and accurate understanding of the work to be accomplished, they were able to combine resources to resolve task demands and, in so doing, work in a way that was effective and harmonious:

“You know, I’m sorry I’m rather old-fashioned, but the joy and happiness of working with a scrub nurse that knows what I’m doing, knows the operation, and that I don’t really need to ask for anything because they’ve given it to me already. And that is just... It’s like a dance, it’s almost like poetry. It’s lovely” (Participant 12, Consultant Surgeon, lines 221-224).

This suggests that each member of the team is conscious from the outset of the collective team intention, which may not be the case. The notion that the collective team has the intuitive ability to perform efficiently implies that there are other influencing factors, such as ‘knowing’ team members, and social connections that have developed as team members interact over time. Furthermore, this suggests that at a team level, parallel processing is the process of aligning team members with the

demands of the task and is a function of team learning, skill acquisition and development. This implies that as team members accrue experiences and skills, they learn how to work together in a seamless and cohesive way.

Being able to accomplish a number of component aspects of a role simultaneously was perceived as contributing to improved efficiency within the team. This was closely aligned to experience and the ability of the individual to have foresight in relation to the team task, along with considering the individual differences and capabilities available across the team members:

“Then being able to anticipate, being able to prepare, being able to... So, ... I think being able to anticipate and to think ahead and plan ahead means that your team works more efficiently” (Participant 10, Physician’s Assistant Anaesthetics, lines 79-82).

This suggests that many aspects of a process are considered simultaneously, continually and seamlessly throughout the episode of activity. The ability to process many aspects of a complex working environment simultaneously was perceived as being able to activate and spread a positive energy throughout the team:

“It’s about experience. And it’s about common sense, and it’s about parallel processing. And it’s about thinking outside of the box. And it’s about being creative within a day to rationalise that limited time available. And, on the whole, when I’m there, it’s a great day. And I feel that when you’ve done that with a good... With a team, it energises the team as well. They get more work done, but actually feel better than if they’ve hardly done any work” (Participant 9, Consultant Anaesthetist, lines 182-186).

Furthermore, enablers to team effectiveness are noted when team action processes are appropriately aligned with the effort of the team and the demand of the task. This includes maintaining a ‘big picture’ perspective in terms of parallel processing, extended beyond merely managing material resources and time, but the utilisation of human resources:

“You want your team to think out of the box a little bit as well. So, I’m alright Jack, in my theatre. But actually, next door – two theatres down – can’t get their breaks. And it’s just trying to get them to think about, actually, I’m finishing now – I’m going down to relieve – to get them to go down to colleagues...So it’s just thinking a little further, juggling resources and managing time...all at the same time” (Participant 2, Charge Nurse, lines 179-183).

Some team members lacked this degree of foresight or the ability to process several different aspects of their working environment at any given time, diverting their attention solely to their job role:

“I think sometimes people get stuck in their own roles, that they don’t understand the bigger picture, the helicopter view” (Participant 4, Senior Operating Department Practitioner, lines 201-202).

The participant also seemed to suggest that when some team members were fixated on their job role, they were unable to engage in outlying events or actions, which indicated they lacked a shared understanding of contextual influences:

“It’s not just what goes on in your own theatre that you have to deal with, it’s what goes on outside of that as well” (Participant 4, Senior Operating Department Practitioner, lines 24-25).

It would appear that parallel processing at a team level combines the resources, knowledge, skills and effort of each individual to resolve the demands of the task, which unfolds across the team and over time through repeated interactions. Perceptions are such that, once a team is working together in this way, the emergent result is team effectiveness. Individual team members who have yet to see the ‘*bigger picture*’ and ‘*get stuck in their own roles*’ may lack the knowledge, skills and effort that are accumulated over time to shift them to the dynamic process of teamworking and the ability to parallel process.

5.3.2 *Mental Models*

Sharing a common understanding of the work to be accomplished facilitated work alignment and tacit coordination. There was a perception that team members had the same understanding of the outcomes to be achieved and the means by which to achieve them, which was associated with improved efficiency:

“So, our team aim is to get through the cases as quickly, efficiently and safely as possible. Yeah, a shared mental model” (Participant 12, Consultant Surgeon, line 43).

Furthermore, one participant perceived that a shared mental model of what needed to be achieved could be coordinated without the need to communicate overtly:

“So... Nurses, consultants, ODPs, sort of, almost talking to themselves and sort of running through what they'd done. But on a very quiet, efficient basis. They weren't talking to one another, but they knew what to do” (Participant 13, Student Nurse, lines 143-145).

This was further clarified by another participant who suggested the notion of a mental model was aligned to a cognitive process, which was constructed in-situ, and referred to knowledge or information that was common throughout the team:

“On one day, if you've got a good team, you can work seamlessly. So, we all interact well enough, people know what the next step is. I can't say, but it would be like reading each other's minds” (Participant 7, Senior Scrub Nurse, lines 49-51).

When team members lacked confidence in their ability to understand the tasks and the team outcomes to be achieved, there was a perception that this influenced the collective ability of their team to accomplish the tasks successfully. The lack of a shared mental model by one team member was perceived as disrupting the vision of the other members, suggesting that this incompatibility has the potential to create an inefficient and idling team effort:

“If you’ve got that team member who’s not that confident... They can’t seem to get the team... They can’t get it off the ground. They can’t... They haven’t got the structure in their own mind of how it’s going to work. And it just seems as if it’s not going to go anywhere quickly” (Participant 5, Theatre Manager, lines 125-128).

Conversely, having a shared mental model or collective cognition enabled the development of group confidence, and was noticed to enhance the unity of the team and the overall team effort. This was recognised as having the potential to energise the team, which was associated with an increase in team effort and productivity:

“And just... You know, and just generally everyone is working from the same song sheet. So, everybody knows right at the end of this, right, what we’re going to do is x, y and z. X, y and z get done, and then we’ll go and have a cup of tea.” (Participant 7, Senior Scrub Nurse, lines 210-213).

One participant suggested team cohesion and a shared mental model involved developing the feeling of confidence through cognitive and emotional preparation:

“Making sure that everybody is in the right place at the right time. Everybody knows what they’re doing. That’s one of the big things. Because we do the boards the night before [allocation of staff to theatres]. And some people psych themselves up to come in to work the next day. It’s a psychological thing.” (Participant 5, Theatre Manager, lines 316-319).

Understanding what everyone else brings to the team and how other team members think and behave supports collective cognition through a shared mental model, and an emergent fluid team dynamic:

“If you are working with a team that you’ve worked with for a while, again you’ve got that flow and you know how each other works.” (Participant 7, Senior Scrub Nurse, lines 94-95).

5.3.3 *Common Goal*

Interdependence and mutual relationships between team members was associated with improved teamwork. This shared team vision, or interdependence in terms of

achieving objectives, suggests that common goals cannot be accomplished independently or separately from the collective team. Collaboration and mutual dependence were perceived to positively influence the teams' capacity to achieve collective objectives effectively:

“So, teamwork, to me, means that a group of individuals would be working together towards a common aim or goal. And within that improved teamwork means improved, sort of, cohesion. Cohesiveness. In that everyone knows the aim and they're able to work together, sort of, symbiotically to... To... Make sure that it works effectively” (Participant 13, Student Nurse, lines 59-63).

Perceptions were that such interdependence did not require the collective team to be organised or directed by one team member, but that the team objective was shared in some other less tangible way. This approach to interdependence and achievement of team goals was noted during the observation periods, whereby team members, either individually or together, problem-solved and 'worked around' potential threats to the team's objectives and efficiency:

The operating surgeon is 'scrubbed up' and ready to proceed with the operation, which is described on the operating list as a hip revision. He chats quietly to the surgical assistant about his approach to the surgery and how he would like the patient positioned. The patient is in the anaesthetic area [a discrete area within but not separate from the operating room], being prepared and anaesthetised for surgery. The anaesthetist and anaesthetic assistant are with the patient. The atmosphere is calm and there are no other distractions. The scrub nurse is preparing and checking through the sterile instrumentation and notes that an instrument specific to that surgeon's requirements is missing. The scrub nurse beckons over the circulating nurse with a head movement and whispers to her that she is missing the surgeon's preferred instrument for a specific part of the revision procedure. The floor nurse responds in a whisper - "don't worry, I double checked earlier, and the instrument is on its way in a taxi from another site, it'll be here in 5", the scrub nurse replies, "thank goodness". The surgeon continues to chat to the surgical assistant. (Data extract, drawn from Observation 1).

Common solutions included: responding to equipment failure; patients not being consented for surgery, which required a change to the order of the operating list; and surgical instrumentation being transported between hospitals.

The anaesthetist informs the team in gynaecology theatre that she has changed the order of the operating list, as the surgeon hadn't yet consented the first scheduled patient and the second patient [who was also diabetic] had been consented. To prevent a delay in the operating start time, the anaesthetist suggested that the second patient be called to theatre first, and the operating list changed to reflect this. Other members of the gynaecology OR team were amenable to this suggestion as the list was 'fast-paced' and they wanted to 'get cracking'. (Data extract drawn from Observation 3).

Team members were accustomed to problem-solving and working around potential threats. This did not require guidance or co-ordination from a team leader but was implicit behaviour within the team, demonstrating an ability to self-manage and respond appropriately for the 'greater good' and successful achievement of the common goal:

"So, if you're working very well together, it doesn't matter who the leader is, because everyone's got the same goal" (Participant 6, Senior Anaesthetic Registrar, lines 392-396).

It was evident that when goals were set at a team level, the team were able to develop their own common goals and track their own progress:

"Everybody knows what the plan is, and everybody is able to contribute to that plan, eh that goal" (Participant 10, Physician's Assistant Anaesthetics, lines 54-55).

Furthermore, this shared approach to achieving a collective purpose becomes more transparent during 'in the moment' events, whereby the process was seen to be dynamic, involving two or more team members. Although the outcome was not favourable, the perception in terms of team effort and interdependence was positive:

“The patient didn’t survive, but the team worked amazingly well. It was just the fluidity of the team, everyone, sort of, pitched in with ideas on what we could do. It was very much a team approach to resuscitation. It wasn’t just one person saying, “This is what we need to do, this is what we do.” Everyone was pitching in with ideas of what we could try and anyway we could help this guy. There was no leader, as such” (Participant 10, Physician’s Assistant Anaesthetics, lines 164-168).

This strengthens the perception that a common goal, interdependence and mutual relationships need to exist, rather than relying on one team member to organise or direct the collective team. Perceptions of efficient team effort and working towards a common outcome during times of uncertainty involved advanced communication skills and shared decision making, with everyone having an equal ‘voice’.

5.3.4 *Category Summary*

Analysis of this category, *Shared Understanding*, found that some participants perceived a shared understanding to be an integral and critical component of efficient and fluid team functioning and performance within the operating room context.

Having a collectively shared and common understanding of the work to be accomplished rather than performing specific tasks in isolation was a powerful antecedent of team performance and efficiency. This inter-professional relationship went beyond the technical aspects of each profession’s role, extending to a shared collective cognition, promoting the concept of a team mental model.

Interdependence within teams, created through a *Shared Understanding*, strongly supports team cohesion and enhanced team performance, elevated through the team experiencing a working environment that promotes a *Positive Disposition*. It is suggested that teams working in an OR context where positive emotions and gratitude are experienced, as highlighted in the subcategories of *Individual Happiness, Respecting and Valuing and Reciprocating and Sharing*, are more likely

to have a positive mindset and be more productive. When the team as a collective is exposed to a climate that promotes a *Positive Disposition*, team members are more willing to communicate, share team cognition to understand the context, and collaborate to achieve team effectiveness.

5.4 Category 2: Positive Disposition

The category of *Positive Disposition* includes the properties of *Individual Happiness*, *Respecting and Valuing*, and *Reciprocating and Sharing*.

Table 8: *Positive Disposition: Properties*

Category	Positive Disposition
Properties	Individual Happiness Respecting and Valuing Reciprocating/Sharing

5.4.1 *Individual Happiness*

Participants perceived that a good day in the OR was influenced by factors arising from the degree of happiness in an individual's disposition at any given moment, having the potential to influence others within the team. The narrative that many participants used to describe the atmosphere within the OR highlighted that any individual team member, from any professional discipline, had the potential to negatively influence the mood of the whole team; a situation that was recognised as being difficult to reverse:

“If there’s one person negative in the team, it can bring the rest down. It’s easy to bring people down, rather than bring that one person up” (Participant 2, Charge Nurse, lines 305-307).

One disruptive unhappy team member seemed able to upset the tone for that particular episode of activity. In this situation, other team members found it difficult to change the atmosphere into one of happiness and team cohesion. They reflected on dwelling on their own inability in being able to achieve this:

“A few months ago, where a surgeon was really unfair. And he was just in a bad mood, and he was taking it out on everybody. And I wanted to say to him, you know, we had a really bad day, and it was unnecessary because of the way you went on – and I didn’t. So, I stewed on it....” (Participant 14, Team Leader, lines 148-153).

Another participant suggested that a teamworking together is not necessarily collaborative or cohesive just because it is a team. Individual or collective attitudes and behaviours, if negative, have the potential to disrupt team harmony, creating a tense working environment:

“It’s horrible when you come to work and you’re here for such a long day, and you’re here so long anyhow, it’s horrible when there’s any friction or, you know... The team hasn’t really gelled together. And you do feel it, because depending on what list you’re in, it’s a very different atmosphere. And you can go from being all happy – so, like, theatre xxx is lovely. They’re all... You know, everyone is lovely. We’re having a great morning. And then equally I might go to a different theatre and the whole place is tense... Or somebody might have aggravated somebody” (Participant 6, Senior Anaesthetic Registrar, lines 528-536).

Individual personalities and fitting into the team based on activities associated with the job role also had a bearing on the collective disposition of the team. When two or more individuals had opposing dispositions and were unhappy, this seemed to infiltrate and influence the whole team dynamic, creating a disconnection and perceived lack of efficiency:

“And they might not like being in that theatre. They might be bored to tears in a laparoscopic theatre. They might like the trauma element of it. So, they’re not going to fit into that team. They’re never going to be happy. And, you know, if you’re not happy in your team, the whole of the team is unhappy” (Participant 5, Theatre Manager, lines 204-207).

Furthermore, there was evidence to suggest that the behaviours of one unhappy group member could have a powerful detrimental influence on the team. It was noted that when humility was present within the team, various manifestations of assurance influenced important group processes and dynamics.

“I think personalities need to be... A non-clash of personalities. So, some personalities get on very well together, and some don’t. And if you get personalities that get on well together, that helps with the ability of the team to work, and to function efficiently” (Participant 10, Physician’s Assistant Anaesthetics, lines 66-68).

Conversely, those that are known to consistently have a positive disposition and who are happy in their work are perceived as being popular team members, recognised by others as having the ability to impart and create a sense of happiness among the team, irrespective of the day ahead:

“Say, like, for instance, if you’ve got a great lovely, easy-going consultant anaesthetist who’s fantastic. Everybody wants to work with him. Everyone is happy” (Participant 5, Theatre Manager, lines 222-223).

Interactions with the person, between people and situations were perceived as creating happiness. Another situational influence on happiness was the happiness of others during social interactions, through the mechanism of emotional infection/spread:

“But I like a nice atmosphere... And I think if you are happy, the rest of the staff sense it. They are happy, they work better, it’s a good rapport between staff, colleagues and patients and nurses. It’s infectious.” (Participant 3, Senior Recovery Nurse, lines 178-182).

Happiness was also associated with a sense of wellbeing among the team, which was able to create the unity and stability associated with positive team performance:

“If you work well as a team, it does make it generally... Everyone is happier. And everyone is mucking in and the whole attitude is better than when you’re fighting and sniping at each other. So, it just... You know, it’s a physical feeling as well as a mental feeling. You know, and having that... Sort of, I suppose relationship with those people – knowing that you’ve all done a good day’s work and you’ve worked... You have had a good team with you” (Participant 7, Senior Scrub Nurse, lines 214-216).

Nurturing social relationships by being mindful and acting with a sense of awareness, rather than in a controlled way, was perceived by one participant as the antecedent to creating a happy, trouble-free working environment:

“I like a quiet life and for everybody to be enjoying themselves. I think they work better” (Participant 9, Consultant Anaesthetist, lines 105-106).

The notion of happiness and a positive disposition was advanced further, to include shared social interactions within and across the OR team that in turn created team satisfaction and perceived efficiency and productivity as a by-product:

So yesterday I was in a lovely list, a lovely team, everyone was happy. It was really a lovely day. I think it was a good day. A few of us were chatting... You know, not chatty, but everyone was just communicating well. The list was ordered. It, like, ran on time, like a dream (Participant 6, Senior Anaesthetic Registrar, lines 371-383).

Alongside individuals having the potential to influence the team climate or atmosphere there was also the perception that individual team members could upset the equilibrium of the team. A change in mood and behaviour that is not perceived as conducive to team satisfaction and a positive disposition is associated with a lack of productivity and reduced efficiency. The team is still able to function and attain team objectives and goals when the atmosphere created by an individual is not conducive to happiness, but it becomes a different way of working:

“So, frustration, poor communication, maybe people’s behaviour sometimes... “But then interestingly there was a surgeon in the afternoon, and he was the only person on the whole team who changed. And the whole dynamic was completely different. And obviously, his personality was quite... I don’t know how to phrase this, but basically, he’s used to telling... Directing everybody...He was telling us stuff that we didn’t necessarily need to be told, but also in a manner that was quite... He was the leader, and we were, you know, follow my orders kind of thing. The whole dynamic in the afternoon was very different. So, in terms of good teamwork I’m... We still worked well, but I’m not sure that everybody was as happy or productive... By the end of the day the vibe was a bit... It was completely different” (Participant 6, Senior Anaesthetic Registrar, lines 371-383).

5.4.2 *Respecting and Valuing*

Respect for others and valuing their contribution to the team effort were of equal importance to participants in terms of creating a positive outlook. Feeling devalued or not having a voice within the team was associated with a lack of self-confidence, whereby those individuals were perceived as not having the same incentive to work towards a common team goal. Again, this was recognised as having an influence on the ability of the collective team to work effectively and efficiently:

“I think depending on the clash [of personalities] it can really affect the morale. And if the morale isn’t good, I don’t think the team can work efficiently or effectively. I think if certain members of the team feel devalued or feel as if they’re not being listened to, then there’s a tendency for people to maybe not work towards the same goal. Or to sometimes go off on their own ideas. And it just makes things a little bit less efficient” (Participant 10, Physician’s Assistant Anaesthetics, lines 90-94).

Recognising involvement and valuing team members for their contribution has the potential to inspire and fortify the teams’ labour, irrespective of whether the result is expected. Acknowledging and reassuring the team that collectively they have worked well affirms that everyone has made an appropriate contribution and that they have added value to the team effort. Having a positive regard for one another and using a reflexive approach to explore the team effort supports the team energy in

moving forward, even when faced with adversity. A reflexive team approach also seemed to allow individual team members to be better able to cope with the psychological effects following an adverse outcome. Speaking openly, asking questions, sharing ideas and being inclusive was perceived as providing a supportive environment with an open and respectful culture, where team members felt able to express their feelings:

“One of the consultants came and did a sort of, debrief [summary of team performance and efficiency following an episode of activity]. And he was just saying how proud he was of the team. And how we tried... You know, everyone had tried the best thing they possibly could. And even though the outcome was negative [patient died], it was actually quite an uplifting experience. Knowing that, as a team, we worked very, very well.” I didn’t go home and dwell on the outcome, I felt satisfied that we had done everything we possibly could have” (Participant 10, Physician’s Assistant Anaesthetics, lines 173-177).

By creating such an opportunity, respect for one another was derived from the collective opinions of each team member, resulting in an experience that shaped the welfare and wellbeing of the team. Respect seemed to have more than one meaning but was generally conceived as respectful treatment of an individual’s emotional experiences, which was extended to a team member during a period of observation:

Gynaecology Theatre - The anaesthetic assistant had returned from checking her controlled drugs and looked upset [red eyes from crying]. At first, this appeared to have gone unnoticed by most of the team but was noted by the anaesthetist who demonstrated ‘quiet’ concern. The anaesthetist placed her arm around the shoulders of the individual, drawing her in close and turning her away from the rest of the team. The anaesthetist offered support and reassurance, quietly saying “the list will be okay...go and get yourself a cuppa and do what you need to do. I’m alright for now and I’ll give you a shout when I need you”. The anaesthetic assistant left the OR. The surgeon looked up from the operation and turned to the anaesthetist, asking “is everything okay?” [demonstrating awareness of the situation and the ability to be discreet] the anaesthetist replied “yes, it will be...just a problem at home”. The surgeon continued with the operation. (Data extract from Observation 1).

In some instances, respect was perceived as something that individuals needed to earn. This went beyond acknowledgement of collective team effort and common courtesy to include the recognition of individuals that required support and additional knowledge so that they could reach their full potential. Going beyond ‘in the moment’ acknowledgement and reassurance considered future possibilities in terms of respecting everyone’s needs. This moves respect and value along a continuum of not being mere platitude:

“But I think before everything... Everyone goes home at the end of the day – no matter what time – there should be... There should be a debrief [summary of performance and efficiency at the end of an operating list] so people can get the right support, get the right information, and that actually makes you feel part of the day. Part of the team. And I think that’s where you earn your respect” (Participant 4, Senior Operating Department Practitioner, lines 466-469).

Courtesy was deemed the cornerstone of expressing respect and value towards each other. Common courtesies were perceived as an acknowledgement of effort, with the potential to create a feeling of positivity in an individual or the team:

“Well, I know from my experience when somebody says thank you for something, I’ve had a really nice day, and you go home skipping... Because they’ve appreciated... They’ve accepted that I did work hard today” (Participant 1, Senior Operating Department Practitioner, lines 325-327).

There was a majority response that common courtesies were essential but often absent within the team. Issuing commands without extending courtesy was perceived as altering the moral equality within the team, suggesting a ‘them’ and ‘us’ divide:

“Sometimes it’s just the manner in how they’ve been asked within the team to do things. No please, no thank you. There’s no please, no thank you. There’s no nothing from them [surgeons]” (Participant 2, Charge Nurse, lines 383-386).

Extending such courtesy was recognised as an attribute and, when absent, some degree of allowance was made in terms of emotional labour:

“And you know, asking appropriately instead of telling... You know, all these simple human courtesies, which some people are naturally good at, and some people don't mean to be, but they just say things... Not the wrong way, but just the way that it's received. In a bad manner...” (Participant 6, Senior Anaesthetic Registrar, lines 474-478).

The sense of feeling valued extended beyond the immediacy of the team, to the employing organisation. Participants perceived there was a lack of organisational commitment and engagement in terms of communicating the value placed of good performance and outcomes. Furthermore, negative outcomes seemed to be recognised more often than positive ones:

“It's one of those in the NHS, we're always told very quickly of something that hasn't gone well. But not necessarily so much when things have gone well. Which is a bit of a shame” (Participant 11, Consultant Anaesthetist lines 134-136).

A lack of respect for other team members was noticed as having the potential to destroy morale, upsetting the status quo. Having respect for one another and shifting the outlook from personal needs to the team goals focuses on the collective good, rather than minor differences:

“Yeah, well, he undermined me. He was disrespectful. And he had a bad attitude. He just doesn't like trauma – which he always says. “I hate trauma. It's never right in here. You never have anything right that I would like here. Honestly, its soul destroying” (Participant 14, Team Leader, lines 213-215).

Having respect for one another, working together and appreciating the contributions that individuals offer to the collective team has the potential to be conducive to an easier day, particularly in terms of team concordance:

“You need to be able to run your list, have the confidence to do so, have respect from other team members, and work with them. Not against them. It makes for a better, easier day.” (Participant 14, Team Leader, lines 369-370).

Valuing each other and the contributions that individuals make to the team was perceived as being an essential antecedent to collaborative teamworking:

“[Teamwork is] Essentially what it says on the tin. It’s working well together as a team. I think valuing each other for what they have to offer” (Participant 10, Physician’s Assistant Anaesthetics lines 42-43).

Conversely, a lack of recognition of contributions instilled a sense of worthlessness:

“People not being valued for what they’re able to contribute” (Participant 9, Consultant Anaesthetist, line 50).

It was apparent that if contributions are recognised and gratitude is conveyed to the team, or for the effort of individual team members, this acknowledgement can have a motivating effect and boost team morale:

“Apart from communication... I think respecting and valuing each other’s roles. This motivates you to come back tomorrow and do it all again” (Participant 4, Senior Operating Department Practitioner, line 201).

More specifically, verbal praise of team effort and acknowledging that ‘a difference has been made’ was enough for the collective team to feel valued:

“It’s about making people feel valued. I don’t include debrief in that. But when it goes well, we need to say it goes well...knowing we’ve made a difference” (Participant 9, Consultant Anaesthetist, lines 250-251).

5.4.3 *Reciprocating and Sharing*

Reciprocity, involving mutual respect between team members, was identified as a determining factor that needed to exist to ensure positive team functioning. This was

categorised in several ways. Participants were cognisant that a lack of reciprocal interactions could alter the team stability, particularly if a team member did not contribute the same amount of effort into the team objective:

“People that are hard-working and willing to put the effort in. So...You’ve got people who won’t put the effort in, which tilts the team a bit. And everyone gets slightly grumpy with people” (Participant 7, Senior Scrub Nurse, lines 204-205).

It was further suggested that reciprocal relationships required a spirit of cooperation, as well as an understanding of, and ability to, embrace interdependence:

“But that’s where the problem lies. When one group of people sees another group of people not doing anything. And they think, well, I’m working hard – why aren’t they working hard? You know, or they haven’t come to help me. And there just wasn’t that on Saturday. It was nice, everyone working together” (Participant 1, Senior Operating Department Practitioner, lines 289-293).

Participants expressed how positive mutual exchange made it possible to build continuing relationships whereby everyone benefits, suggesting that reciprocity requires team members to invest in their working relationships:

“Yeah, I think it’s the mixture of people in theatre. Everything going well surgically, anaesthetically, nice bit of craic [talking generally] with the nurses – most of whom I know really well. Teaching for juniors, you know, so everybody gets a bit of something out of it” (Participant 12, Consultant Surgeon, lines 164-167).

The idea of building relationships and positive mutual exchange was developed further, suggesting that in some instances, it was a deliberate strategy to break down perceived differences in status. This implies a freedom to challenge that was mutually beneficial and unconditional:

“I was brought up in the era of ritual humiliation and that type of stuff. And I do take the mickey out of my juniors. But hopefully I do it with a good smile”

on my face. And... I'm actually doing that with a deliberate point. Because I want them to also wind me up and tease me. And if I do that, I know I have totally got rid of the hierarchy. And, you know, the authority gradient. Because if someone can take the mickey out of me, they can say, actually, I don't think you're doing that right. And that's what I want. So that's why I'm fairly jocular in the theatre. It's a deliberate strategy" (Participant 12, Consultant Surgeon, lines 290-296).

However, there was an expectation that when a positive action committed by one individual had a positive effect on another team member, this action should be returned, rather like a transaction or deal:

"I like a lot of give and take. I'm prepared to give a lot. But I'm not prepared to have people take, take, take. They have to give back" (Participant 3, Senior Recovery Nurse, lines 170-171).

Examples were evident in the data of reciprocal altruism, where individual team members had 'given' freely, demonstrating their gratitude with limited expectation of future return or reward. Alternatively, this could be perceived as self-interest, in an attempt to gain team compliance, indebting team members to reciprocate in terms of effort and toil:

"I mean, on a Saturday someone will shout for bacon sandwiches. If I'm in on a Saturday with trauma, I would pick up 20 sausage sandwiches on the way up, for my theatre. There's lots of little tricks... Not that you do it for that reason – you do it because you're all there on a Saturday, but you can... So that lifts the team as well. Your salary, perhaps, just isn't enough" (Participant 9, Consultant Anaesthetist, lines 251-255).

Participants who perceived themselves to act within a reciprocal context acknowledged that others may not, suggesting that this could lead to modified reciprocal interactions. As a result, participants appeared to be aware that modifying reciprocity could have an impact on the efficiency of the operating list. Modifying reciprocal interactions to form a collective response was evident in the data:

“I do remember... Not so much happening now, but certain teams that you knew damn well you were never going to get through that list because they’d decided right at the beginning of the day that you aren’t going to get through that list. And they would drag their heels... There are certain characters that if I knew they were in theatre, I knew I wasn’t going to finish”
(Participant 12, Consultant Surgeon, 190-194).

When participants compromised, they demonstrated a reciprocal concession so that the initial and incompatible desires of individuals were set aside for the benefit of collective cooperation:

“I’ve had some lovely days where everybody has worked together... Everything goes to plan, everybody has communicated well, and everyone has given a little bit of themselves. Everybody knows exactly what they are doing. And there’s been days when it has been difficult, the wards are struggling with beds, the anaesthetist is frustrated but we get through it. We support each other... We go the extra mile to make it all work” (Participant 4, Senior Operating Department Practitioner, lines 114-119).

5.4.4 *Category Summary*

Having a shared understanding can connect the interprofessional team in a way that creates the potential to promote interpersonal bonds and positive collective attitudes. Feeling happy was perceived as a positive state that was fundamental in constructing a positive affective experience in the workplace. Happiness related constructs appeared to vary from an individual level to a phenomena that occurred at the collective level. Having a positive disposition within a team appeared to be a fluid construct that could vary over time and could change when an individual joined or left the team. Team members who expressed individual happiness were perceived as being more pleasant and interpersonally adept. This enhanced their own work engagement and that of others through helping to create positive working relationships. Work related happiness constructs were moderated by the individual’s needs, preferences and interpersonal connections associated with *respecting and*

valuing one another and through *reciprocating and sharing*. Positive disposition appeared to be associated with a positive work experience and meaningful engagement with the work context and was recognised as an indicator of team performance. Overall, this suggests when a team experiences *individual happiness, respecting and valuing*, and *reciprocating and sharing*, a *positive disposition* is created within the context in which the team is working. This provides a background for team members to connect and feel a sense of belonging. Such inclusivity promotes interpersonal and interprofessional bonds, encouraging a willingness to engage in and contribute to *Information Flow*, further promoting collaboration and a shared understanding of team goals. Collectively, *Positive Disposition* and *Information Flow*, viewed together, can drive team outcomes and performance, facilitated by positive social bonds. The category of *Positive Disposition* interrelates with the category of *Information Flow* and the sub-categories of *Professional Communication, Standard of Care* and *Beyond Talk*, which contributed further to understanding how teamwork and effective team performance in the OR can flourish.

5.5 Category 3: Information Flow

The category of Information Flow includes the properties of *Professional Communication, Standard of Care* and *Beyond Talk*.

Table 9: Information Flow: Properties

Category	Information Flow
Properties	Professional Communication

	Standard of Care
	Beyond Talk

5.5.1 *Professional Communication*

If team goals and objectives were not communicated in the correct way, this was perceived as a breakdown in information sharing, leading to confusion and a less organised team:

“So again, it’s the listening, it’s the communication that tends to go out of the window and everything is less organised and more confused. And when you’re then having to fixate yourself on that one-person, other things get pushed to one side. Which means that other members of the team will tend to be left out or stressed, because we’re sort of stressing at each other. Which just ends up the whole day being a struggle” (Participant 7, Senior Scrub Nurse, lines 140-143).

Conversely, participants perceived communication to be effective when information was passed on and all team members were fully involved and informed. Well-communicated goals and all team members having an equal voice was a vessel for creating unity, direction and harmony:

“I have had some good days where that... You come away and you think I’ve had a really, really good day. Everybody has worked together, and all the information has been passed on. And that, to me, is what makes a good day” (Participant 4, Senior Operating Department Practitioner, lines 127-129).

It was also suggested that for this exchange of information to be effective, self-awareness was a necessary element:

“...everybody has communicated well, and everyone has given a little bit of themselves. Everybody knows exactly what they are doing” (Participant 4, Senior Operating Department Practitioner, lines 115-117).

Self-awareness was further endorsed through an individual team member's declaration to the collective team:

"I'm not firing on all cylinders... I was on-call last night and we never stopped...it was so busy. ED (Emergency Department) was heaving". (Data extract from Observation 1).

When the OR team received scant, contradictory or confusing information, this resulted in a breakdown of information flow, creating a lack of clarity about roles, responsibilities and team objectives. Withholding or providing only partial information appeared to isolate the OR team from meaningful participation in effective communication and decision making, leading to uncertainty. Clear and open information sharing between OR team members appeared fundamental in establishing a strong collaborative relationship, whereby an enhanced understanding of team goals promoted cooperation and trust. Ensuring that the team is kept fully informed and that the voice of each team member is heard and listened to, supported inclusion in information-sharing and decision making.

5.5.2 *Standard of Care*

During observations, the use of an interactive communication tool was noted. This comprised of two parts: briefings/debriefings and checklists. Carrying out briefings/debriefings and completing checklists were activities that happened at different junctures throughout the operating day, for each individual patient attending the OR. Checklists were generally performed at the start of an operating session and as each patient arrived in the OR. There was a requirement that the entire OR team were present for the time out checklist, which established an opportunity for open dialogue:

Gynaecology Theatre – Band 6 Staff Nurse calls out “Are we all ready to start” [referring to the time out checklist and all team members]. This includes the Anaesthetist, Anaesthetic Assistant, Nurses, Healthcare Assistants, Surgeons and trainees from any discipline. Glancing around she notices that the Surgeon is absent and asks, “where’s the surgeon gone now?” [Sighs loudly]. Band 5 Staff Nurse replies, “I think he’s just popped out for a cuppa, I’ll go and get him”. 2 minutes later the Surgeon and Staff Nurse return. The surgeon laughs and says, “are you waiting for me?” and the Band 6 Staff Nurse responds curtly “yes, we are”. The checklist/brief begins, which the Band 6 Staff Nurse leads. (Data extract from Observation 3).

The checklist process promoted a standard approach to direct verbal communication and interaction between OR team members, to ensure a common understanding or “shared mental model” of the patient, procedure and risks. This appeared to empower individual team members to voice any concerns they had about equipment availability, case related information or knowledge gaps within the team, e.g., trainees. Furthermore, this standard approach allowed OR team members to become familiar with one another by introducing themselves and their role before the start of the operating session:

Every member of the theatre team introduces themselves by name and status. The order of the operating list is confirmed; each patient on the list is checked against their hospital ID number and the surgical procedure is verified and acknowledged by each member of the team. Any anticipated variation to the operative procedure is also discussed, alongside the need and availability of specialist equipment. Problems that could be encountered are mentioned. Other factors integral to the checklist includes the patient’s temperature, any known allergies, questioning the need for prophylactic antibiotics and prevention of deep vein thrombosis (DVT) by wearing compression stockings. There was a total of 6 patients on the morning operating list and this same method was adopted for each. The initial checklist/brief, whereby all 6 patients were discussed as highlighted, accounted for approximately 5 minutes. (Data extract from Observation 3).

This approach was observed to be standard, mechanistic and rehearsed, and was repeated at the end of the operating procedure, while the patient remained in the OR. Once again, the entire OR team were present and a standard approach was adopted in

terms of confirming the name of the procedure, specimens, final instrument and swab counts, any equipment problems, and concerns for the recovery area:

Post-surgical intervention, and before the patient left the operating room for the recovery area, a further checklist/debrief was performed, confirming the operation that had taken place, how the wound/incision was closed and whether or not specimens had been taken, and if so, how many and where from. The debrief was observed to be rather more cursory and not all members of the operating team were actively engaged. The debrief lasted no more than 15 seconds. Some members of the team had dispersed and were more involved in cleaning and clearing the OR in preparation for the next patient. The noise levels were much greater, not only in terms of being heard but general movement, for example, opening and closing of doors, clanking of theatre trolleys. This process was evident throughout the operating list and repeated for subsequent patients. (Data extract from Observation 3).

Although a standard debrief approach was evident at the end of each operation, it was less focussed and seemed to interrupt the work routine. Concordance with the standard debrief approach was observed to be less stringent, as prioritisation of other tasks appeared more important:

At the end of the operating session the Band 6 Staff Nurse asked, “any problems encountered?” nobody replied, so she said, “I’ll take that as a no then”. (Data extract from Observation 3).

Participants perceived that when the dynamic and interactive checklist or briefing/debriefing standard processes were adhered to, this increased their feeling of unity and collaborative working, and provided an opportunity for clear and concise communication to take place. This was a dynamic process of acquiring information from the immediate and changing environment, so that teams could respond accordingly. Additionally, this standard checklist process acted as a platform for interdisciplinary communication:

“We’re all on the same page from the word go” (Data extract from Observation 2).

However, it was observed on several occasions that not all teams adopted a consistent or standard approach to using the interactive professional communication tools. Two of the most common challenges to team compliance with the standard checklists and briefings were: active resistance or passive noncompliance. Some team members were not present at the beginning of the checklist process, for example, choosing to organise equipment, or converse about unrelated matters. There were occasions where punctuality and tardiness were obvious sources of frustration for team members, who were ready to begin the checklist process, resulting in time being spent locating the absent team member, or members. This frustration manifested in comments related most frequently to inefficiency and timewasting:

“You see what I mean? We spend more time running around after other people than getting on with the job” (Data extract from Observation 1).

It was suggested that those team members who were not present at the outset of the checklist process should take personal responsibility for any consequences that should ensue from the initial delay that was caused, irrespective of the reason:

“Come on! Where have you been? You can see we’ve got a busy [operating] list and we need to crack on... If we end up cancelling anyone off the list, you can go and tell them the reason why!” (Data extract from Observation 2).

Such comments seemed to suggest that a distraction from the standard approach of team brief could disrupt the natural flow of information in the OR, disrupting positive communication and creating tension that interrupted work routines.

Debriefing was viewed less positively, as several participants perceived that debriefing was not carried out at all or, if it was performed, it was done so hastily with an often incomplete team:

“Okay, so where is everyone (circulating nurse)? We need to do the debrief!” There is a lot of activity in the OR. The anaesthetist is actively engaged in managing the patient’s airway; the operating surgeon has left the OR to dictate his operative notes and other team members are clearing and cleaning the equipment and OR. “Right, okay...we’ll just have to make do with the people who are here. (Data extract from Observation 1).

Paradoxically, having a standard process can at times disrupt positive communication, by prescribing the interaction that should occur during a specified moment in time. Having such a checking process or debrief at the end of the operating procedure, when other tasks seemed to take priority and certain team members were reluctant to alter their habitual workflow, suggests that the checklist can become redundant or a perfunctory repetition of information that is perceived as having already been exchanged. Alternatively, this could be viewed as complacency amongst certain team members, who perceive that critical information has already been shared and communicated. In fact, a lack of engagement in the checking process could create a false sense of security or a missed opportunity in terms of information flow. Poor usage and uptake of the debriefing process seemed to have a dysfunctional effect on the remaining team members who were compliant with the process:

Any problems encountered throughout the list? Any problems with equipment or availability of equipment? Any delays with the running of the list? Any issues in relation to the team or teamwork? Anybody? Has anybody got anything to say? Okay, well I’ll take that as a no to everything then”. The anaesthetist speaks up to say, “I think we’ve had a good day and the team have worked really well...I haven’t encountered any issues or problems, so it’s a huge thank you everyone, from me”. (Data extract from Observation 1).

This lack of engagement with the debriefing process was evident during each of the observation periods, further supported by one participant who perceived there was a perfunctory attitude to checklists and debriefings. It could be suggested that a mechanistic and standardised approach to the interactive professional communication tool stifles the potential for teamwork and communication behaviours to flourish:

“You’ll always have people that aren’t engaged. A lot of people within team brief give it lip service. They’re not listening to actually what’s happening. They’re just ticking boxes, rather than thinking about the day” (Participant 9, Consultant Anaesthetist, lines 107-109).

Some participants felt that debriefing was a futile process, further clarifying that no one acted upon the problems identified or considered the learning points for future team development:

“There’s absolutely no point to the debrief, as you can see most people have either gone off to do something else or gone home...The surgeons are the worst offenders...Anyway the questions aren’t appropriate, and nobody does anything about it anyway” (Data extract from O3).

When debrief was completed poorly or when there was a lack of engagement from certain members of the interprofessional team, not only was the checklist observed as having the potential to disrupt team functioning, but it was also perceived as superfluous, sending out a negative message that it was not a priority to improve communication among the OR team.

5.5.3 *Beyond Talk*

There was evidence during observations that the flow of information, notably information exchange, went beyond verbal communication to include the use of

gestures, body posture, mimicry and mirroring, performing other communicative functions. This behaviour was most apparent and occurred most frequently around the operating table, where most of the team were in close proximity with one another. Non-verbal behaviours were in the form of implicit hand gestures and body positioning, which acted as a form of sign language, understood and interpreted by other team members who were able to respond appropriately. During this exchange, surgical instruments and equipment were handed back and forth between the surgical team, with individuals inherently knowing when a *clip* was needed as opposed to *scissors*, due to the positioning of the surgeon's hands, or gestures made by the surgical team. This behaviour aligns with *mental models*, suggesting that a common understanding of the work to be accomplished is implicitly shared. It could be perceived that knowledge in this instance is derived from prior experience and is shared from person to person, encoded in body language as a mode of information exchange.

The behavioural interactions associated with hand cues and gesturing was out with general spoken conversation, demonstrating an awareness of personally knowing and anticipating future actions. Information and relevant data were gathered and exchanged through behavioural interactions among team members that were connected and involved, far more than through verbal exchange. Team members, although carrying out designated roles and tasks within the OR, demonstrated a unique but compatible and concurrent understanding, allowing the team to work collectively in terms of team goals:

The scrub nurse notes that the surgeon is starting to close the wound and calls, "final count please" which acts as a catalyst for a sequence of events, both inter- and intra-dependent. The circulating nurse obediently positions herself near the scrub nurse and her trolley of instruments, needles, blades and sutures. (Data extract from Observation 3).

The activity and movement associated with the surgeon closing the wound acted as a cue that resulted in a verbal speech command, which shifted the mode of communication back to an 'activity'. This suggests that conversational narratives or prompts emerge through a different set of norms associated with interaction and interpretation of the OR team:

Orthopaedic Theatre – Concurrently and without prompt, the anaesthetic assistant has requested [via electronic method, situated in the OR – demonstrating preparation, anticipation and situational awareness] that the theatre porter [who is located at the theatre entrance] goes to the ward to collect the next patient on the operating list, and calls out “patient sent for”, no one consciously acknowledges this. These limited utterances seem to inform the team that a transition to a new state has begun and establishes a collective and mutual understanding of the situation. (Data extract from Observation 3).

Distractions, such as loud music, unrelated chatter or mobile phones ringing were observed to disrupt the flow of teamwork, with some team members momentarily losing focus, for example handing the surgeon the incorrect instrument for that point in the surgical procedure. Through the act of the surgeon dropping the instrument from his hand, a cue was created prompting the scrub nurse to reassess the results of the surgeon's action and update her perceptions of the situation, recovering from the loss of focus and restoring an understanding of the situation:

General Theatre – A mobile phone rings in the scrub room, which is adjacent but still connected to the OR. The surgeon states, “Sorry, that’s mine. Could someone answer that for me please?” At the same time, the surgeon drops the clip that the scrub nurse has given him. This acts as a prompt or cue for the scrub nurse, who leans into the patient and surgeon, to assess the situation. The surgeon holds his hands in such a way that he is ready to receive scissors, instead of the previously offered clip. (Data extract from Observation 1).

Behavioural mirroring or mimicry was noted on a few occasions across all three periods of observation. This method of conveying messages was more attuned to social connections and relationships, than being pivotal to the operating procedure itself. Behavioural mirroring in the operating room could be categorised as facial expressions, postures and mannerisms. Individuals subconsciously conformed to the mannerisms of other team members, by mirroring behaviour:

Orthopaedic Theatre – Consultant Surgeon and Specialist Registrar are ‘scrubbed up’, waiting to start the operation, across the room from the scrub and circulating nurse. They stand facing one another and talk quietly, their heads completely encased by a helmet and visor. There is less than a metre between them. Although their conversation is not audible, due to other activity and preparation within the OR, their body movements, gaze and hand gestures become more obvious. Initially, their eyes are locked. The consultant turns his head to view the x-ray, the registrar’s gaze follows, glancing at the x-ray as he leans forward. The consultant turns back to face the registrar and their eyes lock again. The consultant crosses his hands, lightly, grasping opposite wrists. Only a few seconds pass and the registrar crosses his hands. They lean in towards each other and laugh. The registrar relaxes his hand [maintaining sterility] and the consultant follows. (Data extract from Observation 2).

Again, this was observed most frequently around the operating table, but was not reserved solely to the OR and was apparent in other areas within the operating department, including recovery and common social spaces. On the occasions when mirroring occurred in the OR, two individuals were in proximity with one another. It was not uncommon for individuals to lean in towards each other, fold their arms at the same time or physically connect by resting side-by-side against one another with no apparent desire to break the physical bond:

Gynaecology Theatre – Consultant Surgeon is the main operator and stands at the right side of the patient. The scrub nurse stands to the left of the registrar, they are side-by-side with little physical distance between them. Face masks and theatre caps physically obstruct most facial expressions, other than eyebrow and eye movement, and gaze. What is most obvious and pronounced around the operating table is the reliance on body movements,

hand gestures, eye movement and gaze, which can signal to other team members what is about to happen next and consequently, what contingencies this places upon them. (Data extract from Observation 1).

A similar relationship was observed between the anaesthetist and anaesthetic assistant, whereby verbal conversation directed towards the patient acted as prompts or cues in terms of interaction and non-verbal activity:

General Surgery Theatre – The patient enters the anaesthetic area, sitting upright on a theatre trolley. The anaesthetist looks directly at the patient, “Hello again, come on in”. The anaesthetist explains, “We will need to pop a needle into the back of your hand, so that we can get you off to sleep”. This statement triggers a sequence of events. The anaesthetic assistant gently lowers the head of the trolley, and proceeds to attach electrodes to the patient’s chest, “I’m just going to stick some dots to your chest, so that we can monitor your heart while you’re asleep”. At the same time the anaesthetist has moved around the trolley and takes hold of the patient’s left hand, “While the anaesthetic assistant is doing that, I’m going to put a tight band (tourniquet) around your wrist and pop a little needle into the back of your hand. (Data extract from Observation 2).

Successful interaction appeared to be founded on several factors including the defined roles of participants, appropriate use of language and style, and how that is received and interpreted:

Once the patient is anaesthetised, the anaesthetist and the anaesthetic assistant continue to work seamlessly to secure the patient’s airway. Few words are uttered, rather hand and body movements signal what will happen next and the contingencies and requirements this places upon the other person. Once the airway is secure, verbal conversation commences with the focus on pleasantries rather than being task related. (Data extract from Observation 2).

This workplace intimacy and mutual acceptance, which appeared to be created unwittingly between team members, demonstrated connectedness, commitment, anticipation and contextual awareness. It was obvious that such interrelationships were built over time, or through sharing the same (or very similar) experiences.

Telling patients what is about to happen, or what they are about to experience, simultaneously makes features of an individual's work obvious to their colleague, alongside the 'art of noticing', whereby hand signals and body movements provide cues for interactions and minute-by-minute contingencies. This appeared to create a fluid situation, which was continually defined and redefined. Talking to the patient was used as a resource, or prompt, to coordinate actions and activities but attentiveness to non-verbal conduct equally important to that of the spoken word.

There was also evidence of 'eye-rolling', a more conscious deliberate method of conveying unspoken messages. Eye-rolling was associated with members of the team who were perceived as being less popular, not demonstrating skills or behaviours associated with job roles or status, lacking in confidence, or their contribution to the team effort was not valued equally:

"She should have taken the lead. And now I know this person, I'm surprised she didn't. Because she is quite a strong character. But she kept just looking at me. So, I felt she was looking at me, for me to say something. She kept looking at me, shaking her head and rolling her eyes. And I wanted to say, "Well, why don't you tell him he's rubbish? Why have I got to be the bad person?" (Participant 3, Senior Recovery Nurse, lines 449-453).

This usually occurred when the individual left the operating room or social space, but there was occasion whereby eye-rolling, or 'tutting' was mimicked, which was perceived by others to intend to humiliate or reject an individual from the team:

"And you have to put up with the looks, the eye-rolling and the tuts and the... And it hurts even... People think I'm strong, but I come across as strong, but inside I'm not strong. I still get hurt if people pull faces and roll their eyes" (Participant 3, Senior Recovery Nurse, lines 278-280).

The sense of knowing whether you are going to have a good day was perceived to be based on looking at individual team members, or the collective team. Having this

degree of precognition or intuition would suggest that such insight is cumulative over time, as social interactions, behaviours and shared experiences between individuals become established, then understood. Having the ability to predict how the day is going to unfold, purely by the composition of the team, could have some bearing on mitigating professional risk:

“You can see, by looking who you’re working with or whether or not it’s going to be, you know, a good day” (Participant 7, Senior Scrub Nurse, lines 116-117).

Throughout all periods of observation, it was evident that some team members were more attuned to problem solving, improvising through non-standard methods to accomplishing work and tasks otherwise blocked by dysfunctional processes and obstacles. These solutions were creative and often anticipatory, and attempted to avoid inefficiencies within the system, an ‘in the moment’ situation, or delays to the surgical procedure while the problem or issue was resolved:

Orthopaedic Surgery Theatre – Locating missing items, instruments and specialised equipment required for surgery resulted in multiple phone calls from the OR to other Operating Theatres throughout the Trust, some of which are in geographically remote locations. These telephone calls were hidden from the team, with the emphasis on the individual to resolve the shortcoming. (Data extract from Observation 1 and Observation 2).

Interestingly, solutions occasionally departed from and circumvented the more prescriptive *Standards of Care* approach, whereby participants would draw upon their ability to make sound clinical judgements, improvise, make shortcuts and find solutions, reallocating resources to do so. Such solutions were both individually and collectively enacted, either covertly or overtly, depending on the situation and circumstances:

Orthopaedic Surgery Theatre – Once located, the equipment or instrument required transportation by taxi from one hospital site to the other. This type of workaround was enacted covertly on one occasion, without the surgeon knowing, and overtly on another. On the occasion the specialist equipment/instrument was not available at the point of need, forcing the workaround to become overt and known to all team members. (Data extract from Observation 1 and Observation 2).

Solutions were most frequently enacted to enable the successful flow of patient through the department, to bypass workflow blocks, organisational and system issues, and offer solutions to shortcomings in staffing and sterile equipment:

Orthopaedic Surgery Theatre – The lack of equipment/instrument created an intraoperative interruption and delays for the patient, the team and the ensuing workflow through the orthopaedic OR. This challenged efficiency and effectiveness. (Data extract from Observation 1 and Observation 2).

The consequences of finding a solution could be perceived positively or negatively. Even the negative outcome, whereby the instrument was not available at the time of need, provided an opportunity to draw attention to an ineffective processes and shortcomings that could be resolved with financial investment. When systems were perceived as inflexible, OR team members found ways to work around the system when it did not conform to, or hindered workflow, choosing to circumvent prescribed work processes or *standards of care*.

5.5.4 *Category Summary*

Mutual performance monitoring or the scanning of the team's mutual operational situation and surroundings was apparent throughout all observations and translated into directing attention to the myriad cues that existed in the complex OR team environment. Information and data retrieved in this manner was internally held in a schema that subsequently guided the course of action, often through anticipation and contextual awareness, with extraordinarily little – and in most instances no – verbal

exchange. Furthermore, it would appear teams that experience working together in climate that promotes a *Positive Disposition* have a greater propensity to engage with *Professional Communication, Standard of Care* and *Beyond Talk*. Understanding and interpreting the relevance of how timely *Information Flow* facilitates a shared understanding, strengthens connections and interprofessional relationships, which appears to synergise the collaborative efforts. Again, the category of *Information Flow* and relevant sub-categories can be closely related to the core category, *Antecedents of Familiarity*, offering insight into how interprofessional connections and collaboration within the team promote efficient information processes. *Antecedents of Familiarity* considers the extent to which team members have the necessary knowledge and skills to successfully perform their role within the collective team. The sub-categories, *Leading to Influence, Motivating, Connecting and the sense of Belonging, Collective Competence* and *Contextual Understanding* focus on collaboration, and the building of mutual support and shared understanding about what each team member knows.

5.6 Advancing the Findings

Positive Disposition plays a critical role for improving team performance. The category of *Positive Disposition* and subcategories of *Individual Happiness*, alongside *respecting and valuing* and *reciprocating and sharing* can be viewed as being self-initiated and can motivate and strengthen team performance. In order for the OR team to perform effectively, a combination of attributes is required, as defined within *Antecedents of Familiarity* and its subcategories. These play a critical role in good interprofessional collaboration in the OR. Working within the same

team allows team members to gain insight and knowledge about one another through mutual experiences and prior collaboration. Common experiences and collaboration harmonise and connect the team, giving team members a sense of belonging. As such, this allows teams to perform effectively and react appropriately when working under pressure or when faced with adversity, strengthening the OR team's resolve.

5.7 Chapter Conclusion

This chapter has presented and discussed the study findings, which are categorised into a core category, three categories and several subcategories. The discussion included quotes from the interviews, ensuring that the participants' voices were heard and extracts from the observations, to demonstrate the complex and multi-dimensional nature of teamwork in the OR. Each category was presented in turn, with a discussion of properties and emerging issues of relevance. The following chapter presents the constructed grounded theory in the form of a model of teamwork and a taxonomy, providing a theoretical representation of the research findings.

6 Chapter 6: Discussing the Findings

6.1 Chapter Introduction

The categories discussed in the previous chapter started to address the primary research question by offering insight into participants' experiences and views regarding teamwork within the OR, and the factors that influenced those perceptions. To develop a comprehensive theory to explain the interactions between and among interprofessional team members, and the notion of a 'great day' in the OR, these findings are explored using the trifecta of inquiry (Antonenko, 2015). This connects the conceptual framework with the context of practice, symbolic interactionism, and the theories of social identity, negotiated order and relation coordination that underpin this study.

This chapter presents a critical discussion that explicitly links existing knowledge with the new insights that have emerged from the data. The discussion that follows, provides an exploration of the data categories of *Shared Understanding*, *Positive Disposition*, *Information Flow* and *Antecedents of Familiarity* that emerged through the participants' responses. Furthermore, the findings arising from the analysis offered insight into new and alternative possible meanings, opening enquiries into areas that had not been previously explored because they were not made salient by the initial literature search.

6.2 Restating research question and objectives

The research question and objectives introduced in Chapter 1 are restated here to contextualise the discussion.

6.2.1 *Research Question:*

What do OR staff perceive teamwork to involve, and how do their interactions with one another contribute to team performance and make a great day?

6.2.2 *Research Objectives:*

- To explore the interdisciplinary experiences of team members within the OR, to elicit perceptions of what teamwork involves.
- To discover team activities, behaviours, qualities, or characteristics that may be perceived to be integral to teamworking in the OR.
- To explore the potential for contexts in which teamwork is perceived to flourish, leading to a “great day” at work.
- To develop a propositional grounded theory that offers an original contribution to understanding teamworking in the OR.

6.3 **Summarising and assimilating the key research findings**

The research findings presented in Chapter 5 identified three data categories relating to: *Shared Understanding*, *Positive Disposition (Positive Team Regard)* and *Information Flow* – as well as a core category relating to *Antecedents of Familiarity*. It was evident that a complex, interdependent relationship existed between the data categories and properties, with each category having the potential to influence another, reflecting a lived dynamic social world.

This chapter aims to examine the evidence from the research that addresses the contemporary interprofessional collaborative relationships within the OR, and the broader topic of how excellence in teamwork is constructed and enacted, leading to a ‘great day’ at work. The importance of the interrelation between individual

contribution and collective work will be examined in terms of the contexts that are perceived to enhance team performance, leading to the perception of a ‘great day’.

Theories of relevance will be discussed in light of the findings to extend how social interactions between individuals are interpreted as emergent team processes, which influence and are influenced by individual and contextual factors and are conceptualised at the team-level. Teamwork across disciplines is widely advocated in health and social care policies. However, the theoretical literature is rarely used to understand the nature of collaborative relations in action or to critique the normative discourses of teamworking. There is limited understanding of the nature of teams and teamworking, as empirical research rarely draws on theory to explore the ways in which teamwork between health professionals is organised. To date, little is known about how team-level antecedents and mediating processes are negotiated and enacted between different professional groups in different professional contexts; or which theories could meaningfully illuminate such issues. A theoretical explanation is offered by drawing on the basic tenets of social identity, negotiated order and relation coordination theories, that add further insight into how the relationship between antecedents of OR group norms and positive affect can create a climate that encourages and embodies collective efficacy, creating the notion of a ‘great day’ in the OR.

6.4 Theories of Relevance applied to the OR Social World Context

To understand and explain the complexities of teamworking and the inter-relationships between individuals within the OR, it is not sufficient to rely upon one theory to encompass all team processes, interactions and nuances of team dynamics.

Social Identity Theory (SIT), Negotiated Order and Relational Coordination go some way to explaining team process, interactions and outcomes within the OR context, while maintaining a restrained view of team dynamics. Cott, (1998) states the perceptions or meaning that staff members attach to teamwork are explained by linking them to the structure of the team using a combination of symbolic interactionist and social network perspectives. The meaning of teamwork refers to the interpretation or perceptions of individual team members as to the effect of being part of a team for themselves personally and for their work (Cott, 1998). In this study, the meaning that OR team members ascribe to teamwork will be discussed, and testable propositions aligned with specific novel relationships that guided the emergence of the theoretical model and taxonomy of OR team processes will also be offered.

6.4.1 *Integrating SIT, Negotiated Order and Relational Coordination*

As this study investigates relations between different interprofessional groups, it is important to have a theoretical framework capable of describing the different groups' approach towards their work and to each other. To achieve a greater understanding of the relationship between teamwork in the OR and team performance, it was necessary to integrate three previously distinct theories: social identity theory, negotiated order and relational coordination. The emergent categories of *Shared Understanding*, *Positive Disposition*, *Information Flow*, and the core category of *Antecedents of Familiarity*, support the notion that an individual team member can be viewed as someone that is highly interdependent and who is strongly connected to collective group activities or outputs. Furthermore, task interdependence and collective goals moderate the relationship between an individual team member and the collective team in terms of connecting and the sense of belonging.

6.4.2 *Social Identity Theory and Self-Collectivism*

Social Identity Theory provides an account of the generative relationship between collective self and group phenomena (Hogg & Williams, 2000). Group, intergroup and societal processes are affected by cognitive-motivational processes, “to make people behave and think about themselves and others in ways that are generally characteristics of groups and specifically shaped by the social context” (Hogg & Williams, 2000, p.81). SIT helps to explain the relationship between self-collectivism and team performance, emphasising when and how individuals will define themselves as part of a collective, or team (Ashford & Mael, 1989; Hogg & Terry, 2000), which is of particular relevance to teamwork in the OR. Turner (1987) suggests that individuals become team members through a cognitive and emotional process of alignment and not purely a behavioural response. However, individual team members who are not concerned with the collective team effort, defined as those who place personal interests over shared group goals (Wagner, 1995), have a significant, unique and negative influence on team performance, discussed later.

6.4.3 *Negotiated Order and Interprofessional Interaction*

Negotiated Order offers a theoretical perspective of how different professional groups interact with one another in the OR context. Historically, studies have demonstrated that interprofessional negotiations have tended to sustain professional divides in everyday work interactions, promoting one profession at the expense of others (Butcher et al., 2017). However, Lokatt et al. (2019) suggest that at times, interprofessional teams identify with similar lines of action, and the possibility of a *space of action* emerges in which the sense of professional belonging is to some extent left behind in favour of belonging to the collective team, as demonstrated within the subcategory of *Connecting and the sense of Belonging*. Crevani,

Lindgren and Packendorff (2010) describe a *space of action* based on interprofessional negotiations in relation to what is constructed as appropriate, legitimate, and thinkable by actors. Everyday work interactions can potentially reinforce or change, *spaces of action*. This notion of a *space of action* is evidenced within the study and will be explored further in relation to (but not exclusively) *Antecedents of Familiarity* and *Shared Understanding*. By developing a theoretical perspective that describes how professional discourses are invoked in the ongoing production of professional *spaces of action* (Lokatt et al., 2019), it should be possible to better understand and analyse the preconditions for, and consequences of, new forms of interprofessional teamwork in the OR and other healthcare settings.

6.4.4 *Relational Coordination and Behavioural Outcomes*

Furthermore, the theory of *Relational Coordination* complements *SIT* and *Negotiated Order* by focusing on relationships among professional groups and has been found to be a sound theoretical perspective to understand coordination in interprofessional teams. *Relational Coordination* adds value to this study by providing a theoretical perspective that captures the behavioural outcomes of interpersonal relationships or relational ties (Gittell, 1999) among OR team members. More specifically, *Relational Coordination* considers behavioural outcomes that include modes of communication, as detailed in *Information Flow* and *Professional Communication*, *Standard of Care* and *Beyond Talk*, whereby the ability to problem solve and mutual respect (respecting and valuing) are perceived to impact on team performance. The theoretical viewpoint of *Relational Coordination* converges with *SIT* and *Negotiated Order* to provide an integrated perspective of the emerging framework that describes interprofessional teamwork in the OR, and how a great day can occur.

6.4.5 *Properties of Teamwork in the OR*

Advanced conceptualisation of the three data categories and the core category identified properties, introduced in chapter 5, representing what individuals perceived teamwork in the OR to involve. The discussion that follows adopts a systemic focus, which explains relations among the categories, the core category and subcategories, rather than summarising the findings into a single overarching rule.

Existing literature that currently informs teamwork will also be explored.

Throughout the discussion, some ‘in vivo’ phrases are taken directly from the data to emphasise points of discussion and allow for the individual voice to be heard. The original contribution to knowledge, and the new insight that teamwork in the OR offers to understanding team processes, performance and relationships within a systemic view of team dynamics, is explained.

6.4.6 *Theoretical Scope*

Shared Understanding, Positive Disposition, Information Flow and Antecedents of Familiarity are processes at the team-level of data analysis, emerging from the team rather than from one individual. Categories and properties represent unique factorial contributions that have emerged in relation to teamwork within the OR context.

Categories and properties are inherently connected, so will be discussed and presented together.

6.4.7 *Shared Understanding*

The findings identified that having a shared understanding was a team-level construct that encompassed the shared knowledge held by the team when engaged in team tasks. Individual team members were able to anticipate one another’s actions by having a complementary mental model and, through the processing of information, to successfully coordinate and execute interactive team tasks. Filho

(2019) suggests that having a shared understanding, is about the quantity and quality of complementary cognitive-affective-behavioural knowledge styles. A shared understanding is held by team members about the individuals in the team, team tasks, the collective team, and contextual constraints. These sentiments are echoed in the core category, *Antecedents of Familiarity*, where a shared understanding is reflected in inter-related cognitive, affective, and behavioural states and patterns, and a cross-level property related to individuals, tasks, the team and contextual information. Creating a shared understanding within the context of an OR turns a group of individual team members into a team and subsequently influences the development of other team processes. Having a common goal and connecting with each team member facilitates the development of shared and complementary thoughts, feelings and behavioural patterns. Through connecting and feeling, a sense of belonging allows for familiarity to emerge.

6.4.8 *Relationships between Shared Understanding and Antecedents of Familiarity*

Although the findings identified the category of *shared understanding*, there is an inter-relationship and integration with the core category of *Antecedents of Familiarity*. The core category suggests that team stability provides team members with repeated opportunities and insight into each other's preferred working practices. This can enable them to retain knowledge, understand preferences and adapt their practices to fit those of the others in more detail than when the team is frequently changed. *Antecedents of familiarity* supports the development of social relations and a sense of interdependency through social connections that create a sense of belonging. There was a mutual sense of 'team', described by a powerful feeling of the need to belong, which energised and motivated the collective team, even when faced with adversity.

6.4.9 *Connecting and the Sense of Belonging*

The findings suggest that previous interactions among team members around shared work experiences and subsequent familiarity with one another played a part in successful team performance. Varying levels of familiarity among team members existed. For example, some individuals had extensive knowledge and connections with other individuals from within the OR context, gained through prior teamworking experiences, while others had never worked together. Furthermore, this study confirms that the retrieval of stored knowledge and subsequent distribution among team members supports the presence of a transactive memory system, a concept proposed by Wegner, Giuliano and Hertel (1985). This theory reinforces the notion of a 'group mind', whereby the memory systems of individuals who are familiar, or close to one another can become involved in larger, organised social memory systems, whereby emergent group mind properties are not traceable to one individual (Wegner, Erber & Raymond, 1991). Furthermore, in such transactive memory systems, when responsibility for remembering different pieces of common experiences is disturbed or shared, team members rely on one another to contribute missing details that cue their own memory retrieval system (Weick & Roberts, 1993).

In situations where team members had never worked together and lacked a shared system for knowledge exchange, there was a tendency to rely on expected role behaviours to bridge the lack of familiarity. If an individual is unfamiliar to one or more members of the team, there is a disconnection in terms of their ability for knowledge exchange, as their experience and system for sharing is untapped and hidden from others. This lack of a shared social memory can affect how fellow team members interpret feedback concerning one another's contributions to the team

(Arnold & Walsh, 2015). As such, without familiarity, the potential for knowledge gained from varied experience being useful in solving complex problems may be lost (Faraj & Sproull, 2000; Lewis, Lange & Gillis, 2005).

Additionally, if team members are familiar with one another, there is the potential for individuals to connect in such a way that they can integrate disparate information, uniting to embody a shared understanding. Disparate information and knowledge held by each team member includes the properties associated with antecedents to familiarity. When such information and knowledge is aligned within teamworking, this can stimulate the collective team to think ahead, work towards common goals and anticipate expected behaviours, resulting in the category of shared understanding. This supports the notion that individual team members have the potential to reach a shared understanding that exists essentially in the pattern of interrelated properties among the collective team.

6.4.10 *Contextual Understanding*

Contextual understanding provided an opportunity for team members to develop their grasp of each other's roles and responsibilities, learn together and gain confidence in each other's cognitive skills, as well as technical ability within the OR environment. Knowledge gained through continually working together as a collective afforded different disciplines and roles the connections that were required to develop an almost intangible/unconscious shared mental understanding of the operating procedures, mutual expectations and behaviours. This was described as being 'on the same page', or 'reading each other's minds'. Team members practicing at this level of connection were attuned to noticing each other's social cues and appreciated mutual team effort through valuing and respecting every team member's contribution. Shared understanding, common goals and shared mental

models across professional disciplines was a particularly strong feature of collective competence within the OR.

When faced with adversity or with an emergency, there was a collective acceptance that the person with the most relevant experience would lead the situation or, if no one stepped forward in a leadership capacity, members of the team actively contributed to ‘in the moment’ decision making and action at a team level. Using collective knowledge acquired by the accumulation of experience or drawing from similar episodes of care delivery as a frame of reference contributed to the sharing of ideas and a collective response in terms of competence, which removed the reliance on one individual perspective, thus reducing cognitive error or oversight. This movement toward collective competence provides the team with a culture or climate in which to openly explore alternative approaches until all options are exhausted, deflecting attention from individual accountability. Lingard (2009) argues that in terms of team performance, competence includes knowing how to jointly produce knowledge, rather than simply reproducing or regurgitating information. He, Butler and King (2007) extend such sentiments, suggesting that when a team is created, team members need to develop ‘meta-knowledge’ of one another’s knowledge and expertise, so that they can effectively and efficiently assign tasks to those that have the appropriate knowledge and skills, or determine whose knowledge is suitable in each situation.

Likewise, the concepts of common goals and mutual cognition – referred to as ‘on the same page’ in this research and characterised through the category of shared understanding – supports the notion that competence is a dynamic fluid process that ebbs and flows throughout a team who demonstrate connectedness, rather than one individual mind. This further supports the concept that cognition is distributed

(Hutchins, 1990), which is one representation of collective competence, conceptualising that shared knowledge helps produce a shared mental model of tasks assisting shared expectations that support coordinated actions (Salas et al., 2007). Locating expertise within the team serves as an index system that shows the internal knowledge distribution and represents the cognitive element in the knowledge contribution process. Again, this is characterised through the categories of shared understanding and antecedents of familiarity to include the properties of contextual understanding and collective competence. This notion has been developed further to reflect “coupling”, a model of team cognition, whereby parts of a system are not seen in isolation but through connections, if there is a change or weakness in one part of the system, this disturbs other parts within the system and the performance (Lingard, 2009). Lingard suggests that the emerging discourse of collective competence provides a platform for understanding an “incompetent team comprised of competent individuals” (ibid. p.627), which to some extent this study supports. Perhaps what this research adds to the discourse is that, in some instances a competent team can include an incompetent individual, whereby team cognition, or “coupling”, works around or subtly excludes the incompetent team member. This was motivated by a strong shared commitment by the rest of the team to achieve the collective outcomes. Furthermore, as evidenced within this study, shared social processes and the context in which they occur act as a means for engaging group interactions and dynamics. This shifts the focus from how individuals’ attitudes, behaviour and cognition support teamwork, or the ‘sum of all parts’, to understanding how these personal concepts converge and influence other group members, resulting in group-level or collective team phenomena. Teams that had prior experience of working together developed a shared representation of collective competence and an implicit

understanding of which individual had what knowledge and skills. This prior team membership and contextual understanding provided insight as to the distribution of skills and behaviours among the team through the retrieval of stored knowledge from earlier teamwork encounters. Underpinning this awareness was the ability to facilitate the distribution of the right amount of relevant information to effectively adapt and engage in shared leadership – shifting from vertical or designated leadership to implicit coordination of the collective team effort. Teams that worked in this way were known to each other through prior varied working experiences, using the knowledge gained from those earlier encounters as a frame of reference. This created a distributed approach to the sharing of knowledge due to the implicit understanding of who could do what and when, enacted through concurrent completion of multiple tasks, supporting a positive impact on perceptions of efficient team performance. Filho (2019) notes that reciprocally, the more team members know about one another, for example, having a collective competence and contextual understanding, the more likely they will trust themselves and each other, strengthening their mental models. Importantly, communication is conceptualised as part of gaining more knowledge and information about team members and contributes to a shared understanding through explicit and implicit communication exchanges.

6.4.11 *Information Flow*

Information Flow and team knowledge sharing within the OR was not limited to purely spoken words and active listening. Higher performing teams shared similar modes of communication and social characteristics, resulting in the properties of Professional Communication, Standards of Care and Beyond Talk. Information flow provided team members with opportunities and an atmosphere to share issues and

concerns about work, and to coordinate their actions. It also offered them a chance to share their mental models or rationalities regarding the work activity, constructing a team shared mental model. This does not mean sharing so much as to transfer individual mental models to each other, but rather testing them and building a common understanding of goals and outcomes to be achieved as a collective. This can result in a common ground that provides predictability, which in turn can ease the coordination of tasks (Klein et al., 2005), whereby '*everyone is on the same page*', emerging in the subcategory *Standards of Care*.

6.4.12 *Standards of Care*

Having a standard approach to knowledge sharing within the OR team does not mean that all team members have the same understanding. However, they have the same or compatible views on the aspects of work on which they can affect each other while working. Nancarrow and Borthwick (2005) acknowledge that multidisciplinary teamwork creates an increasing interdependence between professional groups, but this does not automatically lead to enhanced communication, coordination or mutual respect among professionals from different disciplines. *Standards of care* encourages a consistent approach to communication in which predetermined and generic types of questions are asked. The primary aim of this approach is to create a team interactional atmosphere that promotes an anticipated pattern of information exchange among the team, making it easier to plan for anticipated problems or risky situations. Standardising the approach that the team would take in terms of care delivery allows for collective and mutual detection and awareness of potential hazards through predictability and shared expectations. Hence, they can adapt their own work activities in a manner predictable to other team members, as well as better predict the actions of the others. Overall, this

approach promotes truly interprofessional teamwork, and affords all team members an opportunity to work closely together for a predetermined period of time and communicate and exchange information pertinent to the OR session ahead (Hall & Weaver, 2001).

6.4.13 *Checklists and briefings*

Additionally, information flow among the OR team, via standardised protocols, to include briefing, debriefing and checklists, enables the development of a shared team mental model around common goals and outcomes. Decision making aids such as checklists and communication protocols facilitated the sharing of large amounts of information quickly throughout the team in a clear and predictable order. This method minimises unnecessary communication and can improve team processes and reduce adverse events (Hoff et al., 2004; Lingard et al., 2004; Pronovost et al., 2003). Such aids provide a framework allowing all team members to have a shared vision and expectations in terms of collective goals, alongside an opportunity to refresh their social connectedness to team membership. The checklist process provides an opportunity for team members to connect. The act of introducing themselves and defining their role enables team development through fostering a shared understanding of the team's potential and capabilities. Furthermore, briefings can create a context in which this shared experience promotes a sense of belonging and trust, team harmony, and improved OR efficiency. Having structured opportunities to connect with one another allows interprofessional team members to contribute to decision making and anticipate difficulties. Preoperative briefing checklists can improve team attitudes towards respecting and valuing one another's contribution to the team effort. Eide (2000) develops this notion further, suggesting that when a group or team is faced with adversity or challenging situations, they

typically respond by spontaneously discussing the situation. Boreham (2004) refers to this approach as ‘sapiential authority’, whereby the different roles and responsibilities of each interprofessional group are acknowledged, and authority is based on experience, or having relevant information or skills (Boreham, 2004).

6.4.14 *Negotiating Gaps in Information Flow*

Strategies, such as checklists and debrief protocols were used as drivers for standardisation within the OR, with the intent of ensuring patient safety and enhancing interprofessional communication and information exchange. Such strategies are context or task-specific to provide guidance for and encourage safe practice. This study identified that compliance and full cooperation with standardised practices within the OR were mainly consistent, with most aspects of the checklist being correctly applied. However, there were instances where full participation was lacking, due to the initial absence of key team members, or team members who were engaged in other activities – in most instances, the operating surgeons, who had the OR following the procedure.

Compliance and adherence with standardised practices within the OR ‘set the scene’ for a context that fosters a sense of belonging to the team, and a shared understanding through the flow of information. Passive non-compliant behaviours, active resistance or limited use of checklist have been purported to contribute to a ‘false sense of security’ within the OR, whereby team members assume critical information has been relayed to and received by other team members because a tick box has been checked (Rydenfält, Ek & Larsson, 2014; Vats et al., 2010). There is a need to go beyond encouraging effective communication as simply a set of techniques or strategies, such as checklists, towards appreciating the relevance of deeper and less visible properties of social relationships, acknowledging that

information flow is context-dependent and a product of a social system (Hutchins & Klausen, 1998; Lingard, 2009). Checklists and briefings need to be augmented with the social context and interprofessional behaviours of the collective team.

6.4.15 *Beyond Talk*

Comprehension of situations within the social context of the OR were frequently influenced by non-verbal behaviours, characterised through signs or signals that included facial expression, most noticeably eye-rolling, interpersonal intimacy or distance, posture, gestures, and mimicry. Such signals demonstrate that spoken communication is not the only contributor to understanding or comprehending a situation. They also act as unconscious cues or prompts that ripple through the interactions of two or more people, resulting in spontaneous behaviours. Also of relevance is Goffman's (1969) metaphorical writing, which draws on the idea of individuals as actors in the social world. As if giving a theatrical performance, individuals use certain techniques to manage and control the impressions they give of themselves to others, or the audience. It is through the effect of the self-as-performer that social identity is formed. Therefore, individuals are active in shaping how others perceive them (Riley & Manias, 2005). Collective attention by team members to the properties of respecting and valuing, demonstrated through reciprocation and sharing, expressions of gratitude, positive emotions, and dispositions such as happiness, were social signals that affected the positive functioning of the team.

6.4.16 *Relational Coordination and Information Flow*

In terms of *Information Flow* in the OR, relational coordination captures many of the insights described. Relational coordination is a mutually reinforcing process of communicating, which supports information flow across areas of expertise for the

purpose of task integration (Gittell, 2002). Relational coordination is comprised of shared goals, shared knowledge and mutual respect, supported by frequent, timely, accurate and problem-solving – rather than blaming – communication. It is described as a high bandwidth form of coordination that is expected to impact performance most significantly under conditions of task interdependence, uncertainties and time constraints, and is applicable to interprofessional teamwork and relationship patterns. Relational coordination has been found to predict higher levels of quality, efficiency and job satisfaction (Gittells, 2009), as well as work engagement and psychological safety (Carmeli & Gittell, 2009).

6.4.17 *Emotional Contagion - Knowing through Embodied Actions*

A non-verbal group phenomenon that cannot be underestimated as to its significance and influence on team performance, harmony and efficiency is that of group emotions. Emotional contagion exists as a phenomenon that favours the chameleon effect, whereby participants in a social interaction subconsciously mimic (for example) the smiling activity of their partners (Chartrand & Bargh, 1999). This reflexive copying of one person by another, generally during conversation, results in an unconscious back-and-forth mirroring of smiles and head nodding (Pentland, 2008). This non-verbal group dynamic creates a group emotion through a combination of individual affective factors and team, or contextual-level, factors, with the potential to affect team performance when there is a sharing of emotions, whether positive or negative (Barsade, 2002; Kelly & Barsade, 2001). For example, if one or more team members portray a positive disposition displayed through happiness, the remaining members of the team will become more positive and optimistic about the day ahead. Moreover, *happiness* promotes *positive team regard* and serves to lower perceptions of risk, and nurture *reciprocity and sharing* within

the team, which creates a context that fosters the *valuing and respecting* of individual contributions to the collective effort. Individual affective factors that have the potential to alter the emotional dynamics of the team can be characterised by: predetermined relationships; perceived professional status/power, such as the surgeon as leader; personal moods at a given point in time, which may be influenced by external factors beyond the organisation; contextual factors, such as a shortage of team members; and emotional intelligence, which guides thinking and behaviour. Furthermore, an individual entering the team who is known through previous encounters to expect recognition of their professional status and who can create a power differential, inevitably harbours a contagion of negative emotion. Equally to a positive contagion, a negative can permeate throughout the established OR team, making the environment increasingly difficult to navigate, repressing the flow of information and team knowledge sharing. In such circumstances, familiar teams can maintain a status quo, collectively achieving outcomes, but there is a sense that the OR environment becomes psychologically less safe and social interactions more challenging and difficult, which in turn requires greater effort to maintain a high level of performance and efficiency.

6.4.18 *Mood linkage and Shared Affective State in the OR*

The empirical work of Trotterdell, Kellett and Briner (1998), and Trotterdell (2000) supports the findings of this research by demonstrating the concept of mood linkage, whereby a shared affective state exists between the members of a team. Emotional contagion embodies the notion; whether consciously or unconsciously, humans can match their own emotions and related behaviours with the emotions expressed by those around them. Hatfield, Cacioppo and Rapson (1994, pp.153-154) define this as “the tendency to automatically mimic and synchronise expressions, vocalisations,

postures, and movements with those of another person and, consequently, to converge emotionally”. Interestingly, Hatfield, Cacioppo and Rapson (1994) theorise that emotional contagion is a two-stage process, characterised initially through unintentionally mimicking the mood of others and, in the latter stage of the process, feedback from facial, postural, or vocal mimicry produces a corresponding mood response in others (Duclos et al., 1989; Strack, Martin & Stepper, 1988). Furthermore, studies have demonstrated that people catch others’ affect in teams (Barsade, 2002; Bartel & Saavedra, 2000; Trotterdell et al., 1998).

6.4.19 *Information Flow and Interaction through Relational Coordination*

Relational coordination theory offers insight into how teams work in the OR context and how higher levels of relational coordination produce higher levels of quality and efficiency by enabling the team to manage their task interdependencies with fewer “dropped balls and less wasted effort” (Gittell, Godfrey & Thistlewaithe, 2012, p.1). Relational coordination espouses that organisations, or teams within organisations, are better able to achieve desired outcomes through coordination that occurs amidst “frequent, high-quality communication supported by relationships of shared goals, shared knowledge, and mutual respect” (Gittell, Seidner & Wimbush, 2009, pp.2-3). This type of relationship between team members is of significance in coordinating highly interdependent, often uncertain and time-constrained working. Understanding relational coordination theory is further advanced by defining work practices as “a mutually reinforcing process of interaction between communication and relationships, carried out for the purpose of task integration” (Gittell, 2002, p.300). Leana and Van Buren (1999) suggest that stable relationship and reciprocal norms facilitate the formation of social capital. Identifying the work practices through which organisations influence the development of such relationships is highly

significant. Evans and Davis (2005) identify work practices such as self-managing teams, selective staffing, decentralising of decision making and open communication – to name a few – as multi-dimensional influencers of an organisation's social structure. Relational coordination dismisses traditional bureaucratic structures, such as social capital, to consider relational structures, for example, cross-functional teamwork, cross-functional performance measurement and reward, cross-functional boundary spanners and cross-functional protocols (Gittell & Douglass, 2012), all of which underpin this research in terms of creating connections across workgroups rather than reinforcing the silos that separate them (Gittell, Seidner & Wimbush, 2010). Gittell, Godfrey and Thistlethwaite (2012, p.1) suggest that relational coordination is “measured as a network of communication and relationship ties among workgroups engaged in common work process”. Furthermore, relational coordination improves job satisfaction by enabling participants or team members to effectively carry out their work, and by providing the social support to enable their resilience in the face of stress or adversity (Gittell, 2008; Gittell et al., 2008).

The core category of *Antecedents of Familiarity*, the categories of *Information Flow* and *Shared Understanding*, and the ensuing properties explain the opportunities for interprofessional team members to interact and connect, moving towards the creation of a homogenous team. Homogenous teams are perceived to experience better team outcomes and performance by creating a positive environment, which enhances team interaction and knowledge sharing, gradually fostering an atmosphere of *Positive Team Regard*. Having a *Positive Team Regard* also supported the notion of *Collective Competence*, where the strong norms of *reciprocating and sharing*, *happiness*, and *respecting and valuing* enhanced social connections, and encouraged reciprocal ties and personal investment. Working relationships were injected with

occupational friendship, where interprofessional boundaries were blurred between OR working and social curiosity, mutual trust and authentic motivation.

6.4.20 *The Good Atmosphere for Team Interaction*

The good team interaction atmosphere, identified in the category of *Positive Team Regard* and subcategories of *Respecting and Valuing*, *Happiness*, and *Reciprocating and Sharing* are created by the team members together, which is important to team cohesion and performance improvement. The category of *Positive Team Regard* refers to a shared emotional perception and is significant to teamwork in the OR, and fundamental to positive day-to-day experiences within the OR context.

6.4.21 *The bright side of life within the OR*

Respecting and Valuing, and *Reciprocating and Sharing* are behavioural attributes that contribute to *Happiness* within the OR environment. *Happiness* was perceived as a positive phenomenon that had the propensity to create a team atmosphere that represented the overall characteristics of the team, contributing significantly to feelings of psychological wellbeing, productivity and heightened performance. Fisher (2010) notes that happiness is not a term that has been extensively used in the academic world, particularly when seeking to understand employee experiences within organisations. Diener and Diener (1996) suggest that feeling happy and experiencing frequent positive emotions is fundamental to human experience and appears in every typology of basic human emotions. Regarded as a broader concept, happiness has considerable overlap with several other constructs that *have* been studied, that reflect happiness or positive affect, the most central and frequently used of which is 'job satisfaction' (Fisher, 2010). Fisher suggests that happiness at work includes job satisfaction but acknowledges that there is an array of happiness-related constructs, which share some common causes and consequences. Within this study,

several constructs in organisational behaviour within the OR had some overlap with the broad concept of happiness, emerging as the category of *Positive Team Regard*.

6.4.22 *Defining happiness*

Happiness has been defined in a variety of ways (Kesebir & Diener, 2008). The greatest divide in perspective is between hedonic views of happiness, characterised as: pleasant feelings, favourable judgements and pain avoidance; contrasted with eudaimonic interpretations of happiness, which focus on meaning and self-realisation, doing what is virtuous and morally right, and lies in the actualisation of human potentials (Ryan & Deci, 2001; Ryff & Singer, 2008). The two traditions are founded on distinct views of human nature and of what constitutes a good society (Ryff & Singer, 2008). Diener and Diener (1996) state that happiness is not reducible to a physical hedonism and can be derived from attainment of goals or valued outcomes. Accordingly, Ryan and Deci, (2001) claim that there are two important issues concerning the hedonic paradigm; first “subjective wellbeing (SWB) consists of three components: life satisfaction, the presence of positive mood and the absence of negative mood, together often summarised as happiness” (Ryan & Deci, 2001, p. 144). Second, concerns relating to the type of social activities, goals and attainment that are suggested to promote wellbeing. Although there are various theoretical perspectives associated with the hedonic approach, there is an assumption that overall, the theories are built on an enormous “amount of malleability to human nature” (Ryan & Deci, 2001, p.145). Ryan and Deci suggest that in its simplest form, happiness and positive affect is a function of expecting to attain the outcomes one values. They add that this fits with the expectancy-value approach supported by Oishi et al. (1999) and underpinned by Maslow’s (1970) theory of motivation. The

hedonic focus anchors happiness at the extreme positive end of the pleasantness versus unpleasantness dimension (Peterson, Park & Sweeney, 2008).

From the eudaimonic perspective, wellbeing cannot be equated to subjective happiness (Ryan & Deci, 2001). Whereas happiness is hedonically defined as: pleasant feelings and judgements of satisfaction, eudaimonia occurs when human life activities are most congruent with deeply held values, and are fully and holistically engaged (Waterman, 1993). Wellbeing, self-actualisation, self-validation and related concepts detail that a good or happy life involves doing what is right and virtuous, pursuing important or self-concordant goals, and using and developing one's knowledge, skills and talent, regardless of the need to satisfy the basic human emotion of happiness, at any point in time (Warr, 2007; Fisher, 2010). Robinson, Kennedy and Harmon (2012) suggest that constructs assessed under the umbrella of eudaimonia include: self-determination and the satisfaction of essential human needs for autonomy, competence and belonging (Deci & Ryan, 2000); intrinsic motivation and pursuing goals that are congruent with one's core interests and values (Ryan, Huta & Deci, 2008); taking part in activities that make people feel alive, engaged and fulfilled (Waterman, 1993; Waterman, Schwartz & Conti, 2008); and living in accordance with meaning and purpose in life (McGregor & Little, 1998; Seligman, 2002).

6.4.23 *Beyond throughput - the relevance of Flow within in the OR*

Flow is one concept of eudaimonia that is of relevance to this study. Through empirical studies of the experiences of surgeons and a variety of other groups, Csikszentmihalyi (2000) noted their 'autotelic' nature as a key characteristic.

Autotelic people, as described by Csikszentmihalyi (1990), are internally driven and exhibit a sense of purpose, disregarding the need for recognition, because what they

are doing is reward enough. Flow is an optimal subjective psychological state “in which people are so involved in an activity... every action, movement and thought follows inevitably from the previous one... The experience itself is so enjoyable that people will do it even at great cost, for the sheer sake of doing it” (Csikszentmihalyi, 1990, p.4). Empirical studies have demonstrated that when people are in a state of flow, they are more likely to exhibit positive moods, greater self-esteem (Wells, 1988), stronger intrinsic motivation and a sense that what they are doing is important (Hektner, 1996; LeFevre, 1988; Massimini & Carli, 1988). The association between workplace flow and positive experience has been substantiated by several studies (Chen, 2006; Moneta & Csikszentmihalyi, 1996), with Salanova, Bakker and Llorens (2006) adding that workplace flow has a positive effect on self-efficacy. Autotelic people, who experience flow status more frequently, tend to report more positive psychological states overall, feeling that their lives are more purposeful and meaningful (Adlai-Gail, 1994; Hektner, 1996).

Evidence from this study has indicated that happiness within the OR team and context is best conceived as a multidimensional phenomenon that embraces aspects of both hedonic and eudaimonic conceptions. Furthermore, this supports the idea that happiness has the propensity to extend beyond the concept of human (personal) agency to collective agency (Bandura, 1997). From a hedonic perspective, participants subjectively assessed their happiness and wellbeing based on encounters, behaviours and experience throughout their working day, using past encounters as a frame of reference. Happiness or its absence was associated with the mood, or the type of day that was created, even during times of challenge or adversity.

6.4.24 *Defining happiness at work – a good day*

One of the most common types of change experienced by OR teams is frequent changes in team membership. This flux in team membership, which involves a change in the pattern of interactions previously established among the collective team, is inherent within the OR context. Surgeons and anaesthetists transiently pass through the operating theatre, leaving the environment to fulfil job roles, work plans and competing priorities in the wider organisation. This fluidity of team membership, which typically occurs between morning and afternoon operating lists, involves at least one individual but rarely more than three. When existing members are lost from the team and new members join, the pattern of interactions is disrupted, which can frequently unsettle the previously exhibited team harmony and collective happiness. The loss or exchange of team members prompts the newly formed team to adapt their interactions, which can occur seamlessly, re-establishing collective team harmony, happiness, and efficient performance almost immediately. Conversely, interactions might be stifled, which can affect teamwork and behaviours, due to the interruption to the team interaction atmosphere. This disruption might be confined to the exchange of only one team member but can reduce the connectedness between team members, diminish the team interaction atmosphere and the sense of belonging, resulting in lacklustre performance as the newly formed team are not able to behave as effectively, but still achieve their collective goals.

6.4.25 *Mood Convergence and Collective Group Affective Tone*

This notion of a team interaction atmosphere and *Positive Team Regard* is further supported when considering the literature in relation to mood convergence between people who work together. Group affective tone, proposed by George (1996) is

composed of positive and negative dimensions. Group affective tone can be defined as “consistent or homogeneous affective reactions within a group” (George, 1990, p.108). The finding of group affective tone within the OR supports earlier studies (Cox, Lobel & McLeod, 1991; Wagner, 1995; Ramamoorthy & Flood, 2002, 2004), which highlight the cooperation of collectivists in placing the interests of the team ahead of personal goals, as opposed to individuals who cooperate to satisfy their innate desires and interests (Ramamoorthy & Flood, 2002). Ahuvia (2002) suggests that individuals tend to experience greater self-happiness, creating a life that is consistent with their preferences and aptitudes, pursuing their intrinsic needs rather than acting in such a way as to meet social obligations. Veenhoven (1999) offers a different perspective, proposing a nuanced relationship between individualist and collectivist happiness, whereby collectivism may be highly functional in a context where people need to cooperate and share to achieve goals and outcomes.

Affective events theory, proposed by Weiss and Cropanzano (1996), suggests that people experiencing the same events are likely to have similar affective experiences. In organisations, most happiness constructs are conceptualised at the person level, where the variance of interest occurs between individuals (Fisher, 2010). Personal level happiness constructs include “dispositional affectivity, job satisfaction, affective commitment and typical mood at work” (Fisher, 2010, p.386). From a unit-level perspective, various constructs describe the happiness of collectives such as teams, which, given the rise of team-based work environments, has shifted the focus from the personal-level to exploring links between happiness and positive affect at team-level (Tsai et al., 2012). Fisher, (2010) supports the notion that the person’s own experiences are the referent and, as such, team-level constructs are created by combining the individual experiences or traits of each person, forming a collective

position. Norms of emotional expression (Sutton, 1991) that are conveyed to everyone in the same team may also be considered relevant for the emergence of a common affective state. Emotional expressions that emerged in the properties of *Respecting and Valuing* and *Reciprocating and Sharing* were team-level constructs that supported the formation of a collective position, which facilitated the positive affective state of happiness.

Strong social connections and mutual investment through *Reciprocating and Sharing* created a supportive and high performing environment, generating rich tacit and relational knowledge through *Positive Team Regard*, in turn buttressing efficient and effective teamwork. Interprofessional boundaries were semi-permeable, allowing fluid collectivism to ebb and flow, this in turn supported effective responses to the OR's contextual demands (Liberati, 2017), including unpredictability of the workload. It is apparent that individuals who placed greater emphasis on self-interest and personal achievement have a greater propensity to disrupt and affect team harmony; whereas a collective team effort abandons the need for self-satisfaction, instead promoting the pursuit of collective success, and the goals of the team.

6.4.26 *Self-satisfaction and the pursuit of collective success*

The effects of self-satisfaction on the collective team emerged within this research and were evident in the OR context. While it is important to recognise the contexts, behaviours and attributes in which teamwork is perceived to flourish, it is also relevant to consider situations where challenges exist, and how adaptations are made by other team members to succeed and maintain stability. It was evident within this research that some individuals placed self-interest above the collective pursuit of the team. However, such individuals were known to the team and efforts were made to achieve collective team goals regardless of self-interest. Self-satisfaction in the

context of the OR was viewed as beyond anyone's control, but altruistic motives existed, whereby the team willingly performed organisational citizenship behaviour (OCB) at the expense of creating a positive effect of *happiness* at a team-level. OCB is described as behaviours that help, are discretionary in nature (not part of an individual's contractual tasks) and promote effective team functioning (Organ, Podsakoff & MacKenzie, 2005; Spector & Fox, 2010).

Engaging in OCB is usually motivated by the expectation of tangible or intangible rewards (Spector & Fox, 2010). Intentions can be self-serving, including career development (Finkelstein & Brannick, 2007), or reputation development within the organisation regardless of how well they do their job (Yun, Takeuchi & Liu, 2007). In the OR context, individuals or teams engage in OCB to achieve common goals through parallel processing, thinking ahead and using mental models that create a shared understanding. Higher performing teams were able to absorb self-interest through *Antecedents of Familiarity* in return for acknowledgement of their effort, which emerged through the subcategory of *respecting and valuing*. Huckman and Staats (2011) suggest that when disruptions occur, teams readjust their processes and rhythms, but this realignment takes valuable time. However, when teams are familiar with one another, this increases their flexibility and creates a fluidity that accounts for the deficits of an individual (such as the pursuit of self-interest), but which does not hamper collective team performance. Team members who have prior experience of working together are better able to accurately locate knowledge within the collective team; they can share and distribute the knowledge they possess, using this collective cognition to reach a desired outcome (Liang, Moreland & Argote, 1995; Reagans, Argote & Brooks, 2005). Failure to acknowledge such achievement and readjustment is likely to lead to disappointment, frustration and, in some instances

anger, presenting as counterproductive work behaviours (CWB). CWB are generally considered to be the antithesis of OCB, taking the form of extra-task behaviours that might harm the organisation or individuals (Sackett, 2002; Spector & Fox, 2002; Dalal, 2005). Spector et al. (2006) highlight several different acts that are included in the manifestation of CWB, ranging from abusive and nasty treatment of others to unauthorised withdrawal from situations, which they propose are by-products of injustice and stressful environments.

Both OCB and CWB consist of volitional and active deeds that individuals engage in, as opposed to unintentional or accidental actions (Spector & Fox, 2010). To articulate and describe through concrete phenomena, *Leading to Influence* demonstrated OCB ‘in action’, from both an individual and team perspective, in the form of shared and emergent approaches to leadership, alongside opposing CWB approaches to leadership. Unfavourable, leadership behaviours and incivility can create disharmony within teamworking. Such negative leadership practices and traits that are describes as destructive and toxic, aim to derail the team effort that negatively impacts both the team and the organisation. The term, dark leadership simultaneously encapsulates the traits associated with negative leadership practices and CWB (Otto, Thomson & Rigotti, 2018).

6.4.27 *Leading to Influence*

A further positive team-level construct emerged through the subcategory of *Leading to Influence*. This research challenges the traditional static leadership perspective as a personal-level construct residing with the surgeon, offering an alternate approach, whereby leadership is viewed as a fluid phenomenon emerging from the OR team. *Leading to Influence* is situated within the subcategory of *contextual understanding* and the core category of *Antecedents of Familiarity*. The interactional process of

Leading to Influence acknowledges the behaviours of all professions in the OR, whereby the focus is concerned with the organisation of work at specific points in time to achieve common goals, rather than organisation *per se*. This research introduces a new perspective on leadership in the OR, based on a shared process, and suggests that the traditional static leadership perspective of the operating surgeon is not sufficient to describe how such leadership works in the OR. How leadership is organised in the OR has so far been sparsely researched, and the studies that have been conducted focus predominantly on the leadership of the surgeon (Henrickson Parker et al. 2012; Yule et al. 2008). Such an approach implicitly assumes that it is the surgeon who leads teamwork in the OR, with little consideration given to the roles other team members play. An appropriate definition of OR leadership exhibited within this research is offered by Yukl (2006), who suggests leadership is “...the process of influencing others to understand and agree about what needs to be done and how to do it, and the process of facilitating individual and collective effort to accomplish shared objectives” (Yukl 2006, p.8). This definition can be advanced further to suggest that leadership within the OR is a fluid process that passes between team members and exists at the shared, social, team-level rather than with a specific individual (Pearce and Sims 2000). In this study, *Leading to Influence* emerged as a team-level concept and was shared throughout the interprofessional team.

6.4.28 *Shared leadership as a team-level construct within the OR*

Pearce and Conger (2003, p.1) define shared leadership as “a dynamic, interactive influence process among individuals in groups, for which the objective is to lead one another to the achievement of group or organisational goals or both”. This culminates in an emergent state, where team members collectively lead each other

(Avolio, Walumbwa & Weber, 2009) and captures instances of leadership behaviours identified in this research. Furthermore, there is evidence to suggest that shared leadership exists within teams that are perceived to be high performing and self-managing. Leadership within such teams may or may not have been ascribed, but what emerged was an informal process, whereby individuals within the team were influential in taking the lead and the leadership *'baton passes around'* (Participant 12, Consultant Surgeon, lines 121-129). This process was fluid and dynamic within some OR teams, and was dependent on critical intraoperative moments in time, where leaders emerged at different stages and for different purposes throughout the surgical trajectory. The findings of this study advance this knowledge in terms of a collective approach identified from the view of individuals who have experienced teamworking in the OR, and through observations of teamworking where leadership behaviours were shared. These findings refute the assumption that team leadership resides solely with the surgeon and advances the claim that participants clearly perceived leadership as being shared.

The ability of team members to exert influence on each other, thereby sharing leadership functions, has been conceptually and operationally defined (Pearce & Conger, 2003). Conceptual foundations of shared leadership include antecedents such as the ability to participate in collaborative decision making, fostering motivation within the team, and supporting and influencing one another as a whole, rather than it being the sole obligation of a single designated leader. This notion can be extended further to that of self-managing work teams that take collective responsibility for managing their own goals (Pearce & Conger, 2003), and is supported through the categories of *Antecedents of Familiarity, Shared Understanding* and the emergent subcategories. Most current conceptualisations

refer to the individual paradigms, such as transformational and transactional leadership, whereas shared leadership can be regarded as an emergent state in groups. Marks, Mathieu and Zaccaro (2001, p.357) define these states as “constructs that characterise properties of the team that are typically dynamic in nature and vary as a function of team context, inputs, processes, and outcomes”. Gockel and Werth (2010) state that shared leadership can be influenced by several different factors, such as team member characteristics, motivation, task, technology or organisational setting. In turn, it can be expected to influence different factors, such as cognitive and behavioural phenomena and team performance.

The challenge of integrating the view of leadership as a role performed by an individual and the view of leadership as a social process (Pearce, Conger & Locke, 2008), whereby leadership is shared and constructed collectively (Crevani, Lindgren & Packendorff, 2007, 2010) is of particular interest and relevance to this research. In this study, shared and emergent leadership coexisted, sometimes at odds with one another. Presenting darker traits synonymous with CWB, were exemplified by individual and team traits and behaviours that ensued from social interactions.

6.4.29 *Emergent Leadership*

Emergent leaders are described as individuals who have the capabilities to exert considerable influence over other team members, even though that may not be their designated role (Schneider & Goktepe, 1983). This form of leadership has one similarity to shared leadership in that both emphasise how informal leaders exert their influence within the team. However, shared leadership and emergent leadership differ in focus. Emergent leadership focuses on how individual and team attributes predict the emergence of informal leadership, in which one or two team members emerge as informal leaders. On the other hand, shared leadership

emphasises how leadership can exist in a team with or without a designated leader, can be formal or informal, and focuses specifically on the distribution of leadership roles and responsibilities across all team members. Shared leadership is evident within the OR in high performing teams where leadership responsibility is shared during pivotal moments within the operating procedure. Shared leadership is characterised as a group process representing a team-level concept; emergent leadership is defined at an individual or personal level (Hoch & Dulebohn, 2017). Emergent leadership describes situations whereby an individual arises informally as team leader without being designated formal leadership responsibility.

6.4.30 *The darker side of leadership*

While most research focuses on the effects of positive leadership, the negative personal and organisational effects of passive leadership behaviours are also important (Barling, Akers & Beiko, 2018). Within the OR context, passive leadership tended to surface when leadership was assigned, as part of an inherent expectation of the individual's role and job description. Certain team members were unable to demonstrate the necessary traits, skills, capabilities or competence to lead the team forward in the achievement of goals and outcomes. Those teams that were familiar with one another through working together frequently were able to override this inertia or inability, through shared leadership regardless of the inept designated leader. In teams where there was less familiarity, it was not uncommon for a leader to emerge beyond the passive designated leader, in which another team member stepped into the 'caretaker' role to control the situation and guide the team towards goals and outcomes. Social Identity Theory (SIT) helps to explain this caretaker approach to leadership and promotes a complex perspective of the team and its shared purpose, which differs significantly from the behaviour of individuals who

are aware only of their own performance (Coles, 1995). If individuals adopt a social identity, they are better able to understand the tasks and behaviour required for team output. This social identification moves beyond feeling and thinking at an individual level, to feeling and thinking like a representative of a social group, in this instance, the OR team (Tajfel & Turner, 1986).

Groups with a dominant social identity are expected to be highly productive because the team members are committed to a common group identity and a *sense of belonging* is created. They demonstrate this by directing their behaviour towards the reason for having a group or team and that is its purpose. From a SIT perspective, teamwork is motivated not by the individual but by the benefits intimately linked to the social identity of the team. What SIT does address is the team as a unit, which Lembke and Wilson (1998) claim is unlike most other theories of teams. However, social identification has neglected to include a critical antecedent of specifically team-based identification: “the relative importance that individuals tend to place on individual interests and pursuits versus group interests and shared pursuits” (Gundlach, Zivnuska & Stoner, 2006, p.1608). Thus, SIT does not wholly explain positive interactions that occur during an operative procedure within the OR context.

6.4.31 *Coexistence of emergent and shared leadership behaviours*

The initial literature search indicated that although leadership in the OR context is regarded as an integral part of successful outcomes, there was limited empirical literature and a lack of established theory describing OR leadership behaviours. As highlighted in the literature review, more recent studies have predominantly focussed on an approach that implicitly assumes that the surgeon is the team leader (Henrickson Parker et al., 2012; Yule et al. 2008), based purely and historically on their position within the organisation (Rydenfält et al., 2014). This study has

examined leadership behaviours throughout the OR context but more specifically, within the OR team. The findings suggest and reveal that leadership behaviours within this environment differ from previous research, which has tended to focus predominantly on the surgeon's capacity to lead within the OR team (Henrickson Parker et al., 2012).

Rydenfält et al. (2014) suggest that leadership is likely to be more important in complex interprofessional healthcare contexts such as the OR, but how leadership is conducted in practice, and by whom, is sparsely researched. Definitions of leadership tend to converge on leadership as a process of influencing others and facilitating goal-related efforts, which has traditionally utilised a framework in which leadership resides with a single person (Yukl, 2002). Typically, leaders have focussed on issues related to processes, systems and technical aspects, rather than on facilitating team functioning (Valacich, George & Hoffer, 2006). In the past, the OR environment has been subjected to this systematic approach to leadership, however, this research supports a shift in the status quo to a developing attitude congruent to team functioning.

6.4.32 *From Tuckman to Kozlowski et al*

As discussed previously, team development theory tends to assume the formation of a new team with no prior history or knowledge of the broader organisational context, work roles or prescribed interactions (Kozlowski and Bell, 2012). The dominant focus in Tuckman's (1965) classic linear model of group development is the group's struggle to create structure to regulate their interactions and to finally make progress towards their goal. Although this model provides a useful contribution to understanding group development in newly formed or simple teams, it provides limited theoretical insight to support the findings of this research. The findings align

to the notion that team constructs and phenomena are fluid and agile to meet common outcomes or goals, rather than static or linear stages. Most of the team-level constructs, for example, *Shared Understanding*, *Information Flow*, *Antecedents of Familiarity* and *Collective Competence* emerge upwards from the individual to the team level and evolve via complex temporal dynamics (Kozlowski et al., 1999). The findings suggest that individuals who are familiar with one another through past encounters in the work context form teams that are governed by a relatively stable set of role expectations, and shared systems of knowledge and meanings, demonstrated through the property of *Shared Understanding* and the ensuing categories of *Mental Models*, *Parallel Processing* and *Common Goals*. These informal structures emerge through work-based and social interactions among individual team members across the team's developmental history, as suggested in the categories *Leading to Influence*, *Motivating*, *Connecting*, *Sense of Belonging*, *Collective Competence* and *Contextual Understanding*.

The normative model of team compilation proposed by Kozlowski et al. (1999) considers not only team development (Tuckman, 1965), but integrates a performance perspective, advancing the conceptualising of team development from a multilevel perspective, aligning to the findings presented. The findings are represented in an *Interprofessional Collective Effort (ICE)* model of teamwork in the OR (Figure 3), alongside a taxonomy of OR team process dimensions, *perfORm* (Figure 4), both presented and discussed in Chapter 7. Team performance and adaptability are viewed as dynamic and fluid consequences of a continuous developmental process, of which there are three key conceptual features (Kozlowski et al., 1999). First, team capabilities improve developmentally, promoting transition to more advanced phases of skill acquisition. Variations in task episodes provide opportunities for learning

and skill acquisition, represented in the property of *Antecedents of Familiarity* and the ensuing categories. The second conceptual feature is development transition, where prompt attention to different *content* becomes the focus of new learning; different *processes* by which knowledge and skills are developed; and different *outcomes* that capture current capabilities. The third conceptual feature is where team compilation is viewed as an emergent multilevel phenomenon. Knowledge, skills and performance outcomes continually amass upwards, across individual self-focus to dyadic exchanges to an adaptive team network. This is acknowledged in the *Interprofessional Collective Effort (ICE)* model of teamwork in the OR, whereby knowledge, skills and performance outcomes accumulate across competent individuals to form competent team members, and finally key team members through dyadic exchanges. The fact that team compilation is viewed as an emergent multilevel phenomenon (Kozlowski et al., 1999) is echoed in the findings and represented in the both the taxonomy and model presented in chapter 7.

6.5 Chapter Conclusion

This chapter has presented a comprehensive discussion of the research findings, which represent individual perceptions of interprofessional teamworking in the OR and what makes a “great day” at work. This discussion has highlighted links with existing knowledge, offered new insights into teamwork in a specific context and considered the relevance to the theoretical influences that underpin this study. Several unique aspects of teamworking in the OR would suggest collectivism as a logical and effective construct to examine for its influence on how teams’ function and perform. The discussion will be advanced further in the following chapter to

highlight the propensity for individuals to cooperate with higher collectivistic orientations in a team context. The ensuing debate will explore collectivism and link several important individual-level constructs examined throughout this chapter to working in a team context.

7 Chapter 7: Advancing the Discussion

7.1 Introduction

This chapter reflects on the previous chapter to consider and advance discussion in relation to the construct of team processes that direct, align and monitor what it is that the team are doing. Emergent states that characterise properties of team experiences are highlighted and examined. The chapter will offer a nuanced view linking individual-level outcomes, to support the notion of collectivism, whereby interdependent actions and processes result in outcomes that support team effectiveness. It will give valuable insight into how the construct of collectivism relates to team performance and effectiveness. A taxonomy of OR team process dimensions, *perform*, will be presented, synthesising the findings alongside an *Interprofessional Collective Effort (ICE)* model of teamwork in the OR. The originality of the *perfORM* taxonomy and the *ICE* model is discussed throughout this chapter within the context of the findings, existing knowledge and the theoretical influences of the thesis.

7.2 Reflections

7.2.1 Team Development

This research is concerned with how work in the OR is perceived and how it is conducted in practice. The findings demonstrate how a ‘great day’ emerges in the OR through an interplay between context and collective performance, represented through and by individual behaviours, attitudes and interactions that co-exist within the team. Successful teams reach goals and produce outcomes beyond the capacity

of any individual member, whereby productive team functioning is associated with high performance, efficiency and harmonious collaboration, through opportunities to develop connectedness and shared understanding. Additionally, and of great significance to this research, Boreham (2004, p.1) notes that “interprofessional collaboration is not a single process but a whole family of processes, all related to each other but each with its own special characteristics”. Research on team development and team effectiveness has resulted in theoretical models that describe the maturation of teams through stages that are either linear (Tuckman, 1965) or cyclical (Gersick, 1988), as discussed in chapter 2. While the two theoretical perspectives are not incompatible, there is acceptance that team development is complex and unpredictable (Edmondson & Harvey, 2018). Recent theoretical frameworks of team effectiveness build on the interplay between emergent affective, cognitive or motivational states such as the attitudes, values and motivation of team members and team processes. Team processes are concerned with the interaction of team members, their task context or environment in the form of cognitive, behavioural, and verbal activities (Marks, Mathieu & Zaccaro, 2001). This framework can be advanced further to consider several collective states, adopting a normative perspective that underpins team effectiveness and development or instance, shared mental models that create a shared understanding around role responsibilities and where particular knowledge is located among team members (Klimoski & Mohammed, 1994). As teams form, individuals become focussed on fitting into the team and understanding their role in its collective goal. Such a process of socialisation results in outcomes of interpersonal knowledge regarding team members and team orientation as a basis for norms, goal commitment and team

climate. With social space resolved, individuals then have the capacity to shift to a focus on acquiring task knowledge.

The findings align with three normative principles proposed by collective competence: developing and using a collective knowledge base, developing a sense of interdependency, and making collective sense of events in the workplace (Boreham, 2004, p.9), alongside the fundamental premise that knowledge is constructed through participation (Lave & Wenger, 1991). Gaining a better insight into shared social processes within groups or teams is increasingly important as organisations shift towards team orientation to achieve tasks and outputs (Barsade, 2002). Ultimately, this research provides a comprehensive overview of the benefits of effective teamwork in the OR and the conditions needed for its implementation to create the perception of ‘great day’, even when faced with adversity.

7.2.2 Individualism versus Collectivism

In this study, high performing teams were perceived as being able to achieve outcomes and goals not only through shared knowledge and the skills of different interprofessional team members, but also through the interactive and synergistic dynamics of their transactions, which emerged as a team-level property. As such, collective efficacy based on the team’s shared beliefs, and emergent properties arising from the social dynamics and interactions highlighted within this study, influenced the achievement of predefined outcomes through collective action.

Achievement of collective efficacy within the OR context requires a logical means of relating factional interests to shared purposes. The unifying properties/concepts attained through concerted group effort are made explicit throughout this chapter.

7.2.3 *Collective Occupational Competence*

Spector and Fox (2010), note that there are several reasons that are outside the control of an individual as to why they may perform poorly, a key cause being a lack of capability or competence. A contributing factor that disrupted the flow of the individual to perform their allocated task efficiently was frequently associated with a change in process, inherent within the flexibility of routine OR work. Such inevitable and dynamic change disturbed the individual's information flow, temporarily altering their shared mental model, creating an operational disruption that impeded the individual sufficiently for them to trail behind the collective team. In teamworking situations where there was a known deficit in an individual's capability or competence, there was a reluctance to confront or explore reasons behind this, and instead an acceptance by other team members who allowed such performance to prevail. Collective competence existed by circumnavigating and supporting the individual, in a way that compensated for the deficit. New connections were made to incorporate the additional work created by the individual's inability to respond in a timely manner into the existing tasks. Spector and Fox (2010) note that under certain conditions, the necessity to compensate for a lack of performance could lead to annoyance and resentment. A team member or members could see this additional workload as a burden, creating an unjust situation. Such behaviours, demonstrated by some team members, support the social coupling or re-connecting of the team if an individual team member is known to lack appropriate capability or competence.

Team members find ways to work around and absorb the workload of poorly performing individuals in preference to allowing the team to falter, demonstrating a determination towards collective team goal achievement. This requires more energy,

effort and realignment, whereby other team members integrate and share knowledge, performance and interpersonal behaviours in a dynamic and fluid way to mitigate the risk of uncertainty and unpredictability caused by the individual's deficit.

Long-held assumptions that occupational competence is an attribute of the individual (Lingard, 2009) are challenged within this research, in favour of the belief that competence is a collective construct distinct from individual competence and is situated in patterns of interaction within the team that enable collective sense-making of situations in the workplace. The capacity to construct collective understanding of this kind depends on the team possessing and making use of a collective knowledge base. Collective competence also depends on building and maintaining a sense of interdependency within the team (Boreham, 2004). Boreham notes that collective occupational competence cannot be represented as the aggregation of individual competences, as essential characteristics of collective competence – such as the interaction itself – do not exist at an individual level.

Boreham (2004) makes a clear distinction between individualist and collectivist characteristics. Where individualists value the development of a distinctive personality and encourage personal initiative in making one's way through life. Conversely, collectivists treat the group to which one belongs, such as a work team, as the most significant social unit. They value the priorities of the group and encourage intra-group harmony rather than personal wishes and individual ambition. Nonaka and Takeuchi (1995, p. 31) observe that “while Western societies promote the realisation of the individual self as the goal of life, other societies ideal of life is to exist among others harmoniously as a collective self”.

7.2.4 *Moderating Role of Psychological Safety and Collectivism*

Psychological safety is concerned with a shared belief among team members that it is a safe context for interpersonal risk taking and describes a “sense of confidence that the team will not embarrass, reject or punish someone for speaking up” (Edmondson, 1999, p.354). The underlying principle of psychological safety is that an environment is created where team members feel a sense of openness and avoid taking task-related disagreements personally. Making decisions by consensus ensures “the solidarity of the team and ... allows it to move on, unscathed, from difficult clinical situations to face the next as a fully co-operative and collegial entity” (Melia 2001, p.718). The findings of this research suggest that interprofessional collective efforts can generate a new kind of collaborative practice, and when leadership was shared, psychological safety increased, as did perceptions of team cohesion, a sense of belonging and perceived team effectiveness, particularly when faced with adversity. Additionally, the findings suggest that team member familiarity may result in higher psychological safety, and stronger perceptions of cohesion and effectiveness compared to teams who are agile and less familiar with one another.

7.3 **Theories of relevance and collectivism**

Collectivists view the interests of the group or team as more important than individual needs and desires, and tend to look out for the wellbeing of the groups to which they belong, even when such actions sometimes require sacrificing personal interests (Wagner & Moch, 1986). This was demonstrated within the findings as psychological safety. Collectivism as a team-level construct is supported by Gittel

(2006), who suggests that collective identity at work depends on each participant's recognition that his or her role in the work setting is connected to and valued by other participants, and that this collective identity is developed through relationships of shared knowledge (shared understanding), shared goals (common goals) and mutual respect (respecting and valuing, reciprocating and sharing). These relationships are integral to coordination because they enable the formation of collective identity, which in turn facilitates coordinated collective action, all of which support the findings of this study. Relational coordination (Gittell 2006) supports and advances the findings of this study by offering a theoretical understanding that demonstrates the importance of relationships in coordination, particularly when individuals must adjust to each other due to the interdependencies between their tasks, and due to the uncertainties in the task or environment that create the need for adjustment. Relational coordination offers team members within the OR who are engaged in interdependent work processes the opportunity to positively embrace their connections with one another, strengthening their collective identity and in turn enabling them to engage in coordinated collective action in the face of task or environmental uncertainty. Relational coordination builds upon several other streams of theory to make a distinctive contribution to our understanding of the micro-dynamics of coordination and collective action.

Lembke and Wilson (1998) introduced the term 'team identity' to literature on team performance, arguing that social identity theory serves as an essential framework for understanding team performance in organisations. Lembke and Wilson (1998) suggest that traditional models of group behaviour, such as Tuckman's (1965) model of teamwork theory, lack attention to social identity concerns that occur within teams and affect team performance. Progressing the work of previous social identity

theory researchers (Ashforth & Mael, 1989; Tajfel & Turner, 1979, 1986), Lembke and Wilson (1998) argue that a strong team identity is essential for optimal team performance. Team identity is defined as the cognitive, behavioural, and emotional alignment of team members with each other (Lembke & Wilson, 1998).

Furthermore, team identity is vital in motivating teamwork and attaining successful team performances. Fundamentally, team identity not only has the potential to strengthen team performance by unifying team members into one socially identifiable whole, reflected in the categories of *connecting* and *sense of belonging*, it also inhibits individual team members from being distracted by individual goals and self-interest, which could be prioritised over team interests. Combining individual skills and unique resources in the expectation that teamwork will emerge is not enough; to achieve true teamwork, team members must be actively motivated to share these skills and resources with each other (Stevens & Campion, 1994). This is demonstrated in this study through the properties of *contextual understanding*, *motivating* and *collective competence*. Socially identifying with the team achieves this goal by establishing the primacy of the team's needs over individual needs.

Gundlach, Zivnuska and Stoner (2006) believe that instead of thinking, feeling and behaving like an individual member of a group, team identity results in a common view shared by team members, manifesting in their shared dedication towards achieving team goals, and represented through *shared understanding* and *common goals* in the findings of this study. The group-level construct of team identity is driven by the individual-level construct of team identification (Gundlach, Zivnuska & Stoner, 2006). Identification with the team is a crucial component to motivating members to apply skills and use resources for the greater good of the team. When team identification is deficient, members will continue to think, feel and act as

individuals, and subsequently team identity will suffer (Gundlach, Zivnuska & Stoner, 2006).

7.4 Collectivism and Team-Level Performance

Collectivism has historically been studied at the cultural level (Hofstede, 2001) however, there has been a shift in focus where research has begun to examine collectivism as an individual difference variable in team settings (Eby & Dobbins, 1997; Kirkman & Shapiro, 2001). Given that individuals with greater collectivistic orientations base their identity on group membership as well as valuing interdependence and the group interests over self-interest, teams composed of more collectivistic individuals should engage in behaviours that promote the effective functioning of the team (Dierdorff, Bell & Belohlav, 2011). The limited empirical research investigating collectivism as a team compositional variable is generally supportive of this notion (ibid.) and is reflected in the findings of this study, demonstrated through the properties of *respecting and valuing, motivating, and connecting and the sense of belonging*. Drach-Zahavy (2004) suggests that in teams composed of highly collectivistic individuals, members give more emotional, informational and appraisal support to one another than members of teams composed of those low on collectivism, which reflects and corroborates the findings of this study. The proportion of highly collectivistic individuals on a team is related to cooperation in teams (Eby & Dobbins, 1997).

7.5 Interprofessional Collective Effort (ICE) model of OR teamwork and the PerfORm Taxonomy

The *PerfORm* taxonomy and the *Interprofessional Collective Effort (ICE)* model of OR teamwork originated through synthesising the findings detailed in chapter 5 with the extant literature reviewed in chapter 2. Integration of the data categories into a diagrammatic representation is reflected in the *Interprofessional Collective Effort (ICE)* model of teamwork in the OR, alongside the *perfORm* taxonomy of team performance, both of which provide further transparency to the findings and direction to the discussion within this chapter. Conceptual clarity is offered through combining the experiences of interprofessional team members to generate dimensions that are both conceptually distinct and consistent with the propositional theory of teamwork within the OR context. Through the development of a conceptual framework, team processes as they relate to team effectiveness and performance, and the notion of a ‘great day’ are identified. By introducing both a model and related taxonomy of teamwork and process variables, a more systematic and comprehensive approach to identifying team processes within the OR is presented. Additionally, a more succinct definition of inter-professional working as it relates to the context of the OR can be offered as, “team members that continue to work from a particular professional orientation who collectively undertake patient centred collaborative work”. Furthermore, these multiple, interacting process variables suggest that effective, sustained inter-professional work requires a nurturing environment within the OR environment. The ICE model and taxonomy offers a better understanding of structuring teamwork, which contributes to the overall development of more effective teams within the OR context.

7.5.1 *The ICE model of teamwork in the OR*

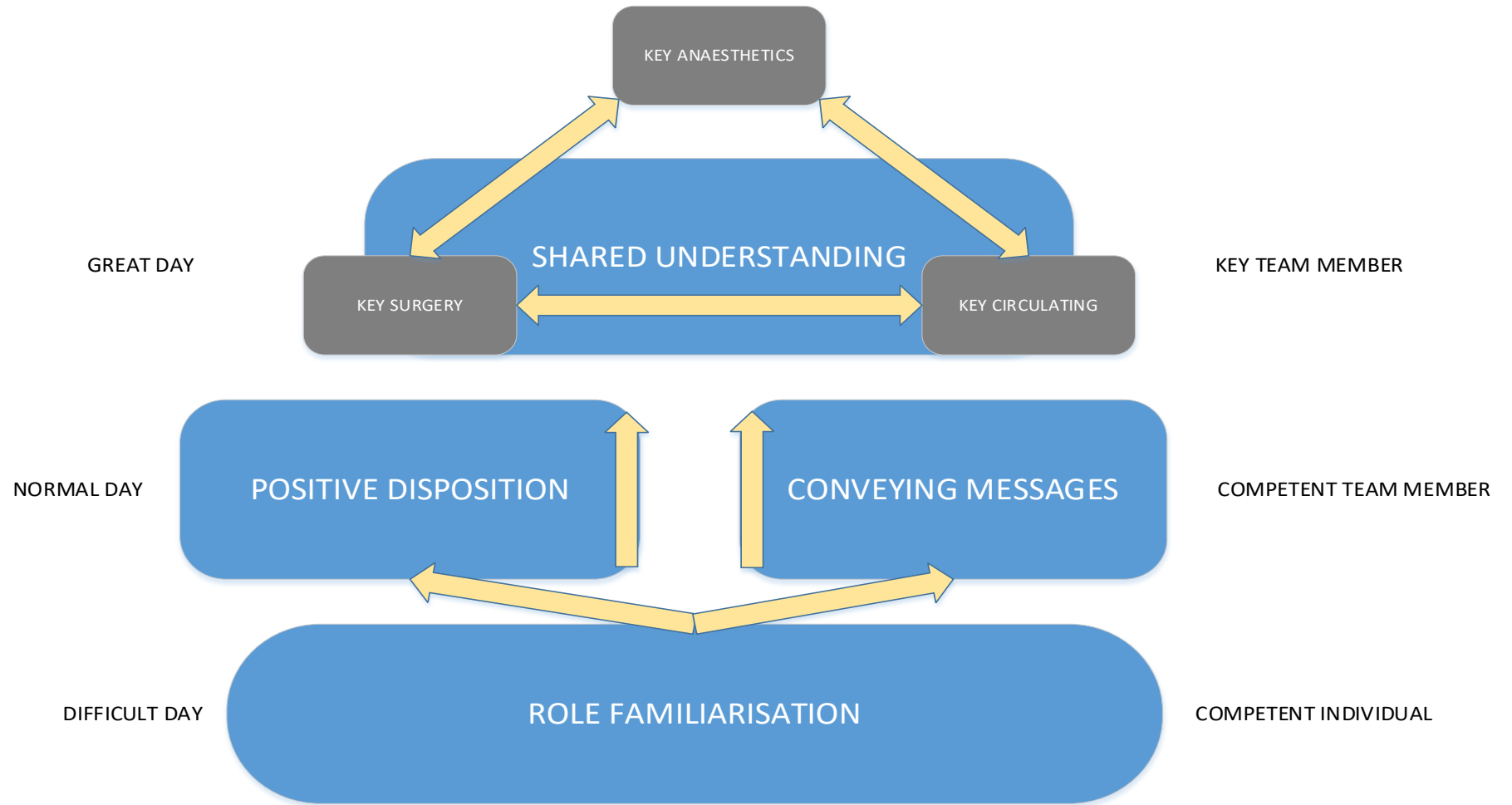
The ICE model illustrates that within the context of the OR, a ‘great day’ was perceived to be dependent on a series of interrelated and progressive elements, which had the potential to influence subsequent collective occupational experiences. The ICE model goes some way to identifying the factors that account for differences in the extent to which individual team members exhibit cooperative behaviours and, ultimately, perceived differences in team performance. Identifying such factors is often cited as an important issue both for organisational research and for human resource practice (Wagner, 1995). One factor purported to enhance individuals’ propensities to cooperate in team contexts is collectivism (Cox, Lobel & McLeod, 1991; Earley & Gibson, 1998; Wagner, 1995). Dierdorff, Bell and Belohlav (2011) suggest that in a broad sense, collectivism represents the degree to which individuals hold a general orientation toward group goals, a concern for the wellbeing of the group and its members, an acceptance of group norms, and a tendency toward cooperation in group contexts. All of these are reflected to some degree within the findings of this study and are represented in the theoretical propositions generated in the proposed explanatory model and underpinning taxonomy. For these reasons, collectivism appears a logical construct to examine for its influence on how teams’ function within the OR. However, whether collectivism predicts performance and effectiveness in team contexts remains generally unexplored (Jackson et al., 2006). It is noted that one reason for this paucity of empirical evidence stems from shortcomings associated with how collectivism should be measured (Oyserman, Coon & Kimmelmeier, 2002).

The ICE model of teamwork in the OR illustrates findings that link collectivism to several important individual-level outcomes for people working in a team within the

OR context. For example, collectivism was shown to be positively associated with shared leadership of team-member task performance, and citizenship behaviour such as respecting and valuing, and was negatively associated with counterproductive work behaviour and a lack of familiarity. The facets of collectivism also displayed a degree of difference projected across these outcomes and represented in the *perfORm* taxonomy, further suggesting that a more nuanced view can lend valuable insight into how collectivism relates to team functioning and the perception of a ‘great day at work’.

Familiarity with the OR context and understanding the collective competence of team members created a sense of belonging and intrinsic motivation, which supported collectivism. This was perceived to affect team performance over time, as familiarity with one another increased through opportunities to interact and work together. It is essential to understand how the antecedents of familiarity contribute to team functioning and performance, primarily because teams are now widely conceptualised as adaptive, fluid, and dynamic systems (Ilgen et al., 2005; Mohammed et al., 2015). The perceived quality of exchanges, including connectedness and information flow, appeared to influence team members’ motivation to continue to expend team-directed efforts towards a shared understanding and the achievement of common goals, and consequently attenuated or amplified the effects of collectivism on team performance. This is reflected in the *perfORm* taxonomy.

Figure 3: The Interprofessional Collective Effort (ICE) model of Operating Room teamwork



7.5.2 *PerfORm Taxonomy*

The perfORm taxonomy is a comprehensive attempt to build and expand upon previous empirical efforts, by integrating the findings of this research, which acknowledge the complexity and inter-relationships of the lived experience of participants within the OR context. The taxonomy incorporates a hierarchical structure, defining seven dimensions appropriate for teams within the OR context, and refers to affective, behavioural/motivational and cognitive mechanisms. Careful consideration was given to the level of specification of the dimensions, to fully represent the construct of interprofessional collective effort and group effectiveness that map onto the presented propositional ICE model. Each dimension refers to a teamwork process that can range from being performed very well to very poorly, leading to either a great or a problematic day.

Figure 4: perfORM – Taxonomy of Operating Room Performance

Self-Managing Team/Shared Leading	Shared Understanding	Positive Disposition	Information Flow	Familiarity	Respecting, Valuing and Connecting	Collective Competence	Type of Day
<p>The team takes ownership of the problem and accepts joint responsibility for its achievements.</p> <p>Problem-solving and 'work-arounds' are seamless.</p>	<p>The team has a shared vision and a set of outcomes, developed collaboratively. With or without conscious thought.</p>	<p>The whole team reflects a positive disposition and are energised and motivated, even when faced with a difficult or unpleasant situation.</p>	<p>Team members actively, openly and subconsciously convey messages to share their knowledge and ideas around the whole team. Mimicking, physical contact and mirroring is common.</p>	<p>The whole team are familiar with one another. They have regular collaborative experiences as a team.</p>	<p>Respect and value are interchangeable throughout the collective team. Mutual willingness to support each other (reciprocity). Psychological safety and wellbeing acknowledged.</p>	<p>Unconsciously competent – Expert Team</p>	<p>Great Day</p> <p>Improved efficiency and performance.</p> <p>Highly motivated team.</p>
<p>The team recognises that its members have individual team goals and tasks are framed accordingly.</p> <p>Problem-solving and 'work-arounds' are demonstrated.</p>	<p>The team has developed for itself both a shared vision and clear objectives.</p>	<p>Most of the team reflects a positive disposition and can maintain effective team harmony.</p>	<p>Team members actively and openly convey messages to share their knowledge and ideas around the whole team. Some mimicking, physical contact and mirroring.</p>	<p>The team are familiar with one another. They have had numerous collaborative experiences as a team.</p>	<p>Respect and value are evident even if there is a disagreement between individual team members. Reciprocity demonstrated between most, if not all team members.</p>	<p>Consciously competent – Proficient Team</p>	<p>Normal Day</p> <p>Majority of OR days.</p> <p>Motivated team.</p>
<p>The focus of the team is on the individual tasks that individual members need to solve.</p> <p>Problem-solving and 'work-arounds' may be attempted.</p>	<p>The whole team is working to a set of common objectives.</p>	<p>One member of the team has a negative disposition, which affects the disposition of the whole team.</p>	<p>Conveying messages with some but not all team members. Limited sharing of knowledge and ideas. Eye rolling is common.</p>	<p>Some team members are familiar with one another. As a team they have had limited collaborative experiences.</p>	<p>Respect and value are evident between some but not all individuals and/or team members. Reciprocity may or may not be demonstrated.</p>	<p>Adequate team competence – Competent Team</p>	<p>Sub-optimal Day</p> <p>Reduced efficiency and performance.</p> <p>Team needs to be motivated.</p>

<p>Team members take limited interest in issues that lie outside their own immediate area of responsibility.</p> <p>Problem-solving and 'work-arounds' are not attempted unless prompted.</p>	<p>Members of the team are clear about their own objectives, but the team has no shared vision.</p>	<p>One member of the team is in direct conflict with another team member, which affects team harmony. Lack of motivation and increased level of stress for some team members.</p>	<p>Conveying messages between team members is limited. Limited sharing of knowledge and ideas.</p>	<p>Members of the team have limited familiarity with one another. They have limited or no collaborative experience.</p>	<p>Respect and value for one another is limited. Reciprocity is not taken into consideration.</p>	<p>Consciously incompetent – Advanced Beginner Team</p>	<p>Difficult Day</p> <p>Limited efficiency and poor performance.</p> <p>Limited motivation.</p>
<p>Team members concern themselves only with their own responsibilities.</p> <p>Problem-solving and 'work-arounds' are not attempted.</p>	<p>Team members, individually and/or collectively, lack a common vision and clear objectives.</p>	<p>Deliberate attempts are made to upset the team status quo. Lack of motivation (saboteurs).</p>	<p>Conveying messages to team members is strictly on a 'need to know' basis.</p>	<p>Team members, both individually and collectively, lack familiarity.</p>	<p>Team members, both individually and collectively, lack respect for and do not value one another. Some team members may conflict with one another. Occasional deliberate lack of reciprocity.</p>	<p>Ambiguity and uncertainty in individual and/or team competence – Novice Team</p>	<p>Problematic Day</p> <p>Lacklustre approach with no motivation.</p>

7.5.3 *Application and Potential of The Interprofessional Collective Effort (ICE) model of OR teamwork and the PerfORm taxonomy*

The study creates a unique grounded theory, presented as *The Interprofessional Collective Effort (ICE) model of OR teamwork* and the underpinning *PerfORm taxonomy*. The heavy reliance on teams in applied settings beyond the OR has created an increased need to understand teamwork processes that optimise team performance. The model and taxonomy presented have the potential to shape future conceptualisations of the scope and boundaries of team processes, as well as serving as a guide for team performance. The taxonomy could be used to conduct customised team process *feedback*, whereby teamwork strengths and areas for improvement are outlined, and specific development and training needs are identified. For example, rather than rely on generic team-building strategies as a universal solution for all process related issues, teams that are in conflict can be provided with targeted and productive conflict resolution interventions.

There is evidence to suggest that *recruitment, selection, placement and training* of team members should be based on a set of team competencies, or knowledge, skill, ability and other characteristics necessary for effective teamwork performance (Morgeson, Reider & Campion, 2005). Barrick et al. (1998) suggest that the skills, knowledge, and motivation needed to function effectively in a team go beyond the core technical skills often measured in traditional selection contexts. Additionally, others have noted that selecting individuals for teams requires consideration of problems that are seldom considered when selecting individuals to work by themselves (Jones, Stevens & Fischer, 2000). The model and taxonomy presented have the potential to be instrumental in *recruitment, selection, placement and*

training, by targeting team-level phenomena and collective processes that support a resulting capability to work in teams.

Together, this model and taxonomy provide a novel and contemporary framework from which to understand teamwork in the OR, which provides a foundation to refine future research with other interprofessional teams beyond the context of the OR, such as action teams. Action teams are teams in which members with specialist skills must improvise and coordinate their action in intense, unpredictable situations (Edmondson, 2003) – a typical example being the hospital cardiac arrest team.

7.6 Chapter Conclusion

This chapter has outlined the PerFORm taxonomy and the Interprofessional Collective Effort (ICE) model of OR teamwork, which describe the interdependent actions and processes that support team effectiveness and performance, and the grounded theory that was created from this study. Cognitive and behavioural activities, supported through information flow and directed towards organisation of tasks to achieve collective goals, form the basis of collective occupational competency. These are crucial for effective team performance in the OR. Such teamwork processes convert individual skills, knowledge and attitudes into collective team performance. The propositional conceptual model and taxonomy introduced in this chapter have implications for the structuring of teams, giving rise to several practical applications regarding team performance, which will be discussed in the concluding chapter.

8 Recommendations and Concluding thoughts

8.1 Introduction

This chapter concludes the thesis with a summary of significant aspects of the study, including its methodological limitations. The key findings and grounded theory constructed from the research are summarised and recommendations for policy, practice, education and research. The contribution of the study to knowledge about teamwork in the OR, and its implications for future development, are presented. The chapter concludes with areas for further research and a brief overview of the significance of the thesis to interprofessional teamworking in the OR and what makes a “great day” at work.

8.2 Methodological Limitations of the Research

This study provides an original and contemporary insight into teamwork in the OR context and the characteristics of a good day. Despite the implementation of strategies to enhance rigour, it is inevitable that some methodological limitations and challenges will arise (Barbour, 2001; Graneheim, Lindgren & Lundman, 2017), so this section focuses on the limitations imposed by the study’s aims and sample.

Acknowledging these potential limitations and challenges through a commitment to reflexivity provides support to the trustworthiness of the research (Malterud, 2001).

Sampling decisions and the choice of the first participant are discussed in chapter four and, while this study used a typical approach, researchers seldom study an entire population (Fairweather & Rinne, 2012). Once the sample data are analysed and interpreted, as detailed earlier in, the researcher is then faced with considering the

extent to which the findings can be generalised. As qualitative research tends to produce highly contextualised data, it is commonly criticised for its limited generalisation and transferability (Scotland, 2012).

Views about generalisation for this grounded theory study, as with other qualitative research designs studies, are varied, with some suggesting that it is either not a priority or it is not possible (Denzin, 1983; Hammersley, 1990). Countering those who deny the possibility of generalisation, Williams (2000) introduces the concept of 'moderatum generalisation', based on the presence of shared culture or cultural consistency in the social environment, rejecting the notion that generalisation is not possible. 'Moderatum generalisation' considers theoretical inference and explains how a limited number of participants can provide a basis on which to generalise, as the sample bears those characteristics necessary to infer to a wider population (Williams, 2000). This suggests that the outcome of research undertaken with any social group requires patterns in behaviour that are distinctive for the group in a particular context. These patterns allow social interaction to occur and provide for regular patterns of social behaviour, rather than reinventing them prior to each interaction. In that sense, the experience of OR team members in this study is likely to reflect to some degree and consistency the experience of team members in another OR context. This is particularly the case for the grounded theory study presented, which has generated a theory inspired from and resting upon the premise of symbolic interactionism (Mead, 1934; Blumer, 1969), the dynamic relationship between persons (individual or collective), and constantly changing situations and contexts, rather than static factual "truths" (Glaser & Strauss 1967).

Barbour (2001) suggests that claims to generalisability in qualitative research can be made through the production of new models or "typologies", which are characterised

by a level of universality (Vicsek, 2010). The theoretical propositions generated and reflected in the *ICE* model and *PerfORM* taxonomy could therefore be said to be "theoretically generalisable" (Barbour 2001, p.158) to those who share a similar clinical practice context, or team members that come together as part of an active team. The theory generated is also relevant to interprofessional working in other healthcare contexts and potentially more widely, whereby the application of theoretical perspectives can provide added value (Barbour 2001).

These findings arise solely from the interactions between interprofessional team members within an OR environment. While the nature of this context provided conditions that were powerful for establishing connectedness and focused on the social interactions of interest to the researcher, they lack an external perspective. The study is based only within the OR context of one NHS organisation and future research should consider more diverse contexts, with larger numbers of teams over longer periods of time. As the analysis is focused on the specific clinical microsystem of the OR, the wider meso and macro systems of the hospital, policy and political environment were beyond the scope of this research. Nevertheless, they are likely to exert their own important effects. It will be important to explore these characteristics for generalisability and seek to replicate these findings in other OR environments, acute care settings and additional knowledge-based organisations where teamwork plays a central role. A further limitation of this study may be that team members who actively participated were well-functioning and wished to share their positive experiences of teamwork.

It is also worth considering the possibility that a more diverse sample may yield different results in terms of ethnicity and international culture. Further research could investigate the characteristics identified with more diverse samples, working in

different health environments and knowledge-based organisations. Further investigation and research are needed to explore ongoing organisational teamwork in teams that remain reasonably static, as well as teams that have fluid membership, to determine how collectively positive properties are developed, and if and how such properties are reinforced and maintained. Additional research is needed to gain a more comprehensive understanding of the dynamic relationships within teams that display collective positive properties and teamwork outcomes.

Although teams and teamworking have received increased attention over recent years, often viewed as the powerhouses responsible for organisational performance, there is limited empirical evidence that addresses the development of positive team-level constructs. In general, this research suggests that complex organisations could benefit from understanding how positive teamwork and ‘having a great day’ at work supports the facilitation of team processes, outcomes and ultimately performance. Furthermore, this study suggests that the scope of research involving ‘having a great day’ in the OR context could be extended to explore the influence of positive properties beyond team level – to department and organisational levels, particularly where outcomes and performance are central.

Finally, these findings were not compared to a measure of ‘performance’ outside of the teamwork dimensions used in the interview guide. Therefore, there is some caution around drawing conclusions about the relative impact of the theoretical propositions on teamwork performance and effectiveness. Nonetheless, the proposed model and taxonomy warrant future research.

8.3 Recommendations

Throughout the discussions presented in Chapters 6 and 7 respectively, existing links to knowledge have been affirmed, alongside the emergence of new insights, which further inform teamworking in the OR context and implications for academic disciplines, research areas, interprofessional education and collaborative team training. To address these implications, a series of recommendations is outlined:

8.3.1 *Shared Leadership*

This study indicates that leadership is as much a practical consideration as a theoretical one. If leadership is a shared role, where all team members perform leadership functions within the OR, as the findings of this thesis suggest, this raises new questions about how OR leadership should be researched in the future. If leadership is shared within the context of the OR, it makes sense to shift the focus away from the traditional notion of the leader-centred approach of the surgeon. The distribution of leadership functions in this study demonstrated that shared leadership is particularly effective when interdependency and collectivism is high. By acknowledging the contributions that different professionals make in terms of shared leadership, healthcare organisations could strengthen each profession's capabilities to lead through team training.

8.3.2 *Team Training*

The current research has several practical implications in terms of effectively managing teams, which have the potential to extend beyond the context of the OR, to action teams and teams within any organisation. Perhaps one of the greatest challenges for policymakers and clinicians is to find ways of implementing the desired conditions for those that deliver healthcare in teams, while meeting the

expectations of service users and patients. Based on the present findings, cultivating a collaborative work climate, which encourages implicit and explicit team norms, can boost the team's ability to interact closely to solve problems, share decision making and generate different or novel approaches.

Team training has been the most widely applied strategy to improve team performance and effectiveness, which emphasises the development of collective competence through interprofessional learning experiences. The challenge remains within healthcare organisations to provide and promote opportunities for team training. Team training has the potential to develop the team's capacity to construct a shared mental model of problematic situations encountered during teamworking, and to establish mutual understanding of common goals through interactions between team members. Despite increasing attention being paid to the effects and benefits of team training in the medical domain, there is no defined content nor a consented curricula for such training (Gross et al., 2019). Team training approaches are heterogeneous and lack a shared conceptual foundation. Furthermore, the need is to develop the collective competence of the team as an entity, not assume that if its members have individual competencies then team competence will occur naturally. Each team member is socialised into a collective way of thinking. This study adds strength to and supports the need for a structured approach to interprofessional 'teaming', whereby time is allocated to learn and teach the importance of non-technical skills that are common across all professions to attain an interprofessional perspective, ultimately benefitting the work team. Once learned, these skills are transferable to many areas in which one profession merges closely with other professions to attain a common goal.

A great deal of planning will be required to determine the content of educational programs that prepare healthcare professionals to work together most effectively. Teaching team skills may facilitate team performance by shaping expectancies, educating team members on the importance of cooperation, and increasing team member accountability. Careful consideration of the various roles that each profession may take within a team may also enhance medical, nursing and allied health curricula. In addition to investigating the topics to be covered, further research is required to determine the best mode of delivering interprofessional learning experiences, beyond 'in-situ' team training. Investigating the efficacy of the theory to guide curriculum planning would be valuable.

8.3.3 *Recruitment and Selection*

Selecting individuals that demonstrate a positive disposition can create teams that demonstrate and maintain a high level of group positive affect, which has the potential to shape and enhance collective efficacy. Clarifying expected behavioural patterns and respecting and valuing positive work behaviours through selecting individuals that demonstrate a positive disposition, can create teams that maintain a high level of group positive affect, enhancing collective orientation. Reflecting upon the current process for recruitment and selection within the NHS, value-based recruitment (VBR) is the preferred approach, whereby the employer seeks to attract prospective employees whose personal values and behaviours align with the values outlined in the NHS Constitution. Identifying individuals who possess the personal domains commensurate with teamworking and team membership is extremely challenging. This is because of the lack of a clear consensus on what attributes and or values should be assessed and how. Gaining a better understanding of how these personal domains can be multidimensional constructs, and how they integrate with

the collective dimensions of teamwork to become observable actions and behaviours, is required. Eby and Dobbins (1997) suggest the use of structured interviews based on critical incidents as an appropriate strategy to uncover the individual's past experiences in teams, which may provide information as to their willingness to work in a team environment. Interestingly, because collectivism refers to a general propensity toward group-based work, rather than an affective reaction to a particular group, this construct may be especially beneficial in team staffing decisions where affective ties to group members are inconsequential (Eby & Dobbins, 1997). The *PerfORm* taxonomy could go some way to providing a theoretical framework to support the selection processes, highlighting important shared personal qualities for interprofessional teamwork alongside the variables that are useful in efforts to understand group processes and group effectiveness. Moving forward, it is important to promote discourse around the personal domains VBR is purportedly assessing. It is also important to develop our understanding of the challenge to identify, target and assess the personal constructs and group composition variables that promote interprofessional teamwork and collective orientation.

8.3.4 *Team Appraisals and Feedback*

The *PerfORm* taxonomy could also be used as a template to conduct team process appraisals, in which teams would be evaluated on their ability to conduct each of the processes identified. The resulting team process summary would describe team strengths and areas for improvement. This information could be used to provide tailored team-level feedback and identify specific interprofessional training needs.

8.3.5 *Familiarity and Team Stability*

Considering OR team membership tends to be fluid in practice, variations in team membership and its impact on belonging, shared leadership and psychological safety

during interprofessional interactions should be further studied. While familiarity and connectedness are important factors for effective teamwork, it is worth noting that foundation doctors and student nurses rotate through clinical placements every four months. The frequency of clinical rotations may not afford undergraduate students the opportunity to become familiar with all team members, or the context in which they are working, to gain a proper appreciation of the interprofessional team. Further research could explore other stakeholders' perspectives of preparing undergraduate students for the complex social aspects of learning to work alongside professionals from other disciplines, as well as learning the material aspects of how to navigate the hospital equipment, systems and technical skills.

8.3.6 *Recommendations for Interprofessional Education*

This thesis adds to the emerging discussion that sees collective occupational competence in alternative ways. There is a shift from viewing competence through an individualistic lens, where learning is no longer the sole domain of the teacher or learner, to collective competence that emerges as social interactions, shaped by the physical, social and organisational context. Although the idea of collective competence is unfamiliar to the individualistic competency culture currently experienced within the NHS, it is implicit in many team training techniques. Interprofessional education needs a stronger theoretical basis informed by the challenges facing collaboration across professions. Tools are needed that measure the concepts underlying interprofessional team dynamics. For example, psychological safety, shared leadership, respecting and valuing are some of the factors identified within this study that may shape interactions among interprofessional team members.

8.3.7 *Recommendations for Research*

Given the necessity to embed interprofessional teaming into working practices, teaching and learning, it would be appropriate to identify opportunities for further research, to investigate the appropriateness of the ICE model of OR teamwork and the underpinning PerfORm taxonomy. Additional insight into the relevance of these could help to guide the development of innovative educational methodologies to improve interprofessional collaborative practice. Testing the dimensions that emerged in the ICE model and PerfORm in interprofessional learning situations beyond the OR could help build a common conceptual framework based on common values that transcend each specific profession and foster positive attitudes between professions.

These findings extend prior teamwork research to the OR context and form the basis for an evolving model of teamwork processes in the OR. The ICE model of OR teamwork processes may be useful to help OR team managers, educators and researchers evaluate the key processes that are critical to teamwork effectiveness in the OR. Given the relative dearth of prior attention in this area, future investigation is warranted that is focused on empirically testing the utility of this model, to predict outcomes based on the performance of these teamwork processes. Additionally, future research aimed at discerning exactly how motivational processes develop and are maintained in groups would add greatly to a growing body of research on the motivational and behavioural consequences of collectivism.

8.3.8 *Recommendations for Policy and Management*

For managing systems within the health service, one of the greatest challenges in terms of teamwork, working across professional boundaries and supporting inter-professional cohesion, is the absence of designated responsibility for ensuring

collaboration takes place. Educational experiences, professional traditions and the socialisation process during training can hinder cohesion and collaboration, perpetuating the status quo and reinforcing commonly held values and approaches within each profession, contributing to the challenges of effective teamworking.

This study's findings also support the need to re-examine individual characteristics in understanding organisational behaviour (Weiss & Adler, 1984). In this study, individual characteristics, such as the necessity to connect and belong, and positive past experiences working in teams, even when faced with adversity, were predictive of a collectivistic orientation. In addition, at the team level, the team's collectivistic composition directly impacted on shared understanding and a positive disposition, which led to perceived higher team performance. Noting the key role played by collectivism, this study advances the foundation for future research seeking to understand the interplay between individual differences and group effectiveness. As this study shows, integrating disparate approaches can be a powerful strategy in the study of work teams.

Looking beyond the OR context to the wider organisation and policymakers, ineffective communication can also be significant in the quest to promote collaboration. Unless multiple strategies are put in place and appropriately integrated to ensure effective communication within and across professions, and vertically within the organisation, then healthcare professionals will likely continue to identify more strongly with their own profession, rather than creating a team identity. Valuing and respecting the role of other professionals through recognising their contribution to patient care enhances connections between professions and the ability to work collaboratively.

8.4 Original Contribution to knowledge

The understandings that emerged during this study of interprofessional teamworking in the OR and what makes a “great day” at work contribute to existing knowledge, perspectives and debates in several academic disciplines, research areas, interprofessional education and collaborative team training.

8.4.1 *Interprofessional Teamwork*

The contribution of this study is mainly concerned with knowledge about how interprofessional teamwork is conducted in the OR context. The operating team not only consists of different people from different professions, but the way in which the team works together also depends on the way that team members interact and connect with one another in their task environment. Challenges of working as part of an interprofessional work team are well documented, with many professions working to define their boundaries, which can lead to territorialism (Hall, 2005). The issue of different professional groups approaching work differently in the OR context is known, but this study adds another dimension, in terms of collectivism, associated with prosocial behaviours that create affective ties, feelings of togetherness and belonging, as well as other shared emotions, such as happiness, that are central to a “great day” at work. As such, affective bonds or connections between team members produce and reinforce collective emotions, and give rise to a stable cooperative disposition, even when faced with adversity.

8.4.2 *Methodological Perspective*

From a methodological perspective, this thesis has shown that observing teamwork in its natural context can reveal aspects of practice that are different from the espoused theories, and therefore offers a valuable contribution to existing

knowledge. The thesis constructs a unique grounded theory, presented as *The Interprofessional Collective Effort (ICE) model of OR teamwork* and the underpinning *PerfORm taxonomy*. This model provides a novel and contemporary framework from which to understand teamwork in the OR, that can form a basis for further research with interprofessional healthcare teams, healthcare and action teams in other contexts.

8.4.3 *Shared Leadership*

Another important contribution to knowledge is that, through the introduction of shared leadership in the OR, a new perspective is offered, which suggests that traditional leader-centred perspectives are not sufficient to describe how leadership is enacted in the OR context.

8.5 Disseminating the Findings

Disseminating and communicating the research findings to diverse audiences is an essential component of the research process (Brownson et al., 2018). Dissemination can assume several forms, such as publishing in peer-reviewed journals, presenting at conferences or merely sharing findings with relevant stakeholders in the workplace (Silverman, 2005). In the immediate post-doctoral period, dissemination of the findings will be achieved through articles for publication in international peer reviewed journals. To meet the needs of a heterogeneous audience, such as stakeholders, related disciplines and policymakers, other innovative knowledge exchange methods will be explored, including the use of multimedia and social media platforms to communicate and present the findings. Finally, there is a duty to

share the findings with those individuals who volunteered their time and energy to participate in the research.

8.6 Post-Doctoral Research

This research has generated *The Interprofessional Collective Effort (ICE) model of OR teamwork* and the underpinning *PerfORM taxonomy*, the utility of which could be tested in a range of other practice contexts and professional groups where teamwork is central. Further empirical research will enhance the credibility of the model and taxonomy, with the aim of advancing the legitimacy of the grounded theory that has emerged from this thesis, adding depth and understanding to the theoretical assertions and proposals made.

8.7 Conclusion and thoughts

This study provides an original insight into interprofessional teamwork within the Operating Room and what makes a great day. Historical power structures, entrenched attitudes about scopes of practice, and professions working within silos (almost afraid to work across professional boundaries) can sabotage the essence of what teamwork is and, on a 'great day', what teamwork can achieve. Self-regulation of professions, placing accountability and responsibility solely on individuals can discourage and deter the establishment of teams. The 'I'm alright Jack' attitude within professions, which has until recently prevailed within healthcare, supporting a culture of blame, has now refocussed on a culture of patient safety and risk management. Teams that perform shared tasks have a much better understanding of professional roles and can locate and utilise each other's expertise, thus becoming

more responsible and accountable as a collective in terms of efficiency and outcomes. However, it must be acknowledged that this is a long road to travel and there is still much work to be done. Structures, processes and a culture that values and respects collaborative practice should be embedded through organisational learning mechanisms that will support and embrace such an initiative. This should include leadership training opportunities that promote a collaborative practice component within and across organisations. This has the potential to offer a safe and streamlined patient pathway, traversing health and social care, preventing patients from falling through the gaps due to professional silos, and poor collaboration and communication. Planning and streamlining such change across numerous services and among many stakeholders is inevitably challenging. When healthcare in general is preoccupied with immediate pressures, like the surge in waiting lists, increases in emergency admissions and patient safety, alongside government priorities, it is difficult to consider and reframe professions that are entwined, as well as cross-boundary professional issues such as accountability, responsibility and education.

The current shortage of healthcare professionals creates workplace environments that are riddled with challenges. The OR is no exception; few people have the time, resources, energy or will to consider alternate models of healthcare delivery that readily create a culture of acceptance. To move healthcare forward, and truly integrate and span the boundaries between health and social care, it is imperative not only to understand the challenges to implementing effective teamwork but also ways to overcome those challenges. There is a lack of time and resources to bring stakeholders together to reflect and change, and while interprofessional education holds the promise of removing professional boundaries, it remains insufficient, forcing professional silos to persist. Conversely, leaders, educators and

policymakers where collaborative practices and teamwork exist and flourish, must exploit opportunities to include discussions on areas for research; evaluation dimensions for educational programme development and improvement; and best practices and lessons learned.

This thesis has secured a foundation based on findings, knowledge and evidence that will serve as a source for evolving discussions, further research and decisions in the future, not least around teamwork in the OR. The OR environment demonstrates that when behaviours, beliefs and attitudes align, causal relationships are formed, regardless of profession. This fusing together of individual team members and professional diversity creates a team that collaborates to co-produce the shared objective efficiently. Effective teamwork in healthcare is undoubtedly considered an asset, but for patients it is a prerequisite that is expected.

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Appendices

Appendix 1: Invitation to participate in research study - interviews

[UNN Letterhead]

Margaret Scott
Senior Lecturer
Faculty of Health & Life Sciences
Coach Lane Campus West
Newcastle upon Tyne, NE7 7XA
Tel: 0191 2156374
Email: margaret.scott@northumbria.ac.uk

Date

“An exploration of the meaning of teamwork in an operating room context”.

Dear

My name is Margaret Scott, a PhD student working under the supervision of Dr Alison Machin and Dr Elizabeth Hall (Consultant Anaesthetist). I am interested in studying staff perceptions of the factors that influence teamwork in the intraoperative setting in order to provide a detailed and systematic analysis of current teamwork behaviours in the operating room. Ethical approval has been granted for this study to take place.

With your permission, I will be observing you and your colleagues during surgery. Please note that my observations are not for assessment, auditing, or training purposes, but merely to gain an understanding of teamwork in the operating theatre. There will be no individual identifiers noted and all documentations taken will only be available to my research supervisors and myself. My results will be written up as a general description of teamwork in the operating theatre. If you would like to participate in this study, I would kindly ask you to read the attached Participant Information Sheet and sign the Participant Observation Consent Form. By signing this form, you will be agreeing to be observed, but will be free to choose not to be observed at any operation I may attend, in which case I would withdraw from the operation.

I would also like to conduct semi-structured interviews, to give you the opportunity to describe your account of teamwork in the operating theatre. This will allow me consider

your perspective and fill in any gaps I would be unable to capture via observation alone, to gain a better understanding of specific behaviours and factors that influence teamwork in the operating theatre. Each interview will last between 30 – 60 minutes but will only take place at your convenience so that it will not interfere with your workload. For ease of later transcription, I would like to audiotape these interviews, if you grant me permission to do so. All data collected from the interviews will be anonymous and only available to my research supervisors and myself. You are free to withdraw from the interview at any time without the need to provide a reason. If you would like to participate in this part of the study, I would kindly ask you to read the attached participant Information Sheet and sign the Participant Interview Consent Form. By signing this form, you will be agreeing to participate in the interview.

This study will span over a period of 6-8 months. This will allow me to familiarise myself with teamwork behaviours in the operating theatre, as well as provide time for staff within the department to express further interest in participating in the research. If you have any questions regarding this study, please feel free to contact me either by email, margaret.scott@northumbria.ac.uk or by phone 0191 2156374.

Yours faithfully

Ms Margaret Scott
Principal Investigator/Lead Researcher

Appendix 2: Invitation to participate in research study - observations

[UNN Letterhead]

Margaret Scott
Senior Lecturer
Faculty of Health & Life Sciences
Coach Lane Campus West
Newcastle upon Tyne, NE7 7XA
Tel: 0191 2156374

Email: margaret.scott@northumbria.ac.uk

Date

“An exploration of the meaning of teamwork in an operating room context”.

Dear Sir/Madam

My name is Margaret Scott, a PhD student working under the supervision of Dr Alison Machin and Dr Elizabeth Hall (Consultant Anaesthetist). I am interested in studying staff perceptions of the factors that influence teamwork in the intraoperative setting in order to provide a detailed and systematic analysis of current teamwork behaviours in the operating room. Ethical approval has been granted for this study to take place.

With your permission, I will be observing you and your colleagues during surgery. Please note that my observations are not for assessment, auditing, or training purposes, but merely to gain an understanding of teamwork in the operating theatre. There will be no individual identifiers noted and all documentations taken will only be available to my research supervisors and myself. My results will be written up as a general description of teamwork in the operating theatre. If you would like to participate in this study, I would kindly ask you to read the attached Participant Information Sheet and sign the Participant Observation Consent Form. By signing this form, you will be agreeing to be observed, but will be free to choose not to be observed at any operation I may attend, in which case I would withdraw from the operation.

This part of the study will span over a period of 1 month. This will allow me to familiarise myself with teamwork behaviours in the operating theatre, as well as provide time for staff within the department to express further interest in participating in the research. If you have any questions regarding this study, please feel free to contact me either by email, margaret.scott@northumbria.ac.uk or by phone 0191 2156374.

Yours faithfully

Ms Margaret Scott
Principal Investigator/Lead Researcher

Appendix 3: Research Study Information Sheet

[UNN Letterhead]

Senior Lecturer
Faculty of Health & Life Sciences
Coach Lane Campus West
Newcastle upon Tyne, NE7 7XA
Tel: 0191 2156374
Email: margaret.scott@northumbria.ac.uk

Research Study Information Sheet

Project Title - “An exploration of the meaning of teamwork in an operating room context”.

Introduction

Your name has been suggested as someone who might be able to contribute to this research study. Before you decide if you wish to participate you need to understand why the research is being done and what it will involve for you. Please take time to read the following information carefully. You may ask me any questions about the study if you wish.

Part 1 tells you about the purpose of the research and what it would involve for you. Part 2 provides more detailed information about the study. Take time to decide whether you wish to take part.

PART 1

Aim of the Research

The purpose of the study is twofold.

1. The aim of the research is to understand and identify staff perceptions of their interactions within operating room team and the factors that influence performance. The study intends to explore the ‘team’, by observing individual performance and focusing on individual behaviour.
2. To fulfil the educational requirements of a PhD.

Why have I been asked to take part in this research study?

You have been asked to take part in this study because you are a member of the operating theatre ‘team’ within an NHS foundation trust and have a particular insight and experience of the area being studied through the job that you do.

Do I have to take part in the research study?

No, it is up to you to decide if you wish to take part. Margaret Scott will meet with you to discuss the study in more details. You will have an opportunity to ask any questions you may have.

If you agree to take part, then Margaret Scott will ask you to sign a consent form to show that you have agreed to take part. You are free to withdraw from the study at any time, without giving reason. Withdrawal will not affect you in any way and your decision to withdraw will not be shared with anyone.

What am I being asked to do?

Individuals participating in this research study will be asked to be:

- Observed in the practice setting only;
- Observed in the practice setting and/or;
- Participate in a semi-structured interview.

What are the benefits of taking part in this research study?

Individuals participating in the study will get the opportunity to offer their perspective of team working and the factors that influence interactions, in the operating room. It is anticipated this will generate new insight into teamwork within the operating room with the potential of improving patient.

Are there any disadvantages to taking part in this research study?

Margaret Scott is aware that you may be identifiable due to the nature of the sample chosen, however your name will not be disclosed, and any data generated will be coded as the operating theatre 'team' and not individual names. You may also experience the potential inconvenience of having to take part in a semi-structured interview.

PART 2**CONFIDENTIALITY****Collecting the data**

Initially data for this study will be collected through field notes following direct observation and then the use of a Digital Dictaphone Recorder during the semi-structured interview. The researcher may also take notes during the interview. Once the interview has ended the recording will be transcribed and a written record of our discussion will be created. The data will not contain your name etc. and any paper-based records from field notes or the interview will be securely stored. Electronic data will be stored on the university U drive which is password protected.

Storage of the interview tapes, transcripts, and other papers.

Any paper-based transcriptions and field notes will be kept in a locked cupboard, in a locked room at Northumbria University until the research is completed, however all digital recordings will be deleted once they are transcribed. These documents are anonymised and are marked by a unique identifier (allocated to you by Margaret Scott).

The only individuals who will have access to the recordings and papers are Margaret Scott, Dr Alison Machin and Dr Elizabeth Hall (Margaret's supervisors) and potentially an administrative assistant involved in the transcription process. The administrator will not have access to your name.

Any information which is produced as part of the dissemination activities associated with the research study will not bear your name or details.

Information disclosure

Margaret Scott works as a Senior Lecturer in the Faculty of Health and Life Sciences at Northumbria University. She is a Registered Nurse and is governed by the Nursing and Midwifery Council (NMC), she will inform you at the initial meeting of the NMC Code (2015), and also the NMC raising and escalating concerns guidance (2010). Margaret Scott

has a duty of care to patients. In exceptional circumstances should she discover issues that raise concerns about the safety of patients, then she will discuss with you the need to break confidentiality and report the matter to a line manager.

What will happen to the results of the research study?

The results will form part of a report which will be completed by November 2019. A report will be disseminated by Margaret Scott and will be made available to study participants. The results will be published in education and healthcare journals and within a PhD Thesis which will be stored electronically by Northumbria University. You will never be identified in any publications although your words may be published exactly as you said during the interview.

Who is funding the study?

Margaret Scott is being supported by Northumbria University through its programme of staff scholarly activity.

Who has reviewed the study?

The proposed research has been reviewed by Dr Alison Machin, the Faculty Research Committee, and the NHS Research Ethics Committee and/or NHS Trust Research and Development department. Comments made in that report have been accommodated in the current study.

If I take part, can I withdraw from the study later?

You can withdraw from the study at any times. Simply contact Margaret Scott to tell her that you would like to withdraw. Details are at the end of this information sheet.

When you indicate your intention to withdraw from this study, she will ask you if you would like her to destroy all of the data collected to the point of withdraw or whether she can continue to use it in an anonymised form.

Complaints

If you have concerns about any aspects of this study please speak with Margaret Scott, Dr Alison Machin (Principal Supervisor), or Dr Elizabeth Hall (Secondary Supervisor) (details below) and we will do our best to address these.

Research Team

Principal Investigator: Margaret Scott
Senior Lecturer
Faculty of Health and Life Sciences
Northumbria University
Room 004 Allendale House
Coach Lane Campus
Newcastle upon Tyne
NE7 7XA
Tel: 0191 2156374
Email: margaret.scott@northumbria.ac.uk

Principal Supervisor: Dr Alison Machin
Principal Lecturer, Postgraduate Studies (Public Health)
Healthcare
Northumbria University
Room
Coach Lane Campus
Newcastle upon Tyne
NE7 7XA
Tel: 0191 2156375

Email: alison.machin@northumbria.ac.uk

Secondary Supervisor: Dr Elizabeth Hall
Consultant in Anaesthetics and Intensive Care Medicine
Northumbria Healthcare NHS Foundation Trust
Wansbeck Hospital
Anaesthetic Department
Woodhorn Lane
Ashington
Northumberland
NE63 9JJ
Email: elizabeth.hall@northumbria-healthcare.nhs.uk

Appendix 4: email invitation to participants

[UNN Letterhead]

email invitation to participants

My name is Margaret Scott, a PhD student working under the supervision of Dr Alison Machin (alison.machin@northumbria.ac.uk) and Dr Elizabeth Hall. I am interested in studying staff perceptions of their interactions within teams in the Operating Room (OR) and from their perspective, what factors influence these interactions.

I would like to invite you to tell me your views, from your perspective as to what factors influence team interactions within the OR. The reason why you have been invited to participate is because you are an active team member working within the OR. The information that you give me will generate new insight into the potential for developing more effective teams and offer recommendations for consistency and sustainability as part of everyday working. There are no right or wrong answers to this – I am keen to gain a wide variety of opinions and perspectives.

It is important for you to understand what it would involve, if you decide to participate. There are 2 parts to the study with varying levels of involvement. If you would like to participate in this research study, you can:

- Be observed in the practice setting only;
- Be observed in the practice setting and/or;
- Participate in a semi-structured interview.

Please fill in the attached questionnaire if you are interested in taking part in a semi-structured interview and send it back to me via return email.

If you agree to be observed in the practice setting, could you express your interest via return email and consent will be gained at a later date.

By returning the questionnaire or expressing an interest you will have the opportunity to find out more about the study before further commitment. You would be under no obligation to take part.

My email address is margaret.scott@northumbria.ac.uk or alternatively, my phone number is 0191 2156374 and I will be happy to discuss with you any questions you may have about the study.

The use of email to recruit participants for this study has been approved by the XXXXX
Ethics Subcommittee (names and email address to be inserted).

Yours sincerely

Margaret Scott

Appendix 5: Sampling Questionnaire

[UNN Letterhead]

Sampling Questionnaire

Please complete the following:

Role –

Highest academic qualification –

Length of service within the operating department/Trust –

Length of time qualified –

Have you worked in other operating departments outside of the Trust? –

Does your role involve you working anywhere else in the hospital? –

Do you ever go outside of the theatre environment? –

Have you previously been involved in teamwork education e.g., human factors training? –

Contact for interview **yes / no** (delete accordingly)

If yes, please provide email contact details below.

Thank you for your time.

Margaret Scott

Appendix 6: Consent form for participant interview

[UNN Letterhead]

Margaret Scott
Senior Lecturer
Faculty of Health & Life Sciences
Coach Lane Campus West
Newcastle upon Tyne, NE7 7XA
Tel: 0191 2156374
Email: margaret.scott@northumbria.ac.uk

CONSENT FORM – Unstructured Interview

Project Title - “An exploration of the meaning of teamwork in an operating room context”.

Researcher: Ms Margaret Scott

Please initial the box

YES

NO

I confirm that I have read and understand the information sheet dated.....for the above study. I have had the opportunity to consider the information, ask questions and have them answered satisfactorily.

I understand that my participation is voluntary and that I can withdraw at any time without giving reason.

I understand that the researcher has a duty of care to patients. If under exceptional circumstances, there are issues which give her cause for concern about the *immediate* safety of patients she will discuss with me the possibility of breaking confidentiality and reporting the matter to a suitable senior person in the hospital.

I understand that any personal information will be kept

confidential to the researcher and that all contributions will be made anonymous in any written outcome of the study or in any related publications.

Please initial the box

YES

NO

I am willing to be interviewed.

I agree to take part in the study.

..... [name of participant] understand the information presented to me by

..... [name of researcher] and agree to take part in the research.

Signature [Participant]

Date

Signature [Researcher]

Date

Appendix 7: Consent form for participant observations

[UNN letterhead]

Margaret Scott
Senior Lecturer
Faculty of Health & Life Sciences
Coach Lane Campus West
Newcastle upon Tyne, NE7 7XA
Tel: 0191 2156374
Email: margaret.scott@northumbria.ac.uk

CONSENT FORM – Observational Study

Project Title - “An exploration of the meaning of teamwork in an operating room context”.

Researcher: Ms Margaret Scott

Please initial the box

YES

NO

I confirm that I have read and understand the information sheet dated.....for the above study. I have had the opportunity to consider the information, ask questions and have them answered satisfactorily.

I understand that my participation is voluntary and that I can withdraw at any time without giving reason.

I understand that the researcher has a duty of care to patients. If under exceptional circumstances, there are issues which give her cause for concern about the *immediate* safety of patients she will discuss with me the possibility of breaking confidentiality and reporting the matter to a suitable senior person in the hospital.

Please initial the box

YES

NO

I understand that any personal information will be kept confidential to the researcher and that all contributions will be made anonymous in any written outcome of the study or in any related publications.

I am willing to allow the researcher to observe my practice.

I agree to take part in the study.

..... [name of participant] understand the information presented to me by

..... [name of researcher] and agree to take part in the research.

Signature [Participant]

Date

Signature [Researcher]

Date

Appendix 8: Sample Population Matrix

SAMPLING MATRIX

PARTICIPANT email contact	ALLOCATED UNIQUE IDENTIFIER	Q – 1 Role	Q – 2 Highest qual	Q – 3 Length of service	Q – 4 Length of time qual	Q – 5 Other OR	Q – 6 Work elsewhere	Q – 7 Go outside of OR	Q – 8 Involved in teamwork education	CONTACT FOR INTERVIEW	ORDER OF INTERVIEW
Anaes	P-1	ODP 6	Diploma	10 yrs	10 yrs	N	N	Y	Y	Y	1
Anaes/Man	P-2	Nurse 7	Degree	25 yrs	25 yrs	Y	Y	Y	Y	Y	2
Recovery	P-3	Nurse 6	Registration	40 yrs	40 yrs	N	Y	N	Y	Y	3
Anaes	P-4	ODP 6	Diploma	20 yrs	20 yrs	N	Y	Y	Y	Y	4
Manager	P-5	Nurse 8	Masters	18 yrs	42 yrs	Y	N	N	Y	Y	5
Anaes	P-6	ST 5	MBBS/FRCA	3 months	7 yrs	Y	Y	Y	Y+	y	6
Scrub	P-7	Nurse 6	Degree	20 yrs	22yrs	Y	Y	N	Y+	Y	7
Cons Anaes	P-8	Cons A	FRCA	3.5 yrs	14yrs	Y	N	Y	Y+	Y	8
Cons Anaes	P-9	Cons A	FRCAI	6yrs	30+yrs	Y	Y	Y	Y+	Y	9
PAA	P-10	PAA	MSc	12yrs	12yrs	Y	Y	Y	Y+	Y	10
Cons Anaes	P-11	Cons A	FRCA FF	19yrs	30yrs	Y	Y	Mostly	Y+	Y	11
Cons Surg	P-12	Cons S	FRCS	21yrs	30+yrs	Y	Y	Y	Y+	Y	12
Student Nur	P-13	Student	GCSE's	8 wks	0 yrs	N	N	N	Y+	Y	13
Team Leader	P-14	Ortho TL	Diploma	3.5 yrs	10 yrs	Y	N	N	Y	y	14

Y+ mean human factors training, PAA = Physician Assistant Anaesthesia

Appendix 9: Ethical Approval



Professor Kathleen McCourt CBE FRCN
Executive Dean

This matter is being dealt with by:
Professor Pauline Pearson
Ethics Lead
Department of Healthcare
Faculty of Health and Life Sciences
Coach Lane Campus
Newcastle upon Tyne
NE7 7XA
Tel : 0191 215 8472
Email : pauline.pearson@northumbria.ac.uk

Dear Margaret

Faculty of Health and Life Sciences Research Ethics Review DHCScott230915
Title: An Exploration of the Meaning of Teamwork in an Operating Room (OR) Context.

Following independent peer review of the above proposal, I am pleased to inform you that University approval has been granted on the basis of this proposal and subject to compliance with the University policies on ethics and consent and any other policies applicable to your individual research. You should also have recent Disclosure & Barring Service (DBS) and occupational health clearance if your research involves working with children and/or vulnerable adults. **You need to provide details of DBS clearance to this office.**

The University's Policies and Procedures are available from the following web link:
<http://www.northumbria.ac.uk/researchandconsultancy/sa/ethgov/policies/?view=Standard>

You may now also proceed with your application (if applicable) to:

- HRA Approval for NHS R&D. Please check with the NHS Trust whether you require a Research Passport, Letter(s) of Access, or Honorary contract(s).

You must not commence your research until you have obtained all necessary external approvals.

All researchers must also notify this office of the following:

- Commencement of the study;
- Actual completion date of the study;
- Any significant changes to the study design;
- Any incidents which have an adverse effect on participants, researchers, or study outcomes;
- Any suspension or abandonment of the study;
- All funding, awards and grants pertaining to this study, whether commercial or non-commercial;
- All publications and/or conference presentations of the findings of the study.

We wish you well in your research endeavours.

Yours sincerely

A handwritten signature in blue ink that reads "Pauline Pearson".

Professor Pauline Pearson
Ethics Lead for Healthcare, on behalf of the Faculty Research Ethics Review Panel

Appendix 10: Trust ethics acceptance

NHS CONFIDENTIAL

Ref: 319-RP/AW

9th March 2016

Private and Confidential
Ms Margaret Scott
Northumbria University
Coach Lane Campus
NE7 7XA

Dear Ms Scott

Letter of access for research

This letter confirms your right of access to conduct research through [redacted] for the purpose and on the terms and conditions set out below. This right of access commences on 9th March 2016 and ends on 9th November 2016 unless terminated earlier in accordance with the clauses below.

You have a right of access to conduct such research as confirmed in writing in the letter of permission for research from this NHS organisation. Please note that you cannot start the research until the Principal Investigator for the research project has received a letter from us giving permission to conduct the project.

The information supplied about your role in research at [redacted] has been reviewed and you do not require an honorary research contract with this NHS organisation. We are satisfied that such pre-engagement checks as we consider necessary have been carried out.

You are considered to be a legal visitor to [redacted] premises. You are not entitled to any form of payment or access to other benefits provided by this NHS organisation to employees and this letter does not give rise to any other relationship between you and this NHS organisation, in particular that of an employee.

While undertaking research through [redacted], you will remain accountable to your employer Northumbria University but you are required to follow the reasonable instructions of Dr [redacted] in this NHS organisation or those given on her/his behalf in relation to the terms of this right of access.

Where any third party claim is made, whether or not legal proceedings are issued, arising out of or in connection with your right of access, you are required to co-operate fully with any investigation by this NHS organisation in connection with any such claim and to give all such assistance as may reasonably be required regarding the conduct of any legal proceedings.

You must act in accordance with [redacted] policies and procedures, which are available to you upon request, and the Research Governance Framework.

You are required to co-operate with [redacted] in discharging its duties under the Health and Safety at Work etc Act 1974 and other health and safety legislation and to take reasonable care for the health and safety of yourself and others

Human Resources Department, [redacted]

Appendix 11: Interview Schedule

Unstructured Interview Schedule for Operating Room Participants

Date of semi-structured interview

Provide an Introduction

Thank you for agreeing to, and attending this interview

Ensure participant agrees to the interview being recorded

Ensure participant acknowledges receipt of the information sheet provided to them, have read it, and have had all questions answered prior to the interview

Ensure that the participant has read and signed the consent form and still agrees to take part in the interview

Inform the participant as to the reason for the interview

To gain an understanding of their own personal perception of their interactions within teams in the operating room and from their perspective, what factors influence these interactions?

Ground Rules

This room is a safe environment where all information, views and opinions are to be treated in a confidential manner, and should not be discussed outside of this room

All information will be recorded and then anonymised during the transcription phase

Please do not refer to, or mention by name team members, or patients

You can discuss anything you feel relevant, willingly and without coercion

I may have to ask you to clarify certain points

I may have to 'cut short' some responses so that all questions can be covered

Please relax; this is a discussion about your views in relation to team working within the operating room and the factors that influence interactions. It is not an assessment, audit, or to be used for training purposes

I am a registered Nurse, governed by the NMC Code of Conduct, if there is any information that I feel in my professional opinion needs to be addressed or escalated I will refer to the NMC raising and escalating concerns framework (copy to be provided to the participant)

Areas for discussion in the initial interview

1. Tell me about your role within the operating department?
2. Can you give me a brief overview of your role on a typical day in the operating department?
3. What does teamwork mean to you?
4. Can you give an insight into teamwork?
5. From your perspective what factors influence how well the team works together?
6. When the day goes well what contributes to that?
7. Can you give any examples of what promotes good teamwork?

End of interview

Have you anything more that you would like to add to this discussion?

Thank you for your time, it is very much appreciated

Appendix 12: Interview Schedule Phase 2

Unstructured Interview Schedule for Operating Room Participants

Date of semi-structured interview

Provide an Introduction

Thank you for agreeing to, and attending this interview

Ensure participant agrees to the interview being recorded

Ensure participant acknowledges receipt of the information sheet provided to them, have read it, and have had all questions answered prior to the interview

Ensure that the participant has read and signed the consent form and still agrees to take part in the interview

Inform the participant as to the reason for the interview

To gain an understanding of their own personal perception of their interactions within teams in the operating room and from their perspective, what factors influence these interactions?

Ground Rules

This room is a safe environment where all information, views and opinions are to be treated in a confidential manner, and should not be discussed outside of this room

All information will be recorded and then anonymised during the transcription phase

Please do not refer to, or mention by name team members, or patients

You can discuss anything you feel relevant, willingly and without coercion

I may have to ask you to clarify certain points

I may have to 'cut short' some responses so that all questions can be covered

Please relax; this is a discussion about your views in relation to team working within the operating room and the factors that influence interactions. It is not an assessment, audit, or to be used for training purposes

I am a registered Nurse, governed by the NMC Code of Conduct, if there is any information that I feel in my professional opinion needs to be addressed or escalated I will refer to the NMC raising and escalating concerns framework (copy to be provided to the participant)

Areas for discussion in the initial interview

1. Tell me about your role within the operating department?
2. Can you give me a brief overview of your role on a typical day in the operating department?
3. Can you give an insight into the characteristics of good teamwork (example)?
4. Can you give an insight into the characteristics of poor teamwork (example)?
5. From your perspective what factors influence how well the team works together?
6. When the day goes well what team structure contributes to that?
7. Thinking of the teams that you work in, what factors do you identify as being most significant in deciding team structure?

End of interview

Have you anything more that you would like to add to this discussion?

Thank you for your time, it is very much appreciated

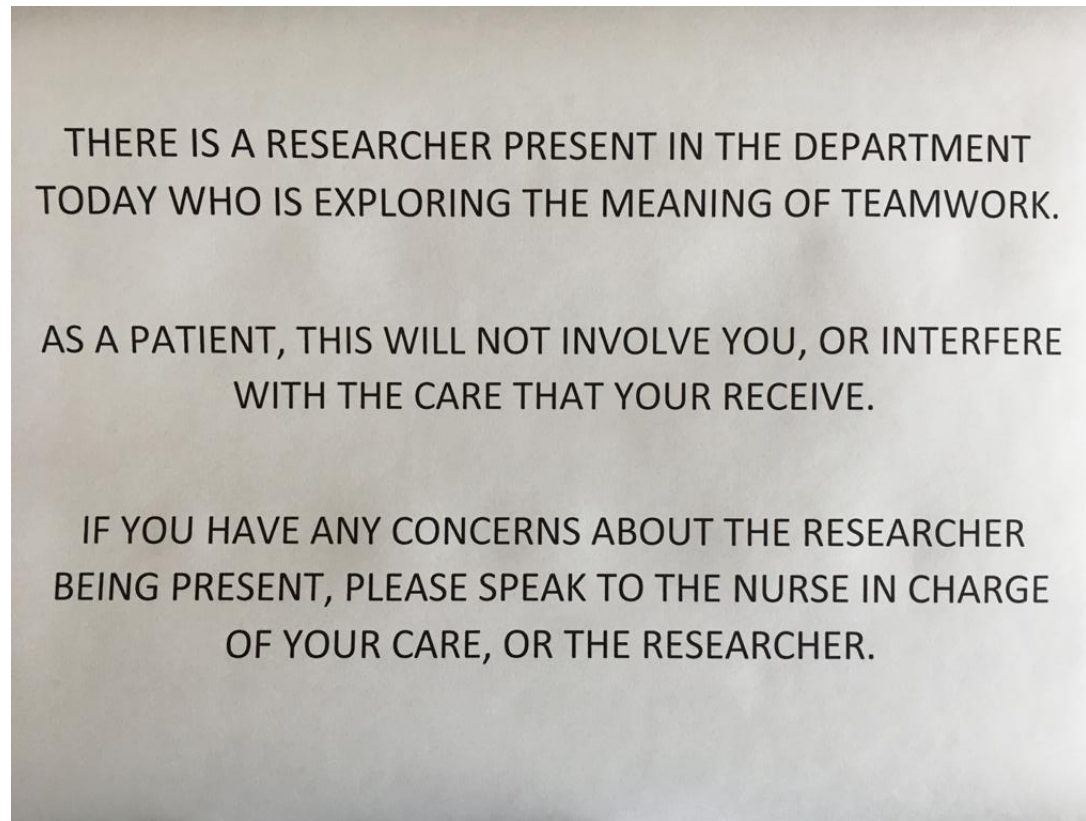
Appendix 13: Simultaneous Analysis

The image shows a collection of handwritten notes on yellow sticky papers and a whiteboard background. The notes are organized into several key themes:

- FAMILIARITY**: Co-ordinated situation. ROLE CONFLICT. LEADERSHIP.
- PERFORMANCE**: = EFFICIENCY = SATISFACTION (PATIENT). = TIME/BREAKS OVERLAPS ATTITUDE. COMMITMENT. EMPLOYEE SATISFACTION TRUST IN HIERARCHY RESTRICTION. MANAGEMENT
- HOW DO MACRO EXTERNAL ORGANISATION PROVIDES NOTION OF 'FLOW' TEAM FUNCTIONING & FLOW**: MESO MICRO MAX
- INFORMAL** → SELF-MANAGING MICRO-WITHIN THE TREE
- FORMAL** → Delegating, allocating - ~~Real~~ organisational
- EFFECTIVENESS**: (What does a good day look like) EFFECTIVENESS AT ONE LEVEL CAN INTERFERE WITH EFFECTIVENESS AT ANOTHER
- BEHAVIOUR**
- ATTITUDINAL**: SEVERAL LEVELS OF EFFECTIVENESS. MICRO MESO MACRO
- BEHAVIOURAL**: CONFLICT AVOIDANCE DIVORCING SAFETY
- RELATIONSHIPS**: ACROSS ORGANISATIONS/ BOUNDARIES. INTERDEPENDENCY SHARED RESPONSIB
- SABOTEURS. POWER / CONTROL**: HIERARCHY SOCIAL HIERARCHY UNDERMINED. POWER WRONG → HINDER TEAM WORK (TEAM PSYCHOLOGICAL SAFETY VANISHED / RESPECTED).

The background whiteboard contains faint diagrams and additional notes, including "CONTROL", "EXTERNAL PROCESSES", "LEADERS MODEL", "NOTION OF CALMNESS", "SEVERAL LAYERS EFFECTIVENESS", "MICRO MESO MACRO", "PERFORMANCE", "EFFICIENCY", "OUTPUT", "SATISFACTION", "QUANTITY OF SERVICE / TIME-FINISHING ON TIME", "NOTION OF CALMNESS", "LEADERS MODEL", "NOTION OF CALMNESS", "SEVERAL LAYERS EFFECTIVENESS", "MICRO MESO MACRO", "PERFORMANCE", "EFFICIENCY", "OUTPUT", "SATISFACTION", "QUANTITY OF SERVICE / TIME-FINISHING ON TIME".

Appendix 14: Poster displayed in the Operating Department



Appendix 15: Participant debrief

Margaret Scott
Senior Lecturer
Faculty of Health & Life Sciences
Coach Lane Campus West
Newcastle upon Tyne, NE7 7XA
Tel: 0191 2156374
Email: margaret.scott@northumbria.ac.uk

PARTICIPANT DEBRIEF

Participant code:

Name of Researcher: Margaret Scott

Name of Principal Supervisor: Dr Alison Machin

Project Title - 'An exploration of the meaning of teamwork in an operating room (OR) context'.

1. What is the purpose of the project?

The overall aim of the project is to produce a theory to explain staff perceptions of how they interact within teams in the operating room and from their personal perspective what factors influence these interactions. This will generate new insight into factors that promote enhanced teamwork for patient safety and make a 'great day' at work for operating room staff.

2. How will I find out about the results?

Approximately xx weeks after taking part, the researcher will disseminate a general summary of the results via departmental meetings.

3. If I change my mind and wish to withdraw the information I have provided, how do I do this?

If you wish to withdraw your data, then email the investigator named in the information sheet within 1 month of taking part and give them the code number that was allocated to you (this can be found on your debrief sheet). After this time, it might not be possible to withdraw your data as it could already have been analysed.

The data collected in this study may also be published in scientific journals or presented at conferences. Information and data gathered during this research study will only be available to the research team identified in the information sheet. Should the research be presented or published in any form, all data will be anonymous (i.e., your personal information or data will not be identifiable).

All information and data gathered during this research will be stored in line with the Data Protection Act and will be destroyed 36 months following the conclusion of the study. If the research is published in a scientific journal, it may be kept for longer before being destroyed. During that time, the data may be used by members of the research team only for purposes appropriate to the research question, but at no point will your personal information or data be revealed. Insurance companies and employers will not be given any individual's personal information, nor any data provided by them, and nor will we allow access to the police, security services, social services, relatives, or lawyers, unless forced to do so by the courts.

If you wish to receive feedback about the findings of this research study, then please contact the researcher at margaret.scott@northumbria.ac.uk

This study and its protocol have received full ethical approval from Faculty of Health and Life Sciences Research Ethics Committee. If you require confirmation of this, or if you have any concerns or worries concerning this research, or if you wish to register a complaint, please contact the Chair of this Committee, Dr Nick Neave: nick.neave@northumbria.ac.uk stating the title of the research project and the name of the researcher:

Appendix 16: Example of line-by-line coding

205 But for whatever reason I couldn't get the spinal in. And this was after
 206 multiple... You know, we haven't got the right drugs, we haven't got the
 207 right needles – but it was only because of experience that we both, you
 208 know, had this logistical approach that we were safe. If you see what I
 209 mean? It was really clumsy, and by far the most un-slick... But it was
 210 safe. So, then I couldn't get the spinal in. The lady had had an epidural.
 211 And they'd whipped it out. Because they thought she was going to have
 212 a GA. Which is the thing to do but again, retrospectively, if we're content
 213 to do the spinal, then we could have topped her up with epidural. So,
 214 then I said, "Oh, can you get the consultant to come over?" And the
 215 surgical consultant, who was cheesed off on the morning and was
 216 standing waiting when we weren't ready to go. Of course, consultants
 217 here don't have dect phones, they have bleeps. Nobody knew to bleep
 218 them but nobody... They could get in touch with the consultant who was
 219 supervising me – and of course it was an emergency situation. So then,
 220 as it happened, they said to me... The **saving grace** is that there was
 221 another consultant who just happened to wander it and said, "Am I
 222 supervision you?" And I said, "No, but can you come and help?" And she
 223 was like the saving grace, if you see what I mean? And she got the spiral
 224 in, and then it was all... Everybody was calm. So then other things about
 225 that thing – we started talking and I said, "Oh, she's..." I started handing
 226 over to the consultant and just telling her. Essentially, once the spiral
 227 was in all the drama was over and, you know, they cracked on. But I said,
 228 "Oh, she's a category one section." And then they said, "Oh, she's not.
 229 She's category two now. We stepped down." So, the communication
 230 was really poor, but it was a junior trainee. And then she came in and
 231 she hadn't meant to be doing the list. And then she was, so the team
 232 actually switched within... You know, you're in there now, and then five
 233 minutes later it's a different team. So, at the team briefing... That, you
 234 know, like, everything... They don't do that in emergency. So, nobody
 235 was really communicating well – because we get so fixed on roles. So,
 236 like we make get the spinal and get the monitors on and all this. And
 237 they're fixed doing their bit. And then the baby was delivered, and
 238 everything was fine. And then... But then afterwards, like I say, they
 239 said, "Oh, we've stepped down." And during the procedure she was...
 240 We didn't know each other. We'd never worked together before. So,
 241 they were saying, "Oh, [Name] [00:12:36], [Name]..." But I'm very
 242 informal. So, I'm just, you know, wittering on with the lady. And she was
 243 wanting to tell me that she needed something. And then somebody
 244 shouted, "[Respondent]." And I said, "Oh, yeah." And it was the name
 245 thing. We didn't know names. If you see what I mean? So, the
 246 communication was really awkward. But then it happens all the time, so
 247 the scrub staff that you might work with very frequently – you can't
 248 remember everybody's name all of the time. But because they don't do
 249 the team brief, it's really hard. And then after that... You know,
 250 everything went fine, the baby was fine. We had a little chat in here
 251 about it. And I thought, you know, that was really just not... I'm glad it
 252 wasn't a bad outcome, because if it had have been a bad outcome, it
 253 would have been awful, because we weren't... But the saving grace was
 254 the consultants, because they were both very experienced. And then

Failing
 Muddling
 Knowing/Understanding
 Experiencing
 Disorganising
 Failing
 Frustrating
 Reflecting
 Poor decision-making
 Referring
 Hierarchy
 Frustrating/Escalating
 Not knowing/Situational A
 Calm to Stormy
 Communicating break in
 Concerning/Fearing
 Timely
 Helping/Supporting
 Winning
 Calm
 Communicating
 Handing over
 Calm
 Changing/Informing
 Changing
 Communicating break in
 Situational awareness
 Changing/Switching
 Briefing
 Emergency briefings – no
 Fixing on roles
 Fixing
 Focusing
 Silo
 Stepping down
 Strangers
 Unfamiliar
 Silo
 Interrupting
 Respecting/Introducing
 Ignoring
 Communicating break in
 Unfamiliar
 Remembering
 Briefing
 Reflecting
 Outcomes
 Reflecting-on-action
 Foreseeing/Predicting
 Experiencing/Knowing

Appendix 17: Descriptive Categories

184 say, they said, "Oh, we've stepped down." And during the procedure she was... [We didn't know
 185 UNFAMILIAR
 each other. We'd never worked together before.] So they were saying, "Oh, [Name] [00:12:36],
 186 [Name]..." But I'm very informal. So I'm just, you know, wittering on with the lady. And she was
 187 wanting to tell me that she needed something. And then somebody shouted, "[Respondent]." And I
 188 said, "Oh, yeah." And [UNFAMILIAR.
 it was the name thing. We didn't know names] If you see what I mean? So
 189 [COMMS
 the communication was really awkward.] But then it happens all the time, so the scrub staff that you
 114 [at the end of the day if we REFLECTING
 could do better.] And ju
 190 might work with very frequently [UNFAMILIAR.
 you can't remember everybody's name all of the time.] But
 193 was really just not... I'm glad [it wasn't a bad outcome, because if it had have been a bad outcome, it
 194 would have been awful, because we weren't...' But the saving grace was the consultants, because
 195 they were both very experienced.] And then they... And [they've held it together] if you see what I
 196 mean? Like [the heroes of the thing] And then... But afterwards, looking back on it, there were so
 200 the afternoon, a [different consultant said, "I haven't done obs for a while. Can I come and watch
 201 ID=6
 you do obs?" Which I think is really great. You know, he's very experienced, but he just hadn't done
 202 it.]
 212 good thing is there was a [senior sister came in, and then she told me about my staff. They went,
 213 "Oh, she's just training. She's very inexperienced, but she hasn't done obstetrics." So it was no
 214 UNFAMILIAR ID=6
 wonder I was saying, "Can we have this? Can we have this? Can we have this?" And she was, yo
 215 know, not familiar with the setup.] And I said, "Oh, you know, at the Freeman Hospital for exam
 216 we [ID=6
 have these boards on the wall. With everybody's name on. Every day. And it doesn't matte
 217 GAINING FAMILIARITY
 You know, even if you've worked together for 20 years, it's still in there. So that would be really

Appendix 18: Instrument to support note taking during observation

Field Notes - Observational Study

TEAM PRESENT (Grade, status, responsibility)

SURGICAL SPECIALITY (Emergency/Elective)

SITUATIONAL FACTORS

TEAM FACTORS (Did the staff involved function as a team? Was there a clear named team leader/co-ordinator within the theatre, within the department? Was all the necessary information available before the start of the procedure? Is nurse input well received? Did surgeons, anaesthetists, and all other personnel work together as a well-co-ordinated team? Any disagreement – were they resolved appropriately? First name terms?)

INDIVIDUAL STAFF FACTORS (On the day of observation, did the team appear fatigued, stressed, rushed, distracted, inexperienced?)

TASK CHARACTERISTICS (Were all members of the team familiar with the task, equipment? Were the tasks routine, monotonous?)

LOCAL WORKING CONDITIONS

WORKLOAD & STAFFING ISSUES (Was there sufficient staff to manage the operating list? Was the skill mix appropriate for the complexity of the surgery? Any trainees, if so, were they appropriately supervised? Level of sickness within the dept. Did on call team have impact on numbers? How were breaks managed? Movement of staff in and out of theatre? For what reasons?)

LEADERSHIP, SUPERVISION & ROLES (Inappropriate delegation, unclear responsibility, who was responsible for sending for next patient? Was this cascaded to team? Did everyone understand their role? Is leadership clear?)

DRUGS, EQUIPMENT & SUPPLIES (Unavailable drugs, equipment not working?)

LATENT/ORGANISATIONAL FACTORS

PHYSICAL ENVIRONMENT (Excessive noise, heat/cold, poor access to patient, sufficient staff to transfer patient from trolley to table, surgeon present to position?)

SUPPORT REQUIRED FROM OTHER DEPARTMENTS (Blood transfusion, radiology, ITU? Any problems?)

SCHEDULING & BED MANAGEMENT (Any delays due to bed pressures?)

POLICIES, PROTOCOLS & PROCEDURES (Were policies, protocols, procedures followed?

Did they help/hinder? Did personnel frequently disregard rules e.g., hand washing, sterile field?)

GENERAL FACTORS

SAFETY CULTURE/CLIMATE (As an observer how would you describe the safety culture?

Patient safety awareness, attitude to risk management, documentation? Do all personnel recognise the importance of briefings and the contribution to patient safety? Any safety issues at the time of observation?)

COMMUNICATION (Written and verbal? Handover, communication between team members etc? Briefing? Decision-making by relevant personnel? Difficulty in speaking up/out? Any disagreements/conflict? Important issues communicated during shift changes? Is hierarchy present that stifles flow of information/communication?

Communication breakdowns which lead to delays in starting surgical procedures?)

Appendix 19: Example of Transcribed Field Notes

Field Notes - Observational Study (Sunday 10.04.16) Site B

TEAM PRESENT AT TIME OF INITIAL BRIEF (Grade, status, responsibility)

SURGICAL SPECIALITY (Emergency/Trauma)

Consultant Surgeon x 1 trainee

Orthopaedics-(3 patients ASA Grade 1 x 1, ASA Grade 2 x 2)

Consultant Anaesthetist

S/N x 2 (circulating and scrub)

ODP x 1 (anaesthetics)

NB No recovery personnel present

Team brief commenced at 09.19 – complete by 09.23. Total time = 4 minutes.

SITUATIONAL FACTORS

TEAM FACTORS

The staff involved functioned very well as a team. There was no obvious hierarchy within the team, and everyone seemed to appreciate the contribution each person had to make. The “team brief” seemed to be an integral part of the working day, with no obvious objectors or saboteurs. The orthopaedic theatre team co-ordinator was not evident initially but emerged as the operating list progressed (this appeared to be the senior staff nurse (circulating and scrub)). The “theatre dept” co-ordinator/manager/leader was not obvious, or visible to the observer throughout the operating session. The “team brief” lasted 4

Team briefing

Collaborating/Collegiality
Respecting
Briefing – all inclusive
In theatre coordinating – micro
Coordinating – meso
Team briefing
Challenging
Questioning
Decision-making
Undermining
Hierarchy

minutes (x 3 “uncomplicated” patients). There was some debate about how appropriate it was to ask one patient to come in from home for ‘emergency’ surgery on a Sunday. A question raised by the Consultant Anaesthetist was whether this patient could be placed on a routine, elective list. This question was noted by the Consultant Surgeon, but he had already made the decision that the surgery would proceed as there was ‘a bed’ on the ward for the patient. Grunting ensued from the Consultant Anaesthetist who was obviously displeased as he had not been included in the decision-making process and that he was ‘on call’ for genuine emergencies and not routine procedures. The Consultant Surgeon and trainee requested specific equipment and the availability of such equipment that would be needed for each operation at “team brief”. Nursing/ODP input was valued at the point of ‘team brief’ and as this was an emergency/trauma list the senior staff nurse ensured that there was a printed theatre list available within the operating room (anaesthetic room and theatre), detailing pertinent information for each patient and a ‘running’ order. Vital information was verbalised and noted on the “Safer Surgery Checklist”. “Time out” was then performed as each patient entered the operating theatre, reiterating key information specific to the patient e.g., consent form, procedure, signatures etc. Once the operating list was up and running there were no disagreements noted. First name terms were used amongst the team within that theatre. Debrief was very brief between cases and wasn’t really given the same emphasis or value as the team brief or time out. Debrief was a summary of what procedure had been undertaken and, on each occasion, was less than a minute in length. No end of operating session debrief. **INDIVIDUAL STAFF FACTORS** The team appeared relaxed and the atmosphere was calm and orderly. Two staff members had worked a 12 hour shift the day before and the previous shift had been busy. They both acknowledged feeling tired, but this did not appear to impact on their level of commitment and ability to function appropriately. The operating list was well managed and prior preparation was evident. No one appeared to be rushed at any point, other than the ODP assigned to anaesthetics. The ODP assigned to anaesthetics had periods of heightened activity when transferring one patient to the recovery area, whilst the next patient on the operating list was in the anaesthetic room. The ODP then needed to come back into theatre from recovery to clean, tidy and prepare for the next patient. Delays were noted as the ODP then needed to draw up anaesthetic agents in the presence of the anaesthetist prior to anaesthesia. The ODP was purely an escort to recovery and did not “handover” to the recovery staff. Handover was the domain of the anaesthetist.

TASK CHARACTERISTICS The operating list had a sense of routine and each surgical intervention seemed

Requesting/Communicating
 Resourcing/Planning/Organising
 Respecting/Valuing
 Informing/Communicating
 Verbalising/Confirming
 Reiterating
 Checking/Confirming
 Flowing/Informal
 Debriefing
 Undervaluing/Scanty
 Ignoring/Overlooking
 Relaxing/Calm/Organised
 Ways of working
 Fatigued
 Committing
 Managing/Preparing
 Hurrying
 Cleaning/Tidying/Preparing
 Delaying
 Preparing/Checking
 Escorting/Supporting
 Handing over
 Unchanging
 Familiarising
 Resourcing/Preparing
 Recurring
 Preparing/Anticipating
 Frustrating
 Overlooking/Missing
 Assuming/Accusing
 Blaming/Inferring
 Searching/Replacing

to be familiar to all. The equipment requested at the time of “team brief” was prepared/checked in advance. There were no delays to the operating list due to inadequate/broken/faulty equipment. Prior to the surgeon and anaesthetist appearing on the department, the OPD performed some ‘routine’ checks on the anaesthetic machine and prepared the environment in anticipation of the first patient arriving in the anaesthetics room e.g., running through of IV fluids. The ODP demonstrated frustration at the fact that anaesthetic tubing had not been replaced, a task designated to the night shift. The anaesthetic tubing was no longer **fit for purpose**. The ODP commented that “the night shift hadn’t been busy and there’s no excuse for not changing the tubing. It shears laziness on their behalf”. The ODP then when off to the stock room and was out of the theatre for approximately 10 minutes. On her return, it was evident that this frustration had turned to annoyance, “the reason I have been away so long is that the bloody stock room is such a mess and so disorganised I couldn’t find what I was looking for, good job it wasn’t an emergency situation”. An additional drip stand would have been useful for the anaesthetic team rather than only one to share between the anaesthetic room and theatre.

LOCAL WORKING CONDITIONS - WORKLOAD & STAFFING ISSUES There was sufficient staff to adequately manage the operating list, but the ODP responsible for anaesthetics did have periods of heightened activity whereby they had competing demands on their time. The skill mix was appropriate for the operating list. The trainee was well supported by the Consultant Surgeon and not left unsupervised. The theatre staff (scrub/circulating nurses) managed their coffee break well. There was no interruption to the operating list or compromised care. The ODP did not have a coffee break until she asked the theatre co-ordinator if there was someone available to relieve. Another ODP was sent in to relieve. There were 4 members of staff working overtime during the period of observation, who were a second theatre team for additional emergencies/trauma cases. As there were no additional cases during the period of observation the 4 staff members remained in the coffee room within the department. This caused a great deal of consternation, particularly with the ODP who a) had to request relief and b) because the stock room was untidy. “It all boils down to sheer laziness and they’re getting paid overtime to sit in the coffee room, while I’m running around like a blue arsed fly”. Another apparent tension was the fact that staff from site B and site C have different ways/approaches to working, even down to the layout of the anaesthetic room environment. A direct comment made to me was **“you see what I mean? It’s ridiculous, taking ECG electrodes from the packets that they are supplied in to put them in a container on the bench. They dry out when exposed to the air and don’t stick to the patients’ skin.**

Disorganising/Impacting/Influencing
Resourcing

Staffing
Managing
Competing/Prioritising
Supporting/Educating/Hidden
curriculum
Breaking
Flowing/Asking/Relieving
Breaking/Replacing
Ways of working
Standing by/Waiting
Estranging/Divorcing – meso
Anxiety/Requesting
Avoiding/Divorcing/Injustice
Ways of working
Planning/Organising
Justifying
Rationalising
Lack understanding
Sabotaging/Disrupting/Interfering
Micro
Knowing
Leading
Coordinating
Ways of working
Customising/Adapting
Communicating break in
Missing/Overlooking

People round here lack common sense, but it's all about site B and their way of working". There was little movement in/out of theatre. Most resources were readily available.

LEADERSHIP, SUPERVISION & ROLES Everyone within the operating theatre seemed to know their role within the team. Initially it was unclear as to who the team leader was, but as time passed it became apparent that the circulating/scrub S/N was the co-ordinator. As an observer, the process of sending for the next patient on the operating list was not transparent. Local custom and practice have developed in so much as the first patient on the operating list for the session is sent for in a timely fashion, thereafter the co-ordinator sends for the next patient. Sending for the next patient was not always verbalised and on the one occasion that it was, not all team members were present (ODP not present in theatre, they were in the anaesthetic room).

DRUGS, EQUIPMENT & SUPPLIES All equipment and drugs readily available. The ODP (anaesthetics) did complain that sundries used the evening before had not been replenished, even though there had been no over-night activity in that operating theatre (imply that the night staff had failed to stock the anaesthetic room). This caused a degree of frustration and the need for the ODP to leave the theatre to replenish vital stock.

LATENT/ORGANISATIONAL FACTORS The theatre environment was bright, clean and initially the temperature was ambient. Nearing the end of the session the temperature seemed to drop and was certainly a lot cooler. There were no trailing cables or hazards on the floor. There were no distractions e.g., music playing. There were periods of general chatter, but this did not appear to detract from the task at hand.

SUPPORT REQUIRED FROM OTHER DEPARTMENTS X-ray required.

POLICIES, PROTOCOLS & PROCEDURES Policies and protocols were followed in relation to anaesthetic machine checks (non-compliance with signing the anaesthetic machine check log, by the anaesthetist), maintenance of sterile field, traceability, instrument and swab count (reported to surgeon, surgeon acknowledged) hand washing, glove changing, patient transfer and sending for the first patient on the operating list. Checklists followed.

GENERAL FACTORS - SAFETY CULTURE/CLIMATE The safety culture appeared to be very good. Each "patient" was safely cared for, protocols/policies/procedures were followed. CQUIN targets acknowledged for example DVT prevention and urinary catheter care plan/bundle. Prophylactic antibiotics given as per "Safer Surgery Checklist". Documentation robust and relevant. The importance of

Frustrating
Missing/Ebbing and Flowing
Environmental
Environmental
Setting
Chatting/Setting

Macro (out with theatres)
Complying/Conforming
Non-complying/Non-conforming
Complying
Complying
Complying
Complying
Following
Following
Following
Complying
De-briefing non-complying
Meeting
Collaborating
Sharing
Fluctuating/Ebbing and Flowing
Confusing
Lacking
Transferring
Meso to Macro
Decision-making
Communicating/Collaborating
Transferring Macro to Meso
Covertly
Chatting/Socialising/Relaxing

team briefings seemed to be acknowledged by ALL members of the team, however distinct lack of emphasis on 'debrief'.

COMMUNICATION - OUTWITH THE OPERATING ROOM – SURROUNDING SPACES (diagram) On arriving within the department, day shift nursing/ODP staff convened with the night shift nursing/ODP staff in the coffee room. There was a very brief 'handover' of information e.g., 'nothing to report as we've had a really quiet night'. During this brief exchange staff were wandering in and out of the coffee room. As an observer, it was difficult to elicit if this was a formalised process, or a matter-of-fact process of 'by the way this happened during the night'. There did not appear to be any documentation/handover sheet to support or refute the activity during the night. Staff handed over 'bleeps' (one bleep for obstetrics, one bleep for A&E). Two nursing/ODP staff members left the department to attend the emergency meeting and the trauma meeting. This is where decisions are made by Consultant Surgeons and anaesthetists about cases that need to come to the operating department for surgical intervention. The nurses/ODP's who attend these meeting, return to the operating department and then relay this information back to the specific operating theatres, but this 'passing on of information' was not observed. Coffee room discussions continued about nights out, holidays and family members during this initial period of 'handing over'. The coffee room was frequented by nursing/ODP/Consultants and trainees throughout the course of the observation. Some nursing/ODP staff members did not leave the coffee room until their shift was due to finish (between 12.30-13.00). Other members of the team went into the coffee room briefly for an allotted break, and some team members (Consultants) came into the coffee room to look for specific nursing/ODP staff. The central collective hub for nursing/ODP staff, beyond that of the coffee room was that of the 'boards. One board detailing off duty and the other board detailing staff allocation (who was working in what theatre and with whom). Throughout the length of the observation period nursing/ODP staff members frequented these boards on more than one occasion, there was a lot of whispering, finger pointing, hands on hips and nodding/shaking of heads. There was also a notice pinned to the wall suggesting that "anyone that had worked overtime (beyond their allocated 37.5 hours) during their annual leave would NOT be paid". This noticed caused a huge amount of discourse. The boards were referred to by one nursing staff member as the 'Holy Grail' and 'woe betide anyone that dare to change the allocations'. Even when the one individual who has sole responsibility for allocations is on days off or holiday, they will know when the allocations have been changed and there will be an 'inquiry'. The office area very definitely was the domain of the senior nurse/ODP in charge of

Stagnating/Languishing
Leaving/Ending
Breaking/Resting
Looking/Searching
Nucleus 2
Allocating
Behaviours

Informing/Dictating
Discussing/Conversing/Conferring
Symbolising/Representing
Threatening (dark)
Intimidating/Menacing
Nucleus 3 Leading/Managing
Unmoving
Struggling
Ways of working
Battling/Struggling
Undermining/Sabotaging
EXAMPLE
Disrupting/Harming/Sabotaging

EXAMPLE
Sabotaging/Undermining
Hierarchy

Macro
Hierarchy/Battling/Undermining
Dividing/Destroying
Controlling

