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LEADING IMPLEMENTATION IN HEALTH AND SOCIAL CARE:
The Line Manager in the Spotlight

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LEADING IMPLEMENTATION IN HEALTH AND SOCIAL CARE: The Line Manager in the Spotlight

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ABSTRACT

Background: Health and social care organizations are frequently undergoing changes intended to improve quality of care and are expected to implement practices based on the best available evidence. However, about two-thirds of all implementation efforts fail. This has resulted in the well-known evidence-practice gap that means patients and clients may not receive the best possible care. Leadership is critical for implementation success. Implementation science and leadership research suggest that implementation is a structured process that requires certain leadership actions, which should be performed in an active and engaging way to increase the likelihood of implementation success. Line managers' play a key role in facilitating implementation processes because they are usually responsible for implementing and directly overseeing implementation efforts. Yet what line managers' do and how they can lead implementation is not well understood.

Aim: The overall aim of this thesis is to increase the knowledge of line managers' leadership during implementation. More specifically, this thesis explores leadership from the line manager perspective (Study I and Study III) and from the employee perspective (Study III), and validates a scale used to measure implementation leadership from line managers' and employees' perspective (Study IV). This thesis also investigates how context influences line managers in leading implementation (Study II).

Methods: Multiple designs and data collection methods were used in this thesis. Study I and Study II, which were conducted in social care, used a cross-sectional qualitative design in which data were collected using semi-structured interviews. These studies explored how line managers' describe their actions when leading implementation (Study I) and how context influences them in this process (Study II). Study I uses the "Phases of an Implementation" and Study II the "Consolidated Framework for Implementation Research" frameworks from implementation science to analyse the data. Study III and Study IV were conducted in health care. Study III used a longitudinal design and data were collected using web-based questionnaires administered to line managers and employees at three time points (at pre-, and post-intervention, and at a six-month follow-up). This study investigated agreement between line managers and their employees' for general leadership behaviours. Study IV was a validation study that used a cross-sectional design. Data were collected from web-based questionnaires distributed to employees. The leadership theory, "Full-Range Leadership Model", was used in both Study III and Study IV to measure leadership.

Findings: Study I found that line managers described their implementation leadership as a rather ad hoc, unstructured process in which they were active in some phases while passive in others. They were most active in informing and preparing their employees for an implementation when a decision had been made on which effort to implement. The line managers' were most passive in performing an analysis of needs prior to an implementation decision and in following up the process in the later phases of an implementation. Study II found that many factors in the inner and outer context influenced line managers'

implementation leadership. These contextual factors include support from the closest manager and senior management, social interactions (networks and internal communications), opportunities to improve knowledge and skills, and opportunities to apply for project funding. However, not all factors, when available, had an impact on the managers' implementation leadership. One explanation for this was that an interaction between factors was often needed to have a positive impact (e.g., project funding from actors in the outer context only had an impact if a positive and supportive climate existed in the inner context). Study III found a disagreement between line managers' self-ratings and their employees' ratings of the managers' leadership. The managers rated their leadership either more positive (higher) or less positive (lower) than their employees. A leadership intervention aimed at improving implementation leadership led to greater agreement at unit level. Study IV found that the iLead scale showed good psychometric properties and can be used to measure active and passive implementation leadership.

Conclusions: Line managers could benefit from being cognizant of implementation as a structured process that requires strategic thinking. Training interventions that develop managers' knowledge and skills may be supportive in how to most effectively lead implementation. It should be acknowledged, however, that line managers' task in leading implementation need to align with all other challenging managerial activities that they perform daily. Furthermore, feedback on line managers' leadership behaviours that includes their employees' perspective can help managers become more aware of their leadership behaviours and thus become more effective leaders. The iLead scale is a valid scale that can be used to measure managers' active and passive implementation leadership from both their own and employees' perspective. Finally, line managers need support in leading implementation and are influenced by various contextual factors. Yet the contextual factors that provide support are complex, various, and often overlapping. A one-size-fits-all support does not exist. Each line manager's situation should be considered in its entirety when tailoring individual manager support.

LIST OF SCIENTIFIC PAPERS

I. Mosson R, Hasson H, Wallin L & von Thiele Schwarz U. (2017). Exploring the Role of Line Managers in Implementing Evidence-Based Practice in Social Services and Older People Care. *The British Journal of Social Work*, 47(2), 542-560.

II. Mosson R, von Thiele Schwarz U, Richter A & Hasson H. (2017). The Impact of Inner and Outer Context on Line Managers' Implementation Leadership. *The British Journal of Social Work*, bcx077.

III. Mosson R, Hasson H, von Thiele Schwarz U & Richter A. Self-other agreement of leadership – A longitudinal study exploring the influence of a leadership intervention on agreement. *International Journal of Workplace Health Management*. Accepted with planned publication in August 2018.

IV. Mosson R, von Thiele Schwarz U, Hasson H, Lundmark R & Richter A. (2018). How do iLead? Validation of a scale measuring active and passive implementation leadership in Swedish healthcare. *BMJ Open*, 8(6).

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CONTENTS

1 Introduction 1
2 Aim 3
2.1 Overall aim 3
2.2 Specific study aims 3
3 Background 5
3.1 The Evidence Movement 5
3.1.1 Evidence-Based Practice 5
3.1.2 Working according to Evidence-Based Practice: The ongoing debate 7
3.2 Implementation Science 8
3.2.1 Phases of an implementation process 10
3.2.2 The Consolidated Framework for Implementation Research 11
3.3 Leading Implementation: The Line Manager in the Spotlight 14
3.3.1 Defining managers and leaders 15
3.3.2 Line managers leading implementation in health and social care 16
3.4 Bridging Implementation Science and Leadership Research 18
3.4.1 Empirical studies on leadership and its influence on implementation 18
3.4.2 Theoretical perspectives on leadership 20
3.4.3 Domain-specific leadership – Implementation-specific leadership 25
3.4.4 Measuring implementation leadership 26
3.4.5 Leadership is a reciprocal process: Considering line managers' and employees' perspectives 27
3.5 The Influence of Context on Leadership 29
4 Overview of the Thesis 33
5 Methods 35
5.1 Research Designs 36
5.2 The "Line Managers Leading Implementation of EBP" Project – Study I and Study II 36
5.2.1 Social care in Sweden 37
5.2.2 Setting for Study I and Study II 38
5.2.3 Participants and data collection 38
5.3 The "iLEAD Intervention" Project – Study III and Study IV 40
5.3.1 Health care in Sweden 40
5.3.2 Setting for Study III and Study IV 41
5.3.3 Participants and data collection 41
5.4 Data Analysis Procedures 44
5.4.1 Study I and Study II 44
5.4.2 Study III 47
5.4.3 Study IV 49
5.5 Ethical Considerations 52

5.5.1 Study I and Study II 52
5.5.2 Study III and Study IV 53
6 Key Findings 55
6.1 Study I 55
6.2 Study II 56
6.3 Study III 59
6.4 Study IV 61
7 Discussion 64
7.1 How Line Managers' Lead Implementation: Two Perspectives From Practice 64
7.1.1 Line managers' descriptions of how they lead implementation 64
7.1.2 Employees' perspectives on how their line manager leads 66
7.1.3 Comparing line managers' and employees' perspectives on how the manager leads 67
7.2 Line Managers Do Not Lead in a Vacuum 68
7.2.1 Leading implementation is not an isolated task for line managers 68
7.2.2 Poor knowledge about leading implementation among line managers 68
7.2.3 Lack of support in the line managers' context 69
7.2.4 Lack of alignment between line managers and their employees 73
7.3 How Line Managers' Implementation Leadership Can Be Supported 74
7.3.1 Consider interactions between and functions of contextual factors 74
7.3.2 Measure and provide feedback on line managers' implementation leadership: From the managers' and employees' perspectives 76
7.3.3 Offer training on implementation leadership 77
7.4 No One-Size Fits All When Leading Implementation 78
7.5 Methodological Considerations 79
7.5.1 Considerations relating to the qualitative data methods (Study I and Study II) 80
7.5.2 Considerations relating to the quantitative data methods (Study III and Study IV) 82
7.5.3 Considerations relating to generalizability (Studies I – IV) 85
7.6 Implications for Practice and Research 86
7.6.1 Practical implications 86
7.6.2 Research implications 89
7.7 Future Research 90
8 Conclusions 91
9 Acknowledgements 92
10 References 95
11 Appendix 114
11.1 Appendix A – The Swedish version of the iLead scale 114

LIST OF ABBREVIATIONS

BCW	Behaviour Change Wheel
CES	Center for Epidemiology and Community Medicine
CFA	Confirmatory Factor Analysis
CFIR	Consolidated Framework for Implementation Research
COP	Co-created Program Theory
EBP	Evidence-Based Practice
EBM	Evidence-Based Medicine
FRLM	Full-Range Leadership Model
ICC	Intraclass Correlations
ILS	Implementation Leadership Scale
MHSA	Ministry of Health and Social Affairs
NICE	National Institute for Clinical Excellence
NBWH	National Board of Health and Welfare
R&D	Research & Development (FoU)
SALAR	Swedish Association of Local Authorities and Regions
SEM	Structural Equation Modelling
SD	Standard Deviation
SLSO	Healthcare Provision Stockholm County

1 INTRODUCTION

Health and social care organizations are frequently undergoing changes intended to improve the quality of care and support offered to patients and clients. These organizations are increasingly expected to implement evidence-based methods to ensure that the best possible health and social care is provided. However, the gap between what is known to work from research evidence and what is used in the practice of care in these organizations is well known (Colditz & Emmons, 2018; Fisher, 2014; Gray et al., 2013a; Grimshaw et al., 2012). This gap exists despite mountains of evidence-based methods in health care and the ever-increasing use of effective methods in social care (Greenhalgh et al., 2004b; Grol and Grimshaw, 2003; Grimshaw et al., 2004; Soydan, 2009). Consequently, patients and clients do not always receive the recommended care. They may even receive potentially ineffective, or even worse, harmful care. For instance, it has been estimated that only 55% of patients receive recommended health care in the United States (McGlynn et al., 2003).

One suggestion to narrow this gap is increased implementation of evidence-based methods. It is argued that effective implementation processes are especially important in health and social care where the well-being of patients and clients is in focus. However, implementing new practices is a notoriously complex task (Durlak and DuPre, 2008; Graham and Logan, 2004; Greenhalgh et al., 2004a; Fixsen et al., 2005; Meyers et al., 2012). Previous research shows that approximately two-thirds of all efforts to implement change are estimated to fail (Greenhalgh et al., 2004a). The field of implementation science aims to address the challenges emphasised in the evidence-to-practice gap by focusing on how changes in practice can be realized. Research in this field has identified leadership as a crucial factor when implementing change in practice (Gifford et al., 2007; Eisenbach et al., 1999; Reichenpfader et al., 2015; Sandström et al., 2011; Wong et al., 2013; Øvretveit, 2010). Leadership has been shown to facilitate processes important for implementation, including active interest and commitment (Helfrich et al., 2007), and to foster a climate supportive of an implementation (Ehrhart et al., 2014). Studies have also emphasized that the line manager has an important task in leading implementation (Aarons et al., 2015; Birken et al., 2012; Gifford et al., 2007; Sandström et al., 2011).

Line managers, those managers who work closest to the employees who provide direct services, are recognized as particularly important because they are usually responsible for implementing and directly overseeing implementation efforts in practice (Aarons et al., 2015; Barwick, 2005; Birken et al., 2016; Fisher et al., 2016; National Board of Health and Welfare, 2013). Thus, line managers play a vital role in leading implementation and managing constant changes because they directly influence how, and occasionally what, efforts that professionals use in the health and social care setting.

Although the knowledge has increased of which leadership actions and behaviours that are most effective in implementation, there is still a lack of knowledge on this topic in the implementation science field (Reichenpfader et al., 2015). There is especially a lack of

knowledge for how line managers describe their experiences and what influences them with respect to leading implementation. This is an area worthy of investigation because we need to understand the challenges these managers face when leading implementation and the support they require for this task. Moreover, to date, studies have often lacked theoretical underpinning (Fixsen et al., 2009; Reichenpfader et al., 2015). Thus, our knowledge is limited on the bridging between implementation science and current leadership research, where the latter broadly concerns what type of leadership behaviours influence various employee and organizational outcomes. It is therefore argued that more scientific research is needed that uses knowledge, such as scientific research, frameworks and theories, from both these research areas to provide a deeper understanding of what and how in leading implementation. This includes which leadership behaviours that are effective or ineffective. It is also important to capture and acknowledge both line managers' and employees' perspectives on the managers' leadership with particular emphasis on whether, and to what extent, a consensus exists between these two groups (Atwater et al., 1998; Day et al., 2014). It is well-established in the research that managers and employees often have quite different perspectives on leadership (Fleenor et al., 2010; Lee and Carpenter, 2017), which may lead to negative organizational outcomes (Aarons et al., 2017a).

In summary, we need to increase our understanding of how line managers tackle the task of leading implementation and how they can be supported in this process. An investigation of this area can be an important step towards fulfilling the intention of the Social Services Act (2001:453) and of the Health and Medical Services Act (2017:30). These Swedish legislations aims to foster economic and social security and to ensure that professionals can work according to best available evidence to provide the public with the best quality of care. An increase in our knowledge of how line managers can effectively lead implementation may lead to increased and improved implementation efforts in health and social care. In this way, we may narrow the gap between evidence and practice. This thesis responds to a call for increased understanding of leading implementation and uses frameworks and theory from the fields of implementation science and leadership research.

2 AIM

2.1 OVERALL AIM

The overall aim of this thesis is to increase the knowledge of line managers' leadership during implementation. More specifically, this thesis explores leadership from the line manager perspective (Study I and Study III) and from the employee perspective (Study III), and validates a scale used to measure implementation leadership from line managers' and employees' perspective (Study IV). This thesis also investigates how context influences line managers in leading implementation (Study II).

2.2 SPECIFIC STUDY AIMS

This thesis consists of four studies with the following aims:

Study I: To explore how line managers perceive evidence-based practice (EBP), and how they describe their own role and actions when implementing EBP.

Study II: To investigate how contextual factors on multiple levels influence line managers leadership when implementing evidence-based practice (EBP).

Study III: To investigate how agreement between line managers and their employees regarding leadership behaviours changes over time as a result of a leadership intervention.

Study IV: To create and validate a scale that captures line managers active and passive implementation-specific leadership behaviours, which follows the factor structure of the Full-Range Leadership Model.

3 BACKGROUND

This chapter begins with an overview of the evidence movement that is the basis of the increased interest in knowledge of implementation. The chapter next presents what implementation science has emphasized as important to effectively implement change in practice. Thereafter, different aspects related to the bridging of implementation science and leadership research are presented, followed by an overview of contextual factors important for line managers to effectively lead implementation.

3.1 THE EVIDENCE MOVEMENT

Health and social care organizations are frequently undergoing changes intended to offer patients and clients the best quality of care. Research in this area continually offers guidance concerning which methods are most effective in offering care and support to the general population (Colditz and Emmons, 2018; Greenhalgh et al., 2004b; Grol and Grimshaw, 2003; Soydan, 2009). There has been an exponential growth of research evidence in the last century (Dawes et al., 2005), and observed successes in working according to evidence-based practice, including new standards of care in the use of chemotherapy and new guidelines in the treatment of asthma (Djulbegovic and Guyatt, 2017; Greenhalgh et al., 2014). Despite these successes, there is a well-known gap between what is known to work from research evidence and the practice of care (Lang et al., 2007; Morago, 2010; Squires et al., 2015). As a result, some patients may not receive the recommended care, or even worse, may receive care or support that is ineffective or even harmful (Greenhalgh et al., 2004b; McGlynn et al., 2003; Oxman et al., 1995).

Various explanations for this gap are suggested. For example, professionals may lack access to, and confidence in, evaluating current research and may have limited time for implementing evidence in practice (Rycroft-Malone, 2008; Squires et al., 2011). Another explanation may be poor leadership in the implementation process. An unforeseen consequence of the significant increase in the published research evidence in health and social care is that it has become unmanageable for managers and for professionals (Greenhalgh et al., 2014). Consequently, working according to evidence has not become as widespread as expected; its implementation remains a problem.

3.1.1 Evidence-Based Practice

An approach to integrating evidence with practice is evidence-based practice (EBP). EBP is often described as a movement aimed at achieving the systematic use of the most reliable knowledge available to inform daily practice (Bohlin, 2011). This approach integrates three knowledge sources: research evidence, professional expertise, and patients and clients

individual preferences (Gray et al., 2013a; Plath, 2014; Rycroft-Malone and Bucknall, 2010; Stetler et al., 2007). In accordance with this definition, EBP is a way of doing practice, i.e. a decision-making process that emphasizes how to integrate the best current knowledge to make the best decisions on what care to offer patients and clients. A benefit of EBP is that it provides safer, more effective, and less costly care, equally to patients and clients.

Working according to EBP is a global movement that has emerged in the past three decades and exerts a strong influence on health and social care. Implementation of EBP is now a priority by the Swedish Government and the Swedish Health and Medical Services Act (2017:30) that governs the work of professionals requires them to use the best available knowledge (Hasson and von Thiele Schwarz, 2017a). Internationally, agencies such as the National Institute for Clinical Excellence (NICE) in the United Kingdom (UK), the Agency for Health Care Research and Quality in the United States (US), and the Canadian Institutes of Health Research are working on the production of evidence and guidance to improve care services (Colditz and Emmons, 2018). In addition, the World Health Organization (WHO) and global international networks of researchers and health professionals (e.g., the Cochrane Collaboration) also promote the use of EBP (Fisher, 2014).

The term EBP emerged in the field of medicine, where the term evidence-based medicine (EBM) was coined in Canada in the early 1990s (Evidence-Based Medicine Working Group, 1992; Sackett et al., 1996). However, fundamental ideas about working according to EBP and EBM are also found in earlier studies, for example, in studies by John Wennberg and the work of Archibald Cochrane during the 1970s and 1980s (Bohlin, 2011; Morago, 2006). The original definition of EBM was as follows: *'the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individuals'* (Sackett et al., 1996, p. 71). This definition emphasizes the importance of the professional's ability to review and judge the credibility of empirical studies in relation to a specific question. An important term used to describe EBM was therefore "critical appraisal". However, this approach proved overall difficult to use in practice, which led to the development of a more centralized system with compilations of evidence often based on meta-analyses and systematic literature reviews (Bohlin, 2011). This resulted in two approaches to disseminate knowledge of evidence with practice: 1) a focus on teaching professionals the concept of critical appraisal, and 2) a focus on the evidence in reports and national guidelines produced by specialized organizations and government agencies (e.g., the National Board of Health and Welfare in Sweden). This has resulted in various descriptions of how to use EBP in practice. Different terms and approaches have appeared that are now used to link research evidence with patients and clients conditions and care in daily practice (Dawes et al., 2005; Fisher, 2014; Gambrill, 2006). For instance, we now have evidence-based medicine, evidence-based social care, evidence-based health care, evidence-informed practice, evidence-based nursing, evidence-based interventions, and evidence-based practice, to name only a few of the terms.

3.1.2 Working according to Evidence-Based Practice: The ongoing debate

The opinions on what working according to EBP means in practice and which of the three knowledge sources that should be emphasized divide researchers and professionals (Gambrill, 2006; Mykhalovskiy and Weir, 2004). There are many reasons for this debate (Djulbegovic and Guyatt, 2017). This thesis mentions two important areas.

First, a common assumption among professionals is that EBP refers to an evidence-based method or intervention (Mullen and Streiner, 2006). The failure to differentiate between EBP as a method or intervention and as a decision-making process causes confusion concerning what it means to implement EBP. To avoid that confusion in this thesis, EBP is used here as a decision-making process that is associated with a multidisciplinary approach that integrates research evidence, professional expertise, and patients and clients preferences.

Second, what working according to evidence actually entails has caused confusion in both the health and social care setting. A common understanding is that evidence proves or confirms a fact that should be independently verified (Rycroft-Malone et al., 2004b). Given the evidence movement beginning in the mid-1990s, a common assumption was that evidence meant research knowledge, preferably acquired in randomized, controlled trials and synthesised in systematic reviews and meta-analyses (Bohlin, 2011; Morago, 2006). A debate continues on whether evidence should only include the more narrow inclusion of randomized controlled trials (RCTs) and systematic reviews, or be more inclusive of evidence produced using other research methods, such as registry, observation and qualitative studies (Bohlin, 2011; Djulbegovic and Guyatt, 2017). Owing to this unresolved debate, many people have strongly held differences of opinions on the value of working according to EBP.

Supporters of implementing and working according to EBP claim it helps professionals work in the most optimal way and improves the quality of care and outcomes for patients and clients (Austin and Claassen, 2008; Eccles et al., 2005; Fisher, 2014; Gambrill, 2007; Gray et al., 2013b). These scholars also emphasize that professionals are ethically obliged to offer clients and patients care known to be effective. It is also argued that working according to EBP improves the documentation and increases the transparency of the professional's daily work. For these reasons, working according to EBP advances the continuous and beneficial development of professions and organizations.

Critics of working according to EBP are sceptical of its use to guide practice – especially in social care (Mullen and Streiner, 2006; Nevo and Slonim-Nevo, 2011; Staller, 2006; Webb, 2001). These critics often question the validity of the hierarchy of evidence (not least, in the use of RCTs) and the application of population-based science to individual clients. Moreover, the use of quantitative research methods to generate evidence is argued to not capture the complex reality and even ignores the unique characteristics of the patients and clients as well as the special expertise of the professionals who provide care and support (Mullen and Streiner, 2006; Staller, 2006). The more critical voices also argue that working according to EBP diminishes professional autonomy by its promotion of a "cookbook" approach (Morago, 2006).

These critics think the focus of care belongs to the interaction between professionals' and clients' as well as on learning from practice.

Overall, it can be established that the term EBP is used inconsistently. For example, some refer to EBP as a synonym to evidence-based methods and others refer to it as a combined term for the three knowledge sources in the decision-making process. From this inconsistency in the EBP discourse, is a debate about what constitutes "evidence" more than using multiple sources of knowledge, consistent with the overall focus of EBP. The initial idea of working according to EBP is premised on an interpersonal relationship between the professional and the patient or client. However, research evidence does not necessarily prevail in that decision (Greenhalgh et al., 2014).

Nevertheless, many agree that evidence from research plays a key role in optimal decision-making in the care and support of all patients and clients. Ultimately, the real issue is not about choosing between two or three alternatives, but rather a central task for professionals is to strike a balance between these knowledge sources in a way that the best human judgement is used to make the best possible decisions in particular situations.

Setting aside these debates on the nature and external validity of EBP in health and social care settings as still unresolved, this thesis focuses on the implementation process of EBP. In this thesis, implementation of EBP was used as a case for leading implementation in Study I and Study II. The other studies (Study III and Study IV), concerned implementation leadership for specific implementation cases that were ongoing in the organizations where these studies were conducted. Thus, EBP is not the only implementation case investigated in this thesis that takes a broader focus on leading implementation (i.e., when leading implementation of any case or effort).

To summarize, the fundamental principle of the evidence movement is to integrate the three knowledge sources (i.e., research evidence, professional expertise, and patients and clients preferences) in EBP that leads to the best possible care. To realize this, there is a need to make research evidence available in practice. However, despite an exponential growth in research evidence in recent decades in health care, and advancements in social care, there is a well-known gap between existing effective methods and what is used in practice. This gap sparked the emergence of research in implementation science that desires to address these challenges by increasing our knowledge on how to improve implementation processes to achieve more EBP in care services.

3.2 IMPLEMENTATION SCIENCE

Implementation science addresses the challenges posed by the evidence to practice gap through its promotion of the systematic uptake of research findings into daily practice with the aim of improving the quality and effectiveness of care (Colditz and Emmons, 2018; Eccles et al., 2005). Therefore, the field of implementation science explores the processes and factors

associated with effective implementation in health and social care (Damschroder et al., 2009; Guldbrandsson, 2008; Rabin et al., 2012). Advances in this field are needed, for example, to avoid insufficient use of limited resources in publicly funded organizations, and, more importantly, to provide patients and clients with the best possible care and support (Colditz and Emmons, 2018; Grimshaw et al., 2012).

The language and terms used in implementation science varies. For instance, *diffusion* refers to the passive spread of an intervention or effort, whereas *dissemination* refers to the more active approach of adopting an intervention or effort (Greenhalgh et al., 2004b). This thesis focuses on *implementation*, which has several definitions, although a commonly agreed-on definition is that implementation is an active process of putting to use or integrating planned efforts in a specific context (Colditz & Emmons, 2018; Eccles and Mittman, 2006; Greenhalgh et al., 2004b; Rabin et al., 2008). There are also multiple terms used synonymously for implementation, mostly depending on country. Examples are knowledge translation, knowledge to action, knowledge transfer, knowledge utilization, research utilization, among others (Colditz and Emmons, 2018; Graham et al., 2006; Rabin et al., 2008). In this thesis, the term implementation is used and the definition concurs with the description above. Furthermore, implementation is considered to concern people changing their behaviour as suggested by authors in the implementation science field (Michie et al., 2011).

To provide some background, implementation science emerged in the light of the early work of Everett Roger's diffusions of innovations in the 1960s and in the work of Archibald Cochrane in the 1970s that documented the inadequate use of evidence in medical practice (Guldbrandsson, 2008; Hasson & von Thiele Schwarz, 2017a). This seminal research led to the evidence movement in the 1990s and the widely referenced compilation by Balas and Boren in 2000 concluding that "it takes 17 years to turn 14% of original scientific research for the benefit of patient care" (Balas and Boren, 2000, p. 66). This foundational work triggered a vast increase in implementation science research in the last two decades. During these years, the construction of frameworks and models has shifted from traditional behavioural science frameworks and models (e.g., The Transtheoretical Model, The Health Belief Model, The Diffusion of Change) to focusing on models and frameworks designed specifically for implementation research (e.g., Consolidated Framework for Implementation Research, Re-aim, among other). An increasing body of evidence shows that implementation influences positive outcomes (Aarons et al., 2009; Durlak and DuPre, 2008). There is also an array of frameworks and models (Meyers et al., 2012; Nilsen, 2015) that support the complex process of implementing new efforts in the daily practice (Battilana et al., 2010; Durlak and DuPre, 2008; Eccles et al., 2005; Fixsen et al., 2005; Greenhalgh et al., 2004b; Powell et al., 2014), which has been suggested to take up to two to four years (Fixsen et al., 2009).

Many different frameworks and models exist that can help us understand the implementation process (Damschroder et al., 2009; Durlak and DuPre, 2008; Greenhalgh et al., 2004b; Kyratsis et al., 2012; Meyers et al., 2012; Rycroft-Malone, 2004), which can be used in practice and in research (Nilsen, 2015). Such frameworks and models typically offer insights into the factors

that are relevant and linked to implementation success. There are approximately 60 frameworks in the field of implementation science (Tabak et al., 2012) with some of these being a blend of theories and models with influences from organizational theory, psychology and sociology. Other frameworks originate in implementation science (Nilsen, 2015). Many of these frameworks have one of the three over-arching aims of implementation science that were described in a recent assessment of the field (Nilsen, 2015). These aims are the following: 1) to describe and specify phases that inform an implementation process (process models), 2) to specify outcomes to evaluate implementation success (evaluation frameworks), and 3) to understand and explore what influences implementation success. This third aim encompasses the explanation of factors that influence, facilitate, or hinder an implementation process (e.g., implementation theories, classic theories, and determinant frameworks). However, some frameworks overlap these categories.

In this thesis, Study I uses a process model (Phases of Implementation by Fixsen et al., 2005) to conceptualize the line managers' leadership in various implementation phases. Study II uses a conceptual determinant framework (the Consolidated Framework for Implementation Research by Damschroder et al., 2009) to investigate contextual factors that influence line managers' implementation leadership.

3.2.1 Phases of an implementation process

Fixsen and colleagues (2005) describe four common phases of the implementation process: *exploration, installation, initial implementation,* and *full implementation* (see Figure 1). Similar phases have been emphasized in the Exploration, Preparation/Adoption, Implementation and Sustainment (EPIS) model by Aarons et al. (2011). These four phases are based on an extensive review of the implementation literature (Fixsen et al., 2005; Fixsen et al., 2009) and have been used in previous research and in practice (National Board of Health and Welfare, 2013; Ogden et al., 2012; Sullivan et al., 2008).

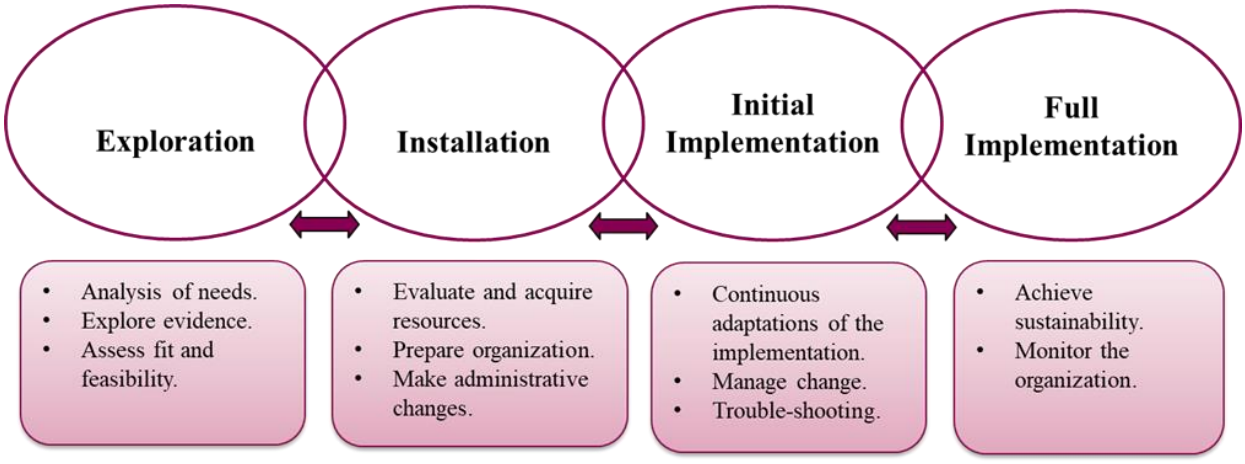

Figure 1. The four phases of an implementation process (adapted from Fixsen et al., 2005).

The first phase, *exploration*, concerns awareness of an issue that needs attention and whether to adopt or even consider an implementation effort (i.e., a method, innovation, or guideline) by assessing the benefits of the implementation and the organization's readiness for change. In this phase, analysis of needs is assessed, but no decision has been made to proceed. Sufficient time should be set aside for this phase in order to increase the chance of implementation success. In the second phase, *installation*, a decision has been made to implement a specific method and concerns preparing for the implementation. This phase includes assessment of the resources needed for the implementation, such as time, materials, and education and training of employees. The third phase, *initial implementation*, is when the exploring and planning is enacted and the implementation effort is used for the first time (post-exploration and installation). This phase is especially challenging because it involves trouble-shooting and continuous adaptations in the implementation process. The fourth phase, *full implementation*, deals with the sustainability of the implementation in daily practice using the creation and support of structures and processes (Aarons et al., 2011; Fixsen et al., 2009; Fixsen et al., 2005).

It is worth emphasizing that an implementation process is dynamic and non-linear, and that each phase influences the other phases in complex ways (Fixsen et al., 2009). For instance, sustainability must be considered in the exploration phase, and the exploration phase has a direct influence on the installation and initial implementation phases.

3.2.2 The Consolidated Framework for Implementation Research

There are a number of determinant frameworks that emphasize the importance of leadership, among several other factors, for effective implementation. Some examples include the Promoting Action on Research Implementation in Health Services (PARIHS) (Kitson et al., 1998; Rycroft-Malone, 2004), the Ecological Framework (Durlak and DuPre, 2008), the Ottawa Model of Research Use (Logan and Graham, 1998), and the Consolidated Framework for Implementation Research (CFIR) (Damschroder et al., 2009). In particular, the CFIR has been widely used in implementation science in recent years (Kirk et al., 2016). This "meta-theoretical" framework was established since a considerable overlap between theories and frameworks in implementation science was revealed in an initial search by the authors. However, each of these theories and frameworks lacked at least one key component included in other frameworks and theories. The aim of the CFIR is to consolidate the constructs and influential factors that may facilitate or hinder implementation. These constructs and factors are found in several other theories and frameworks and in the research that promotes effective implementation. Thus, the CFIR emphasizes the many similarities in existing theories and frameworks and expands our understanding of the influences on effective implementation. Furthermore, the CFIR identifies the multiple levels of context that may influence successful implementation.

The CFIR consists of 26 constructs and 13 sub-constructs organized into five major domains that interact in rich and complex ways (Damschroder et al., 2009). These domains, constructs,

and sub-constructs are listed and summarized next. See Figure 2 for these domains, including their constructs and sub-constructs.

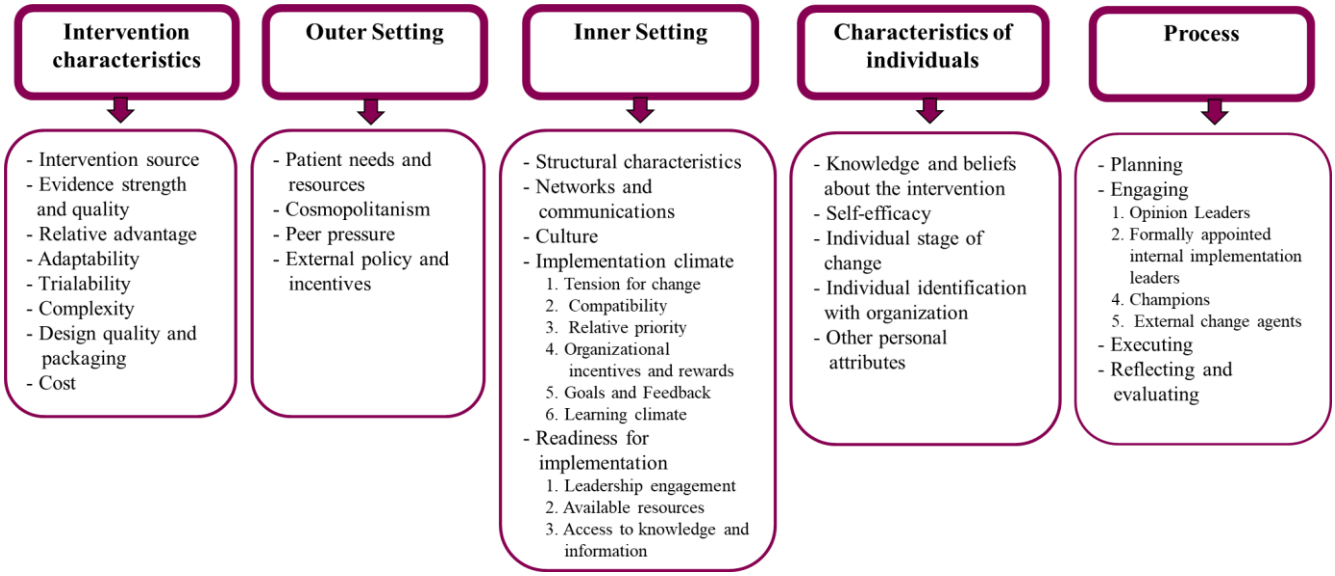

Figure 2. The Consolidated Framework for Implementation Research's five domains, including constructs and sub-constructs (numbered under each construct) (adapted from Damschroder et al., 2009).

Intervention characteristics (8 constructs) refers to central attributes of an intervention that influence the effects of implementation outcomes. This domain includes the constructs *intervention source* that concerns whether the intervention is internally or externally developed, *evidence strength and quality* referring to the extent of support by valid evidence, and *relative advantage* that refers to whether stakeholders perceive that the intervention is more beneficial to implement than another option. Additional important intervention attributes included are *adaptability*, which refers to whether the intervention can be tailored to the local context while still remaining effective, the *trialability* that concerns the possibility of testing the intervention, and, as needed de-implementing it, and *complexity*, referring to the difficulty of implementing the intervention (e.g. duration, scope and radicalness). *Design quality and packaging* of the intervention that concerns how it is visually packaged, and the *costs* of the intervention are also included in this domain.

Outer setting (4 constructs) refers to the influence of external factors, for instance the political, economic and social context surrounding the organization. This domain includes *patient needs and resources* and the extent to which the organization is networking with other organizations, namely *cosmopolitanism*. It also includes *peer pressure*, which concerns whether the organization feels pressured to implement an intervention due to other peer organizations implementing an intervention and *external policy and incentives* that refers to strategies from external actors (e.g., government agencies and other important stakeholders).

Inner setting (5 constructs) refers to the political, structural and cultural context of the organization. In this we find *structural characteristics* of an organization (e.g., in terms of size) and the quality of *networks and communication* with both formal and informal networks within an organization, and organizational *culture* (e.g., norms and values). The inner setting domain also includes *implementation climate* that refers to the absorptive capacity for change and the degree to which the implementation is supported and expected in an organization. This construct also includes the following six sub-constructs: 1) tension for change, 2) compatibility, 3) relative priority, 4) organizational incentives and rewards, 5) goals and feedback, and 6) learning climate (e.g., the extent to which the leader promotes learning and includes employees, and provides time for reflection and evaluation). *Readiness for implementation* is another included construct referring to clear and concrete indicators that the organization is committed to the implementation, and includes the following three sub-constructs 1) leadership engagement (i.e., involvement of leaders and managers), 2) available resources and 3) access to knowledge and information. Worth a mention is that the line between the "Inner setting" and "Outer setting" domains is often unclear and the specific factors belonging to either of these settings in an organization depends on the context of the implementation.

Characteristics of individuals (5 constructs) refers to the individuals involved in the implementation process and/or the intervention. This includes their *knowledge and beliefs about the intervention, self-efficacy, individual stage of change, individual identification with the organization* and *other personal attributes*, for instance motivation, competency and capacity.

Process (4 constructs) refers to the *planning*, *engaging*, *executing*, and *reflecting and evaluating* the implementation throughout the entire process. The engaging construct also has the following four sub-constructs: 1) opinion leaders, 2) formally appointed internal and implementation leaders, 3) champions and 4) external change agents.

Thus, with its detailed list of factors, the CFIR is a useful framework that crosses several contexts and promotes theory development. However, contextual factors may have differing influences on an implementation process depending on the implementation effort and the site of the implementation. Moreover, there are often multiple and complex interactions between contextual factors (Glasgow and Chambers, 2012; Greenhalgh et al., 2004b; Hasson et al., 2012; Jacobs et al., 2010; Moullin et al., 2017). Contextual factors can also be compensatory (Fixsen et al., 2005). For instance, if a factor (i.e., type of support) is lacking in an organization this can be overcome if other factors are present and strong in nature. The CFIR does not address these interactions or their influence on effective implementation.

In sum, although the existing frameworks and models in implementation science vary in their primary intended use, a common aspect is the emphasis on leadership as a key component throughout the implementation process, and for effective implementation to achieve implementation success.

3.3 LEADING IMPLEMENTATION: THE LINE MANAGER IN THE SPOTLIGHT

A recurrent theme in the field of implementation science is that leadership is a critical component for effective implementation. The importance of leadership is highlighted in the major implementation frameworks and models (Aarons et al., 2011; Damschroder et al., 2009; Fixsen et al., 2005; Greenhalgh et al., 2004b; Rycroft-Malone, 2004), and in many empirical studies (Aarons et al., 2015; Eisenbach et al., 1999; Gray et al., 2013a; Harvey et al., 2011; Higgs and Rowland, 2010; Pettigrew et al., 2001; Wong et al., 2013). Leadership can facilitate several aspects identified as essential in effective implementation, such as creating a culture and climate supportive of implementation (Aarons and Sommerfeld, 2012), promoting a positive attitude towards EBP (Aarons, 2006), and commitment to organizational change (Battilana et al., 2010). This indicates that leadership can have a strong influence on implementation processes in health and social care settings.

Leadership theories also emphasize the need for effective leadership in motivating and facilitating change (Day et al., 2014; Dinh et al., 2014; Yukl, 2002; Zaccaro and Horn, 2003). Research on leadership can be traced to the early twentieth century when the focus was on what characteristics leaders should have (i.e., Great Man Theories) and on trait theory in the 1930s. This was followed by behavioural theories in the 1950s and in the 1960s, the focus shifted to situational and contingency leadership theories. By the 1970s and 1980s more contemporary leadership research (e.g., transformational and transactional leadership) was receiving increased attention (Avolio et al., 2009; Dinh et al., 2014; Northouse, 2010; Yukl, 2010). Thus, leadership research originated primarily in the study of the individual leader and personality. This leader was typically a man employed in a leadership position at a private company. Today, by contrast, leadership research takes a broader perspective with the study of followers (e.g., employees) and supervisors, and the context, including culture and climate (Avolio et al., 2009). Thus, current research addresses a more diverse group of individuals who work in more diverse settings (e.g., public, private, and non-profit organizations). The result is that leadership research in its present form focuses more on leadership as an ability that can be developed and created, primarily in interaction with the context, and that can be observed and experienced by others. This indicates that when studying leadership others perceptions, for example their employees, are essential.

Despite a long history of leadership research in many settings and disciplines (Avolio et al., 2009; Northouse, 2010), implementation science has to date paid scant attention to leadership theory and leadership models in the study of leadership during implementation (Estabrooks et al., 2009; Gifford et al., 2014; Reichenpfader et al., 2015; Sandström et al., 2011). Since theories can be used to structure and guide the understanding and observation of research (Glanz, 1997), the lack of theoretical underpinnings in leadership research can result in difficulties in understanding and explaining how, why, and what of leadership is important during an implementation.

A more integrated approach to studying leadership and implementation has only recently emerged. This approach focuses on the key leadership actions required for leading

implementation, also known as "implementation leadership" (Aarons et al., 2014a; Gifford et al., 2013; Richter et al., 2016). The approach is a consequence of the strong indications of how crucial leadership is in influencing effective implementation in organizations. This area of research, which is still in its infancy, integrates research and theory from the two research fields of implementation science and leadership research.

Although the claim in implementation science is that leadership is essential for effective implementation, the research in this area has so far focused mainly on what leadership actions support effective implementation. In the research, leadership actions and behaviours have primarily been analysed from the perspectives of others. We lack knowledge about which leadership behaviours managers themselves perceive that they perform throughout the implementation process (i.e., the different phases) and how to perform implementation leadership. This includes both effective and ineffective behaviours. Therefore, what managers' do and how they lead implementation is generally not well understood (Cummings et al., 2008; Rycroft-Malone, 2012; Wilkinson et al., 2011; Wong et al., 2013). More research is desired on the integration of implementation science with leadership research to improve clarity in this area of research. Making use of both the implementation science and leadership literatures is a focus of the present thesis.

Before attending to how leadership and implementation have been studied up until now, this section first cover the terms "managers" and "leaders" and on leading implementation from the line manager perspective.

3.3.1 Defining managers and leaders

The differences between managers and leaders as constructs have been debated for decades. According to many scholars, a fundamental distinction can be drawn between a manager and a leader (Holmberg and Tyrstrup, 2010; Kotter, 1990; Yukl, 2010). However, both roles have been described as necessary for an effective organization (Bass, 1990; Kotter, 1990; Yukl, 2010). There are also numerous definitions of these terms, most of which are quite different, particularly with regard to the leadership phenomenon. A well-known saying is that there are as many definitions of leadership as there are people attempting to define it (Stogdill, 1974). This situation means we find these various definitions in the research on managers and leaders. In some instances, the researchers fail to define the concepts related to the definitions they use. In other instances, the researchers use the two concepts interchangeably, a problematic usage that has been observed in implementation science (Reichenpfader et al., 2015; Sandström et al., 2011; Øvretveit, 2010).

A manager is a person who holds a formal position in a hierarchy with tasks that are typically described as creating order and focusing on processes that keep an organization functioning (Kotter, 1990; Yukl, 2010). A manager is typically described as a person concerned with how things get done. Thus, the manager focuses on organizing, planning, problem-solving,

budgeting, and staffing with an eye to results and employee performance. The managerial role is to reduce organizational uncertainty and create organizational stability.

A leader is a person who may hold a formal or an informal position in a hierarchy. While many definitions of leadership exist, central themes are that a leader is a person who exerts intentional influence by creating relationships and by setting goals that reflect a common vision within a group setting or context, and is not only about the actions of a manager (Northouse, 2010; Øvretveit, 2010). A leader must cope with change, inspire and motivate others, and focus on an overarching vision (Kotter, 1990). Thus, leadership is a process that focuses on relationships and interactions where a leader defines the future, articulates a clear vision, and helps others to realize this vision.

Previous researchers have argued that both management and leadership are necessary for an effective organization, especially when actual changes are contemplated or implemented (Bass, 1990; Christian and Norman, 1998; Kotter, 1990). Many management theories claim that managers must also exercise leadership. According to these theories, effective managers integrate management skills and leadership skills (Kotter, 1990; Northouse, 2010). This thesis embarks from the view that effective managers are those who integrate both management and leadership skills.

3.3.2 Line managers leading implementation in health and social care

Leadership is performed at different levels of an organization in formal positions, from the senior managerial level to the line managerial level, or informal positions such as, for example, change agents, facilitators, and even employees. Line managers and leaders at all organizational levels ensure congruence of vision and action as well as continuous development with respect to performances and outcomes of an organization (Aarons et al., 2014b; Hasson et al., 2014; Øvretveit, 2010). Line managers have been recognized as having a particularly crucial task in leading implementation (Aarons et al., 2015; Barwick, 2005; Birken et al., 2016; Care and Udod, 2003; Dopson and Fitzgerald, 2006; Greenhalgh et al., 2004a). These managers are the link between the employees who provide the direct services (i.e., by various professionals) in the organization and the senior management. Because line managers have a formal position, they communicate directly with employees. Such clear lines of communication are facilitated by both physical and psychological proximity. Therefore, line managers have a unique opportunity to engage, support, and shape employees' attitudes towards an implementation. This thesis focuses specifically on the actions and behaviours of line managers (i.e., those managers who have a formal position), and what influences them in leading and managing implementation processes. Hereafter in this thesis, line managers are generally referred to as "managers".

Management in health and social care services has experienced many changes in the last two decades (Dopson and Fitzgerald, 2006; Currie and Procter, 2005; Karlsson, 2006; von Knorring et al., 2016; Wilkinson et al., 2011). The management literature reflects a shift in the manager's

role and responsibilities during these years (Hales, 2005; Thylefors, 2016) including in the health care setting (Dopson and Fitzgerald, 2006; Care and Udod, 2003; Currie and Procter, 2005; Wilkinson et al., 2011) and in the social services and older people care settings (Karlsson, 2006; Tafvelin et al., 2012; Thylefors, 2016). This shift has entailed, for example, a move away from administrative tasks to more general management tasks. The managerial role now often aims at ensuring quality and equity in care offered, instituting effective leadership, establishing clear accountability for decision-making (Thylefors, 2016; von Knorring et al., 2016), and taking responsibility for leading implementation efforts (Aarons et al., 2015; Gifford et al., 2007). This shift in role and responsibilities has led to senior management's higher expectations of managers and a more central organizational role for the line manager. Managers now have a rather impressive, possibly daunting, role because their interpretations and priorities determine the services and support patients and clients receive.

The many responsibilities that managers have in health and social care settings are sometimes contradictory. Their responsibilities are nearly always varied and complex, time-consuming and challenging (Berntson et al., 2012; Thylefors, 2016). The list of managerial responsibilities is very long. These responsibilities include the following: organizational administration (e.g., staffing, budgeting), evaluation and results follow-up, dissemination of various communications and information, personnel relationships and teamwork, competence development, purchase/distribution of supplies, support of a positive work environment, the interface with internal and external stakeholders and, not least, implementing changes in practice (Sandström et al., 2011; Thylefors, 2016). Despite the managerial flavour of these tasks, it is also clear that many of the tasks have a leadership flavour also. Therefore, in complex and continuously changing settings such as health and social care, the manager must also be a leader (Shaw, 2008). The Methods chapter of this thesis (Chapter 5) describes the Swedish social and health care settings.

Managers are crucial in the implementation process in creating structures and facilitating processes that are central to promote implementation. For example, creating readiness for change and fostering a work group climate that is supportive (Aarons et al., 2014b; Gifford et al., 2007; Wilkinson et al., 2011). In addition, studies have shown that managers attitudes towards EBP implementation may strongly influence employees use and attitudes towards EBP (Aarons and Sommerfeld, 2012), and that their commitment and accountability to implement clinical guidelines may be linked to implementation success (Gifford et al., 2013). Thus, managers play a crucial role in the implementation process because ultimately employees (i.e., the health care professionals and social care professionals) are closely involved in treatment or care decisions for patients and clients.

Research interest in how managers lead implementation is increasing and more research is being published. However, exactly how managers lead implementation, particularly how they themselves describe their actions and what influences their implementation leadership is still not well understood (Gifford et al., 2014; Gifford et al., 2017; Wilkinson et al., 2011). Many opportunities for research in this area exist.

3.3.2.1 Interventions to increase line managers' implementation leadership

Although it is established that leadership is crucial for effective implementation, managers in the first line position in health and social care are often unprepared for this task (Care and Udod, 2003; Guerrero et al., 2016; National Board of Health and Welfare, 2013). Furthermore, they are rarely supported in how to effectively implement change and often lack the knowledge and skills needed for leading implementation processes (Aarons et al., 2018; Aarons et al., 2015; Gifford et al., 2007; Richter et al., 2016). Research in this area has focused more on senior managers (Birken et al., 2015).

Leadership training and development are essential for managers in rapidly changing environments (Day et al., 2014; Cummings et al., 2008; Cunningham and Kitson, 2000; Newhouse, 2007; Tourangeau et al., 2003). Particular efforts have been made to increase leadership behaviours to improve organizational uptake and sustainable implementation among managers in Sweden – iLead (Richter et al., 2016), Canada – Ottawa Model of Implementation Leadership (Gifford et al., 2013) and the US – Leadership and Organizational Change for Implementation (Aarons et al., 2015). These interventions have shown promising results that implementation leadership can be trained among health care managers.

The iLead intervention (Richter et al., 2016) influenced the designs of Study III and Study IV in this thesis. The theoretical leadership underpinnings of the iLead intervention (and the LOCI) was to improve implementation leadership by training participants in transformational and contingent reward behaviours. These are active behaviours of the "Full-Range Leadership Model". This theoretical model was used because of the claim that it is particularly useful for leading change initiatives (Bass, 1985; Battilana et al., 2010; Eisenbach et al., 1999).

3.4 BRIDGING IMPLEMENTATION SCIENCE AND LEADERSHIP RESEARCH

This section focuses on three main approaches related to leading implementation. It covers empirical studies on leadership and its influence on implementation, the use of theoretical approaches to leadership in relation to implementation and domain-specific leadership. This section also includes the importance of considering both managers' and their employees' perspectives in the assessment of leadership.

3.4.1 Empirical studies on leadership and its influence on implementation

The research on leadership and implementation has identified and described effective managerial and leadership actions for implementation. Many empirical studies list specific actions that managers should perform in relation to an implementation. Four literature reviews published in the last 11 years summarized leadership actions for effective implementation. These four reviews (summarized below) identify and synthesize leadership actions, including behaviours that are important for implementation and its sustainability. All four reviews

highlight the lack of a clear leadership definition and the confusing interchangeability of leadership terms.

Gifford et al. (2007) investigated activities and the use of evidence among nurse managers. The review described managerial activities as multifaceted and that these managers influence research use by their use of facilitative and regulatory behaviours. The authors describe facilitating behaviours as being supportive, including administrative support and socio-emotional support (e.g. considering and valuing individual contributions) and encouraging. Other facilitating behaviours were advocating a common purpose, creating opportunities for education, sharing important information, and allocating resources. The goal of these behaviours is to stimulate intrinsic employee motivation. Their regulatory behaviours include prioritizing activities, monitoring performance, evaluating outcomes (e.g., tracking key performance indicators), and modifying policies that extrinsically motivate change.

Sandström et al. (2011) categorized their findings on leadership and its influence on implementation processes as three main categories: actions of the leader, organizational characteristics, and cultural characteristics. A leader's actions include support (e.g., addressing individual concerns, creating opportunities for education and further developing employees, encouraging staff, and being accessible and visible), good communications (e.g., providing employees with information), engaging employees, being enthusiastic and driven, assuming the role-model figure, providing feedback, showing interest, and exhibiting engagement. These leadership actions clearly overlap with those reported by Gifford et al. (2007). Characteristics of the organization include policy revisions, allocation of resources, educational activities, and responsive administration (e.g., increase in staffing and promotion of innovation). Other factors are identified such as creating a culture in which managers' value research and in which the use of research is encouraged and recognized. Thus, managers have an important role in creating a positive work environment for working according to EBP and implementation processes.

Øvretveit (2010) took a more comprehensive approach in his review of effective leadership in general improvement initiatives, not just implementation leadership. He agrees that leadership is important for implementation processes; however, it is less clear which actions a leader should actually take. It is suggested that leaders should be involved and involve senior leaders, and engage their employees in the implementation, and should provide sufficient resources (e.g., time, education) and feedback (e.g., evidence of results). Nevertheless, Øvretveit emphasizes that what actions a leader perform depends on the type of leadership role and the leadership level, various organizational aspects, the implementation effort, and the setting. Thus, the most effective leadership actions are those that are adapted to the situation, the setting, and the implementation itself.

Reichenpfader et al. (2015) focused on the influence of leadership in implementing EBP and on how leadership has been conceptualized and operationalized in the reviewed studies. This review establishes that leadership is often described as a modifier for achieving implementation success, with an emphasis on positive influences and facilitative behaviours (both direct and

indirect) by the leader that foster implementation effectiveness. The leadership behaviours summarized are similar to those in the literature reviews described above (Gifford et al. (2007) and Sandström et al. (2011)). Each of the reviews emphasizes the importance of support. As an overarching theme, support includes soliciting opinions, enhancing cooperation, mentoring, coaching, and facilitating development of employees. The review points out some of the limitations of the studies on leadership and implementation: for example, leadership lacks a precise definition and a strong theoretical foundation.

Several other studies reinforce these findings on important leadership behaviours and actions in the context of implementation, organizational change, and organizational innovation (Aarons et al., 2014b; Battilana et al., 2010; Christian and Norman, 1998; Eisenbach et al., 1999; Gray et al., 2013a; Helfrich et al., 2007; Wilkinson et al., 2011). Furthermore, more recent research re-emphasizes that managers, engaged in implementation, should have the knowledge and skills needed for effective leadership, insight into the EBP gaps at their units, an understanding of which implementation strategies to use for different implementations, and competence in managing the barriers to implementation (Gifford et al., 2017).

To summarize, the four literature reviews categorize leadership actions into six main clusters based on the required managerial action. Managers should 1) be supportive (which includes various types of actions and behaviours), 2) be good communicators, 3) be role models/visionary, 4) provide feedback, 5) influence the work environment/context, and 6) demonstrate certain leader characteristics. All these actions can be related to leadership behaviours in a general leadership theory called the Full-Range Leadership Model (described in the next section).

3.4.2 Theoretical perspectives on leadership

Research on leadership and implementation have also used general leadership theories to relate effective leadership behaviours with positive implementation outcomes. Of the many theories on leadership (Avolio et al., 2009), the Full-Range Leadership Model (FRLM) is particularly useful (Firth-Cozens and Mowbray, 2001; Jung et al., 2003; Michaelis et al., 2010), and is one of the most studied leadership theories (Antonakis and House, 2014; Judge and Piccolo, 2004; Lowe and Gardner, 2000).

The FRLM describes a continuum of leadership behaviours and cluster behaviours, divided in two broad dimensions: active and passive leadership (see Figure 3) (Avolio, 1999; Bass, 1985; Bycio et al., 1995). These dimensions are further categorized as transformational, transactional, and laissez-faire leadership. Transformational leadership and contingent reward behaviours (the latter is an active part of transactional leadership) are emphasized as particularly effective in change processes (Barbuto, 2005; Bass et al., 2003; Herold et al., 2008; Judge and Piccolo, 2004; Rafferty and Griffin, 2004).

Study III in this thesis uses the FRLM to measure and compare managers' and employees' perceptions of a manager's general leadership behaviours. Study IV uses the factor structure of the FRLM to create and validate a scale intended to capture implementation-specific leadership.

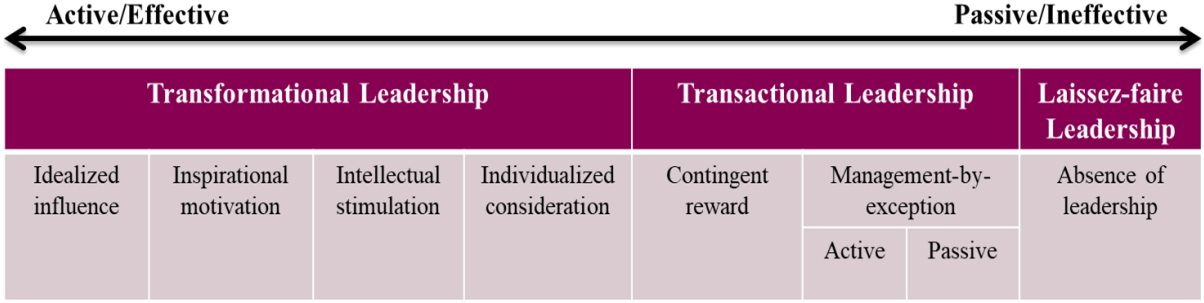

Figure 3. The Full-Range Leadership Model.

3.4.2.1 Active leadership

Active leadership in the FRLM continuum includes *transformational leadership* and *contingent reward.*

Transformational leadership refers to a leader who inspires her employees to accomplish higher goals and to perform beyond what is expected (Avolio, 1999; Bass, 1985). The transformational leadership category originally included the following three sub-categories: 1) *idealized influence* referring to leaders who act as role models and builds relationships with employees based on trust; 2) *intellectual stimulation* that denotes those leaders who are thoughtful and encourages employees to be creative and to challenge assumptions; and 3) *individualized consideration* that refers to when a leader considers and encourages each employee to find ways to develop and has empathy for employees' needs and desires. An additional sub-category that was added in later versions of the transformational leadership category is (4) *inspirational motivation*, which is about clearly envisioning a compelling future that motivates employees to accomplish set goals (Avolio and Bass, 1990).

Transformational leadership has been associated with positive employee performance (Bass et al., 2003), positive organizational outcomes (Barling et al., 1996), and organizational change (Eisenbach et al., 1999; Holten and Brenner, 2015). Moreover, recent research addresses the positive relationship between transformational leadership and effective implementation in which these behaviours are strongly related to employees' innovation implementation behaviours (Michaelis et al., 2010) and to employees' commitment to change (Herold et al., 2008).

Because of the close relationship of these four transformational leadership sub-categories to each other, it may be somewhat difficult to distinguish between them (Avolio et al., 1999; Barbuto, 2005). Difficulties exist in empirically supporting discriminant validity (i.e. high

intercorrelations) between the sub-categories (Bycio et al., 1995; Hardy et al., 2010; Yukl, 2010). This has resulted in different approaches to conceptualize and measure transformational leadership. Some researchers have measured it as a global construct (Carless et al., 2000; Jung et al., 2003). Others have examined all individual sub-categories of transformational leadership (Antonakis et al., 2003; Podsakoff et al., 1996). Still others have used a reduced set of sub-categories (Larsson, 2006). Particular difficulties have been encountered in distinguishing between *idealized influence* and *inspirational motivation* at the conceptual level (Avolio et al., 1999; Rafferty and Griffin, 2004) and at the empirical level (Barbuto, 2005; Bycio et al., 1995; Tepper and Percy, 1994). Consequently, *idealized influence* and *inspirational motivation* have often been combined into one sub-category (Barbuto, 1997; Barling et al., 1996; Hinkin and Tracey, 1999; Yukl, 2010).

Antonakis et al. (2003) argue that differentiating between the transformational leadership sub-categories is valuable, particularly in the research on leadership development because it allows for a more detailed exploration of leadership behaviours. Previous research supports this conclusion with the claim that the different transformational leadership behaviours have different associations with organizational outcomes, and that each transformational leadership sub-category has a different impact on organizational change (Barling et al., 2002; Lowe et al., 1996; Podsakoff et al., 1996; Rafferty and Griffin, 2004).

Contingent reward behaviours are considered the most active sub-category of transactional leadership (Avolio, 1999; Bass, 1985). These behaviours are based on an exchange relationship between managers and their employees. These exchanges may be rewards or disciplinary threats, both of which are intended to achieve a desired outcome, whether financial or psychological. The contingent reward is the most active, constructive, and effective style of transactional leadership and usually correlates higher with transformational leadership behaviours than other transactional behaviours (Yukl, 2010).

Contingent reward behaviours refer to managers' work with their employees to establish agreements on which tasks that should be achieved and what the intrinsic reward will be for successful completion of these tasks. This includes setting mutually agreed-on goals that clarify expectations of followers and to follow-up on these expectations. Behaviours in the contingent reward category have been associated with employee satisfaction (Bycio et al., 1995) and positive individual performance results (Bass et al., 2003).

It is also argued that a combination of the two active behavioural categories – transformational leadership and contingent reward – is the most effective way to produce beneficial organizational outcomes (Barbuto, 2005; Clarke, 2013; Judge and Piccolo, 2004; Rafferty and Griffin, 2004).

3.4.2.2 Passive leadership

Passive leadership in the FRLM continuum includes the categories *passive management-by-exception* and *laissez-faire* leadership. The latter is said to be the most passive leadership style (Avolio, 1999; Goodnight, 2004). However, both passive leadership behaviours are associated with ineffective leadership (Antonakis et al., 2003; Yukl, 2010).

Passive management-by-exception refers to managers only acting when things have already gone wrong or correct employees' actions when brought to their attention. *Laissez-faire* leadership is even more passive in its nature where the leader abdicates responsibility and avoids taking any initiative, decisions or actions in any circumstance. Research has shown a relationship between passive leadership and increased workplace stress (Skogstad et al., 2007), lower safety climate (Kelloway et al., 2006), ill health (Einarsen et al., 2007) and associations with a negative influence on performance (Bass et al., 2003). Laissez-faire leadership is recognised as a particularly destructive leadership style despite the fact that it is not a deliberately detrimental managerial action. Such leadership, which involves no action, undermines the overall welfare of the organization (Goodnight, 2004).

Midway on the FRLMs active-passive continuum another sub-factor is found: *active management-by-exception*, which also belongs in the transactional leadership category (Avolio, 1999; Garman et al., 2003). This leadership behaviour, which was added to later versions of the model, describes leadership in which leaders monitor and detect mistakes (norm deviations) and then take corrective action when errors occur. The main feature that distinguishes active management-by-exception from passive management-by-exception is that in the former managers actively search for mistakes and problems.

A current debate exists that concerns if active management-by-exception should belong to the active or the passive leadership dimension (Garman et al., 2003), and whether it should even be represented separately (Clarke, 2013). Some researchers argue that active and passive management-by-exception are distinct categories that do not correlate or have a slight negative correlation (Avolio et al., 1999; Garman et al., 2003; von Thiele Schwarz et al., 2016). Therefore, it may be argued that this sub-factor is an active way of leading compared to the passive leadership behaviours. However, compared to the active leadership behaviours (transformational leadership and contingent reward), active management-by-exception is more reactive than proactive. Therefore, it cannot be considered an effective leadership style. The active management-by-exception has also been associated with negative organizational outcomes (Michel et al., 2011). Consequently, the positioning of active management-by-exception to either the active or the passive leadership dimensions on the FRLM continuum is unclear.

3.4.2.3 Critique of the Full-Range Leadership Model

The FRLM has been under scrutiny in many countries and cultures, and various types of organizations (Den Hartog et al., 1997; Northouse, 2010; Yukl, 2010). Certain strengths are attributed to the model. For instance, a large body of research has been conducted on transformational leadership using both quantitative and qualitative research methods (Lowe and Gardner, 2000; Bryman, 2004). A substantial amount of evidence shows that this leadership style is effective (Judge and Piccolo, 2004; Yukl, 2010). Moreover, transformational leadership, which addresses the needs of both leaders and followers (e.g., employees), treats leadership as a process that emerges from the interplay between the leader and the follower (Northouse, 2010).

The FRLM has its critics. Several weaknesses have been identified. One criticism concerns the overlap of the four original transformational leadership sub-categories (idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration). The complaint is that the boundaries between these different behaviours lack clarity (Hinkin and Tracey, 1999; van Knippenberg and Sitkin, 2013). Another criticism is the association of transformational leadership with "heroic leadership" (Yukl, 1999). The complaint is that transformational leadership is elitist and anti-democratic (Northouse, 2010). This criticism suggests that leaders act independently of their followers and do not treat leadership as a reciprocal process. However, other researchers have challenged the idea that transformational leadership is elitist. They argue that this leadership behaviour can be directive, participative, democratic, and non-authoritarian (Northouse, 2010).

3.4.2.4 Linking empirical findings on leadership and implementation with the Full-Range Leadership Model

Transformational leadership may be associated with typical leadership behaviours (with the focus on exerting influence) whereas contingent reward behaviour is related to managerial behaviour (with the focus on results and improved employee performance). The leadership behaviours reported in the literature reviews by Gifford et al. (2007) and Sandström et al. (2011) clearly reveal an overlap of transformational leadership with contingent reward in the FRLM. For instance, acting as a role model and engaging in the implementation are associated with *idealized influence*; encouraging staff may be linked to *inspirational motivation*; and development of staff relates to *intellectual stimulation*. Moreover, clear communications and employee feedback on goals achievement may be linked to *individualized consideration*. Setting goals is also related to *contingent reward* behaviours. Employee support on task achievement, including change implementation, is associated with *intellectual stimulation*, *idealized consideration*, and *contingent reward* behaviours, depending on the support offered.

Moreover, some behaviours identified in the review by Reichenpfader et al. (2015) are consistent with transformational leadership, particularly *individualized consideration*. In this review, support is also described as setting clear goals and clarifying roles, which are associated

with *contingent reward* behaviours. To a lesser extent, behaviours such as setting a clear strategic vision and motivating change were reported (i.e., the *idealized influence* and *inspirational motivation:* sub-categories of transformational leadership). About half of the reviewed studies conclude that although transformational leadership is used, the behaviours described such as clarifying roles, seem to reflect individual support behaviour more than visionary and motivational behaviour. A possible explanation may be the lack of a scale that can measure the distinct behaviours of transformational leadership.

To date, most research on leadership and implementation have used leadership with a positive connotation, rather than addressing how it can also be a barrier to implementation success. Unfortunately, passive leadership behaviours are largely overlooked when considering managerial actions in general (Skogstad et al., 2007) as well as in relation to implementation. Passive leadership behaviours are worth investigating because they can have detrimental effects on an implementation and may create a negative implementation climate. Therefore, research is needed that investigates the barriers to effective implementation, especially when the causes are managers' lack of leadership behaviours or of passive leadership behaviours. Managers may even undermine implementations (Gifford et al., 2013; Kajermo et al., 2008; Øvretveit, 2010).

More recent research on implementation and leadership shows that when managers focus on a particular initiative or objective (for example, a specific implementation effort), this leadership behaviour tends to be more effective than general leadership behaviours (i.e., non-specific leadership behaviours) in achieving goals (Barling et al., 2002; Kelloway et al., 2006). This research has inspired the implementation and leadership research to focus on specific behaviours that leaders should perform to support implementation efforts, also known as "implementation leadership".

3.4.3 Domain-specific leadership – Implementation-specific leadership

The notion of domain-specific leadership is that in order to produce specific results, such as realizing an implementation, unspecific or general leadership may be insufficient. The indications are that domain-specific leadership has a stronger relationship with positive domain outcomes (Barling et al., 2002; Kelloway et al., 2006; Lundmark et al., 2017). Scales measuring general leadership behaviours may therefore be insufficient to capture leadership behaviours that are specific to an implementation effort. Domain-specific leadership have been applied in several fields that have developed domain-specific FRLM-scales where the rater is asked to consider leadership behaviours according to the specific domain. These fields include occupational safety (Barling et al., 2002; Kelloway et al., 2006) and health (Lundmark et al., 2017), and employee health and well-being (Gurt et al., 2011), mental health (Adler et al., 2014), and implementation of EBP (Aarons et al., 2014a).

The limited research on implementation-specific leadership has indicated that leadership behaviours have to be more specific to the actual effort that is being implemented to improve

the chances of success (Aarons et al., 2015). Implementation leadership is about creating a climate that embraces a specific implementation effort. For instance, when implementing a new evidence-based guideline into the daily routine, it is important that this guideline is accepted, prioritized, considered important and evaluated. This process includes explaining to employees why the guideline is needed, how it will be implemented, and what the benefit will be to patients, clients, and the employees themselves. Moreover, the process involves effective prioritization, allocation of resources, goal-setting, and defining how the implementation will be achieved.

The specific leadership behaviours towards the implementation effort are what differentiate specific from general leadership behaviours. For instance, although an individual is a transformational leader, which research has shown to be effective for organizational change, this does not necessarily mean that the leader supports a specific implementation effort. General leadership facilitates a working environment that supports employees in their day-to-day practice on a more overall level, whereas implementation leadership focuses on performing leadership behaviours that are specific to a particular implementation effort. It may therefore be essential to identify and evaluate leadership behaviours that are specific to an implementation effort because general leadership evaluation scales may be insufficient to predict outcomes of implementation processes.

3.4.4 Measuring implementation leadership

Measures for assessing leadership in general are abundant and depend on the type of leadership style and behaviours one attempts to measure. There are a number of scales developed to measure FRLM behaviours. A few examples of different variations are the Multifactor Leadership Questionnaire (MLQ) (Avolio et al., 1999), the Global Transformational Leadership Scale (GTL) (Carless et al., 2000), the Transformational Leader Index (Podsakoff et al., 1990), and the Developmental Leadership Questionnaire (Larsson, 2006).

In 2014, a scale to measure implementation-specific leadership, the Implementation Leadership Scale (ILS), was developed (Aarons et al., 2014). This scale, which is based on the embedding mechanisms in Edgar Schein's work on organizational culture (Aarons et al., 2014b), aims to identify the specific actions that leaders take as they try to create a strategic climate for implementation. The ILS developers identified four dimensions of implementation leadership that assesses the extent to which a leader is 1) proactive in EBP implementation, 2) knowledgeable about EBP, 3) supportive of EBP implementation, and 4) perseverant in the EBP implementation process (Aarons et al., 2014a).

Although Aarons et al. (2014a) initially used the FRLM (specifically transformational and transactional leadership) as a source of information when generating the items, the FRLM factor structure with its sub-categories were not retained in the final version of the scale. As stated above, it can be argued that retaining the factor (category) structure of the FRLM is essential to obtain more detailed information about which leadership behaviours are performed

in relation to a specific implementation effort. Furthermore, the ILS captures active leadership behaviours and excludes passive leadership behaviours in relation to implementation. Measuring passive leadership behaviours is necessary, however, as they can have detrimental effects on employee and organizational outcomes (Dóci et al., 2015; Skogstad et al., 2007), and will most likely influence an implementation process. It is necessary to enlighten managers which leadership behaviours they should avoid as well as which they should adopt or further develop. Moreover, the ILS captures leaders actions when implementing EBP. However, the scale provides less information on how they perform their implementation-specific behaviours. For instance, the ILS focuses on whether a leader "supports employee efforts to use EBP" and if a leader has "developed a plan to facilitate EBP implementation" rather than how these tasks have been executed in terms of inspiring and motivating their employees.

Consequently, there is a gap in implementation science with respect to having a scale that measures implementation leadership that clearly operationalize the FRLM theory (i.e. closely linked to leadership theory). From this follows that in addition to active includes passive implementation leadership behaviours and considers how implementation-specific leadership behaviours are performed. This calls for an updated scale to measure implementation leadership that includes these criterions.

An important aspect when assessing leadership is to capture both the employees' and the managers' perceptions of how managers lead a unit or an organization. This requirement is consistent with the more recent leadership research that asserts that leadership can only be understood by incorporating employees' perspectives. The rationale is that leadership is a reciprocal process that involves the mutually beneficial relationship between managers and their employees (Hollander, 2014; Northouse, 2010). The perception of leadership is in the eye of the beholder.

3.4.5 Leadership is a reciprocal process: Considering line managers' and employees' perspectives

The leadership research emphasizes the importance of both managers' and employees' perspectives in leadership evaluation. This is because considering only of these sources may not provide an accurate picture of a manager's leadership (Atwater et al., 1998; Fleenor et al., 2010; Lee and Carpenter, 2017). If managers expect to understand whether they succeed as leaders and whether they are perceived as effective (active leadership) or ineffective (passive leadership), they need to ask others, for instance their employees, to rate them. Asking employees to rate their managers' leadership is the most common approach in evaluating leadership. This is because managers have been argued as poor judges of their own leadership and how others perceive them (Atwater et al., 1998; Fleenor et al., 2010; Mabe and West, 1982). However, relying solely on employees' ratings may not result in a representative picture of a managers' current leadership (Fleenor et al., 1996; Lee and Carpenter, 2017; Ostroff et al., 2004). The reason is that managers' self-ratings can still provide meaningful information about

their leadership, especially in comparisons with other ratings'. Comparisons between managers' and employees' provides an opportunity for managers' to reflect on their levels of self-awareness, which is vital for managers' seeking to improve their leadership (Fleenor et al., 2010; Smither et al., 2005; Tekleab et al., 2008; Yammarino and Atwater, 1997). This observation has resulted in a leadership research field called "self-other agreement".

The research on self-other agreement shows that when a manager agrees with the employees on the manager's leadership behaviours, more positive organizational outcomes are obtained. For instance, agreement between managers and their employees is associated with a more positive work climate (Aarons et al., 2017a), and with more positive employee outcomes, including job satisfaction (Amundsen and Martinsen, 2014) and work engagement (Kopperud et al., 2013). However, some research shows that disagreements between managers and their employees on leadership are common (Lee and Carpenter, 2017; Mabe and West, 1982; Ostroff et al., 2004). This is problematic because managers who view their leadership differently than their employees tend to be less effective leaders associated with poorer organizational outcomes (Atwater et al., 2007; Johnson and Ferstl, 1999; Smither et al., 2005).

Yammarino and Atwater (1993) developed a model of self-perception accuracy that grouped comparisons between managers and employees ratings into the following three major categories:

1) *in agreement* (managers and employees rate the managers similarly)
2) *over-raters* (managers rate themselves higher than their employees do), and
3) *under-raters* (managers rate themselves lower than their employees do).

Managers in agreement with their employees on their leadership are more open to feedback and setting appropriate improvement goals (Atwater et al., 1998; Tekleab et al., 2008), and are related to higher performance ratings (Bass and Yammarino, 1991; Ostroff et al., 2004). Managers who over-rate their leadership are often associated with the most negative organizational and employee outcomes (Aarons et al., 2017a; Van Velsor et al., 1993). A possible explanation is that they ignore negative feedback, which may prevent them from developing their leadership (Bass and Yammarino, 1991; Yammarino and Atwater, 1997). Managers who over-rate have been associated with passive leadership behaviours since they may lack understanding of what support their employees need (Bashshur et al., 2011; Berson and Sosik, 2007). However, the research on managers who under-rate their leadership have been associated with two mixed performance patterns. One the one hand, these managers may not improve their performance based on feedback to the same extent as other managers (London and Smither, 1995; Tekleab et al., 2008). On the other hand, these managers may compensate for their self-perceived weaknesses by hard work that may lead to positive outcomes (Atwater et al., 1998; Yammarino and Atwater, 1997). Managers who under-rate

their leadership have also been associated as modest leaders who are generally perceived as more effective leaders than over-raters.

A previous study shows that disagreements between managers and employees about transformational leadership is related to a negative organizational culture (Aarons et al., 2017a). Another study shows when teams agree on the level of organizational learning, the level of such learning at their unit improves (Hasson et al., 2013). Yet another study focuses on manager-employee agreement specifically related to implementation leadership (Aarons et al., 2017b). This study surprisingly indicated that managers who under-rated their leadership compared to their employees was associated with a more positive involvement and performance feedback climate than those managers who agreed or over-rated their leadership. These studies indicate that the degree to which managers and employees agree in an organization may have an impact on shaping an organization's culture and climate. Moreover, the relationship between disagreement and less favourable outcomes appears to be more complex than just agreement or disagreement (Fleenor et al., 2010; Lee and Carpenter, 2017). For instance, managers who over-rate their leadership influence their employees differently than managers who under-rate their leadership.

From this follows that it is evident that managers and employees do not always agree on how the manager leads. This tends to be problematic. Thus, considering self-other agreement is essential because it appears that not only the mean values of leadership ratings are important. However, also recognizing the relationship between these sources (i.e., their ratings), whether managers and employees agree or disagree, seem to matter, and may influence the organizational context as well as impact implementation processes. At present, it is unclear how managers' and their employees can become more in agreement on leadership. More specifically, we lack knowledge of how leadership interventions, and the feedback provided during these interventions, influence agreement. Gaining more knowledge on manager-employee agreement are valuable because disagreements are negatively associated with organizational context.

The importance of context for effective implementation is a common theme in all implementation frameworks and is highlighted in the empirical research. Hence, although managers have a pivotal role in realizing implementation efforts, considerations of the context in which they operate is crucial.

3.5 THE INFLUENCE OF CONTEXT ON LEADERSHIP

Although managers have a central role in leading implementation, leadership does not take place, and managers do not lead, in a vacuum (Holmberg and Tyrstrup, 2010; Nielsen, 2013). The research has identified the organizational context as a critical determinant of the behaviours that occur in an organization (Bate, 2014; McCormack et al., 2002; Johns, 2006; Yano, 2008). Thus, an organization must create a context that supports managers in implementation processes because the context has a great influence on individuals in an organization, including

the managers (Cummings et al., 2008; Greenhalgh et al., 2004b; Rycroft-Malone et al., 2004a; Sandström et al., 2011). Moreover, an understanding of context is voiced as vital for the success of implementation efforts (Aarons et al., 2018). This suggests the importance of considering contextual factors when exploring managers in leading implementation processes.

Context has been defined in various ways in implementation science, and in other fields. There is both agreement and disagreement on these definitions (Bate, 2014; French, 2005; Johns, 2006; Squires et al., 2015; Taylor et al., 2011; Øvretveit, 2011). Damshroder et al. (2009) define context in implementation research as "the set of circumstances or unique factors that surround a particular implementation effort" (p. 3). This broad definition is used in the studies of this thesis because of its conceptualization of context at multiple levels. Much theoretical work supports the impact of the inner context and the outer context on implementation (Aarons et al., 2011; Greenhalgh et al., 2004b; Pettigrew et al., 1992).

In the inner context, structural characteristics such as size may influence implementation. For example, smaller organizations may have less diversity in knowledge (Damanpour, 1991; Damschroder et al., 2009). In addition to structural features, organizations have specific cultural, social, economic, political, and technological characteristics (Damschroder et al., 2009; Greenhalgh et al., 2004a). Therefore, continuous improvement in an organization depends on leadership engagement and support in the creation of a culture by, for instance, the closest manager and senior management. It is crucial that this culture values research and supports managers in leading implementation (Kitson et al., 1998; Rycroft-Malone et al., 2002). Previous studies have shown the senior management can support managers through clear directives that implementation of new effective practices is an organizational priority and by providing resources necessary for leading implementation (Birken et al., 2015). Senior management can also restructure processes for effective implementation (Nielsen and Randall, 2012) and influence managers' commitment to an intervention (Hill et al., 2012). Moreover, factors such as social networking, informal and formal communications, allocation of resources that support managers, among others, have been identified as having a strong-to-moderate influence on effective implementation (Estabrooks et al., 2003; Greenhalgh et al., 2004b; Meijers et al., 2006).

In the outer context, a commonly mentioned factor is the organization's network with external organizations (both formal and informal networking) (Damschroder et al., 2009; Greenhalgh et al., 2004b). Other factors in the outer context are Research & Development (R&D) units and interest organizations that can offer opportunities for external training on implementation (Alexanderson et al., 2009; Damschroder et al., 2009; Rycroft-Malone et al., 2002). Still other outer context actors are government agencies and regulatory authorities that provide various incentives such as funding, policy revisions, and guidelines and steering documents (Damschroder et al., 2009; Grol and Grimshaw, 2003; Sandström et al., 2011). All these sources may increase the motivation to implement change.

Leadership interventions and/or other relevant educational activities, whether they are offered in the inner context or the outer context, are a vital contextual support that managers need as

they work to improve their leadership skills and competencies in general (Cummings et al., 2008; Day et al., 2014; Tabak et al., 2017) and their implementation-specific leadership in particular (Aarons et al., 2015; Gifford et al., 2017; Michaelis et al., 2010; Richter et al., 2016).

The CFIR and other determinant frameworks outline factors that research has shown to influence implementation. However, we still lack knowledge on which contextual factors line managers think are important and which influence their ability to lead implementations (i.e., if they are same from the managerial perspective).

4 OVERVIEW OF THE THESIS

Line managers have an important task of leading implementation effectively. To date, we are gaining increased knowledge of what actions and leadership behaviours that are effective when leading implementation. However, we know less about how managers themselves describe their actions during the implementation process in their own practice and on how they lead implementation. Moreover, more research is needed that bridges implementation science and leadership theory. For instance, we lack an instrument that measures implementation-specific leadership that is solidly underpinned by leadership theory and that measures both active (effective) and passive (ineffective) leadership behaviours. Research on how managers and their employees' view leadership behaviours and the related idea of manager-employee agreement is limited. Little research has been conducted into such agreements in the field of implementation science. It is possible we would learn from research into managers' implementation leadership how they can foster a context that is conducive to an implementation effort and how the context influences the managers. Hence, the line manager role should take its place in the implementation and leadership research spotlight.

This thesis consists of four studies on line managers' leadership. Two projects provide the empirical data for the studies: "Line managers leading implementation of EBP" and "The iLead intervention". In the first project, qualitative data were collected in the social care setting (Study I and Study II). In the second project, quantitative data were collected in the health care setting (Study III and Study IV). Figure 4 presents an overview of the thesis.

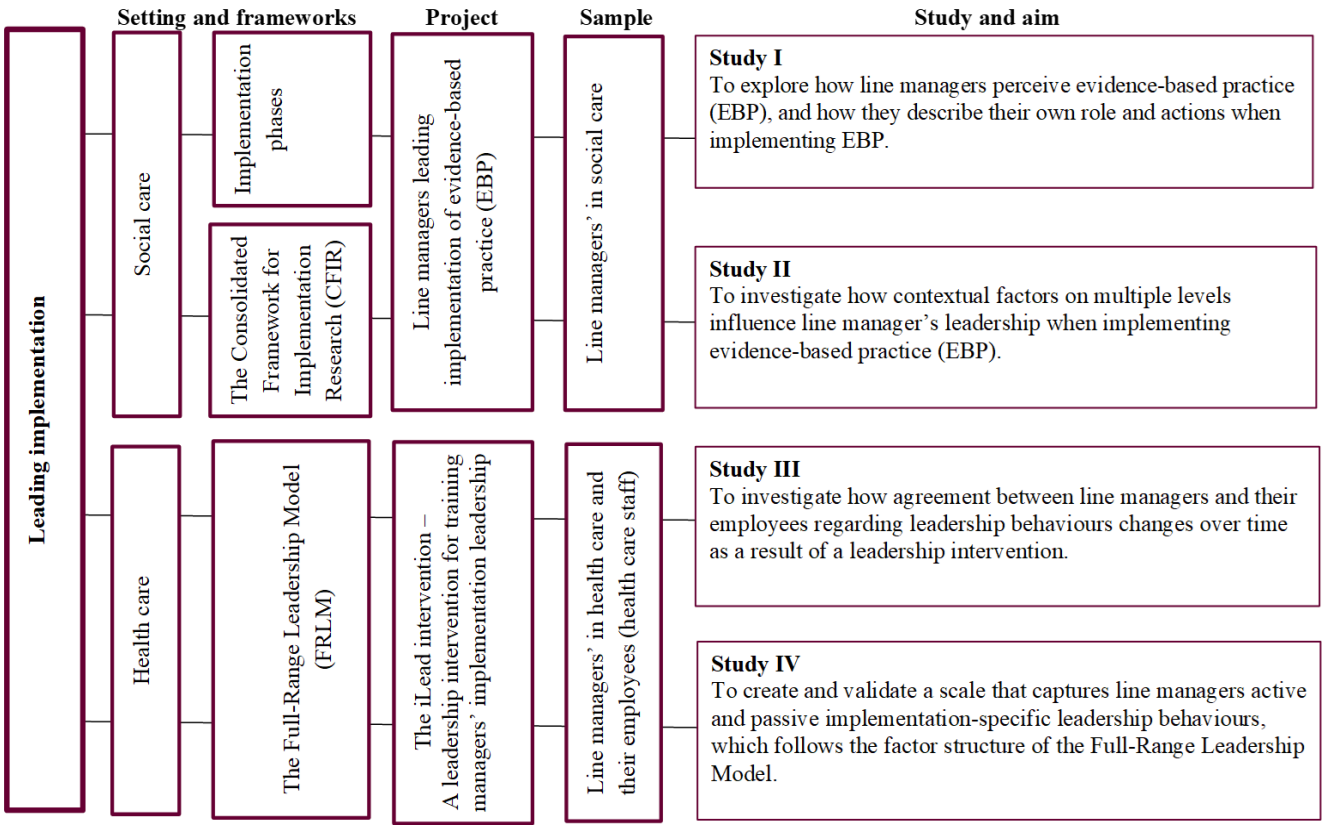

Figure 4. Overview of the thesis including setting, frameworks and theory, projects, sample, and aims of Studies I-IV.

5 METHODS

This section first provides an overview of the research methodology for the four studies (presented in Table 1) followed by a description of the research designs. Next, the setting, and participants and data collection for the two projects in this thesis are described. Thereafter, there is a description of the analytical procedure for each study.

Table 1. Overview of the studies included in this thesis (Studies I – IV).

	I	II	III	IV
Project	Line managers leading implementation of EBP	Line managers leading implementation of EBP	The iLead intervention	The iLead intervention
Setting	Social care	Social care	Health care	Health care
Design	Cross-sectional qualitative study	Cross-sectional qualitative study	Longitudinal study	Cross-sectional quantitative study
Data source	Interviews (2012)	Interviews (2012)	Questionnaires (web-based) (pre-intervention, 2015; post-intervention, 2016 and six months follow-up, 2016)	Questionnaires (web-based) (pre-intervention, 2015)
Subjects	Line managers N=28	Line managers N=28	Line managers and employees $N_{managers}$=18 $N_{employees}$ =640	Employees N=336
Data analysis	Hybrid Thematic analysis – inductive and deductive approach	Hybrid Thematic analysis – inductive and deductive approach	Descriptive statistics Independent samples t-test *Preparing for main analyses:* Logistic regression, interrater agreement (r_{wg}) and interrater reliability (ICC) analyses, categorization of agreement	Confirmatory factor analysis using structural equation modelling Bifactor analysis Correlation and linear regression analyses
Theoretical framework	Phases of implementation[1]	The Consolidated Framework for Implementation Research (CFIR) [2]	Self-other agreement model (self-perception accuracy) [3] (Yammarino and Atwater, 1993) The Full Range Leadership Model (FRLM) [4]	The Full-Range Leadership Model (FRLM) [4]

[1]Fixsen et al., 2005; [2]Damschroder et al., 2009; [3]Yammarino and Atwater, 1993; [4]Avolio, 1999 and Bass, 1985.

5.1 RESEARCH DESIGNS

Various designs and multiple data collection methods were used in this thesis to gather different perspectives on the line managers' leadership, including the various factors that influence their implementation leadership. A cross-sectional qualitative design, with semi-structured interviews, was used to answer the research questions posed in Study I and Study II. The cross-sectional qualitative design, which measures the phenomena under study at one point in time, is used to identify patterns of associations, to capture experiences, and to acquire in-depth knowledge of the phenomena (Bryman, 2012). This research method was chosen for its suitability in the capture of different experiences and variations between line managers' actions, and what influences them, when leading EBP implementation at local authorities throughout Sweden.

Study III uses a longitudinal research design in which web-based questionnaires were used to collect data. In longitudinal studies, the same sample is followed over time. Measurements are taken at regular intervals where data are collected over two or more distinct time periods (Bryman, 2012). A longitudinal design enables the researcher to track changes over time and to describe patterns of change.

Study IV is a validation study that uses a cross-sectional survey design. Data were collected using web-based questionnaires. In a validation process, it is important to follow certain procedures in order to determine the psychometric soundness of the instrument (Chan, 2014; Furr, 2013; Hinkin, 1998). This process includes determining whether the items in an instrument reflect the phenomenon that it is supposed to measure (content validity), how well the respondents perceive the items (face validity), assessment of internal consistency and whether the data reflect the hypothesized theoretical framework (Confirmatory Factor Analysis). In addition, a validation study shows the extent to which the scale correlates with other, similar (convergent validity) and dissimilar (discriminant validity) scales, and how well the scale predicts an outcome of interest (criterion-related validity) (Chan, 2014; Furr, 2013; Hinkin, 1998).

5.2 THE "LINE MANAGERS LEADING IMPLEMENTATION OF EBP" PROJECT – STUDY I AND STUDY II

Study I and II were conducted in the social care context. The data collection for these studies was part of a project that aimed to explore the kinds of support line managers working in the social care setting, including social services and older people care, need to implement EBP.

The National Board of Health and Welfare (NBHW) assigned the project to the PROCOME research group at the Medical Management Centre, Karolinska Institutet. The starting point was the identified knowledge gaps in how line managers implement EBP and in the support they need in leading implementation of EBP.

5.2.1 Social care in Sweden

The social care system in Sweden is tax-funded. At the local level, 290 local authorities (municipalities) fund and deliver social care, which broadly includes support and care for the elderly, and social services, which supports families, children, people with substance abuse problems, and people with functional disabilities (Holosko et al., 2009). Before the 1990s, older people care was the responsibility of the regional authorities. However, a transfer of that responsibility, including a mandate for older people care from regional to the local authorities, was enacted in 1992 as a result of the ÄDEL reform (Anell et al., 2012). The care and support offered in the social services area is broad and includes a vast range of services that support children, families, and individuals with disabilities, whereas older people care is usually either provided in the home or in special housing facilities. It is common that employees in social services have a university degree in social work or similar qualifications, whereas relatively few employees in older people care have a university degree (National Board of Health and Welfare, 2014).

The Social Services Act (2001:453), which is the legislative foundation of Swedish social care services, states that the overall aim of this Act is to foster economic and social security, equal living conditions, and active participation in society (older people care is regulated by this law as well as by the Medical Services Act (2017:30)). Moreover, this legislation promotes self-governance and allows considerable freedom for local authorities to work according to their specific needs, which results in differences in how social care services and older people care are organized and delivered throughout Sweden.

The national government is responsible for overall policy in health and social care services through the Ministry of Health and Social Affairs (MHSA). The NBHW is a government agency under MHSA and has a key role at the national level in collecting and evaluating information and in developing national guidelines based on evidence for health and social care in Sweden (Anell et al., 2012). The Swedish Association of Local Authorities and Regions (SALAR) is a politically governed interest organization that represents all regional and local authorities and offers support and service to these organizations at the national level in order to improve conditions for self-government (Swedish Association of Local Authorities and Regions, 2016). Since 2010, the MHSA and SALAR have established yearly agreements to foster EBP within social care to ensure good quality support in this sector (Swedish Association of Local Authorities and Regions, 2015)

In the 1990s, the NBHW established Research and Development (R&D) units (FoU enheter) to support practices in social care services and older people care. These R&D units have been argued as crucial to strengthening the use of EBP in social care (Alexanderson et al., 2009; Soydan, 2010). The development of these units is a result of the growing emphasis by government agencies and other stakeholders on improving and supporting the implementation of EBP in social care services and older people care. Thus, the focus on the development of knowledge should be long-term and should take a national perspective. However, this work should be practically driven at the regional and local levels since this is where the responsibility

and mandate lie to provide care and support. This results in higher expectations on the senior management and a more central role for the line managers in driving this work because these managers' interpretations and priorities guide the service and support provided to the clients (Thylefors, 2016). To implement EBP, therefore, line managers require knowledge, skills and support.

5.2.2 Setting for Study I and Study II

Data for Study I and II were collected at seven Swedish local authorities. Purposive sampling (Patton, 2015) of local authorities was conducted in order to obtain representation by various local authorities on the line managers' experiences. A representation of local authorities was sought due to a lack of previous knowledge of how line managers in social care work with EBP implementation and of the support they need, and because of a large variation in how care and support are organized in Sweden. The project aimed to include local authorities that differed in geographic location (north, central, and south Sweden, including urban and rural areas), size (number of inhabitants), and their experiences of working with EBP to get an overview of the country. Twenty-eight of the 290 local authorities were initially selected based on their geographic location and size.

The webpages of these local authorities were then reviewed, and information was gathered on the extent that they appeared to work according with EBP. Search terms included "evidence-based practice", "research and development", "practice guidelines", among others. Information about the local authorities' work with EBP was also gathered from the R&D association and from the opinions of experts in the area. Based on advice from experts, two additional local authorities were included as they were known for having extensive experience of working according to EBP (i.e. being in the forefront with implementing EBP). After the data from these 30 local authorities were discussed in the project group, it was decided to use seven local authorities in the project. An overview of the local authorities selected for the studies is presented in Table 2.

5.2.3 Participants and data collection

Twenty-eight semi-structured interviews with line managers were performed in October and November, 2012. Five to six managers at each of the seven local authorities were randomly selected from a list of managers obtained from each local authority's website. Each manager was invited to participate in an interview. Of the forty managers invited, 32 agreed to participate although four managers cancelled at the last minute. The managers worked in both the social services area, including areas providing support for children, youths, families, and people with addictions, and in older people care where managers' were mainly employed in nursing homes. Twenty of the interviews were conducted with managers in social services and eight with

managers in older people care. This was because more managers in the local authorities work in the social services area than in older people care.

The semi-structured interview guide was founded on broad dimensions based thematization (Kvale, 2008) with each dimension having a number of questions. For example, some questions asked the managers about their role in implementing EBP, how they described their practical work with implementation (i.e., what they do/their actions), and which factors support and/or influence their implementation leadership, among others. Follow-up and probing questions were also asked when required throughout the interviews to encourage further descriptions (Kvale, 2008). These one-to-one interviews were conducted at each manager's workplace (with between two and six managers from each of the seven local authorities). The interviews lasted 60-80 minutes and were recorded and transcribed verbatim.

Table 2. Overview of the seven local authorities included in Study I and Study II.

Local authority	**Geographic location**	**Size, approximate inhabitants**	**Level of apparent experience of working with EBP[a]**
I	Central (close to a metropolitan city)	10 000	Low
II	North	85 000	High – identified as being in the forefront
III	North	5 000	Low
IV	South (close to a metropolitan city)	37 000	Medium
V	South	330 000	High – identified as being in the forefront
VI	Central	62 000	Medium
VII	Central	16 000	Medium

[a] Based on information from each local authority's website, the National Research and Development Association website, and advice from experts in relevant governmental agencies.

5.2.3.1 Participants included in Study I and Study II

All the interviewed line managers (N=28) were included in both Study I and II. There were 20 female (13 in social services and seven in older people care) and eight male (seven in social services and one in older people care) managers. They had been managers for an average of 14 years and been in their present managerial position for an average of seven years. The managers had between nine and 55 employees. Most managers in social services held a university degree in social work, whilst only one manager in older people care had a university degree.

5.3 THE "iLEAD INTERVENTION" PROJECT – STUDY III AND STUDY IV

Study III and IV were conducted in the health care context. The quantitative data used for these studies were collected as part of the iLead project. This project developed, performed and evaluated a leadership intervention based on the FRLM for training managers in implementation leadership. The iLead intervention aimed to increase managers' implementation leadership, with general leadership as an intermediate outcome. The intervention is grounded in the scientific literature on leadership, leadership training, and implementation science. Based on a literature search, the intervention content is based on increasing effective leadership behaviours (i.e., transformational and contingent reward behaviours) and on a behaviour-focused approach to implementation, namely the Behaviour Change Wheel (BCW) (Michie et al., 2011).

The iLead intervention consisted of five half-day workshops held during a period of five months. Participating managers chose which implementation effort to work with throughout the intervention that was relevant to their everyday practice; however, the aim of the intervention was to train behaviours that could be used for any implementation effort. The intervention aims to train managers in systematically implementing their chosen implementation effort by applying the BCW that focuses on achieving behavioural change while systematically applying relevant leadership behaviours that facilitate the implementation. The key implementation leadership activities in focus were identifying and defining which effort to implement, considering potential barriers to the implementation, communicating the implementation, identifying leadership behaviours relevant for the implementation, dealing with resistance to the implementation, and evaluating the sustainability of the implementation.

A personalized upward feedback (180-degree) report was provided to each participating manager that contrasted the manager's ratings with his or her employees' ratings on general and implementation-specific leadership behaviours. This report guided the managers in identifying their strengths as leaders and in identifying which leadership behaviours they needed to focus on developing during the intervention. This thesis does not specifically focus on the content or outcomes of the iLead intervention; however, this overall description may be of interest when considering the findings from Study III. For more information about the iLead intervention, see the study protocol by Richter et al. (2016).

The iLead project was a collaboration between researchers with the PROCOME research group at Karolinska Institutet and the Unit for Implementation and Evaluation – a knowledge centre at the regional health care organization at the Center for Epidemiology and Community Medicine (CES), Healthcare Provision Stockholm County (SLSO), Stockholm county council.

5.3.1 Health care in Sweden

Health care services in Sweden, like social care services, are mainly tax-funded. The provision of health care is decentralized to 21 autonomous regional authorities (county councils) that are

independent governing bodies that operate on a regional level (Holosko et al., 2009). Under the Health and Medical Services Act (2017:30), which mandates self-governance and allows considerable freedom for each regional authority to act according to its specific needs, the regional authorities are responsible for promoting good health among the population and ensuring equal access to health care (Anell et al., 2012). The Act stipulates that care should be of best quality, cost-efficient, and safe. In addition, the Act states that health care professionals have the responsibility to work in accordance with the most effective evidence-based methods and lessons from clinical experience. The line manager at each unit is accountable for ensuring that the professionals follow this guidance. The responsibility and support from the national government (e.g., MHSA and NBHW) and from politically governed organizations (e.g., SALAR) is the same for health care as described for social care (see Section 5.2.1).

5.3.2 Setting for Study III and Study IV

The setting for Study III and IV was the regional authority in Stockholm, which is responsible for all health care provided by the regional authority. This includes primary, psychiatric, rehabilitation, and acute hospital care. The regional health care authority in Stockholm is one of Sweden's (as well as Europe's) largest health care providers with over 42 500 employees, serving a population of two million (Stockholm County Council, 2017). The units included in the studies were at different branches, including habilitation services, primary care centres, and hospital units.

5.3.3 Participants and data collection

Two procedures were used to recruit line managers for the iLead intervention. First, potential managers working in the regional health care organization received an invitation to participate. This was conducted through the Unit for Implementation and Evaluation's communication channels between June and October 2015. E-mails were sent to the division managers, the invitation was posted on SLSO's intranet, and a targeted email was sent to approximately 600 employees listed on the Unit for Implementation and Evaluation's mailing list. The inclusion criteria for participation in the intervention were the following: 1) participants had to have a formal line managerial position, and 2) participants had to have a specific implementation effort they could work on during the intervention. This recruitment resulted in 41 potential participants. Of these, five were excluded because they did not have a formal managerial position, four managers were later included in other groups (pilot or intervention Group II), and 13 managers withdrew because of major organizational changes and a high workload. Nineteen line managers were in the final sample (Group I).[1]

[1] Note that in the study protocol this number is 21, which was the number of managers who answered the pre-intervention questionnaire; however, two of these were excluded since they did not participate in the intervention.

Second, the senior management in one division of SLSO approached the Unit for Implementation and Evaluation to ask for help with implementing a new electronic system to facilitate care planning. It was then decided to include the 30 line managers in the division in the iLead intervention (Group II).[2]

Consequently, 49 managers participated in the iLead intervention, consisting of two intervention groups (Group I and Group II). The two groups received the same intervention in parallel from February to May in 2016, including contents and materials although three main aspects differed between the groups. First, Group I consisted of line managers from different divisions in the regional organization, whereas Group II consisted of one division. Second, managers in Group I participated voluntarily, whereas participation for the managers in Group II was mandatory. Third, no contextualization was performed for Group I, whereas Group II received contextualization, which means that the senior management and change agents in the organization also received an intervention (for more information about contextualization, see Hasson & von Thiele Schwarz, 2017).

The data used for Study III and IV were collected to evaluate the effects of the iLead intervention. This was performed using web-based questionnaires that were distributed at three time points: pre-intervention (November/December 2015), post-intervention (May/June 2016), and at a six-month follow-up (November/December 2016) in a pre-post design. All the line managers who participated in the intervention and their employees (excluding employees on parental leave, leave of absence or had left the organization) received a secure link to an electronic questionnaire in their work e-mail (see Figure 5 for the timeline and population samples at each time point). This email included information regarding the study and the purpose of the questionnaires.

Before the pre-intervention questionnaire was distributed, the managers received an e-mail that they were asked to forward to their employees. This email, which described the objectives of the questionnaires, was intended to encourage the employees to answer the questionnaires. At each time point, two reminders were distributed at two-week time intervals whilst the response period for the questionnaires was open. All managers with a response rate of less than 70% received an individual e-mail asking them to encourage their employees to answer the questionnaire.

[2] Note that in the study protocol this number is 31; however, during the process it came to the project group's attention that one of these was a R&D coordinator (i.e., the coordinator did not have a formal position as a line manager and was therefore not included in the analyses for Study III and Study IV).

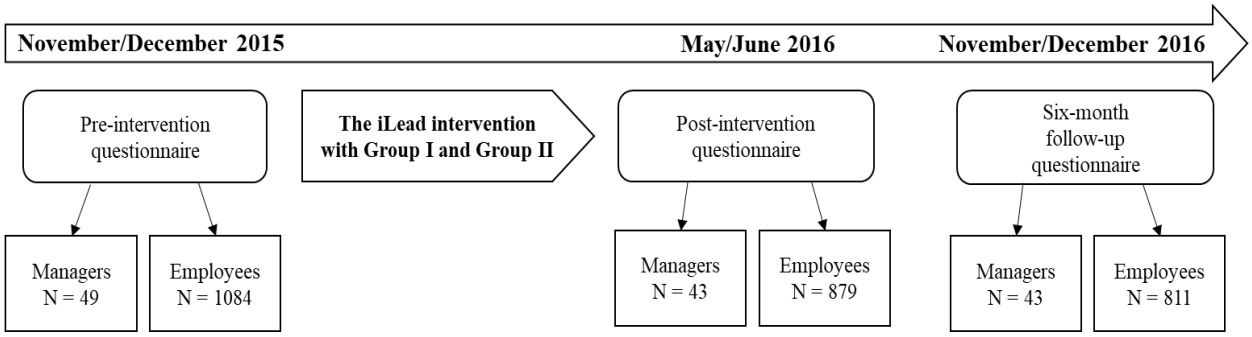

Figure 5. Timeline for the data collection and samples for participants who received the questionnaire at each time point (for Study III data from all three measurements were used; pre-intervention data were used for Study IV).

5.3.3.1 Participants included in Study III

The data for Study III included managerial and employee data collected at the three time points (pre-intervention, post-intervention, and at the six-month follow-up). Since the aim of the study was to follow changes in manager-employee agreement for leadership over time, only those managers who answered the questionnaires at all three time points, and only their employees, were included in the data analysis. In total, 18 (42%) of the 43 managers who participated (including managers from both Group I and Group II) throughout the iLead intervention answered all three questionnaires. A non-response analysis using logistic regression was conducted to predict manager dropout from the survey, which showed that manager dropout was not predicted by demographic factors or by how leadership was rated at pre-intervention ($\chi^2_{(4)} = 4.03$, p=.40).

The employees included in the study, who worked for one of the 18 managers who met the inclusion criteria, had rated their manager on the leadership scale at least once. This resulted in an inclusion of 266 employees (39% response rate from the 684 employees who responded to the questionnaires) at pre-intervention, 194 employees (42% response rate from the 459 employees who responded) at post-intervention, and 184 employees (41% response rate from the 449 employees who responded) at the six-month follow-up. Consequently, the inclusion criteria for employees also influenced the response rates. A non-response analysis (containing the factors: age, gender, education level, years at workplace, and the leadership scale) showed that dropout could be predicted ($\chi^2_{(5)} = 13.68$, p=.02), where employees with a lower educational level ($\beta = -0.84$, $p < .01$) and who rated their managers lower in leadership ($\beta = -0.31$, $p < .05$) were more likely to drop out at the post-intervention and follow-up time points.

All the managers were female, had a university degree, an average age of 50 years, and had worked in their current unit for an average of 6.7 years. The majority of employees were female (approximately 91%) and held a university degree (approximately 88%).

5.3.3.2 Participants included in Study IV

The pre-intervention employee data were used for Study IV. In addition, one scale was used to assess predictive criterion validity (i.e., using a criterion that occurs in the future). Therefore, post-intervention data were used for this particular analysis. Out of 1084 eligible employees, 815 responded (75% response rate) at the pre-intervention, of which 336 employees (41%) responded to the iLead scale. A likely explanation for this response rate was that a filter question was included in the questionnaire to assure that only employees that had a specific implementation effort in mind responded to the iLead scale. This was an important aspect of this study since the focus of this scale was to capture implementation leadership, which means that the employees needed to have a specific implementation in mind when answering the questions. When answering the questions in the iLead scale, employees were instructed to replace "the new working method" with the specific implementation they had reported in the initial filter question.

Most employees were female (90%) and had worked between two and five years (26.8 %) at their present job. All the managers were female. This high percentage of female employees and managers represent the Swedish health care context (Statistics Sweden, 2015). The average age of the employees was 47 years (SD=11.8; Range: 22 – 65) with the majority having a university degree (79.6%) (18.7% had completed high school and 1.7% did not have an education beyond high school).

5.4 DATA ANALYSIS PROCEDURES

5.4.1 Study I and Study II

A thematic analysis (Braun and Clarke, 2006) influenced by the hybrid-thematic analysis approach (Fereday and Muir-Cochrane, 2006) was performed in the analyses in Study I and Study II. Although there were some slight differences in how the analytical procedure was conducted for these studies, the overall procedure is based on the same analytical approach. The description in this section, therefore, refers to both studies. However, because different conceptual frameworks were used to analyse the interview data (due to dissimilar research questions), the two frameworks are therefore described separately.

Thematic analysis is a method that searches, identifies, analyses, and reports themes that emerge from the data considered important in descriptions of the phenomenon under investigation (Braun and Clarke, 2006; Daly et al., 1997). In this iterative approach to analysing data, the researchers immerse themselves in the data, develop initial codes, search for themes, and then review and define the themes. A hybrid-thematic analysis methods approach was applied since it combines an inductive (data-driven) and a deductive (theory-driven) approach to thematic analysis (Fereday and Muir-Cochrane, 2006). This approach was perceived

appropriate for the research questions in Study I and Study II because knowledge on social care managers' actions and influences in implementation of EBP is scarce.

An immersion of the raw data was first performed after the completion of the interview transcripts to familiarize with the data. This was followed by an initial deductive abstraction analysis guided by pre-defined dimensions based on theory (through thematization (Kvale, 2008)) from previous research on managers' implementation leadership actions, including what influences their leadership, which informed the interview guide. NVivo (Version 10) was used to conduct this analysis. In Study I, this related, for example, to line managers' understanding of their role in implementing EBP and to the descriptions of how they practically work with implementation. In Study II, this related, for example, to the line managers' perceived support in implementing EBP and the factors that influenced their implementation leadership. The pre-defined dimensions guided the initial coding of the data.[3]

Each interview was coded by two authors independently. The inter-rater reliability of each code was tested whereby two individually coded transcripts was compared between three of the authors using the same guide (as conducted in NVivo). Another inductive approach to analysing the transcripts was taken in which the relevant direct and indirect statements relating to the research questions and codes were, when relevant, generated. This resulted in an expansion of a previous code from the initial pre-defined dimensions. Themes that had emerged from these approaches were iteratively reviewed, discussed, and defined by the authors of Study I and Study II.

The analytical procedure also took an additional deductive approach in the use of conceptual models for each study that structured the themes that emerged from the data and gave them a practical perspective. Different theoretical frameworks were used for Study I and Study II since they aimed to answer different research questions. This analysis is described in Sections 5.4.1.1 and 5.4.1.2.

It is worth emphasising that this analytical procedure described above was not a clear linear process. Rather, the data were read and re-read carefully and were continuously discussed by the studies' authors in a re-iterative process.

5.4.1.1 Use of conceptual model – Study I

The core implementation phases, as described by Fixsen et al. (2005), were used as a conceptual framework to deductively analyse which actions line managers take when leading implementation. This framework was chosen because it is based on an extensive review of the implementation literature (Fixsen et al., 2005) and has previously been used in practice and in research (National Board of Health and Welfare, 2013; Ogden et al., 2012; Sullivan et al.,

[3] Note that in the articles, the terms "category" and "sub-category" are used as a synonym for "code".

2008). In the use of this framework, certain managerial and leadership actions are sorted according to when they occur in the implementation process. There are four phases in the process.

The four phases are described as the "core phases" that should occur to ensure effective implementation. The phases are *exploration* (needs assessment, readiness for change), *installation* (assessment of resources needed), *initial implementation,* and *full implementation* (sustainability). Results from the deductive and inductive coding of the data that related to the line managers' practical implementation work were re-read and summarised according to these four implementation phases. This was a reiterative process in which the authors agreed on the content of the final themes. The themes "Perceptions of evidence and EBP" and "Perceived role in implementing EBP" were generated from the initial deductive analysis and the inductive analysis of the data. However, they were not included in this additional deductive approach because these do not specifically concern managers' actions in leading implementation (nevertheless, the two themes are included in Study I).

The data analyses for Study I were conducted separately for social services and for older people care as a result of the initial reading of the transcripts that showed notable dissimilarities between managers in these settings. For Study II, no examination of differences was required as the procedure was not pertinent to the research question.

5.4.1.2 Use of conceptual model – Study II

The CFIR was used as a conceptual framework for Study II to describe the data in relation to previous findings on influential contextual factors for implementation (Damschroder et al., 2009). The framework identifies the following five domains (that include 26 constructs and 13 sub-constructs) that are relevant in the study of effective implementation: *Intervention characteristics* (8 constructs), *Outer setting* (4 constructs), *Inner setting* (5 constructs), *Characteristics of individuals* (5 constructs), and *Process* (4 constructs). This comprehensive framework synthesises 19 existing theories and frameworks. Therefore, the framework was suitable for this research and because it focuses on what works across multiple levels of context.

In line with Kaplan et al. (2010), three of the five CFIR domains were considered primarily as context: *Outer setting, Inner setting,* and *Characteristics of individuals*. After numerous discussions by the authors on which domains and constructs were most appropriate for Study II, *Characteristics of individuals* was excluded. The reason for this exclusion was the partial overlap between constructs in the *Inner setting* domain when considering the themes and codes generated from the raw data. Accordingly, it was decided to include the categories "Cosmopolitanism" and "External policy and incentives" in the *Outer setting* domain and to include all constructs in the *Inner setting* domain, including the sub-constructs "Learning climate" and "Leadership engagement". In addition, the sub-construct "Leadership engagement" was divided into "Closest manager" and "Senior management" as the data revealed that these actors influenced the line managers differently as far as leading

implementation. The data were condensed and summarized according to these constructs. This was a reiterative process and the authors of Study II agreed on the final themes and their inherent codes. Figure 6 presents the final included domains, constructs and sub-constructs from the CFIR in Study II.

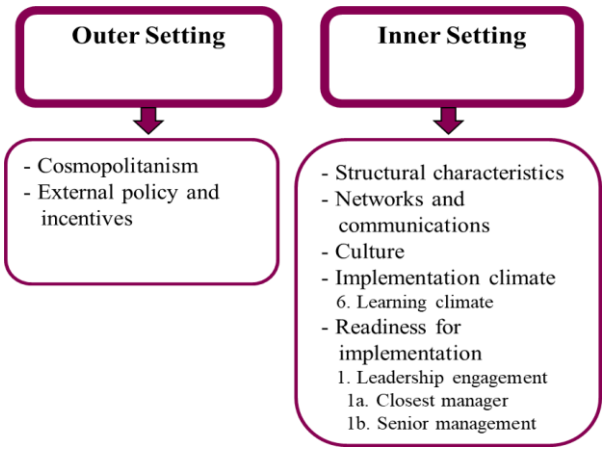

Figure 6. The CFIR domains, constructs and sub-constructs (numbered under each construct) included in the data analysis for Study II.

5.4.2 Study III

General leadership was assessed using a scale that measures transformational leadership with seven items (Carless et al., 2000) and contingent reward with two items (Avolio et al., 1999; Kelloway et al., 2006). Thus, the scale captures the active leadership behaviours of the FRLM. A sample item for transformational leadership is the following: 'I communicate a clear and positive vision of the future', and for contingent reward: 'I show satisfaction when subordinates meet expectations'. A manager version and an employee version of this scale were used. Each item was scored on a five-point Likert scale where 1 = strongly disagree and 5 = strongly agree. The Cronbach's alpha coefficients were $\alpha = .79$ at pre-intervention, $\alpha = .93$ at post-intervention, and $\alpha = .92$ at the follow-up for the managers, and $\alpha = .96$, $\alpha = .96$ and $\alpha = .95$, respectively for the employees.

5.4.2.1 Aggregating employee data

Since data were missing, Little's Missing Completely at Random (MCAR) test was conducted in order to confirm that the missing data were completely random (non-significant p-value) (Little et al, 2013). This test indicates that the missingness of the data is assumed to have no influence on the interpretation of the results (LeBreton and Senter, 2008; Newman and Sin, 2009).

Before aggregating the employee data to a unit level rating, this aggregation had to be justified. That is, a requirement before aggregating individual data is that there is substantial within-unit homogeneity, thus the unit rating only has meaning to the degree that it is representative of shared unit views (Chan, 1998; Woehr et al., 2015). The rwg(J) index for multiple item were used to assess interrater-agreement (Bliese, 2000; James et al., 1984; LeBreton and Senter, 2008) and inter-rater reliability was calculated using the ICC(1) and ICC(2) (Bliese, 2000; LeBreton and Senter, 2008; Van der Voet et al., 2016) to indicate consistency. Because an ongoing debate exists on how best to interpret these values, particularly the arbitrariness of using cut-offs, this study used recommended categories of values for interpretation rather than specific cut-offs (Biemann et al., 2012; LeBreton and Senter, 2008). These were the following: lack of agreement = .00 to .30; weak agreement = .31 to .50; moderate agreement: .51 to .70; strong agreement = .71 to .90; and very strong agreement = .91 to 1.00. Intra-class correlations were used to assess ICC(1) (the variance accounted for by group membership) and ICC(2) (the reliability of the group mean) (LeBreton and Senter, 2008). Recommendations for interpreting the ICC values were over 0.05 for ICC(1) and over .75 for ICC(2). The findings from inter-rater agreement and inter-rater reliability indicated that it was justified to continue aggregating individual data (Table 3).

Table 3. Inter-rater agreement and inter-rater reliability.

	$r_{wg(J).uniform}$	ICC(1)	ICC(2)
	Mean		
Leadership, pre-intervention [a]	.67	.19	.78
Leadership, post-intervention [b]	.70	.24	.78
Leadership, follow-up [c]	.77	.33	.87

N = 18 units with subordinates per measurement: N = 225[a], N = 194[b], N = 184 [c].

5.4.2.2 Categorization of agreement groups

When calculating the agreement between managers and their employees the model by Yammarino and Atwater (1993) was used to categorize their agreement into three categories: *in agreement*, *over-rating* and *under-rating*. This model has been used and recommended by Fleenor et al. (1996) and Shanock et al. (2010). A standardized mean was used to calculate the agreement between managers and their employees at each time point. If the managers' self-rating of their leadership was within .5 SDs of their employees ratings, they were categorized as being *in agreement*. However, if the managers' rating differed by .5 SDs above their employees ratings they were categorized as *over-rating* their leadership, whilst if it was .5 SDs under their employees ratings the managers' were categorized as *under-rating*. This clustering of in agreement, over-rating and under-rating were entered as separate variables in SPSS 23. These variables were then used to compare agreement levels at the three time points and to describe changes in them over time.

5.4.3 Study IV

As Study IV is a validation study, this section describes analytic approaches and the creation of the iLead scale. The different validation approaches used are also described.

5.4.3.1 Creating the iLead scale

Following an initial literature search undertaken to identify the central research relating to implementation leadership, it was decided that the iLead scale should follow the factor structure of the FRLM, as it includes both active and passive leadership behaviours (including their sub-factors).

Moreover, it was decided that the iLead scale should be based on two validated domain-specific leadership scales. The first scale, which is a safety-specific leadership scale that measures transformational and passive safety leadership, was developed by Kelloway et al. (2006). This scale, which has 13 items, builds on the work of Barling et al. (2002), and Bass (1985) and Avolio (1999). The second scale was the subscale "line manager's attitudes and actions" from the "Intervention Process Measure" (IPM) by Randall et al. (2009). This sub-scale aims to measure behaviours performed by managers' in relation to occupational health interventions, which makes it unique by attempting to capture managerial behaviours that are specific to an intervention.

The items in these scales were slightly adapted for the implementation area and the Swedish health care context. For instance, the following original item by Kelloway et al. (2006), "My manager shows determination to maintain a safe work environment", was adapted to "My closest manager has shown determination to maintain the new working method". The original item, "My immediate manager has actively worked towards the implementation of teams" from the scale by Randall et al. (2009), was adapted to "My closest manager has actively worked towards implementing the new working method". This led to a scale that included 20 items to measure implementation leadership. Thus, the iLead scale includes items that capture the continuum of leadership and managerial actions that have shown to be crucial in effective implementation. An important component when creating the iLead scale is to make it practical and brief so that it can be completed in busy settings such as health care (Glasgow and Riley, 2013).

Because the iLead scale was initially developed as a tool that provides feedback to managers on their leadership behaviours, it was central that the scale could differentiate between various active (i.e., the transformational leadership sub-factors and contingent reward) and passive leadership behaviours (Antonakis et al., 2003; Hardy et al., 2010). The sub-factors "idealized influence" and "inspirational motivation" were, however, combined as one sub-factor titled "exemplary behaviours" because research has been unable to consistently and empirically separate these sub-factors (Barbuto, 2005; Hinkin and Tracey, 1999) even though they may be argued as conceptually different (Barbuto, 2005; Rafferty and Griffin, 2004). This is in

accordance with previous studies that have used the FRLM (Rafferty and Griffin, 2004; Yukl, 2010). Consequently, the iLead scale measures active implementation leadership according to the following four sub-scales: *exemplary behaviours* (7 items), *individualized consideration* (3 items), *intellectual stimulation* (5 items), and *contingent reward* (2 items). Passive implementation leadership comprises elements from both *passive management-by-exception* and *laissez-faire* leadership behaviours (3 items), in line with a previous scale measuring domain-specific leadership (Kelloway et al., 2006).

5.4.3.2 Content validity

In addition to basing the iLead scale on two validated, domain-specific leadership, scales content validity (Furr, 2013) was assessed using two other approaches. First, workshops were held with national experts on leadership and implementation (n=5) and with managers in a health care organization (n=40). The purpose of the workshops was to identify crucial implementation leadership behaviours. The outline was a structured and interactive process – the Co-created program logic (COP) (Hasson and von Thiele Schwarz, 2017b). Those who partook in the workshops began by individually brainstorming important leadership behaviours for implementation. These individual behaviours were then discussed in groups and categorized into overall themes. The project group deemed the themes that emerged as consistent with the research on leadership during implementation. This further validated the inclusion of leadership behaviours in the scale.

Second, employees and senior managers (n=11) representing the health care organizations provided feedback on the items in the questionnaire and were enquired whether they believed the iLead scale measured what it is intended to measure. No major changes were made to any of the items as a result of this review.

5.4.3.3 Measures

Implementation-specific active and passive leadership was measured using the newly created iLead scale (see Section 5.4.3.1). All 20 items were scored on a 1 (strongly disagree) to 5 (strongly agree) Likert scale. See Table 4 for an overview of the validity measures used in Study IV.

Table 4. Overview of validity measures used in Study IV.

Scale	Reference	No. of items	Likert scale range	α[↓]	Example item
Convergent and discriminant validity measures					
General transformational leadership	Carless et al. 2000	7	1 (strongly disagree) – 5 (strongly agree)	.95	"My closest manager communicates a clear and positive vision of the future"
General transactional leadership	*Based on:* Avolio et al. (1999) and Kelloway et al. (2006)	2	1 (strongly disagree) – 5 (strongly agree)	.81	"My manager shows satisfaction when employees meet expectations"
Criterion-related validity measure[§]					
Implementation Climate	Ehrhart et al. 2014	3	1 (strongly disagree) – 5 (strongly agree)	.86	"At my workplace it is a top priority to change our working methods in order to achieve the best possible quality"

[↓]Reliability was assessed via internal consistency (Cronbach's alpha > .70 (Furr, 2013)). [§]Predictive criterion validity with the outcome was collected at the post-intervention measurement.

5.4.3.4 Statistical analysis

The dimensionality of the iLead scale was tested by means of confirmatory factor analysis (CFA) using structural equation modelling (SEM) in AMOS 23. CFA was chosen because it intends to determine how well a hypothesized model fit data, and to compare models with different factor solutions as well as because it can be used to identify which model best fits the data (Furr, 2013; Hinkin, 1998). An exploratory factor analysis (EFA) was not performed before the CFA because the iLead scale follows the well-established FRLM factor structure that has substantial validity evidence from previous studies (Bass, 1999; Bass and Yammarino, 1991; Bycio et al., 1995; Yukl, 2010).

The maximum likelihood estimation (ML) method was applied because of the missing data in this study (Byrne, 2010). The following four fit indices were used to assess model fit: the chi-square (χ^2), the comparative fit index (CFI), the Tucker-Lewis index (TLI), and the root mean square error residual (RMSEA) (Byrne, 2010; Hu and Bentler, 1999). The estimated cut-off criterions for CFI and TLI is around .90 (Byrne, 2010) and for RMSEA a value of $\leq .06$ (Hu and Bentler, 1999) to indicate a good fit to the data. The Akaike information criterion (AIC) and the chi-square difference test were used to compare models, whereby models with lower values are deemed to have more acceptable model fit (Byrne, 2010).

A comparison of five different models was conducted to examine the hypothesized factor structure of the iLead scale. For the active implementation leadership factors, a second-order factor model is suggested because of high correlations between the sub-factors (Avolio et al., 1999; Carless et al., 2000; Tepper and Percy, 1994). The first, and hypothesized model, is composed of exemplary behaviours, individualized consideration, intellectual stimulation, and contingent reward as four factors under one second-order factor for active implementation

leadership, which intercorrelated with passive implementation leadership. In the second model, a merging of individualized consideration and intellectual stimulation was performed to represent one factor that resulted in three factors under the active implementation leadership second-order factor, which intercorrelated with passive implementation leadership. In the third model, exemplary behaviours, individualized consideration and intellectual stimulation were merged, thus there were two factors under the active implementation leadership second-order factor, which intercorrelated with passive implementation leadership. In the fourth model, the transformational leadership sub-factors and contingent reward were included in one first-order factor, which intercorrelated with passive implementation leadership. In the fifth model, all items loaded on a single factor.

Convergent validity (i.e., the analysis of the degree of similarity between theoretically similar instruments (Bollen, 1989; Furr, 2013) was tested by correlating the iLead scale with general transformational leadership and transactional leadership. Correlations should be higher than .40 (Clinton-McHarg et al., 2016). Discriminant validity (i.e., the analysis of whether theoretically distinct measures are in fact unrelated (Bollen, 1989; Furr, 2013) was assessed by correlating passive implementation leadership with general transformational leadership and contingent reward behaviours. Criterion-related validity (i.e., how well a measure can predict an outcome of interest) (Bollen, 1989; Furr, 2013) was examined in regression models with implementation climate at post-intervention (Time 2), which was an outcome of interest for this study.

5.5 ETHICAL CONSIDERATIONS

The ethical considerations are described according to the qualitative (Study I and Study II) and quantitative research strategies (Study III and Study IV).

5.5.1 Study I and Study II

The data collection for Study I and Study II was reviewed by the regional ethics committee in Stockholm and was judged not to need any ethical approval (ref no. 2012/1392-31/5).

All the participants initially received written and verbal information about participating in the interviews as well as about the study project. The written information clearly stated the aim of the study and of the interview. This included who was responsible for the research, that participation was voluntary, how long time the interview would approximately take, that a tape-recorder will be used and about confidentiality. A description of how the data management and storage according to the Personal Data Act and the Public Access to Information and Secrecy Act, and how the data will be used (e.g. a report and scientific articles) was also included in the information.

The interviews were carried out at the manager's workplace, which was chosen by the managers themselves as they viewed this as most comfortable for them. A risk of carrying out research at a workplace is that there may be misgivings that the manager may experience that their involvement in the research study is connected to their employment. However, that their participation was voluntary and that they could withdraw at any time was emphasized. It was also explained that the research study was separate from the work they perform at their workplace, and that their senior management will not have access to any data. A benefit of participating in the interview is that the manager's get a possibility to reflect on and gain new insights about how they lead implementation efforts at their workplace and what support they need in this.

Before initiating each interview, a briefing was performed in which the interviewer defined the purpose of the interview, explaining that participating is voluntary and could be ended whenever the respondent pleased. Furthermore, it was emphasized that there are no right or wrong answers to the questions, and to confirm that it was ok to use a tape-recorder. An informed consent was collected from all the respondents before the interview, which also highlighted that participation in the research is voluntary. It also stated that confidentiality will be ensured since the results will only be reported at group level, and that the data will be managed according to the ethical guidelines where the data is anonymized and stored on a secure data system.

The interviews were recorded and transcribed verbatim. Transcripts and the audio files were coded and not stored on the same server. The audio files and the coding of the respondents are protected by a password to protect the anonymity of the respondents. Thus, the data is only available to the members of the project group. All the managers who had participated in the interviews were given the possibility to read and comment on the results before any publications.

5.5.2 Study III and Study IV

The data collection for Study III and Study IV was reviewed and approved by the regional ethics committee in Stockholm (ref no. 2015/857-31/5).

All the respondents gave an informed consent that the data may be used in research prior to answering the questionnaire. They were also asked to confirm that they understood the purpose of the project, and had been informed about what their participation entails. In this, the respondents were requested to read a document stating the aim, and other important information, of the project as well as responsible person and who to contact to ask questions about their participation. The information emphasized for example that their participation is voluntary and that they could withdraw from the study at any time as well as from answering the questionnaire. Moreover, that their decision to participate does not affect their work situation. The respondents were also informed that their data was managed according to the

Personal Data Act and ensured that no individual data is reported or published, but only on group level.

The survey data is stored in a database on a server with high security and is only available to the project group members. Personal data collected in the project is stored on a server with high security and encrypted with a password.

6 KEY FINDINGS

This section provides a summary of the key findings for each of the four studies.

6.1 STUDY I

Findings showed that the line managers' performed implementation leadership ad hoc rather than systematically. Furthermore, little consideration was given to analyze needs in the local context and there was limited attention to following up and planning for sustainability. Figure 7 summarizes the results according to the implementation phases.

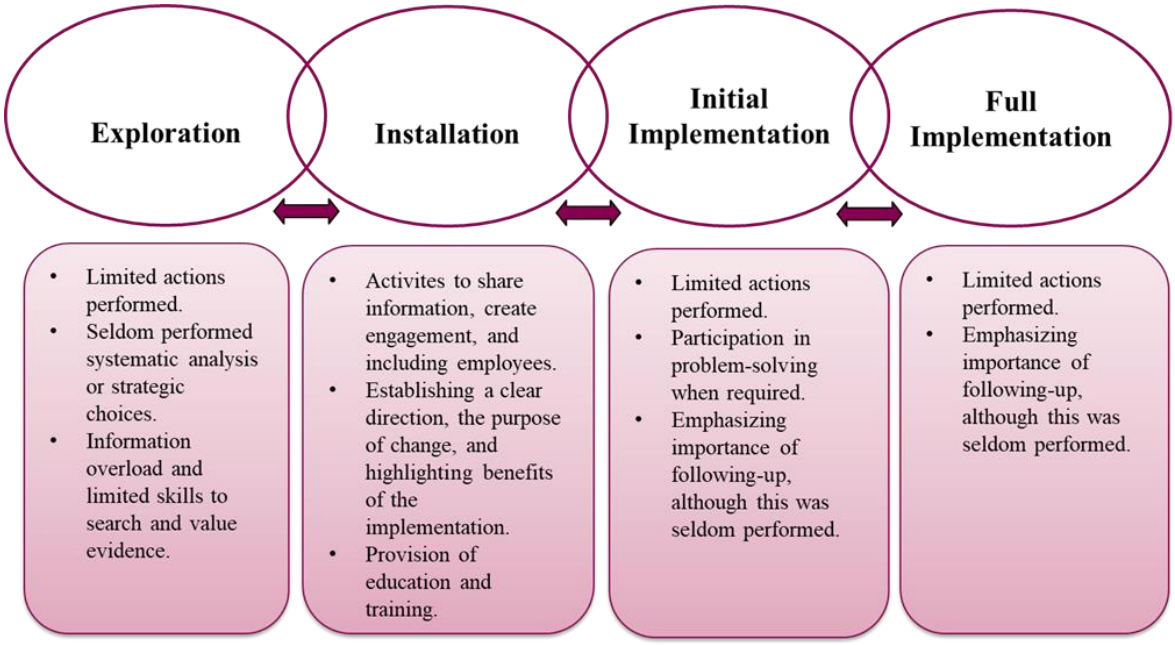

Figure 7. Summary of line managers' actions when leading implementation throughout the implementation process (based on the phases by Fixsen et al., 2005).

The managers' focused most on the *installation phase* where they emphasised the importance of establishing a clear direction including clarifying the purpose of change and the benefits of change for the organization and its clients. The managers also described the following actions as important: sharing information with their employees, creating engagement, motivating them, and providing them with time to reflect and ask questions on the consequences of an implementation. The managers also stressed the importance of education and training for their employees when implementing a new method.

In the *initial* and *full implementation phases*, the managers described a rather inactive role by mainly being present and participating in problem solving only when required. Several

managers stressed the importance of following up and evaluating an implementation. However, these were seldom performed satisfactorily and were identified as an area for improvement.

Their actions in the *exploration phase* were limited. Instead of exploring the particular needs of their organization themselves, the managers either relied on their employees' preferences and wishes regarding their competence development or they lacked decision-making authority concerning which evidence-based methods to implement.

6.1.1.1 Differences between social services and older people care

There were notable differences between managers in social services and managers in older people care. The managers in social services were more knowledgeable and appeared more positive towards working according to EBP than the managers in older people care appeared. The managers in social services also described a more active role in the implementation process. In addition, managers in older people care were rarely involved in what evidence-based methods to work according to at their unit by the senior management. Therefore, several older people care managers did not regard it as their responsibility to try to improve the workplace.

6.1.1.2 Differences between local authorities

In two of the local authorities that were chosen to be included in this study because they had been identified as being at the forefront of implementing EBP (Local Authority II and Local Authority V in Table 2), the social services managers had a much clearer structure for leading implementation. Social services managers in these local authorities had support throughout the implementation process by several stakeholders from their inner and outer contexts. Access to a R&D unit or similar unit gave the managers more knowledge of EBP and the implementation process.

6.2 STUDY II

Findings showed that a broad range of various factors in the line managers' outer and inner context had the potential to influence their implementation leadership. The reason why some factors had only a potential influence on their leadership was because they did not have an impact in practice, meaning whether the support was actually realized in practice and that it was not only hypothetically described as supportive. That is, the managers reported several factors that could be supportive in leading implementation, but these factors were either not offered or did not reach the managers at the first managerial level. This led to a described sense of loneliness from the managers in trying to lead EBP implementation. Figure 8 summarizes identified influential factors (Study II includes the full list of contextual factors).

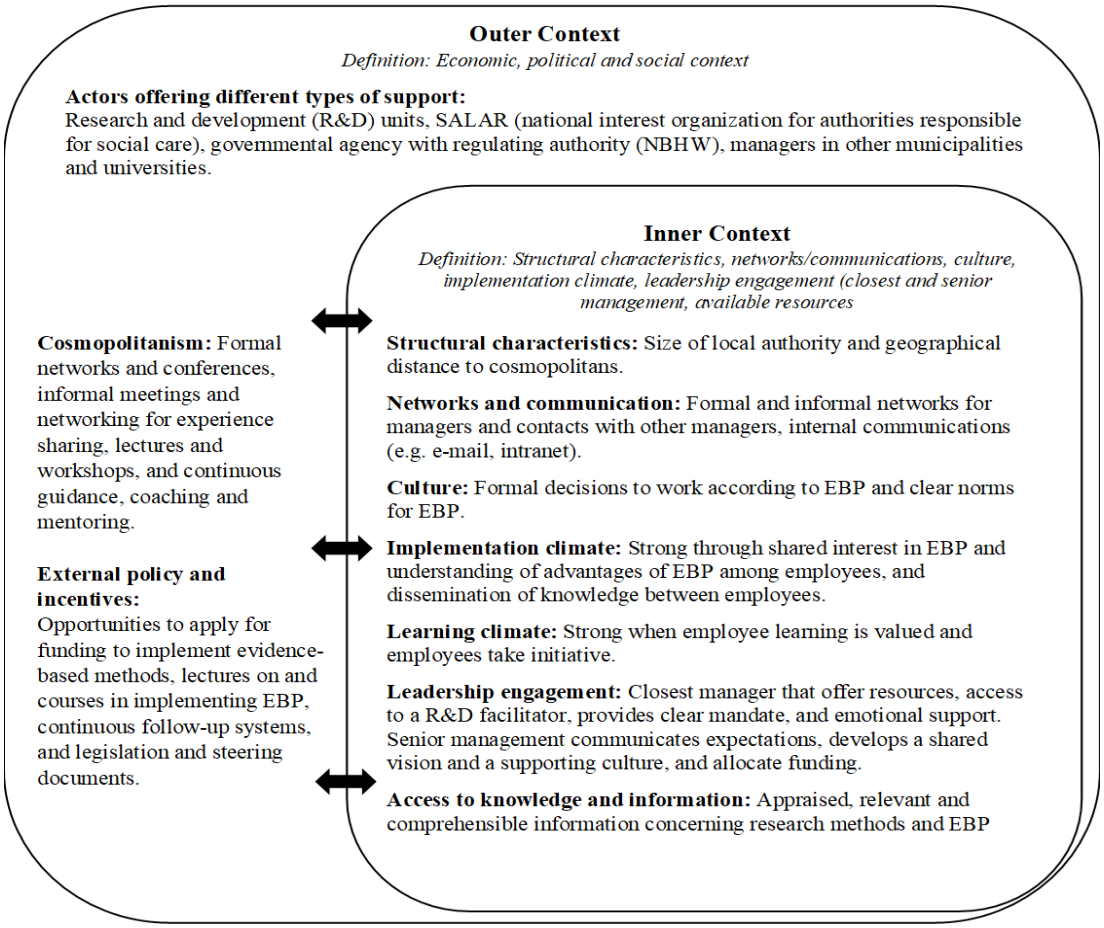

Figure 8. Summary of contextual factors influencing line managers' implementation leadership.

In the outer context, the managers mentioned several actors that offered different types of support in leading EBP implementation, such as R&D units, SALAR, and managers in other municipalities and universities. Actors that had a substantial practical impact were policy makers from a governmental agency with regulatory authority (e.g., NBHW) and interest organizations (e.g., SALAR). These actors provided support such as information and education about EBP and opportunities to apply for project funding. Opportunities to apply for funding had a high impact since they created incentives for implementing new evidence-based work methods, for continuous development (e.g., employee training), and for restructuring systems and processes that facilitate implementation. Networking with nearby local authorities through informal meetings was also described as an influential factor with a high impact in practice. Networking provided opportunities to exchange experiences and to learn from others about effective work methods.

Some contextual factors were described as having a potentially high impact to support the managers. However, this support was generally seldom available or offered in practice. Such support included verbal information acquired in lectures, workshops, conferences, and

coaching about leading implementation of EBP. The managers thought such information could be useful in increasing their knowledge and competences related to leading implementation and facilitating sense-making of EBP. Written information acquired from e-mails, reports, homepages, the intranet etc., had a low impact in practice. In contrast to the verbal information, written information was abundant. In fact, it resulted in information overload that was difficult to comprehend, and therefore meant it had a low impact in practice.

As far as the inner context, managers working in smaller-sized local authorities in more rural areas, i.e., that were geographically remote from metropolitan areas, emphasised structural factors as influential. The geographical distance was perceived as a barrier for their implementation leadership because it was difficult to attend meetings and workshops usually held in more urban areas. This factor therefore had a high negative impact for these managers in terms of missed opportunities to develop their knowledge and skills, less access to R&D facilitators, and fewer learning opportunities organized by various interest organizations. This type of support was also perceived as valuable emotional and practical support in obstacles that arise when leading implementation processes and EBP. Consequently, structural characteristics inhibited managers in these local authorities and therefore had a high impact for their implementation leadership, particularly concerning training opportunities.

In addition, Study II revealed the existence of some modifiable factors in the inner context where a clear structure and/or strategy for implementing EBP was lacking. Social exchanges in networks and communications with other managers in their organization and R&D facilitators had a high practical impact in practice. The managers' regarded these factors as positively influential because they could hear from other's experiences, which motivated them to lead implementation as they learned of successful implementations of evidence-based methods. Factors such as culture and climate for implementing EBP, for example, shared interest in working according to EBP and employees' knowledge of EBP had a high practical impact when these factors were positive or strong. In these situations, it was less difficult to implement new work methods. Nevertheless, when these factors were negative or weak, they had no positive practical impact. In these situations, the managers' implementation work became even more difficult.

An additional influential factor for managers' to lead implementation was organizational leadership engagement from the closest manager and senior management. Important indications of support from these actors that increased the managers' motivation and interest ranged from providing resources, clearly communicating work priorities among tasks, and to provide a R&D facilitator. It was also supportive in ensuring a supportive culture and creating a shared vision to work according to EBP, among others. The closest manager and senior management support had a high impact on the managers' implementation leadership whenever it was present. However, there was no impact when other actors provided the same type of support or had a negative impact when engagement was insufficient or implementation efforts were counteracted.

6.2.1.1 Interactions between contextual factors

Study II also found that several factors seemed only to have a positive practical impact in interaction with other factors, rather than when being offered independently. An example was the project funding offered by actors in the outer context, which only had an impact in a positive and/or strong supportive culture and climate in the inner context (e.g., clear work strategies and priorities according to EBP). Yet another contextual factor was the information about EBP, evidence-based methods, leadership, and implementation from actors in the outer context. This information only had a high practical impact if the managers had support from individuals (e.g., facilitators) in their inner context who could appraise the information and summarize its important aspects for the units.

6.3 STUDY III

Findings showed that 17% (n=3, out of the 18 managers) were *in agreement* with their employees about their leadership before their participation in the iLead intervention (44% *over-rated* and 39% *under-rated*). *In agreement* increased at the post-intervention measurement with 61% (n=11) of the managers agreeing with their employees (17% *over-rated* and 22% *under-rated*). This slightly decreased at the six-month follow-up measurement where 44% (n=8) of the managers and their employees were *in agreement* (28% *over-rated* and 28% *under-rated*). Table 5 presents these findings.

Table 5. Manager-subordinate agreement categories of leadership over time.

	Pre-intervention				**Post-intervention**				**Follow-up**			
Agreement category	n	%	Mean Managers	Mean Employees	n	%	Mean Managers	Mean Employees	n	%	Mean Managers	Mean Employees
Managers in agreement	3	17	4.00	4.03	11	61	4.18	4.25	8	44	4.15	4.25
Managers over-rating	8	44	4.02	3.55	3	17	3.92	3.37	5	28	4.18	3.40
Managers under-rating	7	39	3.76	4.30	4	22	3.27	4.23	5	28	3.35	4.25

Units/Managers: N = 18.

The majority of the managers and employees changed agreement category over time. Three managers (17%) remained in the same category at all three time points. The largest change in agreement category occurred between the pre- and post-intervention measurements (67%, n=10). Figure 9 illustrates the patterns of change in the categories that occurred over the three measurement points based on the pre-intervention measurements.

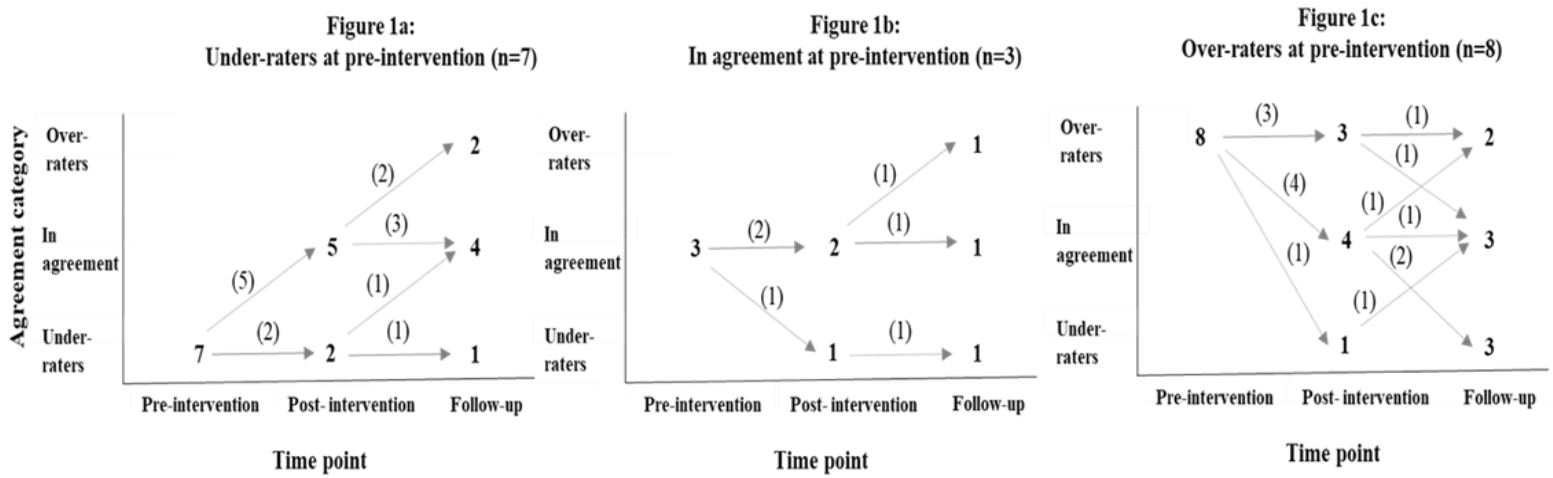

Figure 9. Changes in agreement category over time for all managers (n=18).

Notes: Bold numbers at each time point (pre- and post-intervention, and follow-up) denotes the total amount of managers that belonged to that specific agreement category at that particular time point. Numbers in parenthesis indicate how many managers changed agreement category between the time points.

Managers' and their employees' rated the managers' as moderately active leaders based on the mean sample ratings (see Table 6). A significant positive change in the employees' mean ratings occurred between the pre- and post-intervention measurements (M_{diff} = .18, SE = 0.05, t = 3.07, p < .01). Minor changes occurred for the managers' mean ratings over time.

Table 6. Descriptive data of study measures.

	Mean	SD
Leadership, employees pre-intervention[a]	3.92	.93
Leadership, managers pre-intervention	3.91	.30
Leadership, employees post-intervention[b]	4.14	.82
Leadership, managers post-intervention	3.94	.69
Leadership, employees follow-up[c]	4.02	.88
Leadership, managers follow-up	3.94	.62

Managers: N = 18; Employees: N = 225[a], N = 194[b], N = 184[c].

6.4 STUDY IV

In creating the iLead scale to measure active and passive implementation leadership, four of the initial 20 scale items were removed because these items either had a factor loading below .4 (i.e., did not represent the proposed construct) or had low correlations (r=< .3). One of these items was removed because of respondents' comments that indicated difficulty in understanding the item.

6.4.1.1 Dimensionality

Five competing models were compared to investigate whether the sub-scales could be separated from each other. Table 7 presents the findings from the model comparisons and a description of the models. These findings show that the hypothesized model (Model 1) was the best fitting model with an acceptable model fit ($\chi^2_{(99)} = 382.864^{**}$, CFI=.935, TLI=.911, RMSEA=.059). Figure 10 presents the standardized factor loadings for the hypothesized model.

Table 7. Model comparisons.

Models	χ^2	df	CFI	TLI	RMSEA	AIC	Model comparison	Δ df	Δ χ^2
Model 1	382.864^{**}	99	.935	.911	.059	488.864			
Model 2	388.906^{**}	100	.934	.911	.060	492.906	1 vs 2	1	6.04^{*}
Model 3	452.720^{**}	101	.920	.892	.065	554.720	2 vs 3	1	63.81^{**}
Model 4	501.158^{**}	103	.909	.880	.069	599.158	3 vs 4	2	48.44^{**}
Model 5	1655.889^{**}	170	.740	.678	.104	1775.889	4 vs 5	67	1154.73^{**}

N=336; ** p < 0.01; * p < 0.05; *Model 1*: exemplary behaviours (EB), individualized consideration (IC), intellectual stimulation (IS), and contingent reward (CR) were included as four first-order factors under one second-order factor for active leadership (AL), and passive leadership (PL) was intercorrelated with AL; *Model 2*: IC and IS were collapsed into one factor, resulting in three first-order factors for the AL second-order factor, and PL was intercorrelated with AL; *Model 3*: EB, IC and IS were collapsed into one factor, resulting in two first-order factors for the AL second-order factor, and PL was intercorrelated with AL; *Model 4*: all the active factors (transformational leadership sub-factors and CR) were collapsed into one first-order factor, and PL was intercorrelated with AL; *Model 5*: all items loaded on one single factor.

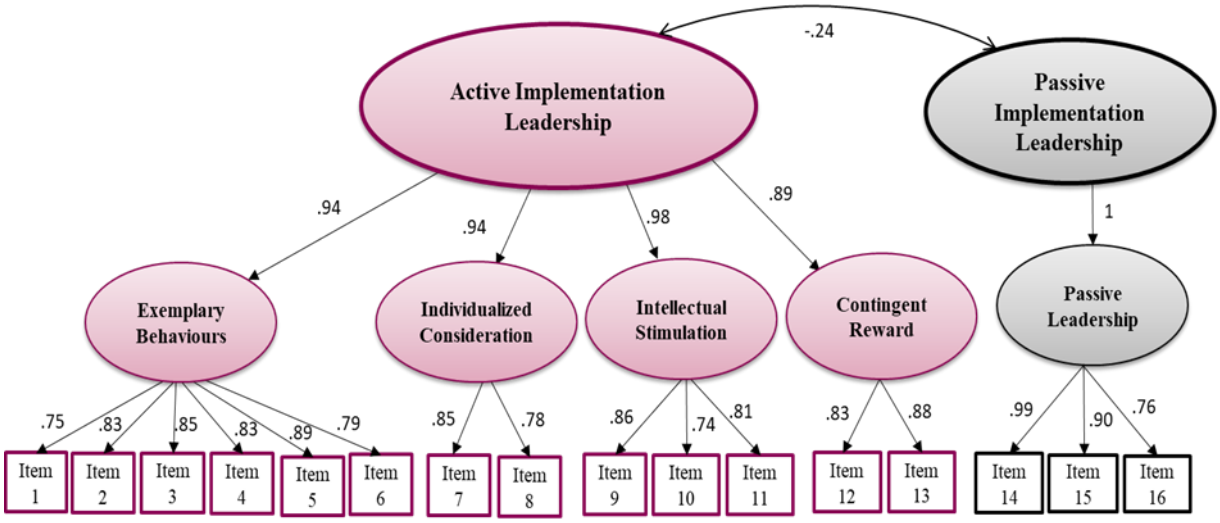

Figure 10. Standardized factor loadings for the iLead scale.
n=336; All confirmatory factor analysis factor loadings are for Model 1 ($\chi^2_{(99)}$=382.864**, CFI=.935, TLI=.911, RMSEA=.059) with four first-order factors under one second-order factor for active implementation leadership, which is intercorrelated with a passive implementation leadership factor.

6.4.1.2 The iLead scale

The final version of the scale with its constituent items, including descriptives and the internal consistency of the sub-scales is presented in Table 8 (employee version). The table shows that the scale is based on four sub-scales representing active leadership: *exemplary behaviours* (6 items), *individualized consideration* (2 items), *intellectual stimulation* (3 items), and *contingent reward* (2 items) and one sub-scale represents passive leadership (3 items). In the managerial version of the iLead scale, the items were slightly adapted to be directed at them as managers'. In their version, "*My closest manager*" was replaced with "*I*". For example, "*I* have talked about *my* values and beliefs of why it is important to work according the new working method" instead of "*My closest manager* has talked about *his/her* values and beliefs of why it is important to work according the new working method" in the employee version. The Swedish version of the iLead scale for managers and employees is found in Appendix A.

6.4.1.3 Convergent, discriminant and criterion-related validity

Active implementation leadership correlated with general transformational (r=.70 – .78**) and transactional leadership (r=.61 – .70**) supporting convergent validity (high correlations). The assessment for discriminant validity was also supported by correlating passive leadership with general transformational (r=-.22**) and general transactional leadership (r=-.18**). The association between implementation climate (measured post-intervention) and active and passive implementation leadership (measured pre-intervention) was measured to assess criterion-related validity. The findings revealed that active implementation leadership significantly predicted implementation climate (B=.40*), There was a slight negative relation (non-significant) between passive implementation leadership and implementation climate (B= -.07).

Table 8. The iLead scale measuring active and passive implementation leadership.

Scales and constituent items	Mean	SD	α	Item no.
1. Active implementation leadership	**3.84**	**0.88**	**.95**	
1a. Exemplary behaviours	**4.06**	**0.86**	**.92**	
My closest manager…				
…has shown determination to maintain the new working method	4.17	0.94		1
…has talked about his/her values and beliefs of why it is important to work according the new working method	3.94	1.08		2
…has actively worked towards implementing the new working method	4.08	0.96		3
…has continuously encouraged us in the implementation of the new working method	4.15	0.96		4
…has behaved in a way that explicitly displays commitment to working according to the new working method	4.02	1.05		5
…has been positive towards the implementation of the new working method	4.22	0.92		6
1b. Individualized consideration	**3.60**	**1.10**	**.80**	
My closest manager…				
…has spent time showing me how I can work according to the new working method	3.51	1.19		7
…has given me the opportunity to speak to him/her about what consequences the implementation of the new working method will have for me	3.68	1.21		8
1c. Intellectual stimulation	**3.87**	**0.93**	**.83**	
My closest manager…				
…has done a lot to involve us in the implementation of the new working method	3.89	1.08		9
…has encouraged me to express my ideas and opinions about implementing the new working method	3.89	1.17		10
…has shared whatever information he/she has about the implementation of the new working method	3.92	1.09		11
1d. Contingent reward	**3.84**	**0.97**	**.85**	
My closest manager…				
…has shown satisfaction when I work according to the new working method	3.89	1.02		12
…has shown appreciation when we have achieved our goals to implement the new working method at our workplace	3.80	1.07		13
2. Passive implementation leadership	**2.01**	**1.17**	**.91**	
My closest manager…				
…has avoided to intervene until major problems with the implementation of the new working method has already arose	1.98	1.26		14
…has waited for things to go wrong with the implementation of the new working method before taking action	1.96	1.24		15
…has avoided making decisions that affect the implementation of the new working method	2.09	1.29		16

N=324–336, due to missing data on some items (pairwise deletion).

7 DISCUSSION

This thesis aims to increase the knowledge of line managers' leadership during implementation. Various perspectives were considered in this exploration of leadership in the four studies that use frameworks, including aspects of process and context related to leading implementation, from both implementation science and leadership research.

This chapter begins with a general discussion on line managers' descriptions of how they lead implementation (Study I) and the employees' perspectives on their managers' leadership (Studies III and IV). Thereafter, the challenges facing these managers in effectively leading implementation (Studies I, II, and III) and the most useful support for line managers in this process (Studies I – IV) are discussed. This chapter also discusses methodological considerations and implications for practice and research. The discussion provides an overall approach to the study findings in this thesis. A more detailed discussion of each study is found in the individual studies.

7.1 HOW LINE MANAGERS' LEAD IMPLEMENTATION: TWO PERSPECTIVES FROM PRACTICE

7.1.1 Line managers' descriptions of how they lead implementation

A pervasive idea in implementation science is that implementation is a structured process that has mainly four phases (e.g., *exploration, installation, initial implementation* and *full implementation*) (Aarons et al., 2011; Fixsen et al., 2005). Furthermore, implementation science suggests that managers should perform certain actions to increase the likelihood of implementation success. These actions include offering support (e.g., administrative and socio-emotional support), sharing important information, providing educational activities, communicating clearly, acting as role models, giving feedback, and influencing the context. In addition, managers should be committed, inspire and create engagement in others (Gifford et al., 2007; Reichenpfader et al., 2015; Sandström et al., 2011; Øvretveit, 2010). The findings from this thesis reveal that the social care managers' actions in implementation were ad hoc rather than structured. These managers were active in only one of the implementation phases and passive in the other phases (Study I). Specifically, the managers were most active in the *installation phase* and passive in the *exploration, initial implementation,* and *full implementation phases.* These findings refute recommendations in implementation science that emphasize that implementation is a structured process that requires strategic thinking.

The managers' actions in the installation phase included creating engagement among employees, establishing a clear direction for the change, clarifying the purpose of the change, highlighting the organizational benefits of the change, and motivating employees to implement the change. The managers described the importance of sharing information with their

employees and including them in the beginning of the implementation process. They emphasized the importance of education and training for their employees. The managers' were most passive in the exploration phase because virtually no action was described that the managers' themselves performed in this phase. During the initial implementation and full implementation phases, the managers often only acted when a problem was brought to their attention. Although the importance of following up was mentioned, the managers said they rarely took this action because they lacked the necessary tools in their organization for continuous follow-up. Thus, there was less focus on how an implementation should be used in the long-term in the effort to achieve sustainability.

To the author's knowledge, no studies in implementation science are available that have explored the specific leadership actions that managers perform (or do not perform) in each specific implementation phase. Thus, it is not possible to compare directly the findings from this research to findings from previous studies. However, studies have emphasized the importance of leadership in the implementation process (Aarons et al., 2011; Moullin et al., 2017; Øvretveit, 2010). Another study explored the importance to line managers in health care of actions in innovation implementation (Birken et al., 2016). The managers in this study ranked diffusing innovations as the most important implementation action. This action included communicating information, offering training and education, among others, all of which relate to the installation phase. Least important were the actions related to encouraging employees and maintaining a positive attitude towards the implementation efforts (Birken et al., 2016). These are actions associated with the initial implementation and full implementation phases. In another study, nurse managers' described their role in EBP implementation as sharing and disseminating information with employees (Wilkinson et al., 2011). Findings in this study suggest that managers' perceive their role as being active in the installation phase; however, they do not describe their role in EBP implementation to include actions relating to the other phases of the implementation process.

Leadership research emphasizes that the active leadership behaviours of the FRLM, (i.e., transformational leadership and contingent reward behaviours) are effective in obtaining positive outcomes (Barbuto, 2005; Bass et al., 2003; Herold et al., 2008; Judge and Piccolo, 2004). Findings in this thesis showed that the managers described some relationship-based behaviours in the installation phase that can be associated with transformational leadership (Study I). However, fewer regulatory behaviours were described. This finding suggests that the managers recognised the importance of motivating and engaging their employees but not in creating regulations for implementation. On the contrary, when the health care managers were asked to rate their general transformational and contingent reward behaviours (Study III), they rated themselves as moderately active on both transformational and contingent reward behaviours. This suggests that these managers' thought they performed both relational and regulatory actions. Previous research shows it is common for managers to rate themselves higher on relation-based behaviours such as transformational leadership (Lee and Carpenter, 2017). Studies that have applied the FRLM show that when managers lead in a way that inspire and encourage employees to challenge assumptions, and consider each employee's needs and

development through personal attention, the chance of implementation success may be enhanced (Aarons and Sommerfeld, 2012; Michaelis et al., 2010). Other leadership behaviours, such as establishing agreements with employees on goals, activities, and follow-up, are also important for effective implementation.

The passive actions the social care managers described (especially in the initial implementation and full implementation phases) resembled the passive management-by-exception behaviours of the FRLM. However, their descriptions lacked an explanation of how they acted prior to the implementation decision (in the exploration phase). The managers' did not report any involvement in the needs analysis for their local context. Prior research suggest that managers who are passive and sit back waiting to take action until problems occur or avoiding taking any initiative at all have been associated with negative organizational outcomes (Einarsen et al., 2007; Kelloway et al., 2006; Skogstad et al., 2007), and may lead to a negative implementation climate.

In sum, the managers' descriptions of their actions in the installation phase correspond with many actions identified by previous implementation researchers as influential for effective implementation processes (Gifford et al., 2007; Reichenpfader et al., 2015; Sandström et al., 2011). However, an important observation stemming from the managers' descriptions is that they do not seem to consider implementation a structured process that includes different phases, all of which require different actions (as recommended in the implementation and leadership literature). Considering managers' own descriptions of how they lead, this indicates that they were operative rather than systematic when leading implementation.

These findings indicate that the managers do not appear to follow a systematic and structured implementation process. It may be concluded that how managers' should lead implementation to optimize the likelihood of success recommended in theory do not entirely concur with how the managers' lead in practice. However, a more comprehensive examination of managers' leadership behaviours needs to consider others' descriptions and perspectives, such as those of employees (Atwater et al., 1998; Fleenor et al., 2010; Lee and Carpenter, 2017). It may also be argued that this is particularly important in the discussion of transformational leadership behaviours that focus on the social exchange between managers and their employees. The following section discusses the leadership behaviours as perceived by employees (Study III and Study IV), and thereafter factors influencing how managers' lead implementation will be discussed.

7.1.2 Employees' perspectives on how their line manager leads

The iLead scale was used to measure the employees' perspectives on their managers' implementation leadership. This scale focuses on capturing transformational leadership, contingent reward behaviours, and passive leadership behaviours in relation to an implementation. The findings show that the employees rated their managers as moderately active leaders in implementation (Study IV). They rated their managers highest on the

transformational aspect of "exemplary behaviours" (e.g., continuous encouragement during the implementation). The employees rated their managers lowest on "individualized consideration" behaviours (e.g., time spent on showing employees how to perform the implementation). Overall, the employees rated their managers low on passive implementation leadership although the mean ratings show that the employees perceived some passivity from their manager in leading implementation.

The findings in this thesis also show that employees' rated their manager as moderately active on general transformational leadership behaviours and contingent reward behaviours (i.e., not implementation leadership behaviours) based on the sample mean rating (Study III). In fact, the employees' ratings on general leadership were consistent with the managers' self-ratings (as reported in the previous section). This indicates that, according to the overall sample mean, both managers and their employees perceived the managers as moderately generally active leaders.

These results suggest that the employees (in the health care setting) of this thesis perceived that their manager performed some active leadership behaviours for a specific implementation, and in general, although these ratings can be improved.

7.1.3 Comparing line managers' and employees' perspectives on how the manager leads

Despite the similarity in the managers' and employees' overall mean ratings on general leadership behaviours (Study III), this consistency does not tell us whether they actually agreed on the managers' leadership at the unit level. When the managers' and their employees' ratings were compared at the unit level, the findings reveal that a large majority of managers disagreed with their employees on the general transformational leadership and contingent reward behaviours (Study III). This was especially the case at the measurement point before the managers participated in a leadership intervention. Here, most managers rated their behaviours higher than their employees did, which is in line with previous research (Atwater et al., 2005; Fleenor et al., 2010; Podsakoff et al., 2003). However, the findings also show that many managers rated themselves lower on these behaviours than their employees did. Thus, there were two main groups: the managers who over-rated themselves and the managers who under-rated themselves (in comparison with employees' ratings). The managers who agreed with their employees were in the minority. This suggests that the sample's overall mean ratings do not present an accurate picture of the agreement between managers and employees at the unit level.

The reasons for the disagreement on the ratings are very likely complex. The managers may think that they perform certain leadership behaviour to a larger, or lesser, extent than they actually do. Alternatively, the employees may not have observed all instances of leadership behaviours. In any case, the employees' perception of managers' leadership has implications relative to the influence the managers have on them. This perception is also a factor in the managers' success in motivating their employees.

Although employees perceive their manager as a moderately active leader, including managers' themselves, on an overall level there may be a lack of agreement between how managers perceive what they do and how they lead compared to their employees on the unit level.

7.2 LINE MANAGERS DO NOT LEAD IN A VACUUM

This section addresses the discrepancy between how managers, in theory, "should" lead implementation and how managers, in practice, do lead implementation according the findings in this thesis. In the discussion, four reasons are proposed to explain this discrepancy.

7.2.1 Leading implementation is not an isolated task for line managers

The research on how to most effectively lead implementation generally assumes that managers only focus on one particular effort at a time. In fact, recent leadership research argues that when a manager performs active leadership behaviours according to a specific domain (e.g., a particular implementation effort), these behaviours appear to be more effective than general leadership behaviours as far as achieving implementation-specific results (Gurt et al., 2011; Kelloway et al., 2006; Lundmark et al., 2017). However, in reality, managers in health and social care have a multifaceted role that involves many different complex, unexpected, and competing daily activities (Berntson et al., 2012; Hales, 2005; Thylefors, 2016). Typically, several implementation efforts are underway at the same time. Thus, implementation-specific (domain-specific) leadership is not an easy task for managers. Nor is leading implementation an isolated task for managers. On the contrary, leading implementation is performed simultaneously with the many other challenging, often complex, tasks (e.g., budgeting and staffing) managers face on a daily basis. Given this situation, managers cannot easily separate leading implementation efforts from their other daily tasks, and may therefore not adapt their leadership according to each specific task.

An enormously beneficial tool for managers would be a generic model or system for how to lead implementations. For instance, a model or system that is adaptable to all tasks rather than having different models for implementation of EBP, another one for a new IT journal system, and yet another one for budget. Related to this idea is the recognition that implementation science should acknowledge that managers have numerous tasks to complete each day. It is unrealistic to assume that implementation leadership is the manager's main priority. Leading implementation is a task that must align with all other tasks that managers' face in practice.

7.2.2 Poor knowledge about leading implementation among line managers

Managers in this thesis did not appear to follow a systematic and structured implementation process. Previous research has established that managers may not have specific knowledge on

leading an implementation (Aarons et al., 2018; Guerrero et al., 2016; Sandström et al., 2011). Their lack of knowledge may be the result of their inadequate understanding of implementation as dynamic process and of the time required to achieve sustainability with any implementation. Implementation is a time-consuming process where informing and preparing employees is one of several important phases in the process. Although this process also requires follow-up and continuous employee support, among many other things, to increase the likelihood of implementation effectiveness (Fixsen et al., 2005; Moullin et al., 2017).

Managers' lack of implementation knowledge may be one explanation for their passive leadership in the initial implementation and full implementation phases. The resulting decline in focus in these later implementation phases is problematic because difficulties may occur during the implementation that are not acknowledged. Opportunities may be missed that would have led to adaptations in the implementation effort or case during the process to increase the likelihood of sustaining the implementation. Nevertheless, considering the various and complex tasks managers face daily, one might ask whether it is fair to expect that managers have implementation-specific knowledge or to assume that they prioritize leading implementation without organizational support in gaining knowledge and skills on specifically leading implementation.

Moreover, a shift in responsibilities has occurred in the line managerial role in both health and social care (Currie and Procter, 2005; Karlsson, 2006; Thylefors, 2016; von Knorring et al., 2016). The main focus has shifted from administrative tasks to a focus more on ensuring quality and continuously leading implementation. It may be that preparations for managers in the line managerial role have not caught up with this shift, which therefore may have decreased the likelihood of acquiring the necessary knowledge for leading implementation. It cannot be emphasized too strongly that managers need opportunities to increase their knowledge and skills on how to lead implementation effectively. These opportunities should be provided in the initial management training and/or preparations for all individuals entering into the managerial role.

7.2.3 Lack of support in the line managers' context

Contextual support is essential for leading successful implementation. The findings from this thesis confirms the importance of context in effective implementation that previous research has also emphasized (Cummings et al., 2008; Damschroder et al., 2009; Greenhalgh et al., 2004b; Sandström et al., 2011). The findings show that several factors influence managers' implementation leadership in both their inner context and outer context (Study II). Managers are clearly dependent on their context for effective implementation leadership where everything and everyone in their environment strongly influences how they can lead implementation. The four most crucial contextual factors highlighted in this thesis (Study I and Study II) were 1) managers' being excluded from decision-making processes, 2) limited support from closest and senior management, 3) working in smaller sized and rural

organizations', and lacking social interactions, and 4) clinical guidelines and steering documents on the national level being too broad.

7.2.3.1 Line managers' exclusion from decision-making processes, either by themselves or by others'

Two main reasons explain the managers' passivity in the exploration phase. The first reason is that some managers rarely sought new efforts themselves to improve the work at their unit. Instead, employees' suggestions influenced what efforts to implement. The second reason is that the closest manager and senior management did not always include the managers in the decision-making process of what to implement at their unit. Not involving managers in discussions about what efforts to implement may have negative consequences. For instance, by giving managers directions to implement a new effort that they are unconvinced agrees with their unit's goals or that managers do not completely understand, then they are unlikely to fully support the implementation (Damschroder et al., 2009; Meyers et al., 2012) or to adopt active leadership behaviours for that implementation (Dóci et al., 2015). Consistent with previous research, a top-down management approach often exists to what evidence-based methods are practiced, particularly in social care. Often senior managers decide which actions to take in the inner context, and government agencies prepare new policies and regulations in response to public concerns expressed in the outer context (Aarons et al., 2011; Dopson et al., 2002). Furthermore, in health and social care settings, budget restrictions exist that may discourage managers' implementation initiatives in practice (Greenhalgh et al., 2004b).

The managers' exclusion from the decision-making processes (with respect to evidence-based methods) suggests their passive role in the exploration phase may be involuntary rather than an active choice. It then seems that their passivity in this phase has another explanation than for the later phases of an implementation (i.e., initial implementation and full implementation phases). However, this explanation does not directly relate to the managers who mainly rely on their employees' implementation suggestions on what efforts to implement who disengages from this phase of the implementation process themselves.

Both explanations, whether bottom-up or top-down, may result in difficulties for managers in identifying and owning what they can improve in practice and how they can make the improvements (Currie and Procter, 2005). Considering this, it may not be surprising that the managers focused more on the installation phase (i.e., preparing for the implementation) than on the exploration phase. Nevertheless, non-recognition of the exploration phase and/or exclusion from this phase is problematic for managers. The result is that the managers do not consider the needs and goals of their organization, their employee's readiness for change, or how a particular implementation can be sustained in practice (Aarons et al., 2011; Fixsen et al., 2009; Moullin et al., 2017). These aspects have been described as essential for effective implementation. Ignoring the exploration phase of implementation may lead to implementing efforts that are unnecessary or unsuitable for the local context (Squires et al., 2011).

7.2.3.2 Lack of support from the closest manager and senior management

Support from the closest manager and senior management was not always provided to the managers. These actors have an important role in motivating and increasing managers' commitment by providing clear directions and by establishing that leading implementation is a prioritized task. Previous research has also commented on the importance of the senior management role (Birken et al., 2015; Hill et al., 2012; Nielsen and Randall, 2012; Øvretveit, 2005). For instance, nurse managers' have reported feeling disempowered to lead EBP implementation because they lacked support from their senior management (Wilkinson et al., 2011). Involvement and formal decisions taken by the closest manager and senior management provide explicit directions on how to work and provides social and emotional support to enable managers' implementation leadership. Thus, these actors are important for creating a culture where focusing on implementing new efforts and improving their organization is valued (Birken et al., 2015; Rycroft-Malone et al., 2002). This is particularly essential given that managers tackle many complex, and often unexpected, tasks in their daily work.

The issuance of clear directives throughout the organization that leading implementation efforts is a priority is crucial. The closest manager and senior management play an important role in this activity. For instance, if their directives focus mainly on prioritizing budgetary constraints and on staffing rather than on continuously leading implementation efforts intended to improve the unit, managers will probably maintain their original priorities even when they may prefer to re-think them. Moreover, having a senior management that does not indicate that leading implementation efforts to improve their unit is a priority may lead to managers failing to invest in opportunities to improve their knowledge and skills for leading implementation. This is problematic because managers often lack such knowledge and skills, as discussed in Section 7.2.2.

7.2.3.3 Smaller sized and rural organizations, and lack of social interactions

Findings in this thesis showed that the managers in the smaller and more rural local authorities described receiving little practical support from their context. Thus, structural characteristics appear to have an impact on how managers can lead implementation. This is in line with previous research that shows that larger and more mature hospitals are predictors of increased use of innovations (Damanpour, 1991), and that these may have more diversity in knowledge (Damschroder et al., 2009). However, even though structural characteristics, such as size, have shown significant associations with implementation, studies have produced mixed results. This outcome is likely because these characteristics interacted with other organizational factors (Damschroder et al., 2009).

The managers in the rural and smaller local authorities emphasized that they lacked support from R&D units and facilitators. Because of their size and geographic location, social interactions with other managers and networks were also limited. Such support is an important factor as was shown by the remarks of managers in local authorities who had this support.

These managers reported that social interactions had a positive impact on their implementation leadership. For instance, access to R&D units and facilitators was generally perceived as helpful in gaining support on how to lead implementation as well as in making sense of and critically appraising evidence to effectively implement EBP. The managers who had this type of support described a more structured process for implementation than the managers who lacked such support. This indicates that R&D units and facilitators may provide important support for managers throughout the implementation phases. The R&D units in Sweden have been shown to be facilitators that can narrow the gap between evidence and practice (Alexanderson et al., 2009). They accomplish this by introducing systematic documentation methods, evaluation workshops, among other measures.

In addition, in the local authorities where the managers can share their experiences with other managers in both formal and informal networks, the outcome can be very positive. These social interactions have been shown to improve the use of research and implementation processes in previous research (Estabrooks et al., 2003; Dopson et al., 2002; Greenhalgh et al., 2004a; Greenhalgh et al., 2004b). For instance, this support is important for having access to opportunities to share ideas and information, and to facilitate learning. Moreover, networking with other organizations that work according to EBP and support from colleagues and other professionals, this interaction can encourage and potentially increase the possibility of implementing EBP in the manager's own organization (Aarons et al., 2011; Meijers et al., 2006; Rycroft-Malone et al., 2004a). Thus, ensuring that managers have relatable, emotional, and practical support may be important as a motivator that continuously advance successful implementation in practice as well as in work according to EBP. Social interactions with other local authorities or with their R&D units help managers in many different ways.

7.2.3.4 Steering documents and clinical guidelines that are too broad for clear interpretation

Steering documents may be supportive by providing directives on how to work, by increasing managers' understanding of what efforts to implement, and by highlighting the negative consequences of implementing other efforts. However, findings showed that these directives were generally perceived as too broad for clear interpretation. As a result, the directives did not have a high impact on the managers' implementation leadership. The managers' thought that the steering documents and clinical guidelines rarely met the needs of their local context, and were not especially practical or helpful. In contrast, previous research has shown that such directives can increase an organization's motivation to implement new efforts in practice (Greenhalgh et al., 2004b). Perhaps a reason for this divergence is that clinical guidelines entail recommendations on a national level that makes it difficult to appraise what is useful for each managers' unit, or they do not have knowledge in how to most effectively use such clinical guidelines.

Government agencies in Sweden encourage health and social care organizations to continuously improve and up-date their practices according to the best available evidence (Ministry of Health and Social Affairs, 2018; Swedish Association of Local Authorities and Regions, 2015). How this should be accomplished and what the managers' role is to achieve this is not well explained. Although some efforts have been made to incorporate clinical guidelines from the NBWH, there are limited resources and training opportunities available at the national level that would support managers in leading implementation. If the national government expects organizations to work according to EBP and continuously lead implementations, the managers need more support. Clearly, more attention should be paid to how generic support (in the form of clinical practice guidelines and steering documents) is provided and can be best used to assist managers in their implementation efforts.

7.2.4 Lack of alignment between line managers and their employees

The lack of alignment between managers and their employees on how managers lead may be another reason for the discrepancy between what the literatures recommends a manager "should" do and what the manager does in practice. Although the findings in this thesis indicate that the employees, as well as the managers, perceived the managers as moderately active leaders, many managers seem to lack an awareness of their leadership. This lack of self-awareness was revealed by comparing the managers' ratings of their own leadership with the employees' ratings of the managers' leadership (i.e., many managers disagreed with their employees about their leadership). In a study on nurse managers' role in implementing EBP, managers' described an active role in empowering and facilitating nurses in this work (Wilkinson et al., 2011). However, their employees painted a different picture in which they described their manager as passive and being more "hands-off" in EBP implementation. This finding also underscores the importance of considering both managers' and employees' perspectives on leadership and the discrepancies that often exist between what managers believe they do and what employees truly observe. This is also in line with previous research that shows that such disagreement between managers and employees is common (Atwater et al., 1998; Fleenor et al., 2010; Mabe and West, 1982).

Such disagreements can be problematic in realizing implementation efforts since the manager may not be perceived by employees as active in fostering the implementation as they (the managers) think they are. For instance, previous research shows that managers who over-rate their leadership compared to ratings by the employees are associated with being leaders that are more passive and lack an understanding of the support their employees require (Bashshur et al., 2011; Berson and Sosik, 2007). The managers who under-rate their leadership are associated with being less likely to improve their performance (based on employee feedback) than managers who agree with their employees. The managers who under-rate their leadership may wish to improve their leadership behaviours, but their lack of self-confidence creates problems in setting unchallenging improvement goals (Atwater et al., 1998; Tekleab et al., 2008).

The implications of having managers disagreeing with their employees and being passive and setting unchallenging improvement goals may have negative effects on an implementation process and cause a negative implementation climate (Aarons et al., 2017a). It is therefore recommended that consideration should be given to the manager-employee agreement when studying leadership in general as well as when studying leadership during an implementation. The employees, who play an important role in how managers lead implementations, are the ultimate users of the implementation in practice. Thus, comparisons of managers' and employees' perspectives on transformational leadership may be especially important. The reason is that managers tend to rate themselves higher than employees on these leadership behaviours (Lee and Carpenter, 2017). Because the aim of transformational leadership behaviours are to influence and inspire employees in various ways, which means that it focuses on the social exchange between managers and their employees, considering manager-employee agreement is advisable.

Measuring leadership from the managers' and the employees' perspective and to provide continuous feedback to managers on their leadership is essential if they are to improve how they lead. Nevertheless, although studies on self-other agreement show increasing support for the importance of agreement for positive organizational outcomes (Atwater et al., 2005; Fleenor et al., 2010; Ostroff et al., 2004), studies in this field have also produced mixed results. We currently lack a complete picture of this research area and there is still much that is unknown about the effects of self-other agreement related to leadership. This calls for more research on this topic.

7.3 HOW LINE MANAGERS' IMPLEMENTATION LEADERSHIP CAN BE SUPPORTED

Based on the findings in this thesis and the challenges managers may face in leading implementation, as discussed in Section 7.2, it is clear that managers need support in this process. This section discusses two key aspects that should be considered and a crucial contextual factor that may be particularly supportive to alleviate managers in leading implementation.

7.3.1 Consider interactions between and functions of contextual factors

A list of the contextual factors that can facilitate or hinder implementation processes could be helpful in understanding the managers' chance of leading a successful implementation. However, the support that contextual factors provide managers is complicated and is often difficult to understand, partly because the health and social care settings in which the managers operate are so complex. Each influential contextual factor may operate in numerous ways. Furthermore, the contextual factors are *dependent on and interact with each other*, *on the managers' specific context,* and *on the managers as individuals*.

One finding from this thesis is that although support was sometimes "available", it did not always have an impact on the managers (Study II). A reason may be that an *interaction* between contextual factors was often needed to lead to a positive impact in practice. For instance, one cannot take for granted that support from the closest manager and senior management will always be helpful and will have a positive influence on their implementation leadership. If other important factors in the managers' context are unavailable or lacking, such as employees who are unprepared for the change or a system is lacking for follow-up implementations, then the senior management support may not have an impact. Moreover, more time and more funding did not have an impact on the managers' implementation leadership in this thesis when senior management was unsupportive. Similarly, opportunities for funding, which were perceived as having a high impact from the outer context, did not have an impact on the managers' implementation leadership when senior management did not prioritize this work. That contextual factors often have multiple and complex interactions is suggested in several research studies (Glasgow and Chambers, 2012; Greenhalgh et al., 2004b; Moullin et al., 2017; Jacobs et al., 2010). However, to the author's knowledge, most research seem to argue the importance of context, although there is a lack of research further analysing how various factors interact.

In a similar, but differing way, findings show that engagement by the closest manager and senior management had a high impact on many managers' implementation leadership when it was provided. However, when managers received this type of practical and emotional support from another actor in their context (e.g., a R&D facilitator or unit) they did not miss this support (i.e., the lack of senior management support had no impact) compared to those who did not have this support from another actor (i.e., lack of senior management support resulted in a negative impact for them). This suggests that *certain factors* (e.g., senior management support) *may be modified by another moderating factor* (e.g., a R&D unit facilitator). This is consistent with Fixsen et al. (2005) who suggest that interactive drivers of implementation (broadly categorized into competency, organization and leadership) can compensate for one another. A strength in one driver can overcome the weakness in other drivers. Previous research has identified this complex and interrelated mix of factors in investigations of influential factors on implementation fidelity (Hasson et al., 2012).

Moreover, one type of support offered may be redundant if the underlying function of that factor (e.g., education, training, or incentivisation) already exists in the managers' context by means of another factor or actor. When offering support to managers in leading implementation it is therefore important to think in terms of what *the function of a factor* is (i.e., the underlying mechanism) and the existing support in the local context. An approach to studying mechanisms of context is to investigate how and why contextual factors influence implementation (Michie et al., 2014). Michie et al. (2014) describe this as studying functions of the different factors. Analysing functions may be essential because factors that are important may differ depending on, for instance, existing knowledge and motivation as well as the implementation effort. The authors conducted a comprehensive categorization of interventions by targeting individual behaviour change and by identifying the primary functions of these types of interventions. They

describe them as intervention functions, which are the means to change a specific targeted behaviour (Michie et al., 2011). Intervention functions represent one of three aspects of the Behaviour Change Wheel (BCW) – a framework that aims to help us understand how to successfully achieve changes in behaviour (Michie et al., 2014). According to this perspective, interventions can have nine functions: education, persuasion, incentivisation, coercion, training, restriction, environmental restructuring, modelling, and enablement. Moreover, these functions can operate in different ways. Educational activities, for example, can have a function of increasing knowledge as well as to remind or motivate implementation leadership. The implication of this analysis is that one type of support offered may have a different impact depending on the managers' context.

Taken together, this reasoning indicates that support for managers should be provided according to what fits their local context and their individual circumstances. No generic support on how to lead implementation can be provided because one type of support may be crucial for one manager but not for another because that type of support is already provided by a different actor. Alternatively, because the function of that support is already present in the managers' context as provided by another factor. Thus, instead of bombarding managers with, for instance, clinical guidelines that they "should" follow and should squeeze into their daily practice, when in fact they may require a different type of support or may be lacking in support from their inner context meaning that they cannot make use of the clinical guidelines. This idea calls for more thorough analyses of managers' current situations (e.g., missing support or existing support) before support activities are introduced in practice.

7.3.2 Measure and provide feedback on line managers' implementation leadership: From the managers' and employees' perspectives

Another important aspect that can support managers' is to continuously measure, follow-up and provide feedback on how managers' lead implementation processes. In this, the iLead scale can be used. The iLead scale was created (Study IV) to capture the "what" and the "how" of implementation leadership behaviours according to both the active and passive leadership behaviours in the FRLM. This scale showed good psychometric properties and thus is able to measure implementation-specific leadership behaviours related to effective implementation. For instance, the iLead scale captures "what" actions managers perform, such as addressing individual concerns and being supportive by sharing important information. Moreover, the scale captures "how" actions are performed. For example, the scale measures the extent to which managers' leadership inspires and motivates their employees.

The iLead scale is particularly useful for measuring implementation leadership because it retains the FRLM factor structure. This factor structure was not retained in a previously used implementation leadership scale (i.e., ILS) (Aarons et al., 2014a). The FRLM factor structure is important for increasing our knowledge of bridging implementation science and leadership research and for capturing how managers lead. Moreover, an advantage of the iLead scale is

that it captures passive implementation leadership (e.g., waiting to intervene until problems have occurred) in addition to active implementation leadership. Thus, the iLead scale differs from the ILS, which only captures active implementation leadership (Aarons et al., 2014a)

The ability to measure passive leadership behaviours is an important addition to implementation science since most research on leadership has, to date, focused more on active leadership behaviours (Skogstad et al., 2007). The leadership research in relation to implementation is no different (Aarons et al., 2014a), despite the fact that managers are capable of making or breaking an implementation. Managers' passive leadership can have negative individual and organizational outcomes (Bass et al., 2003; Kelloway et al., 2006; Skogstad et al., 2007). However, passive implementation leadership was not found to be significantly related to the implementation climate in this thesis, although a slight negative correlation could be observed. This calls for further investigation into the possible negative effects that passive implementation leadership behaviours can have on implementation processes. Furthermore, capturing passive behaviours may help in the avoidance of such ineffective behaviours.

Continuously measuring leadership behaviours allows managers to gain insight and self-awareness on which behaviours to develop that can foster a positive implementation climate. Moreover, these measurements can be useful in identifying which leadership behaviours managers should avoid that have a negative influence on employees. Thus, the iLead scale may be used to measure the extent to which managers support an implementation effort. This may also facilitate the development of the managers' knowledge and skills (Atwater et al., 2005; Fleenor et al., 2010).

When assessing how managers lead implementation, it is important to consider both managers' self-reports and employees' perspectives on their managers' leadership. This is important since such dual reporting provides a clearer picture of which leadership behaviours the manager needs to retain, develop or abandon. Moreover, employees have to experience their managers' leadership in order for it to have an influence on them. Their perceptions of managerial support in relation to an implementation are vital if the managers' implementation leadership is to have any impact in practice.

7.3.3 Offer training on implementation leadership

Given the difficulties that managers may face when leading implementation addressed in this thesis it is argued that on an overall level, managers especially need support in improving their knowledge and skills about implementation leadership. This includes increased knowledge and skills on how to strategically plan for the implementation process and on which leadership behaviours may be most effective. Leadership interventions and other educational activities have been shown to improve leadership behaviours in general (Day et al., 2014; Cummings et al., 2008; Lacerenza et al., 2017; Tabak et al., 2017). However, leadership interventions that train managers in implementation-specific behaviours may be required so that managers can acquire knowledge on how to lead implementations effectively. One reason is that while many

managers seem to know how to lead in general, they may not know how to lead an implementation successfully or know which leadership behaviours are most effective. Implementation-specific leadership interventions are especially important because of the lack of emphasis on training managers in leading implementation in the more generic leadership courses offered to managers in health and social care in Sweden (The Swedish Agency for Health and Care Services Analysis, 2017).

This thesis does not address or evaluate the effects of a specific implementation-specific leadership intervention. The thesis uses data collected from the iLead intervention to answer the research questions posed in Study III and Study IV. Nevertheless, previous research has found that leadership interventions focusing on increasing managers implementation leadership behaviours based on the FRLM behaviours (or behaviours resembling them) increased understanding and knowledge about leading implementation overall (i.e., for any implementation case) (Richter et al., 2018), and more specific evidence-based methods (Gifford et al., 2013) and EBP (Aarons et al., 2015). For instance, findings on the effects of the iLead intervention show that it supports a concrete mind-set on how to lead an implementation process (Richter et al., 2018). Therefore, it seems advisable that organizations consider offering such interventions to their managers in an effort to decrease the number of failed implementation efforts in the health and social care setting and to aid in narrowing the evidence-practice gap.

In addition to increasing managers' knowledge and skills, the findings in this thesis show that manager-employee agreement may improve after managers' participation in the iLead intervention (Study III). In this study, the majority of managers agreed on the leadership ratings immediately after the intervention. By comparison, in the evaluation before the iLead intervention, the majority disagreed. The agreement, however, decreased when measured at the six-month follow-up. Nevertheless, more managers agreed after the intervention than before the intervention. Thus, training managers in implementation leadership based on the FRLM can increase their knowledge and skills on how to lead an implementation and result in managers' and employee' agreeing more on the managers' leadership. Such knowledge and skills are needed because their use by managers connects them more closely to how their employees perceive the managers' leadership.

7.4 NO ONE-SIZE FITS ALL WHEN LEADING IMPLEMENTATION

In this thesis, the content (i.e., the implementation effort or case) differed in the studies, where the focus included EBP as well as different implementation cases identified as important by the managers themselves. It should be acknowledged that implementing a complex process such as EBP, which involves the organization as a whole, may differ from implementing an effort identified by the managers themselves as important. However, the *main foundational aspects of leading implementation,* according to implementation science and leadership research (e.g., considering implementation as a structured process with different phases that

may require different actions and an active and engaging leader), may be the same no matter what is being implemented or where an implementation occurs.

Nonetheless, it is necessary to remember that what needs to be considered in all implementation phases on a detailed level, and how a manager leads an implementation, *depends on what is being implemented* and differs *depending on the local context.* Thus, the specific active leadership behaviours needed depend on the specific implementation effort and on the context. As such, a specific focus on role modelling and motivation may be appropriate for one implementation effort where managers' sense there is low readiness for change. By contrast, another implementation effort may require managers to focus more on coaching and educating their employees.

It is evident that managers need support in leading implementation based on the findings in this thesis. However, the type of support managers need depends on several conditions. These conditions include whether certain factors are present or absent in the *specific local context,* and the positive impact of factors is typically *dependent on the interactions* between them, and on *the individual manager*. Thus, it is essential to emphasize that no one-size-fits-all exists in leading implementation processes. Nevertheless, as this thesis concludes, certain foundational aspects exist that should always be considered to increase the likelihood of an effective implementation.

Although this chapter takes an overall approach to the findings in this thesis, it should be acknowledged that the four studies were conducted in two different public sector contexts: health care and social care with different data collection methods, which might limit the ability to compare the results across the four studies included in this thesis. It is recognized that health and social care settings have dissimilarities. For example, on an overall level, health care is associated with the treatment of disease whereas social care is related to the assistance of daily living. Moreover, managers in health care operate in professional bureaucracies where they are highly influenced by their employees, such as doctors and nurses that generally have more work autonomy and higher education than professionals in social care, especially in older people care (Currie and Procter, 2005). However, these settings also have similarities. For instance, both sectors are self-governing and experience similar bureaucratic processes. In addition, professionals in both these settings work towards providing care to support patients and clients, and managers in both these settings are facing similar challenges to effectively implement new efforts to ensure that the best possible care is provided. Moreover, many of the managers have similar complex tasks that they perform on a daily basis and are responsible for implementing new efforts in practice (Thylefors, 2016).

7.5 METHODOLOGICAL CONSIDERATIONS

Different research methodologies were used in the four studies in this thesis. Their analyses were conducted in various ways that were intended to achieve the specific aims of the individual studies. Therefore, different decisions were taken in the four studies as the research

progressed. These decisions influence the internal and external validity of the results for each study. The thesis also used frameworks from implementation science (Phases of an implementation and the CFIR) and the leadership research fields (FRLM). Although a strength of the thesis, the use of these frameworks also had certain limitations, which are also discussed.

7.5.1 Considerations relating to the qualitative data methods (Study I and Study II)

The trustworthiness of Study I and Study II is discussed in terms of how the findings of these qualitative studies are credible, confirmable, dependable and transferable (Lincoln and Guba, 1985). The methodological aspects of the conceptual frameworks used in these studies are also discussed in this section.

7.5.1.1 Credibility

Credibility refers to the degree that research findings present a trustworthy representation of the data (Lincoln and Guba, 1985). This mainly requires conducting the research in a way that enhances and demonstrates the credibility and demonstrates this in the research study. For Study I and Study II, purposive sampling (Patton, 2015) was used because variation in the managers' experiences and perspectives related to leading implementation of EBP was sought. Interviews were conducted with managers who represented different local authorities in different geographic locations (both rural and urban areas) of different population sizes, with different experiences with EBP, and with work experiences in diverse settings in the social care setting (data triangulation in terms of space) (Korstjens and Moser, 2018). This selection of respondents led to rich descriptions with different perspectives on the same phenomena. In addition, the managers had the opportunity to review and comment on the findings in Study I and Study II before publication (respondent validation). None of the managers had any objection to the interpretation of the results.

When collecting interview data in qualitative research, the interviewer is the main instrument (Kvale, 2008). The first author of Study I and Study II (i.e., the doctoral candidate) participated in and conducted the majority of the interviews for these studies. Because individuals have their own personal experiences and viewpoints, it was essential to be reflective of one's own background and experiences when conducting the interviews and, especially, to consider if this information may influence the interviews and their analyses. The analysis procedure for these studies, which was therefore reflective, was a reiterative process with numerous discussions among the author and the studies' co-authors related to the interpretations, coding, and thematization of the data (investigator triangulation) (Korstjens and Moser, 2018).

7.5.1.2 Confirmability

Confirmability refers to the neutrality of the research findings (Lincoln and Guba, 1985). That is, whether the findings represent the experiences and perspectives of the informants and not the biased opinions and interpretations of the researcher. To assure confirmability, several researchers participated in both the design of the studies and in the analysis procedures. The goal was to ensure that the interpretations were grounded in the data by fostering a reflexive dialogue. The different steps of the research process, from selecting local authorities and managers to the analysis procedures, were contemporaneously documented throughout the process (an audit trail was created). Both Study I and Study II included respondent quotations that reflected various aspects of the findings. None of the researchers had previous work experience in the social care setting. Therefore, they were unbiased by their personal experiences when interpreting the transcripts. The researchers followed the process of reflexivity as they discussed the research data (Korstjens and Moser, 2018).

7.5.1.3 Dependability

Dependability refers to the replication of a study by other researchers in a different setting and to the stability of findings over time (Lincoln and Guba, 1985). An audit trail was created using notes with descriptions about the selection of local authorities and the managers, the data collection methods, the interview notes, the analysis procedures, and notes from the project group's meetings while conducting Study I and Study II (Korstjens and Moser, 2018).

7.5.1.4 Transferability

Transferability concerns the degree to which the findings are applicable, and transferable to, other contexts or settings (Lincoln and Guba, 1985). In Study I and Study II, the author of this thesis strived to describe the context (i.e., the local authorities and the managers), which enable assessment of associations for these findings with other contexts. However, it is very difficult in qualitative research to determine if the findings are applicable to other settings and situations (Lincoln and Guba, 1985; Polit and Beck, 2010). Ultimately, the reader must assess whether the findings and conclusions are transferable to their setting (Korstjens and Moser, 2018).

7.5.1.5 Use of conceptual frameworks (Study I and Study II)

The frameworks used to analyse the data for Study I (Phases of implementation) and Study II (CFIR) were based on comprehensive literature searches and previous theories and frameworks. These frameworks were used in the last step of the data analysis to deductively analyse the interview data and to give the results a practical perspective, which is considered a strength in such studies. This procedure meant that the frameworks were not included from beginning of the data analysis, which has its advantages and disadvantages. An advantage is

that the data analysis was not biased towards the constructs included in the framework, which may have resulted in a closer link to the raw data. However, a disadvantage is that delaying the use of the CFIR framework until the last step in the analysis meant that certain factors that may have been important for the managers in leading implementation were overlooked (Kirk et al., 2016).

7.5.2 Considerations relating to the quantitative data methods (Study III and Study IV)

This section discusses the implications that some of the choices made in Study III and Study IV have on the internal validity of the quantitative findings.

7.5.2.1 Sample size (Study III and Study IV)

Eighteen managers were included in Study III, which can be considered a small sample. The focus in this study was to follow how the manager-employee agreement changed from before the iLead intervention, to immediately after to six months after the intervention. Therefore, only the managers who answered the questionnaire at these three time points were included in the analysis, which resulted in a smaller sample size than initially expected as several managers failed to meet this inclusion criterion. This result adversely influenced the statistical power of the study and therefore increased the likelihood of a Type II error (Banerjee et al., 2009). This limitation should be considered in the interpretation of the results.

In regards to the employees in Study III, the decision was to include employees who had answered (at least) one of the three questionnaires. Our decision was based on the facts that the data were collected over approximately one year and that generally a large staff turnover exists in public organizations, particularly in health care. We therefore did not want to exclude participants who had the opportunity to observe the managers' leadership even though they may have responded to only one questionnaire. It was important to use the scale with a representative sample of employees who worked closely with the managers and who could therefore observe their managers' leadership in action.

Another important methodological consideration concerned the employees who participated in Study III. The non-response analysis showed that the employees with lower education levels, and who had rated their managers' transformational and contingent reward behaviours lower before the iLead intervention, were less likely to participate at the two follow-up measurements. This suggests that these two factors may be potential confounders in this study. Thus, the results may not be representative of the overall group of employees in a unit (Hogan et al., 2004).

In Study IV, a number of employees did not answer the iLead scale before the iLead intervention. A moderate sample size was therefore used to validate the scale because we only

wanted a response from employees that could remember their manager implementing an explicit effort in the last six months. This is considered an important aspect because it is only when employees have a specific implementation in mind that they can then rate their managers' implementation leadership. Thus, it cannot be assumed that all employees have observed their managers' implementation leadership, or any leadership behaviour for that matter, and therefore this inclusion criteria was essential (Hunter et al., 2007). As the focus of the iLead scale was to capture implementation-specific leadership, the initial filter variable was crucial for ensuring that employees answered the questions in relation to a specific implementation and not just in relation to general leadership. This meant that they could make a reliable evaluation of their managers' leadership. Nevertheless, for the analyses, at least ten times more raters than questionnaire items were included, which suggests that the sample size was sufficient (Byrne, 2010).

7.5.2.2 Choice of methods and statistical analyses (Study III and Study IV)

The data for Study III and Study IV were collected using one method: web-based questionnaires distributed by e-mail. Self-administered questionnaires are one of the methods most used to capture leadership behaviours (Bryman, 2004; Stentz et al., 2012). Critics charge that this method, used alone, is limited as far as capturing the complex and socially constructed process that is leadership, especially in using self-reports (Podsakoff and Organ, 1986). Thus, the use of mixed methods research to capture leadership has been suggested, for instance combining survey data with observations or with interviews (Bryman, 2004; Stentz et al., 2012). The method was inapplicable for Study IV that aimed to validate the iLead scale. For Study III, we could have complemented our questionnaires with other qualitative methods (e.g., interviews or focus groups), which might have provided useful insights on the processes influencing manager-employee agreement. However, we evaluated and compared our questionnaire data that consisted of the managers' and the employees' perspectives on the managers' leadership behaviours. The data was collected at three intervals, which can be considered a strength of the study. It is recognized that the managers' self-reports of their leadership may have been influenced by their knowledge that they were participating in a leadership intervention. Similarly, the employees also knew that their managers were participants in the intervention, which could have influenced their ratings of their managers' leadership.

The collection of data using web-based questionnaires sent via work e-mails may be problematic because not all employees, particularly in health care, use their work e-mail on a regular basis. This may explain why a number of employees did not respond to the questionnaire. However, repeated attempts were made to contact the employees and to remind them of the questionnaires. The managers also informed the employees of the questionnaires.

Another limitation of Study III relating to the interpretation of the results is that there were no comparison groups. This means that causal attribution could not be applied (Paulus et al.,

2014). Furthermore, basic statistical methods were chosen when analysing manager-employee agreement in Study III. This decision was taken because of the small sample size after the exclusion of managers who participated in the iLead intervention but did not answer the questionnaire at all three measurements. Thus, the small sample size did not allow for more complex statistical analyses, such as polynomial regression, or non-parametric analyses testing for significant changes in the agreement categories over time. However, the focus of this study was to measure changes in manager-employee agreement over time rather than differences between predictor variables where the polynomial regression approach is useful (Shanock et al., 2010). In this study, the same assessment method was used for the managers and the employees' at all three time points to ensure comparisons of agreement and disagreement over time. The changes in the agreement categories over time should be relative and not be dependent of comparative methods.

The use of difference scores in Study III should also be acknowledged because of the criticism that this methodology is prone to methodological problems (Edwards, 2001; Edwards, 1994). For instance, using difference scores introduces a bias when the scores are used as predictors for an outcome variable. However, for this study, the difference scores were not used in the statistical analyses because of the known difficulties in using such scores. The purpose of using difference scores in this study was to group managers into agreement categories that described how agreement changed over time according to Yammarino and Atwater's model of self-perception accuracy (Yammarino and Atwater, 1993).

7.5.2.3 Validation and use of the FRLM factor structure in the iLead scale (Study IV)

In Study IV, a thorough examination of the validity of the iLead scale was conducted that showed sound psychometric properties. A strength is that the respondents, who represented different professional groups in the health care setting, included nurses, physicians, and physiotherapists, among others. A limitation is that the iLead scale has to date only been used in Sweden and has been back-translated to enable use internationally (House et al., 2013) (the Swedish version of the iLead scale is available in Appendix A). However, the iLead scale is based on previously validated scales that have been used internationally (Kelloway et al., 2006; Randall et al., 2009), which strengthens the support for its use. Nevertheless, cross-validation studies should be performed with the iLead scale that uses the implementation domain to test its reliability and validity in other countries and in other settings.

In assessing an instrument such as the iLead scale, validity tests are one of several psychometric aspects. A scale must also be repeatable (Bland and Altman, 2002; Polit and Beck, 2010). Because this thesis did not include any repeated measures, test-retest reliability was not evaluated. This therefore limits the possibility of examining the stability of the scale.

A literature search guided the decision to use the factor structure of the FRLM when creating the iLead scale. This model has been validated in a number of studies (Judge and Piccolo, 2004; Lowe and Gardner, 2000) and in different cultures and contexts (Den Hartog et al., 1999).

Therefore, the findings from the iLead scale can be used to relate to previous research based on the FRLM. Moreover, this scale contributes to the domain-specific leadership area by showing that such leadership can also be used for the implementation domain.

However, there are several limitations with using the FRLM factor structure. For instance, the intercorrelations between the transformational leadership sub-constructs were high, which has been identified as a limitation in previous studies (Hinkin and Tracey, 1999; van Knippenberg and Sitkin, 2013). In Study IV, however, a bi-factor model was conducted (see supplementary file in Study IV) that showed that although the sub-constructs were highly related, they still contributed unique aspects. Moreover, because the *active management-by-exception* construct was not included in the final scale, such leadership behaviours in relation to implementation are not captured by the iLead scale. The reason for excluding this construct was because the reliability of sub-scales aimed to capture this construct is problematic (Bass et al., 2003). In addition, active management-by-exception cannot be clearly distinguished as belonging to either the active or the passive leadership domain, which is in line with previous research (Garman et al., 2003).

Furthermore, the claim is that the FRLM factor structure is not "full-ranged" since it excludes important leadership behaviours (Antonakis and Atwater, 2002; Michel et al., 2011; Yukl, 1999), especially for regulatory behaviours. This may suggest that the iLead scale does not capture certain leadership behaviours that may be effective in implementation leadership related to task-oriented behaviours. However, in busy settings, such as health and social care, it is argued that there is a need for brief and practical scales (Glasgow and Riley, 2013). Using more scales that are not so lengthy may protect against common method variance by avoiding transient mood states, for instance, boredom and fatigue (Furr, 2013; Lindell and Whitney, 2001).

Two items represent the sub-scales "individualized consideration" and "contingent reward" in the iLead scale whereas the other sub-scales have at least three items. This was caused by the fact that items initially included in these sub-factors had to be removed because of low factor loadings (< .4) or low correlations (r= <.3) with items belonging to the matching sub-scale. Although there is no clear and absolute rule on how many items to include in a scale some argue that scales with more items increase reliability (Furr, 2013; Hinkin, 1998). Although this mostly refers to scales aimed to capture broad-defined constructs (e.g., psychological well-being) rather than for scales aiming to capture more narrow-defined constructs. There are also examples of scales with only one item that have shown good psychometric properties as well as scales with at least three items per sub-factor that have shown poor psychometric properties (Furr, 2013). A conclusion is that the optimal number of items for a scale depends.

7.5.3 Considerations relating to generalizability (Studies I – IV)

Generalizability refers to the degree to which the findings are relevant for other settings than the studied setting (Polit and Beck, 2010). The samples in the four studies of this thesis have a

Swedish context that might not directly translate directly to international contexts. Moreover, the setting for the studies differed. Study I and Study II were conducted in the social care setting whereas Study III and Study IV were conducted in the health care setting. These settings differ from many other settings in terms of the high percentage of female employees and the self-governance of the organizations that provide care for patients and clients. In addition, health and social care delivery differs between countries. Sweden, for example, spends a relatively larger amount of funds on these services than many other countries (Holosko et al., 2009; Robertson et al., 2014). Therefore, further research is needed to examine the generalizability of the findings in this thesis from the Swedish context to other countries (King and He, 2005). Nevertheless, it should be noted that the findings in this thesis, relating to the actions managers perform when leading implementation and on what contextual factors that influences their implementation leadership, are consistent with observations made in some international contexts (Damschroder et al., 2009; Gifford et al., 2007).

Considering the national perspective, the organizations in Study I and Study II represent seven different local authorities that provide a range of services that differ throughout Sweden, depending on local demands. Here, the generalizability to the Swedish context may be considered high because it is a national sample.

Study III and Study IV were set at various health care units that employ a variety of professions, although all of them belong to one regional health care authority. This specific regional health care authority represents an urban area in Sweden, and may therefore limit the generalizability of the results to other health care organizations. Because these organizations vary in how they are organized throughout Sweden, research is needed into whether the findings of these two studies correlate with the experiences in other regional authorities (King and He, 2005; Polit and Beck, 2010).

Most participants in the four studies, including managers and employees, were female. This is worth acknowledging because it has some implications for the generalizability of the results. However, the high percentage of females is representative of the Swedish health care context, both in regards to employees as well as line managers (Statistics Sweden, 2015). How the results can be generalized to international contexts has to, however, be further investigated.

7.6 IMPLICATIONS FOR PRACTICE AND RESEARCH

7.6.1 Practical implications

The findings in this thesis have practical implications for line managers, for actors in the managers' inner context (e.g., closest manager and senior management) and for actors in the managers' outer context (e.g., local and regional authorities and government agencies).

7.6.1.1 Recommendations for line managers

- *Leading implementation is a complex process that can be improved by structured thinking.* Being aware of the complexity and structure of implementation processes can be very useful to effectively lead implementation. This means that engaging in all phases of implementation is important. This includes exploring which interventions may improve care at a particular work setting to engage in continuous monitoring and follow-up on the processes so that problems are identified and the implementation can be adapted as needed. Simply informing employees of the implementation is probably insufficient for successful implementation.

- *Use a combination of relationship-based and regulatory leadership behaviours*. As a manager, it is essential to be engaged and active throughout the implementation process. For instance, focus on relationship-based behaviours that inspire and motivate employees, and be a role model. Paying attention to employees' needs, including employees in the implementation decision-making, providing support to employees in the implementation, and acknowledging employees' achievement of goals are also important implementation leadership behaviours. These behaviours will help create a positive climate that fosters the implementation. Which leadership behaviours to emphasize depends on the implementation phase, the specific implementation efforts, the organization's readiness for change, and the existing knowledge among the employees. Avoid being a passive leader (e.g., reacting only to mistakes or not reacting at all) because such passivity decreases the chance of implementation success.

- *Adapt leadership behaviours to each implementation effort*. Even though a manager's workday is a busy one with many complex, different and competing tasks, try to direct your leadership to each implementation effort. This is a more effective way of achieving specific results than using general (non-specific) leadership behaviours in implementation efforts.

- *Participate in training that improves implementation leadership.* One way to create structure and improve knowledge and skills on leading implementation is to partake in leadership training interventions that aim to develop these specific competencies. They also present a good opportunity for managers to meet colleagues and to share experiences because implementation leadership can be a lonely task for a manager. Leadership training interventions may also improve alignment between managers' and employees' perceptions of leadership, thereby increasing understandings between the two groups and perform leadership that is valued by the employees.

- *Seek feedback on your implementation leadership.* Continuous measurement of and feedback from employees on implementation leadership can be an important motivational tool because these insights are valuable in leader development. In addition, feedback offers the manager the opportunity to become more aligned with employees.

7.6.1.2 Recommendations for decision-makers on the organizational level (e.g., senior management), the local and regional authority level, and the national level

Various actors at different managerial levels in health and social care – organizational level, local and regional authority level, and national level – can have a large impact on the opportunities for line managers to perform effective implementation leadership. An essential task for these actors is therefore to create and offer support to these managers. In this, it is important to consider their needs and unique situations in order for the support to actually fulfil their needs. The following general recommendations are proposed.

- *Senior management can create a local infrastructure*. Managers' commitment to implementation leadership cannot be taken for granted. Senior management has an important task to engage managers, provide them with clear directions, and communicate to them that leading implementation is an organizational priority. Senior managers also have a unique opportunity to follow-up and to ask health and social care managers for results on the implementation of new efforts. In addition, by including managers in decision-making processes and giving them mandate to implement efforts they consider beneficial will maximize the chances of implementing efforts that align with the interests and needs of the patient and client groups at the local context. In this, managers will most probably become more motivated to improve their practice and to be more active and engaged in the implementation process.

- *Ensure training opportunities to increase knowledge on how to lead implementation.* Effective implementation leadership requires managers to have specific knowledge and skills. Appropriate training for managers should be provided. Such training may also increase managers' motivation to lead implementation processes. Training in implementation leadership can also be included in the more general managerial and leadership training programmes that are offered at many organizations.

- *Ensure alignment at all managerial levels*. Alignment of shared perceptions at all pertinent managerial and leadership levels – from the line manager to senior management to actors at the local, regional and national level – is crucial for the

creation of an environment conducive to implementation. Clarification of strategies and structures is important to avoid confusion about actors' expectations and responsibilities in leading implementation. This clarification will lead to an alignment of expectations in an organization where leading implementation is a priority. Setting priorities trickles down to employees and helps create a climate that fosters implementation of new and effective practices at the level where services are provided.

7.6.2 Research implications

The findings in this thesis lead to some recommendations for implementation researchers.

- *Use the iLead scale to measure active and passive implementation leadership based on leadership theory.* The findings in this thesis show that it is feasible to use a single scale to measure both effective and ineffective leadership behaviours, as noted in previous research (Kelloway et al., 2006). The iLead scale contributes to the research area as a brief and practical tool that can capture implementation leadership when the intention is to improve implementation processes in busy and real world settings such as health and social care. The iLead scale can also be used in implementation research.

- *Extend the leadership component in existing conceptual frameworks and models in implementation science.* Current descriptions of leadership in implementation science, which are rather obscure, do not provide the level of detail needed to be truly helpful in practice. Existing frameworks in implementation science usually do not represent a collective picture of leadership (i.e., the reciprocity of the process), and a recommendation is to include the employees' perspective on managers' leadership behaviours. A stronger emphasis on leading implementation is important because managers lead in complex organizations in which they manage many tasks simultaneously. Thus, it is a challenging, ongoing process that requires specific knowledge and skills if they are to be effective in implementation processes. Therefore, more can be included in such frameworks on, for instance, which type of leadership behaviours that may be effective can be helpful.

- *Move towards consideration of the complexity, interactions, and multiple influences of contextual factors in implementation research.* Rather than listing contextual factors that hinder or facilitate an implementation process, implementation science would benefit from adopting a sharper focus on the combined effects of factors as viewed from the managers' perspective.

7.7 FUTURE RESEARCH

Despite the contribution that this thesis has made to the implementation science field on further understanding line managers' leadership during implementation, many questions remain.

First, there is more to learn about how managers lead during the phases of an implementation process. Future researchers could investigate whether certain leadership behaviours are more important in the various phases than others, and whether useful guidance can be formulated that assists managers who lead implementation processes. Moreover, it would be interesting to explore employees views on how the manager leads during the implementation phases, especially as previous research has shown discrepancies between managers' and employees' perception of a manager's leadership.

Second, further research is needed to investigate the complex interactions between contextual factors related to implementation. For instance, how can these factors be studied in practice and in theory? How do these factors exert an influence, depending on the phases of an implementation process?

Third, the study on manager-employee agreement had a small sample size, therefore studies with larger samples are warranted. Such studies may tell us whether rating changes in manager-employee agreements over time are significant. In addition, researchers could use advanced statistical methods (e.g., polynomial regression) to investigate how manager-employee agreement for leadership relates to specific outcomes of leadership interventions. Future research could also study the antecedents to manager-employee agreements to further understand the disagreements between managers' and others' observed in many organizations.

Fourth, in this thesis manager-employee agreement was assessed using a general leadership scale with data collected during an implementation leadership intervention. Researchers might examine whether the manager-employee agreement would differ if the iLead scale were used to measure implementation-specific leadership. Such studies could also investigate if general leadership training produces the same results as implementation-specific leadership training.

Fifth, although the iLead scale showed good psychometric properties, researchers might test this scale in other settings and cultures (for external validity). They could also test the scale at different managerial levels.

Sixth, this thesis did not investigate any causal relationships between implementation-specific leadership and varying outcomes, which is a natural next step. More research is needed on how active implementation leadership behaviours relate to positive implementation outcomes, and how passive implementation leadership behaviours relate to negative implementation outcomes. Scant knowledge on these relationships is available in the implementation science research.

8 CONCLUSIONS

Line managers' described an ad hoc process when leading implementation rather than following a structured process. A conclusion, based on this finding, is that line managers could be more successful in leading implementations if they followed a more structured process that supports them in their various implementation efforts and in different situations. This is because almost all implementation efforts are complex tasks that requires rigorous planning and strategic, forward-looking thinking about the future.

To a moderate degree, the line managers in this thesis performed active leadership behaviours (i.e., transformational and contingent reward behaviours) that the literature describes as effective in implementation processes. This implies there was the potential to achieve improvements. There was also some improvement potential in terms of decreasing managers' use of ineffective (passive) behaviours. Thus, continuous measurement of implementation leadership in terms of active and passive leadership behaviours can be valuable to acquire insights into which behaviours managers should develop in order to increase the possibility of effective implementation and to foster a positive implementation climate. The iLead scale is a tool that can be used to make such measurements as it showed good psychometric properties in this thesis. The iLead scale is especially useful because it measures both passive and active implementation leadership behaviours. Having a scale that captures both effective and ineffective behaviours in one scale is a novel approach in the implementation science field.

The surrounding context influences line managers' ability to effectively lead implementation processes. Certain contextual factors may be particularly useful. These factors include support from the closest manager and from senior management, and training opportunities that support the development of the knowledge and skills managers need for implementation leadership. However, these contextual support factors, which are complex, are not applicable to all managers in all situations. It is therefore essential to identify the most effective support in a given managerial situation. This means understanding the local context, the manager as an individual, and the interactions between various contextual factors. Thus, there is no one-size-fits-all support for leading implementation. An analysis is needed in each situation that identifies the existing support as well as the support that is missing.

In summary, this thesis concludes that more attention, in theory and practice, should be paid to line managers because of their essential role in leading implementation processes. Furthermore, implementation science and practice should recognize that these managers have numerous other tasks and responsibilities – thus the time and effort spent on leading implementation is time and effort not spent elsewhere. Leading implementation therefore needs to align with all other managerial activities.

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11 APPENDIX

11.1 APPENDIX A – THE SWEDISH VERSION OF THE iLEAD SCALE

iLead skalan –

mätning av aktivt och passivt ledarskap vid implementering

Mosson, R., von Thiele Schwarz, U., Hasson, H., Lundmark, R. & Richter, A. (2018). How do iLead? Validation of a scale measuring active and passive implementation leadership in Swedish healthcare. *BMJ Open*, 8(6).

Denna skala används för att förstå hur ledarbeteenden påverkar en implementeringsprocess och mäter i vilken utsträckning en chef eller ledare är aktiv samt passiv vid en implementering. Det finns två versioner av denna skala: en för medarbetare att skatta sin chef och en version för chefer att skatta sig själva. *Det nya arbetssättet* i skalorna syftar till den specifika metod, riktlinje, eller dylikt som ni ska implementera på er enhet.

Version för medarbetare

Ange i vilken utsträckning du instämmer med följande påståenden.

iLead skalan	**1 = Stämmer inte alls**				**5 = Stämmer helt**
1. Aktivt implementeringsledarskap					
1a. Föredömliga beteenden					
Min närmaste chef…					
har visat beslutsamhet i att vidmakthålla det nya arbetssättet.	1	2	3	4	5
har pratat om sina värderingar och sin tilltro till varför det är viktigt att arbeta enligt det nya arbetssättet.	1	2	3	4	5
har arbetat aktivt för att införa det nya arbetssättet.	1	2	3	4	5
har uppmuntrat oss i arbetet med att införa det nya arbetssättet.	1	2	3	4	5
har agerat på ett sätt där han/hon tydligt visar sitt engagemang för att arbeta enligt det nya arbetssättet.	1	2	3	4	5
har varit positiv till införandet av det nya arbetssättet.	1	2	3	4	5
1b. Personlig omtanke					
Min närmaste chef…					
har tagit sig tid att visa mig hur jag kan arbeta enligt det nya arbetssättet.	1	2	3	4	5
har gett mig möjlighet att prata med honom/henne om vilka konsekvenser införandet av det nya arbetssättet får för mig.	1	2	3	4	5
1c. Intellektuell stimulering					
Min närmaste chef…					
har gjort mycket för att involvera oss vid införandet av det nya arbetssättet.	1	2	3	4	5
har uppmuntrat mig att komma med idéer och synpunkter kring det nya arbetssättet.	1	2	3	4	5
har delat med sig av allt vad han/hon vet om införandet av det nya arbetssättet.	1	2	3	4	5
1d. Villkorligt belönande					
Min närmaste chef…					
har visat att han/hon är nöjd när jag arbetar enligt det nya arbetssättet.	1	2	3	4	5
har uppmärksammat när vi på arbetsplatsen uppnått våra mål för att införa det nya arbetssättet.	1	2	3	4	5
2. Passivt ledarskap					
Min närmaste chef…					
har undvikit att agera tills stora problem med införandet av det nya arbetssättet redan har uppstått.	1	2	3	4	5
har väntat med att ingripa tills något redan gått fel med införandet av det nya arbetssättet.	1	2	3	4	5
har undvikit att fatta beslut som berör införandet av det nya arbetssättet.	1	2	3	4	5

Notera: *Det nya arbetssättet* syftar till den specifika metod, riktlinje, eller dylikt som ni ska implementera på er enhet.

Version för chefer

Ange i vilken utsträckning du instämmer med följande påståenden.

iLead skalan	**1 = Stämmer inte alls**				**5 = Stämmer helt**
1. Aktivt implementeringsledarskap					
1a. Föredömliga beteenden					
Jag som chef…					
har visat beslutsamhet i att vidmakthålla det nya arbetssättet.	1	2	3	4	5
har pratat om mina värderingar och min tilltro till varför det är viktigt att arbeta enligt det nya arbetssättet.	1	2	3	4	5
har arbetat aktivt för att införa det nya arbetssättet.	1	2	3	4	5
har uppmuntrat medarbetarna i arbetet med att införa det nya arbetssättet.	1	2	3	4	5
har agerat på ett sätt där jag tydligt visat mitt engagemang för att arbeta enligt det nya arbetssättet.	1	2	3	4	5
har varit positiv till införandet av det nya arbetssättet.	1	2	3	4	5
1b. Personlig omtanke					
Jag som chef…					
har tagit mig tid att visa mederabetarna hur de kan arbeta enligt det nya arbetssättet.	1	2	3	4	5
har gett mina medarbetare möjlighet att prata med mig om vilka konsekvenser införandet av det nya arbetssättet får för dem.	1	2	3	4	5
1c. Intellektuell stimulering					
Jag som chef…					
har gjort mycket för att involvera mina medarbetare vid införandet av det nya arbetssättet.	1	2	3	4	5
har uppmuntrat mina medarbetare att komma med idéer och synpunkter kring det nya arbetssättet.	1	2	3	4	5
har delat med mig av allt jag vet om införandet av det nya arbetssättet	1	2	3	4	5
1d. Villkorligt belönande					
Jag som chef…					
har visat att jag är nöjd när mina medarbetare arbetar enligt det nya arbetssättet.	1	2	3	4	5
har uppmärksammat när vi på arbetsplatsen uppnått våra mål för att införa det nya arbetssättet.	1	2	3	4	5
2. Passivt ledarskap					
Jag som chef…					
har undvikit att agera tills stora problem med införandet av det nya arbetssättet redan har uppstått.	1	2	3	4	5
har väntat med att ingripa tills något redan gått fel med införandet av det nya arbetssättet.	1	2	3	4	5
har undvikit att fatta beslut som berör införandet av det nya arbetssättet.	1	2	3	4	5

Notera: *Det nya arbetssättet* syftar till den specifika metod, riktlinje, eller dylikt som ni ska implementera på er enhet.