Incorporating psychological theory into the model of diffusion of innovations in healthcare



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Abstract

Evidence-based medicine calls for the use of current best evidence (together with individual clinical expertise). Guidelines aim to distil such evidence, yet clinical practice often fails to follow guidelines, for multiple reasons that are still not well understood. One under-researched aspect of the gap between guidelines and practice is psychology. My literature review found that the application of psychology to implementation research has been limited, and such research is not well integrated into wider implementation research. In this study, I sought to a) systematically apply psychological theory to understand the different psychological processes in the stages of adoption described in the diffusion of innovations model; b) collect and analyse data to explore and test this new, psychologically-enhanced model of guideline adoption; and c) improve and extend my model in the light of my empirical data.

Having populated my proposed framework with potentially relevant psychological theories based on my literature review, I undertook a first assessment of the validity and added value of this proposed theoretical framework through a case study of the implementation of guidance on universal offering of HIV testing in hospitals serving populations meeting the criteria for high HIV prevalence in the catchment population, interviewing 20 healthcare professionals across two sites. My findings broadly supported my proposed theoretical approach, and illustrated relevant psychological theories for different stages of adoption.

My findings support two provisional conclusions. First, that there is potential to improve the effectiveness of efforts to implement guidelines by augmenting the widely-used innovation adoption model with specific psychological theories. Second, that policymakers would do well to shift from viewing the health system as a *complicated* entity that policy can control and direct is misconceived; I recommend shifting to a perspective of the health system as a *complex* system, and rethinking the role of policy from that perspective.

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Chapter 1. Introduction and aims

1.1 Outline

This chapter sets out the subject of this research; using psychology to better understand the apparent gap between what 'should' be happening in healthcare, and what actually does. After setting out the issue and my perspective on it, I describe my overall research aims, and introduce how I address these aims in the rest of the thesis.

In this section I describe the background to my research and my choice of research aims. I describe the implementation gap, why it matters and why this topic was of interest to me as a policymaker with a psychological background. I illustrate some of the different ways in which the implementation gap is thought about, and the different ideas of the individual that they imply. I briefly review the ways in which psychology has been used to help address this issue, and why more research is needed to draw on psychology to better understand issues around change and implementation of good practice in health services.

1.2 What is the implementation gap?

Evidence-based medicine calls for the use of current best evidence (together with individual clinical expertise) to meet the needs of patients (Evidence-Based Medicine Working Group, 1992). Guidelines aim to distil such evidence, and are seen as a key mechanism for ensuring that healthcare is provided effectively and consistently (Grimshaw, Eccles, Lavis, Hill, & Squires, 2012; Grol, 2001). Yet clinical practice often fails to follow guidelines, a subject on which there has been much research but around

which much uncertainty remains (Cabana et al., 1999; Mickan, Burls, & Glasziou, 2011). This is the implementation gap; the gap between what 'should' be happening, according to the evidence, and what actually is.

These concepts of evidence-based medicine and the implementation gap are not as simple as they are sometimes made to appear. There are biases in the way that research evidence is funded and generated, such as a preponderance of bio-medical research and within that, funding from industry, and a focus on clinical trials whose samples frequently do not correspond to real-world practice (Walshe & Davies, 2013). Even where the evidence is clear, evidence-based medicine can be seen as formulaic, excluding individual clinical judgement and not fully taking account of individual patient preferences (Dopson, Locock, Gabbay, Ferlie, & Fitzgerald, 2005) or the real-world complexities of patients whose conditions do not neatly align with evidence from clinical trials (Greenhalgh, Howick, & Maskrey, 2014). Indeed, the increasing promotion of evidence-based medicine by policymakers and through formal health technology assessment institutions such as the National Institute for Health and Care Excellence (NICE) in the UK can be seen as a mechanism for control, shifting power from individual doctors to managers and policymakers (Dopson et al., 2005). The gap between what 'should' be happening and what clinicians actually do is therefore a contested one, which I explore further in Chapter Two. It reflects different paradigms of how health systems function and change, which I discuss in more detail below.

Nevertheless, even recognising these issues, a substantial gap remains between what the research literature suggests is best practice and what doctors (and other clinicians) actually do (Straus, Tetroe, & Graham, 2013). From a policy perspective, the need to

better understand this gap is greater than ever. Health systems are under increasing pressure from changing care needs, linked demographic ageing and the rising prevalence of chronic conditions; constant developments in medical technologies and techniques improve the scope of action, but bring additional costs; and funding for health systems has been hit by wider pressures on public finances that were exacerbated by the 2009 global financial crisis, in particular for the principally publicly-financed health systems of Europe (European Commission, 2015).

1.2.1 Researcher perspective

The policy challenges outlined above were the basis for my interest in this area. My professional background is as a policymaker principally in health issues, both at national level within the UK and at European level in the European Commission. As one of many policymakers wrestling with the challenges facing European health systems, I became increasingly aware of the difficulties of innovation and implementing change in practice in these complex systems, but increasingly felt that I lacked the tools to understand and explore them properly.

To help address this, I retrained in psychology (my original bachelor's degree being in philosophy) as a means of providing insight at the individual level to complement my systems-level perspective. As I explored this subject further, I realised that the lack of understanding about how change comes about in health systems was not just on my part, but reflected a more general issue, which I chose to explore further through this doctorate.

In sum, as a researcher I come from a dual perspective, with interest in and professional experience of policy challenges of health systems, alongside an academic perspective of psychology.

1.3 How to conceptualise the implementation gap?

Underlying the implementation gap are different conceptualisations of what that gap represents. From a psychological perspective, this can be described as 'framing'; a set of assumptions or beliefs about a concept that structure thinking about that concept (Colman, 2015). Morgan (2006) describes this in terms of metaphors, the use of which imply "a *way of thinking* and a *way of seeing* that pervade how we understand our world generally" (Morgan, 2006, p. 4, italics in original). To illustrate some of the different ways of conceptualising the implementation gap, I set out five such metaphors:

- the pipeline;
- the machine;
- the guild;
- the network; and,
- the market.

1.3.1 The pipeline

The principal metaphor for the implementation gap used by protagonists of evidence-based medicine is the pipeline (Dopson et al., 2005). This sees change as a linear process driven by a flow of information from initial research to summaries of evidence, disseminated through guidelines and implemented in practice (Cooksey, 2006). This

reflects a wider academic conceptualisation of research knowledge as flowing from academic effort into practice and policy. In this view, the role of the clinician is to stay up-to-date with current knowledge (generated by others) and to adapt their practice accordingly, not to go beyond the evidence.

1.3.2 The machine

Policymakers, in contrast, work within a bureaucratic paradigm: a fixed division of tasks, with hierarchical supervision and detailed rules for actions to be taken (Morgan, 2006). Applying this metaphor to health systems, guidelines and evidence take on the role of rules for action, and clinicians are framed as being at the bottom of a hierarchy; their role as seen through the lens of this metaphor is to act in accordance with the rules as set out, and to do so in a consistent and reliable way that is the same throughout the system. The system as a whole is seen as a machine – a complicated one, with many moving parts, but a machine which can be controlled and steered with the right tools.

1.3.3 The guild

Clinicians tend to see themselves as members of a particular profession, which itself defines the requirements for becoming and remaining a member of that profession, and which provides that expertise underpinned by values of integrity and trustworthiness (Eraut, 1994; Scott, 2014). This is rooted in the ethos of the medieval guilds, which were the origin of modern health professional associations and which asserted exclusive rights over knowledge related to their activities and its applications, accepted by society in exchange for standards of quality and expertise (Reeves,

Macmillan, & van Soeren, 2010). As with the guilds, clinicians expect a high degree of autonomy once they have passed the entry requirements for the profession, and expect change to be negotiated between members of the guild itself (Dopson et al., 2005; Greenhalgh, Macfarlane, & Maskrey, 2010).

1.3.4 The social network

The most cited academic model (Estabrooks et al., 2008) for understanding how new ideas, practices and objects spread is the diffusion of innovations model developed by Rogers (Rogers, 2003). Rogers describes these innovations as being communicated through a social system – albeit, in the case of health systems, a particularly complex one. Seen through this metaphor, individual clinicians are members of the social network of the healthcare system, both influencing others and influenced by them, making their own individual decisions about change in the context of organisational change decisions around them.

1.3.5 The market

In recent decades, the market model from economics has become a dominant paradigm in many areas (Le Grand, 2003). In this paradigm, individual clinicians take on the role of self-interested agents seeking to maximise their own situation, who can be steered towards change and improvement through incentives (positive or negative). In recent years, the use of incentives linked to targets for specific performance has become one of the principal tools through which central policymakers have sought to have the NHS behave in particular ways, such as through

the Quality and Outcomes Framework negotiated with general practitioners in 2003 (Ham, 2009).

These five metaphors illustrate different ways in which the uptake of guidelines can be seen, and some of the different perspectives of the different groups involved. Each of these different ways of thinking about change in health systems also implies different ideas about individual clinicians and how they view change, and the use of different tools to achieve it.

1.4 How psychology has been used to understand the individual in implementation science

As the scientific study of the mind and behaviour (Colman, 2015), psychology should be able to shed light on which of these different ideas of the individual clinician are most appropriate – and if many different ideas of the individual are relevant, to help better understand which ones and when. Yet, as I will describe in more detail in my literature review, psychology is surprisingly little used in understanding how health professionals change and adapt their professional practice (Grol, 1997).

Once a field has become reasonably established, textbooks of that field may be taken as representing an overview of accepted thought and practice in that area (Greyson & Johnson, 2015). Recent textbooks illustrate typical current use of psychology in research on addressing the implementation gap. Hutchinson and Estabrooks (2013) identify the principal psychological theories used in the field of knowledge translation in three groups:

- theories related to motivation: Bandura's social cognitive theory, and Ajzen's theory of planned behaviour;
- theories related to action: Gollwitzer's implementation intentions theory and behaviourist conditioning approaches, in particular operant conditioning;
- theories related to stages of change, in particular Prochaska and Di Clemente's transtheoretical model of change.

I will briefly summarise these theories in turn. A summary of psychological theories discussed in this thesis is also provided in Table 3-1, page 45.

Bandura's social cognitive theory sees the process of decision as being not only a matter of how desirable or useful the innovation or outcome is seen as being, but also a question of how far the individual feels able to make the necessary changes – their self-efficacy (Bandura, 1977, 1998). To take an example from health promotion (one of the major application areas of the theory), I might have an 'outcome expectancy' that by eating less I can reduce my weight; but I would also need to have a self-efficacy expectancy that I am able to control how much I eat if I am going to commit to making the change.

Building on this, the theory of planned behaviour proposes that behaviour is based on a combination of the attitude of the individual toward the behaviour, what they think relevant others think and do about the behaviour, and how effectively they feel able to carry it out if they wish (Ajzen, 1991). These factors affect the intention of the individual to act in a certain way; their perceived control over the behaviour then also affects how likely they are to turn that intention into action. This theory has been widely used in health promotion for patients and the public with some success (Ogden,

2007); and, as I will describe further in my literature review, this is also the principal psychological theory used in implementation science.

Gollwitzer's implementation intentions theory argues that forming a goal intention (eg: I will exercise more) is quite different from an implementation intention (eg: I will exercise on Tuesday after work), and that this works by shifting from requiring a conscious effort at the time of action to being able to rely on external cues to prompt action (Gollwitzer, 1999).

Instrumental learning (or operant conditioning) takes a behaviourist approach. This is the psychological approach that behaviour can be changed through reward or punishment; so if someone receives a reward for behaving in a particular way, they will behave that way more frequently (Colman, 2015). For example, if I give my child a biscuit every time they do their homework as soon as they get home, instrumental learning would suggest that they will tend to do so more frequently.

The most common 'stage' model of behaviour change is the transtheoretical model of change, seeing behaviour change as happening in five stages:

- precontemplation;
- contemplation;
- preparation;
- action;
- maintenance;

and proposing that interventions should be adapted to each stage (Prochaska & DiClemente, 1982). The example that this model was originally focused on was

stopping smoking, with interventions focused on raising awareness of issues around smoking in the earlier stages, for example, and focusing on practical implementation once the decision to act has been taken.

These theories represent only a small subset of even those psychological theories directly related to behaviour change. Michie, West, Campbell, Brown, and Gainforth (2014) identified 83 different behaviour change theories and leave other areas of psychological theories out entirely. In an effort to reduce this complexity to a manageable framework, Michie and colleagues developed a compendium of psychological constructs, reducing 128 constructs drawing on 33 different psychological theories down to a set of 12 domains (Michie et al., 2005). However, this approach has the weakness of losing the explanatory mechanisms of the theories concerned, as I discuss further in my literature review in Chapter Three.

Other textbooks paint a similar picture. Grol, Wensing, Bosch, Hulscher, and Eccles (2013) highlight the importance of cognitive processes in understanding physician behaviour as well as the social dimension of social cognitive theory (with the behaviour of clinicians affecting and being affected by the behaviour of others), as well as similar theories to Hutchinson and Estabrooks as described above. Coming from the perspective of health psychology in particular, Walker (2004) proposes a similar set of theories to Hutchinson and Estabrooks, though also including the self-regulatory model, which sees people as constantly monitoring their own performance in relation to their personal goals (Zimmerman, 2006). This self-regulatory process can be seen as a cycle of three phases:

- forethought phase: what goals we set ourselves and why;

- performance phase: the strategies we adopt to achieve them;
- self-reflection phase: how we evaluate our performance, and where we attribute responsibility (eg: internally or externally).

From this brief overview, the overall picture of the use of psychology for implementation research is of a narrow range of theories being drawn on, but a much wider range of potentially applicable psychological theories being mostly ignored. Moreover, even the theories that are used do not seem to be well integrated into wider understandings of change in health services, or the different paradigms of change in health services and thus different ideas of the individual, such as those that I describe above. I explore both these elements further in Chapter Three.

Other authors have also identified this gap in the use of psychology to help understand change and implementation of innovations in health services. Greenhalgh and colleagues reviewed and synthesised a wide range of literature from a number of disciplines (Greenhalgh, Robert, Bate, Macfarlane, & Kyriakidou, 2005). They found that though there was a large body of potentially relevant psychological literature, it had been "largely ignored" by wider research on diffusion of innovations systems (Greenhalgh et al., 2005, page 8). As it was outside the scope of their own review, they recommended that further secondary research be carried out to link that literature with wider models on diffusion of innovations within health. I will look further at how my research links to this framework in Chapter Two. More recently and from a psychological perspective, Vincent, Wearden and French (2015) have also identified a range of areas where psychology should be able to help improve health service delivery and patient safety, including behaviour change of healthcare staff and

improving collaboration within teams, but again argue that this engagement of psychology with wider implementation issues has not yet taken place and needs to be addressed.

1.5 Aim and research questions

As a policymaker with a background in psychology, I aimed to contribute to the knowledge base on effective implementation of guidelines through both theoretical analysis and empirical research. More specifically, I sought to improve the use of psychological theories in ensuring that high-quality, evidence-based guidelines (which reflect policy priorities and goals) are followed by clinicians where appropriate.

I had two specific research questions:

First, how can the use of psychological theory be optimised to help illuminate why skilled and dedicated healthcare professionals make choices that differ from evidence-based guidelines? (I consider issues relating to the content and reliability of guidelines themselves in Chapter Two.)

Second, what are the implications of a better psychological understanding of the process of individual guideline adoption for policy mechanisms such as law, guidelines, payments, qualifications, training and monitoring?

1.6 Overview of thesis

I address these research questions in this thesis as follows:

- in Chapter Two, I describe my epistemological approach ;

- in Chapter Three, I describe my literature review of the use of psychology to understand variation in the implementation of guidelines by clinicians;
- in Chapter Four, I propose a new theoretical model based on the above literature review for linking psychological theory to the wider framework for diffusion of innovations in healthcare;
- in Chapter Five, I describe my empirical exploration of this theoretical model, beginning with the aims and methods of this empirical investigation.

My empirical findings are described in four chapters:

- Chapter Six sets out my findings at the individual level;
- Chapter Seven turns to the organisational level;
- Chapter Eight looks at the systems and policy level; and
- Chapter Nine brings those findings together into an overall synthesis and relates these findings to my literature review (Chapter Three) and proposed model (Chapter Four).

Finally, in Chapter Ten, I suggest implications from my research for policy, practice and research.

Chapter 2. Epistemology and overall approach

In this chapter, I set out my epistemological and theoretical approach to addressing my research aims. In the first section, I consider the precise nature of the topic of my research; what exactly is the implementation gap? And in looking at the psychology of implementation, how should the thoughts and actions of individual health professionals be seen in relation to health systems overall? I argue that health professionals should be considered within their social, organisational and professional contexts, and thus I have taken an approach based on seeing health professionals as part of complex, multi-layered systems, drawing on systems theory to provide an epistemological approach for my research.

In the second half of this chapter, I set out the theoretical framework that I will use. Rather than creating my own multi-level model of health systems within which to look at health professionals, I will draw on existing approaches using diffusion of innovations theory.

2.1 The nature of the implementation gap

As I discussed in Chapter One, the gap that is observed and described in the literature between what 'should' be happening and what 'is' happening is a contested one.

First, what 'should' be happening. In Chapter One, I proposed five different metaphors for how the implementation gap can be thought of: the pipeline, the machine, the guild, the society and the market. As this illustrates, healthcare professionals (thinking

in terms of the guild metaphor) do not simply or unquestioningly accept 'guidelines' as being an unproblematic statement of how their professional practice should work (Dopson et al., 2005). Rather than being seen as a summary of evidence, guidelines can be perceived as an assertion of power by other actors – by the state, for example, and interpreted as pursuing goals of saving money rather than improving care (Fitzgerald & Dopson, 2005). More challengingly for researchers, this can also apply to academic evidence, which clinicians may perceive as undermining their professional autonomy; this has been an ongoing tension around the idea of evidence-based medicine (Dopson et al., 2005).

Sometimes the underlying evidence itself is also either not appropriate or not trusted to be so. Research in health faces particular challenges from the weighting of research funding towards biomedical research and in particular the relatively large proportion that is financed by private organisations, notably the various health industries (Walshe & Davies, 2013). This can result in a skewed evidence base – or at least, one that is perceived as skewed and treated with caution (Greenhalgh et al., 2014). Even research that is free of particular interests all too often produces evidence that does not provide clear guidance to practice, because of the ways that research is carried out; designing clinical trials to produce clear evidence about a single condition is likely to produce evidence that is limited in its applicability to real-life patients with multi-morbidity (Greenhalgh et al., 2014). Clinicians also develop their own knowledge based on experience, rather than formalised external 'evidence', which may lead them to different conclusions from the formal evidence (Fitzgerald & Dopson, 2005). This personal experience and tacit knowledge may or may not be a reliable basis for action.

I discuss some psychological theories that can shed light on use of this type of knowledge in Chapter Four.

Even the issue of what 'is' happening is not as straightforward as it may seem. An essential part of medicine is adapting wider knowledge about biology and treatments to the specific needs, values and situation of the individual patient, and sharing the process of decision-making with patients themselves (Greenhalgh et al., 2014). This means that some variation in practice is not only inevitable, but positively desirable. Yet the data typically used to measure the implementation gap does not reflect this. Rather than measuring 'did the clinician enable this individual patient to come to an informed decision that they are happy with', data typically measure the process of care ('was a certain clinical intervention provided?'). An example of this are the standardised measures used to determine how care is paid for, such as in the National Tariff Payment System for secondary care (Monitor, 2016). Yet there is also evidence that when patients are involved in decision-making, there are differences in the pattern of care choices made and how satisfied patients are with them (O'Connor, Llewellyn-Thomas, & Flood, 2004; Veroff, Marr, & Wennberg, 2013). So some of what may look like unwarranted variation when only the process of care is measured and compared with guidelines may in fact represent good practice in adapting care to the individual needs and preferences of a patient.

Returning to the implementation gap, how much of this gap between what guidelines suggest should be happening and what is measured as happening represents problematic care? It is impossible to provide a clear answer (Mercuri & Gafni, 2011). On the one hand, identical care for all patients is neither feasible nor desirable. On the

other hand, there does appear to be a broad consensus that the current extent of variation is too great (Wennberg, 2011), and there are clear examples of a genuine gap (Maskrey & Greenhalgh, 2009). My conclusion is that the implementation gap is a real problem, but has a much less clear and identified nature than simple comparisons of typical data about processes of care with guidelines suggests, and should be treated cautiously.

This raises questions about my own research; how far does the contested nature of this implementation gap affect efforts to better understand it? Clearly, the problematic nature of the implementation gap is something that should be reflected in my research into this topic, and I will return to this in the analysis of my empirical findings. Without anticipating those findings, though, in my empirical research, the merit of the guideline that I focused on went almost entirely uncontested by my participants, yet a clear gap between that guideline and practice remained. Whilst recognising the problematic nature of the implementation gap, therefore, my specific case study enabled me to explore issues relating to implementation when the contested nature of the implementation gap is not one of the primary factors, as I will describe below in my findings.

2.2 My approach to understanding the nature of healthcare and clinicians within it

The focus of psychology being how people think and act, my psychological perspective means concentrating on the thoughts and actions of individual clinicians. However,

those individual clinicians exist within wider social, professional, organisational and system contexts – and, of course, in interaction with their patients.

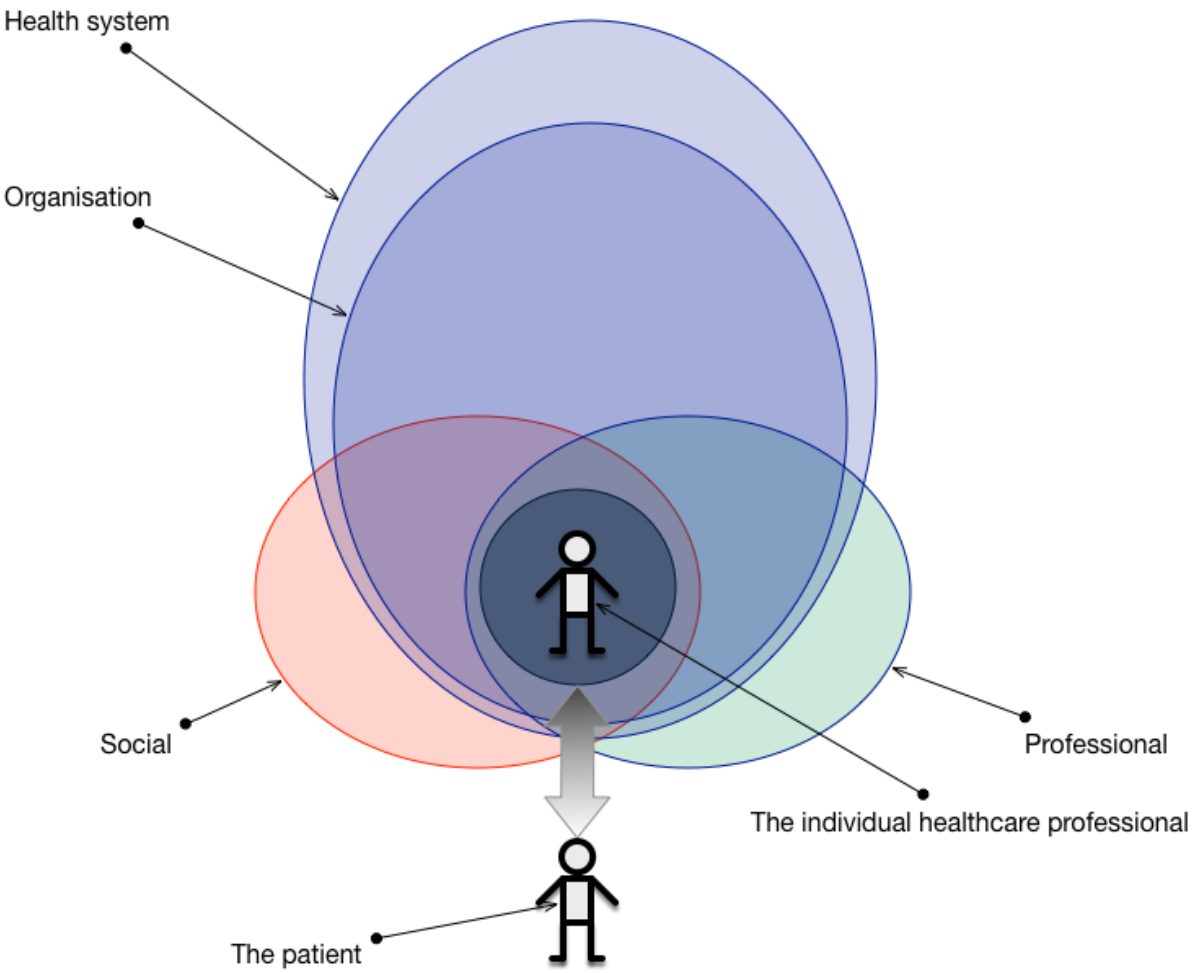


Figure 2-1: The individual healthcare professional in their social, professional and organisational contexts and relationships.

These contexts are clearly relevant; each influences the thoughts and actions of individual clinicians. For example, in assessing evidence for their practice, clinicians are strongly influenced by the views of their professional peers and by key information providers within the organisation and health system in which they work; and their view about the appropriateness of particular actions will change according to the patient in question (Maskrey & Greenhalgh, 2009). So even though my research is

focused on the individual level, it is essential to take account of where that individual healthcare professional is situated in these contexts and relationships.

However, these different levels – individual, social, organisational, system - require different types of explanations. Taking an approach that looks at these different levels thus requires careful consideration of what it means to explore these different levels, in research terms; what the nature of these different levels are and what kinds of things exist within them (in philosophical terms, their ontology); and what we can know about them and how this knowledge can be gained (in philosophical terms, epistemology) (Scott, 2014).

This layered approach is used within psychology, and illustrates how different epistemological approaches can be appropriate for different levels of ontology. Biological psychology draws on methods from biology to understand psychological questions; for example, how neurons are formed and interact, or the role played by different parts of the brain in thought and action, and the interdependence of the brain, the body and the wider social and physical context (Toates, 2006). Biological psychology thus draws on ontological and epistemological approaches rooted in biology, and uses similar investigative methodologies; and for understanding how neurons are formed and synapses connect, for example, such a natural-science approach seems entirely appropriate.

The psychological level focuses on cognition, and considers processes such as memory or perception. In doing so, cognitive psychology draws on hypothetical constructs such as the self, or working memory, or motivation. This is a different epistemological perspective; these hypothetical constructs are explanatory variables that are not

directly observable, but which we hypothesise as part of the process of explaining something that we can observe (Colman, 2015), and which we hope relate to something meaningful that can help to improve our understanding.

Social psychology focuses on the reciprocal relationship between the individual, others around them and their social context, looking at issues such as family life, social compliance, and group dynamics. This level of psychology is where epistemological debate has been strongest within the discipline, with a variety of approaches ranging from those drawing on cognitive psychological methods and typically experimental methods seeking to produce generalizable knowledge, to those drawing on sociological methods (and qualitative methods in particular) and situating both investigation and knowledge within particular social contexts (Hollway, 2007b). This tension emerged explicitly with the 'crisis' in social psychology beginning in the 1970s, with criticism of the predominantly laboratory-based approach of social psychology and a new emphasis on the importance of situating social psychology in the real world, taking account of specific contexts and individual experiences.

Of course, these different levels interact, as Engel argued in his biopsychosocial model (Engel, 1977); see Figure 2-2.

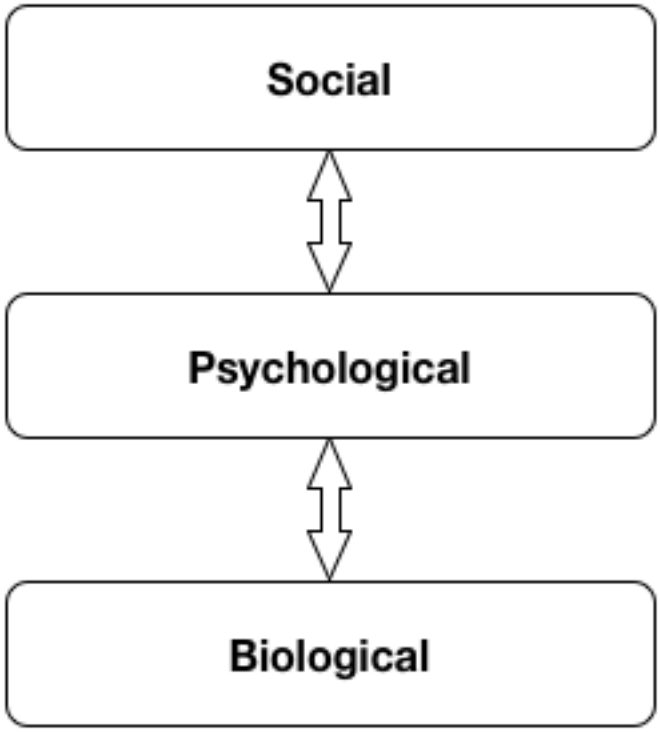


Figure 2-2: The biopsychosocial model, based on Engel (Engel, 1977).

Language is an illustration of this, combining the psychological (in providing the core structure for how we think, and psychological concepts of the structures of language) and the social (in its learning and its constant construction and reconstruction) (Green, 2010) – as well as, of course, linking back to the biological level in terms of the neural structures related to different aspects of language processing. Indeed, there is much research effort invested in trying to link between these different levels – for example, trying to identify parts of the central nervous system that correlate with psychological constructs, or understandings of social interactions in groups through psychological level constructs such as identity. However, seeking to relate these explanations at different levels does not require a single, shared view of ontology and epistemology, which indeed there is not. Rather, the overall biopsychosocial model provides a reference point for seeing these different levels of psychological study and the

relationships between them, with different approaches to study at different levels recognising the different nature of inquiry at these different levels, and the different types of knowledge that they are seeking to generate. This is an analogy for the kind of approach that I am seeking to situate my research in the psychological dimension of innovation adoption in health systems.

A more general way of describing this layered approach to psychology and the biopsychosocial model is a systems approach. Systems theory is a perspective, rather than a single, specific theory (Skyttner, 2001). It sees systems as "a set of interacting units of elements that form an integrated whole intended to perform some function" (Skyttner, 2001, page 53). There are some shared ideas across systems theory, such as inter-relationship and interdependence of the parts of a system; systems as multi-layered hierarchies, with systems containing smaller subsystems, for which different tools of analysis may be appropriate (such as different academic disciplines); and emergent properties, with different levels of the system both shaping and being shaped by smaller sub-systems and having their own properties, without those properties being analytically reducible to its subsystems.

Systems theory thus provides a framework for situating individuals within their teams, organisations and the health system as a whole. From this perspective, psychological processes can be seen as systems operating within each individual (and indeed, at multiple levels within individuals, as described in Engels' biopsychosocial model). Those individuals are themselves part of wider systems – organisations, social and professional networks, and the health system as a whole.

Seen in this way, my research into the psychology of why healthcare professionals make choices that differ from evidence-based guidelines will help to understand the individual level of the wider, multi-level health system. This does not mean that by better understanding individual psychological processes, it would be possible to reduce individual implementation to a linear, simple process. Rather, by better understanding these processes, my research will help to better understand the contribution of the individual level to the dynamics of the system as a whole.

2.3 Diffusion of innovations as a theoretical framework for health systems

In the previous section, I have set out my epistemological approach for my research. This provides a framework for exploring these issues, but does not provide any substantive explanation of them. I now turn to the substantive theoretical framework that I use for the wider context to the individual; diffusion of innovations.

Situating the psychological processes that I plan to research within a wider conceptualisation of the health system means that I should take into account interactions with other parts of the system. As developing such a wider framework for the whole health system is beyond the scope of my thesis, I will draw on existing research about change within the health system as a whole.

Estabrooks et al. (2008) carried out a bibliometric analysis of the knowledge utilization field, in order to map the development of the field and its intellectual structure, covering the period from 1945 to 2004. Their results are unambiguous; despite the rapid expansion and development of the field over this time, the field is dominated

throughout this period by the diffusion of innovations model proposed by Rogers (2003). I have therefore taken the diffusion of innovations model as the overall theoretical framework for understanding change and implementation of innovations. Based on extensive empirical work, Rogers set out a model of diffusion as "the process in which an innovation is communicated through certain channels over time among the members of a social system" (Rogers, 2003, page 5). I will briefly summarise each of these components.

An innovation in this sense is anything perceived as new by a potential adopter – such an innovation might be an idea, or a practice, or an object or item of technology. In the case of healthcare, this might mean an idea (such as multi-disciplinary teams for cancer care), or a practice (such as handwashing, or a particular treatment protocol), or an item of technology (such as a medicinal product). Considering these examples also highlights the complexity of what is an innovation; handwashing, for example, sounds simple, but might involve an idea (ensuring clean hands before any contact with patients), technology (eg: hand basins in appropriate locations), organisational processes (eg: altering processes and pathways to include this practice) and monitoring procedures.

Rogers identified five key characteristics of innovations, as perceived by potential adopters, that facilitate their adoption:

- relative advantage (compared to what is in place at the moment, and in the perception of the adopter – though in an organisational context, there may be more than one 'adopter', and thus different perceptions);

- compatibility (with the adopter's needs, experiences, values and available resources);
- complexity: how difficult is the innovation to understand and use;
- trialability: the degree to which an innovation may be experimented without fully adopting it;
- observability: how far the results of an innovation are visible to others.

Innovations are also not static. Frequently innovations are changed or otherwise 're-invented' locally. How far they lend themselves to such adaptation is also a factor affecting their uptake.

Based on extensive empirical work, Rogers demonstrated that different kinds of communication serve different purposes. While mass media can establish awareness of innovations, it is inter-personal communication that has more impact in forming and changing attitudes towards an innovation. The nature and structure of social networks is thus central in the spread of innovations. In a healthcare context, for example, mass media might include mainstream media, but also professional journals or communications from the wider NHS or Department of Health. Thus Rogers' model suggests that communicating the benefits of an innovation through these mass media channels is likely to be less effective than clinicians encountering other peers who have tried the innovation and adopted it.

Rogers saw adoption as going through five stages:

- knowledge: finding out about an innovation;
- persuasion: forming an attitude towards an innovation;

- decision: when an individual (or other deciding entity – in an organisational context, adoption might be up to the organisation) makes a choice to adopt (or reject) an innovation;
- implementation: putting the innovation into practice;
- confirmation: reinforcement of the decision to adopt and retain the innovation.

This five-stage model is focused on adoption by individuals, and was primarily based on studies of reasonably autonomous adoption at an individual level. Of course, in a professional context, this is often not the case; adoption decisions or other factors at an organisational level will of course also affect adoption. There is also debate about how far these stages are necessary or immutable. Empirically, there is support for the first three stages of the process in particular, with research able to identify distinct patterns of information flow and reported decision-making, for example (Rogers, 2003). The distinction between implementation and confirmation has proved harder to support empirically, although there is some evidence of a distinction between active implementation and when an innovation becomes routine, for example (Brewster et al., 2015).

Given that this model sees adoption of innovations as linked to communication between members of a social system, the structure of that social system becomes crucial. This may be actively shaped by actors within the network, including those who are actively seeking to promote (or to devalue) innovations. For professionals, this will also be affected by their position in relation to employers and other professional organisations.

There have been criticisms of the diffusion of innovations model, as Rogers acknowledges. One is the 'pro-innovation bias'; the assumption implicit in much diffusion of innovations research that the innovation should be disseminated, and that lack of implementation is problematic. As I discussed above in relation to the implementation gap, this is not necessarily the case. An innovation may not fit a particular person's circumstances, or their alternative may suit them fine, or the innovation may have other implications that are not apparent to those promoting it. Another is the tendency of the model to focus attention on those adopting or not a particular innovation and to problematize their individual decision, rather than to look at issues with the system itself. Nevertheless, the diffusion of innovations model remains widely used and extensively empirically supported since it was first put forward by Rogers in 1962.

How this general model can be applied to the specific topic of health systems was investigated through the systematic review by Greenhalgh and colleagues referred to in Chapter One (Greenhalgh et al., 2005). Their review affirmed the rigour and wide empirical evidence base for Rogers' model of diffusion of innovations. Their review covered a very wide range of literature from across many different domains. The authors identified no fewer than thirteen different major research traditions that were relevant to the topic: rural sociology, which was the basis for Rogers' diffusion of innovation model; medical sociology; communication studies; marketing and economics; development studies; health promotion; evidence-based medicine and guideline implementation; structural determinants of organisational innovativeness; studies of organisational process, context and culture; interorganisational studies;

knowledge-based approaches to innovation in organisations; narrative organisational studies; and complexity studies, itself derived from general systems theory.

Drawing on this range of literature, Greenhalgh and colleagues developed an integrated conceptual model for the diffusion of innovations within health service organisations which complemented Rogers' focus on interpersonal influence with organisational and wider contextual components – see Figure 2-3.

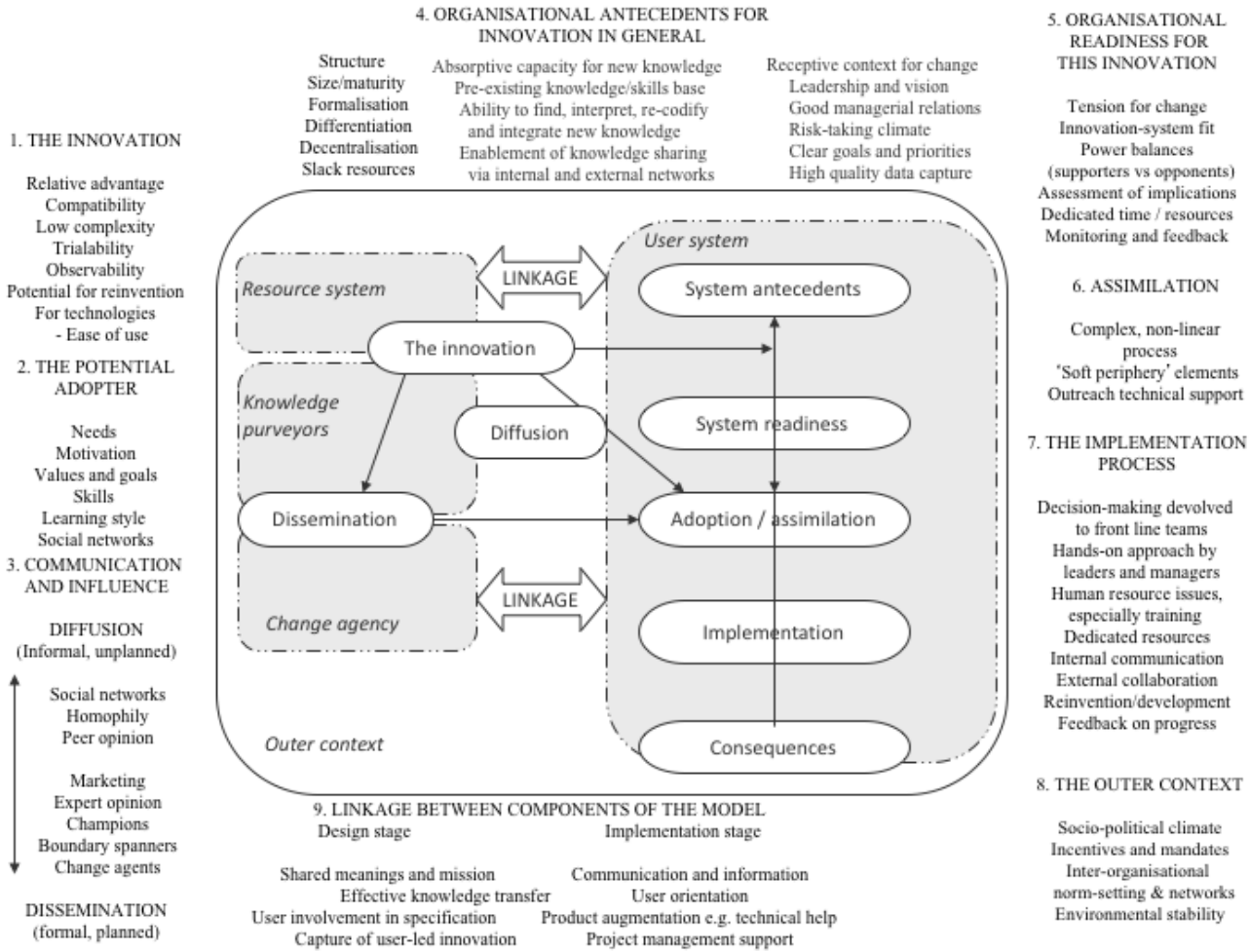


Figure 2-3: A conceptual model for the spread of innovations in health service delivery and organisation (Greenhalgh et al., 2005, page 201).

This is a relatively complex model, describing a wide range of processes and factors operating interactively. Given its complexity, it is not possible to use this model as providing a simple prediction about how a particular innovation might or might not be implemented in practice, and that is not its purpose, as the authors highlighted. Rather, this model provides a conceptual framework for considering and analysing relevant issues and specific cases.

A noteworthy omission is psychology, which the authors identified as relevant but outside the scope of their review:

> *"This evidence has been largely ignored by researchers studying the diffusion of innovations, and we did not cover it in this review because of the constraints of our project. Therefore, we have not made any recommendations on general psychological antecedents, but we strongly recommend that further secondary research be undertaken to link this literature with the findings presented here."(Greenhalgh et al., 2005, p. 8)*

For my own research, this model provides a good framework of systems relevant to adoption of particular practices within which I can situate my own exploration of the specifically psychological processes. As I describe above, those psychological processes will of course operate in interaction with the context in which the healthcare professional finds themselves; this model provides a framework on which I draw for understanding those wider influences. Thus, my research will address the specific recommendation by Greenhalgh and colleagues to link psychological research with this model.

2.4 Theories, frameworks, models; how different explanations relate to each other

What does it mean to link different types of explanation in this way? If I combine theories, does this produce a new theory, or something else?

There are many different ways of defining what a theory is. For example, the Oxford Dictionary of Sociology gives three different ways of defining what a theory is:

- a measureable or testable proposition about the world;
- a generalisation or classification of the world, whether looking at particular phenomena or the world more generally; or
- an explanation identifying causal mechanisms and processes which cannot be observed directly but can be seen through the effects that they have (2014).

These can also be linked to different epistemological perspectives. A natural science perspective would focus on the first type of definition of theory; an interpretivist perspective the second, and a realist the third.

The Oxford Dictionary of Psychology takes a similar approach to the third definition above; theory as explanation of what cannot be observed directly (Colman, 2015). This is logical enough, given the interest of psychology in processes of thought that of course cannot be observed directly. Psychologists work often with constructs; hypothetical concepts that cannot be observed directly (Coolican, 2009), such as self-esteem or perceived control over behaviour, as discussed above. For my purposes, therefore, I will take the third definition of the Oxford Dictionary of Sociology above; theory as an explanation identifying causal mechanisms and processes.

One theory might contain many elements, or even sub-theories. For example, the diffusion of innovations theory contains specific theories about the individual adoption process, influence of attributes of innovation on adoption; these meet my definition of theory, but are part of a wider theory, too. However, one might group theories together without fully specifying causal links between them. I would term this a framework; a framework creates an overall structure and might include different theories or constructs within that structure, but does not specify the causal relationships or processes between them.

The degree to which a relationship is specified is of course a question of judgement. For example, in the conceptual model above, Figure 2-3, concepts such as organisational readiness for the innovation are shown to relate to the adoption process. A model I will take as a description of structure (Furnham, 2005), which might thus be the structure of a framework or a theory, or indeed something else. But what exactly is the process through which the different elements of organisational readiness for innovation (such as power balances) affect specific patterns of adoption? Does this make the model a framework or a theory?

For the purposes of my research, drawing a fine line between a theory and a framework is not necessary. Taking the perspective of systems theory, each of these different components (whether theories or constructs) is a system, with different systems interacting with each other in different ways, of which our understanding is necessarily partial, given the emergent and unpredictable behaviour of these complex systems. The key issues are the extent to which such linkages are taken into account, and that relationships between the different parts are acknowledged and examined, or

whether the different parts are seen in isolation. In this thesis, though, I use the term theory specifically in the sense described above, and use the term framework for more general groupings of ideas or concepts that do not necessarily specify the linkages between them.

2.5 Conclusion

In this chapter I have set out the overall ontological and epistemological approach for my research. The nature of the implementation gap is itself problematic, but while it is more complex and nuanced than it may seem at first sight, there does appear to be a genuine issue concerning the gap between good practice and what actually happens in healthcare. Understanding the psychological component of this cannot be done in isolation, though, and thus I have sought a perspective that allows me to situate the psychological issues that are the focus of my research within a wider, multi-level understanding of health systems drawing on systems theory. Rather than inventing my own theoretical model for those wider contexts, I will draw on diffusion of innovations theory and specifically on the conceptual model proposed by Greenhalgh and colleagues in their systematic review of the diffusion of innovations in health service organisations.

This provides me with an epistemological, ontological and theoretical framework for my research. In the next chapter I will look at how psychology has been used so far to understand diffusion of innovations within health systems, and whether the gap identified by Greenhalgh and colleagues remains.

Chapter 3. Literature review

In this chapter, I describe my review of the literature concerning the use of psychology to understand the implementation of good practice in healthcare. My starting point was the lack of integration of psychology into implementation research identified by Greenhalgh and colleagues in 2005 and described in the previous chapters. I aimed to see how far that gap had been addressed by subsequent work, and how psychology had informed implementation research more generally. The methods required to identify the relevant literature proved to be more complex than I had envisaged; I describe how those methods evolved and how my adapted search strategy has been effective in identifying the relevant literature.

I have structured my findings around four strands of research, identified through my review of the literature and each drawing on psychology in a different way:

1. using individual psychological theories;
2. using multiple psychological theories, chosen according to the specific issues of the individual health professional concerned;
3. compiling a range of psychological constructs into a compendium;
4. integrating psychological constructs into wider frameworks for understanding implementation.

I argue that none of these adequately addresses the relative lack of use of psychology in implementation science, and discuss some issues around why this might be.

3.1 Context

Psychology should be relevant to understanding the individual level of adoption, by illuminating how individual clinicians think and act in relation to the adoption and non-adoption of innovations. The application of psychological theory to behaviour by health professionals has been emerging as an issue – not only through the call for further work on this topic made by Greenhalgh and colleagues, but also through specific attention to psychological theory as a key element of implementation science, as I described in Chapter One. Despite these individual examples, psychological theory remains little used in implementation research, as I will describe further below. This lack of integration of the psychological perspective represents a substantial gap in the literature in this area.

3.2 Aims

The aims of my literature review were:

- first, to assess how far the gap identified by Greenhalgh and colleagues in 2004 has been addressed in subsequent work by linking psychological theories with wider models of implementation in health services;
- second, more generally to identify how psychological theories have been used in implementation research to understand the adoption of new ideas, practices or objects within health systems.

3.3 Methods

This description of the methods used for the review describes not only my search strategy, but also how this changed over time. As the review proceeded, I adapted and extended my search strategy in response to the literature I was (and was not) finding in this area.

Initially, my search strategy was relatively simple; a systematic, protocol-based search of relevant electronic databases. I aimed to identify articles addressing four components of the aims described above: psychology, theory, diffusion of innovations and health services. For each of these four components, I drew on terminology used in review articles and taxonomies of keywords in databases to identify key words. For example, for psychology I searched for psychology in general, and also for cognitive psychology; social psychology; the psychology of expertise and expert performance; learning, development and change; professional behaviour; and organisational psychology. I searched academic databases selected to cover the different areas of potentially relevant literature:

- medical and health literature (PubMed and PubMed Central);
- psychological literature (PsycINFO);
- social science literature (Web of Science Social Science Citation Index);

adapting my search terms as necessary to fit the taxonomies of each database.

However, it became clear that this approach was not sufficient for the literature in this area. Not only did this search strategy identify very few articles, it also missed other literature that I knew to be relevant. In my own early exploration of the literature (undertaken when preparing my PhD application), I had already found some relevant material. When my

formal search strategy identified nearly none of this material, it suggested to me that this search strategy needed rethinking.

My initial tactic was to refine my protocol-based search. I worked with a specialist librarian to develop a more sensitive search strategy, including more potentially relevant terms. This refined search did generate a much larger set of initial papers. But it still did not identify much of the literature that I knew to be relevant, and yielded a very low number of useful papers relative to the total number of items identified. In more formal terms, it had both low recall and low precision (Boell & Cecez-Kecmanovic, 2014b). I concluded that a comprehensive literature review of this area could not be achieved through a protocol-based search of databases alone.

I began to read more widely and think differently about ways to search the literature. I came to realise that for an area of complex evidence with literature coming from many different fields and using different terminologies, a range of approaches was needed. Following Greenhalgh and Peacock (2005), I thus complemented my initial protocol-based search with other methods:

- citation tracking, or 'snowballing': starting from relevant literature, I followed up citations of interest, both backwards (identifying papers of potential interest from an existing citation) and forwards (to see how relevant theories and papers have been further developed) by using tools such as "Cited by" within Google Scholar;
- I reviewed psychology textbooks as constituting a reference of established and accepted perspectives within the discipline (Greyson & Johnson, 2015) for potentially relevant theories, or what Kuhn (1996) describes as normal science;

- I sought out opportunities to present and discuss my review of the literature and to get feedback from academic and professional colleagues, who suggested additional topics and texts and helped to refine my developing understanding of the field;
- I searched for psychological literature related to characteristics and processes derived from diffusion of innovations theory. Rogers proposes certain characteristics of adopters related to quicker or greater adoption of innovations, such as a more favourable attitude to risk and change (Rogers, 2003; see chapter 7 on innovativeness and adopter categories), as well as the five stages of adoption described in Chapter Two;
- I searched for new topics as they emerged from my empirical findings. For example, as my interviews suggested the importance of the department as a group in collectively forming attitudes towards innovations, I returned to my literature review to explore social cognition and decision-making in small groups.

Looking back, this process could be described as following a hermeneutic cycle (Boell & Cecez-Kecmanovic, 2014a); a literature review as a process of iterative critical engagement with a body of literature, with developing understanding leading to further exploration, identification of linkages and themes, development of a scholarly argument and a position in relation to existing work. This is quite different from the straightforward search following a predefined protocol identifying a clearly defined body of studies that I imagined at the start. This understanding itself was only something that emerged during the process of the review, though, rather than being my starting point.

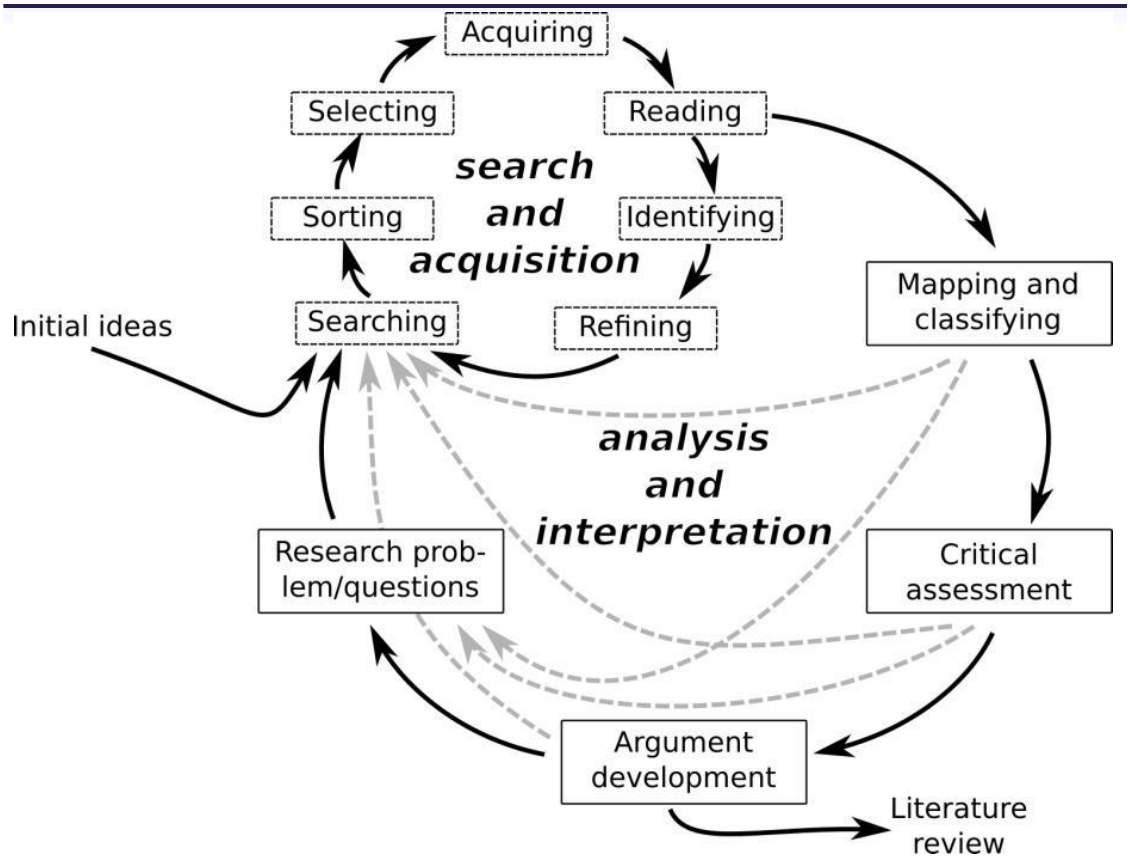


Figure 3-1: A hermeneutic framework for the literature review process consisting of two major hermeneutic circles (Boell & Cecez-Kecmanovic, 2014a, p. 264).

Given this approach, how can I be confident that this literature review is adequate in its coverage? My search was looking for theoretical saturation; assessing how far each new item of data is adding information relevant to the theoretical perspective being investigated, and stopping when new data items are not providing significant new information (Patton, 2015). As new areas of literature emerged, I sought to continue searching until each new paper and its references were not providing new information about psychological theories related to implementation in comparison to the information that had already emerged from my review of the literature. Although there are constantly new papers emerging that add information about specific new studies, my review has

reached a stage where these appear not to be adding to my coverage of the psychological theories in this area. On that basis, I have concluded that my literature review provides systematic coverage of current psychological theories in this area.

Having conducted my literature search using the combined strategies above, I then developed and applied the following inclusion criteria to identify the most relevant literature:

1. drawing on psychological theories;
2. combining these with the diffusion of innovations model (or some other general model of implementation of adoption of evidence-based practice within healthcare);
3. and concerning behaviour by healthcare professionals, not health promotion activities targeting patients or the general population.

3.4 Findings

In this section, I present the findings of my literature review. The first part describes the literature identified and through which route. The second part sets out my substantive findings in line with four principal strands around which I have grouped the use of psychological research and theories to support implementation research:

1. using individual psychological theories as a means of understanding the behaviour of health professionals;
2. using multiple psychological theories, chosen according to the specific issues of the individual health professional concerned;
3. compiling a wide range of psychological theories and constructs relevant to implementation into a single compendium; and

4. integrating psychological constructs into wider frameworks for understanding implementation.

3.4.1 Literature identified by source

The number of records identified throughout the review is summarised in Figure 3-2.

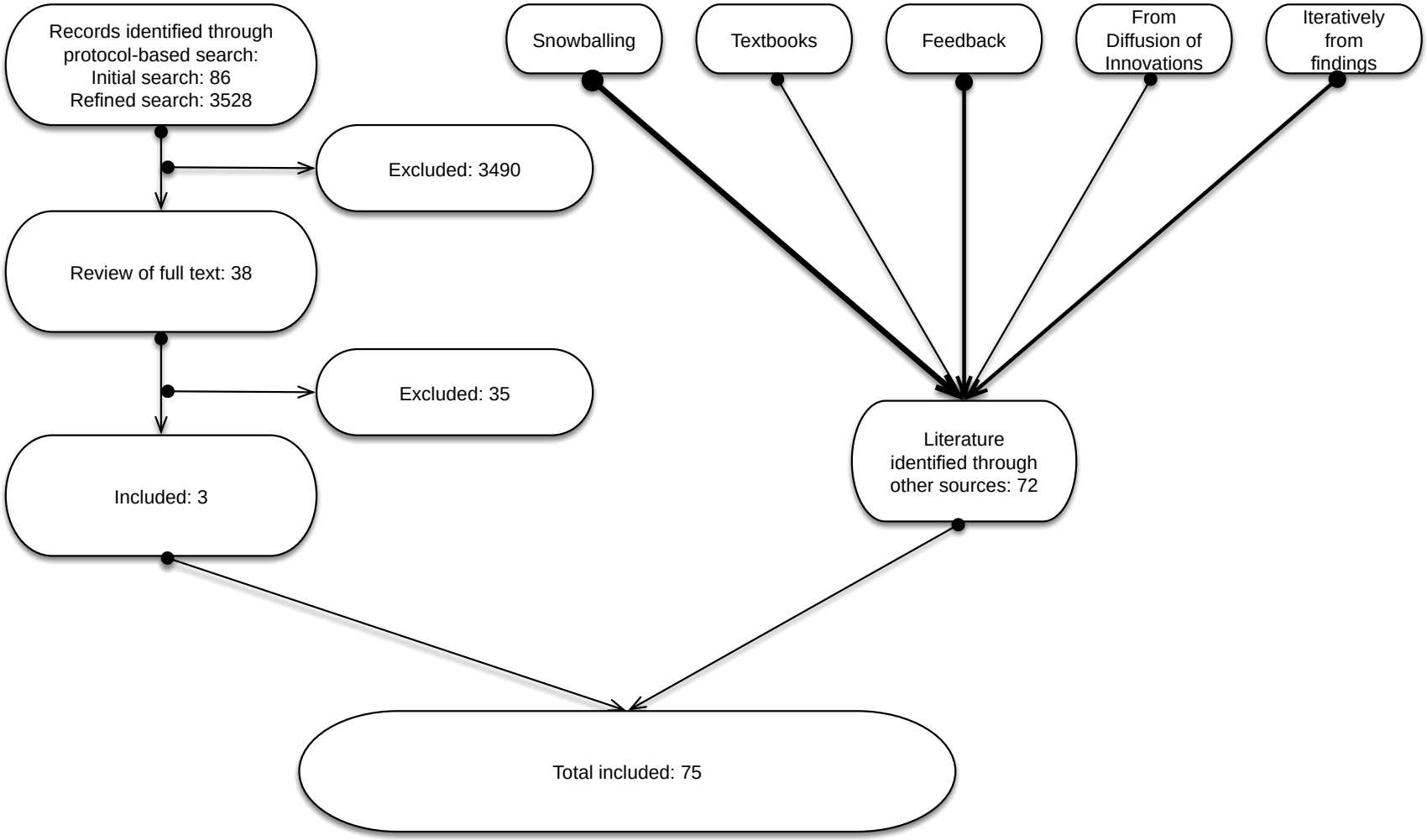


Figure 3-2: Flowchart of literature identified and source.

As this shows, although the protocol-based search of databases identified many potential items of relevant literature, once these were reviewed, only three were relevant. This relatively large number of initial hits (in comparison to those finally included) was a result of two main points.

Firstly, the large number of hits from the refined search strategy is because I tried to make the protocol search more sensitive in order to identify literature that I already had identified as relevant. As described above, this was not successful.

Secondly, a very large number of hits came about through the use of terms that have a specific meaning within psychology, but which are also frequently used in more generic ways. For example, terms such as 'beliefs', 'attitudes', 'emotions', 'self-esteem' and 'self-confidence' were often used in the literature identified, but were mostly not used in ways that linked them explicitly with psychological theories or definitions. This was particularly the case for descriptive studies, where the description of individuals' perceptions of an innovation or guideline frequently involved such terms, without drawing on psychological theories or definitions. In these instances, I looked for evidence that the term was being used in a specifically psychological sense, such as a reference to its originating psychological theory or explicit discussion of the concept in psychological terms, and excluded literature without such evidence. However, this meant a large number of items identified which could rapidly be excluded on the basis of a review of the abstract.

Other groups of literature that generated a large number of initial hits but which were not relevant included:

- those concerning the implementation of evidence in the practice of psychology itself (eg: the implementation of strategies for mental health issues); or
- psychological factors concerning the implementation of evidence in healthcare, but by patients (eg: concerning patient adherence to treatment regimens).

In summary, increasing the sensitivity of the protocol-based search strategy was ineffective and the vast majority of the relevant literature was found through the other approaches described above. The snowball approach was particularly relevant; once I found some key recent overviews of relevant literature (eg: Damschroder et al., 2009), this provided a good starting point for tracing strands of research through the literature. Feedback from colleagues (especially my supervisors) was also very helpful in identifying key papers, and my findings highlighted some gaps that seemed relevant in practice.

Having described the volume of literature identified and the sources through which it was found, I now turn to the four strands that I identified regarding the use of psychological research and theories to support implementation research.

3.4.2 First strand: using individual theories

Within health psychology, behaviour change is a central topic, for example in stopping smoking or exercising more. The starting point for using psychology to support implementation of guidance within healthcare has been the idea that actions by health professionals are themselves a form of behaviour (Walker, 2004). Reflecting this, the first strand of the use of psychology in implementation research has been to apply the behaviour change theories used in health psychology more generally to the implementation of evidence-based practice, though some topic-specific theories have also been developed.

An analysis of the literature suggests a broad consensus around the core theories that are most relevant. Hutchinson and Estabrooks (2013) identify the principal psychological theories used in the field of knowledge translation as follows:

- theories related to motivation: Bandura's social cognitive theory and Ajzen's theory of planned behaviour;
- theories related to action: Gollwitzer's implementation intentions theory and behaviourist conditioning approaches, in particular operant conditioning;
- theories related to stages of change, in particular Prochaska and Di Clemente's transtheoretical model of change.

Walker (2004) proposes a similar list to Hutchinson and Estabrooks, though also including the self-regulatory model, and using a slightly different stage model, the precaution adoption process model. For a summary of these and the other psychological theories discussed in this thesis, see Table 3-1.

Table 3-1: Summary of key psychological theories discussed in this thesis

Theory	Brief summary
Theory of planned behaviour (Ajzen, 1991)	Proposes that behaviour is based on a combination of the attitude of the individual toward the behaviour, what they think relevant others think and do about the behaviour, and how effectively they feel able to carry it out if they wish. These factors affect the intention of the individual to act in a certain way; their perceived control over the behaviour then also affects how likely they are to turn that intention into action. The theory of planned behaviour is an extension of the theory of reasoned action, adding in the element of perceived behavioural control. It is discussed further in Chapter Four.
Social cognitive theory (Bandura, 1986)	Sees the process of decision as being not only a matter of how desirable or useful the innovation or outcome is seen as being, but

	also a question of how far the individual feels able to make the necessary changes – their self-efficacy. For example, I might have an 'outcome expectancy' that by eating less I can reduce my weight; but I would also need to have a self-efficacy expectancy that I am able to control how much I eat if I am going to commit to making the change. Bandura identifies four ways of strengthening self-efficacy beliefs: • mastery experiences (doing something well); • vicarious experiences (seeing others); • social persuasion; • and physiological feedback (where Bandura argues that people interpret stress and tension as indicators of low self-efficacy). Social cognitive theory is dynamic, based on the concept of three constantly interacting causal elements: • our behaviour; • our environment; • and our personal and cognitive states; which are constantly shaping and reshaping each other in a process of what Bandura terms "triadic reciprocality".
Instrumental learning/operant conditioning (Colman, 2015)	Part of a behaviourist perspective; the form of conditioning in which a particular act becomes more frequent in response to a contingent stimulus, such as a reward for a particular behaviour.
Transtheoretical model of change (Prochaska & DiClemente, 1982)	The most common 'stage' model of behaviour change, seeing behaviour change as happening in five stages: • precontemplation; • contemplation; • preparation; • action; • maintenance; and proposing that interventions should be adapted to each stage.
Self-regulatory model (Zimmerman, 2006)	People as constantly monitoring their own performance in relation to their personal goals. This self-regulatory process can be seen as a cycle of three phases: • forethought phase: what goals we set ourselves and why; • performance phase: the strategies we adopt to achieve

	them; • self-reflection phase: how we evaluate our performance, and where we attribute responsibility (eg: internally or externally);
Precaution adoption process model (Weinstein, Sandman, & Blalock, 2008)	Similar to Prochaska and DiClemente's transtheoretical model but places more emphasis on the initial stages where people are not even aware of an issue, much less contemplating change. Stages: 1. Unaware of the issue; 2. Unengaged by the issue; 3. Undecided about acting; 4. Decided not to act; OR 5. Decided to act; 6. Acting; 7. Maintenance.
Social influence theory (Hovland & Weiss, 1951)	The influence of the credibility of a source on how the communication itself is perceived (and how the impact of the source diminishes over time, with the communication becoming considered separately.
Implementation intentions (Gollwitzer, 1999)	Focuses on turning intentions into acts and how this can be made more effective, in particular by creating concrete plans for putting those implementation intentions into practice.
Technology acceptance model (Davis, 1989)	Model based on two elements: perceived usefulness of the technology, and perceived ease of use.
Theory of interpersonal behaviour (Triandis, 1977)	Sees behaviour as shaped by similar attitudes and social factors as for the theory of planned behaviour, for example; but also adds past behaviour and habits, as well as affect, and includes the person's environment in the form of facilitating conditions.
Bereavement response (Parkes & Prigerson, 2010)	Bereavement as a process of numbness, pining, disorganisation/despair and adaptation.
Resistance to change model (Oreg, 2006)	Conceptualises a negative attitude to change as being made up of three dimensions: affect, behaviour and cognition. This negative attitude is influenced by a combination of individual personality traits (routine seeking; emotional reaction to imposed change; short-term focus; and cognitive rigidity) and contextual factors (such as prestige, intrinsic rewards, and trust in management).
Knowledge-attitudes-	Sees barriers to physician adherence in terms of three stages:

behaviour model (Cabana et al., 1999)	knowledge, attitudes and behaviour; see Figure 3-3 below.
Five factor model of personality (Costa & McCrae, 1992)	Proposes five key personality factors influencing adoption: • neuroticism (sensitivity to negative emotion); • extraversion (motivated in the pursuit of reward); • openness (to new experiences and novelty); • agreeableness (friendliness and ability to engage with others); and, • conscientiousness (ability to resist immediate temptation for longer-term gain).
Multiple factor model of intelligence (Ness, 2010)	Sees intelligence as made up of multiple factors, not as a single construct. In particular, the Cattell-Horn-Carroll model describes intelligence in three layers: general intelligence, underneath which are eight broad cognitive abilities, with a variety of more narrow abilities underneath each of those (over 70).
Groupthink (Janis, 1982)	Groupthink is the process whereby a desire to maintain the cohesion of the group hinders open and critical discussion within the group, especially where such discussion would cause conflict within the group or put membership of it into question. This concern for the views of others makes members more hostile to views and contributions from outside, because they implicitly threaten the cohesion of their group.

Though I have selected these as the most relevant, they are only a small part of potentially relevant behaviour change theories. Michie and colleagues have been exploring the scope of behaviour change theories to support implementation, and have recently published an overview of 83 behaviour change theories (Michie et al., 2014). My aim in this review is not to produce a similar compendium; rather, I aim to describe how the principal psychological theories have been used within implementation research and in my next chapter, to propose a model incorporating the most relevant theories from psychology – these include behaviour change theories, but also others.

Oreg has proposed a specific model of resistance to organisational change (see Table 3-1). Although this model has not been widely applied within healthcare, it provides a valuable

theoretical complement to the principal models by taking an individual-differences approach, highlighting the relevance of personality differences in responses to proposed change.

Cabana and colleagues also proposed a specific (and widely cited, in particular within medical literature) framework for understanding why physicians do not follow clinical practice guidelines (Cabana et al., 1999), structured around three stages of knowledge leading to attitudes, leading in turn to behaviour; see Figure 3-3.

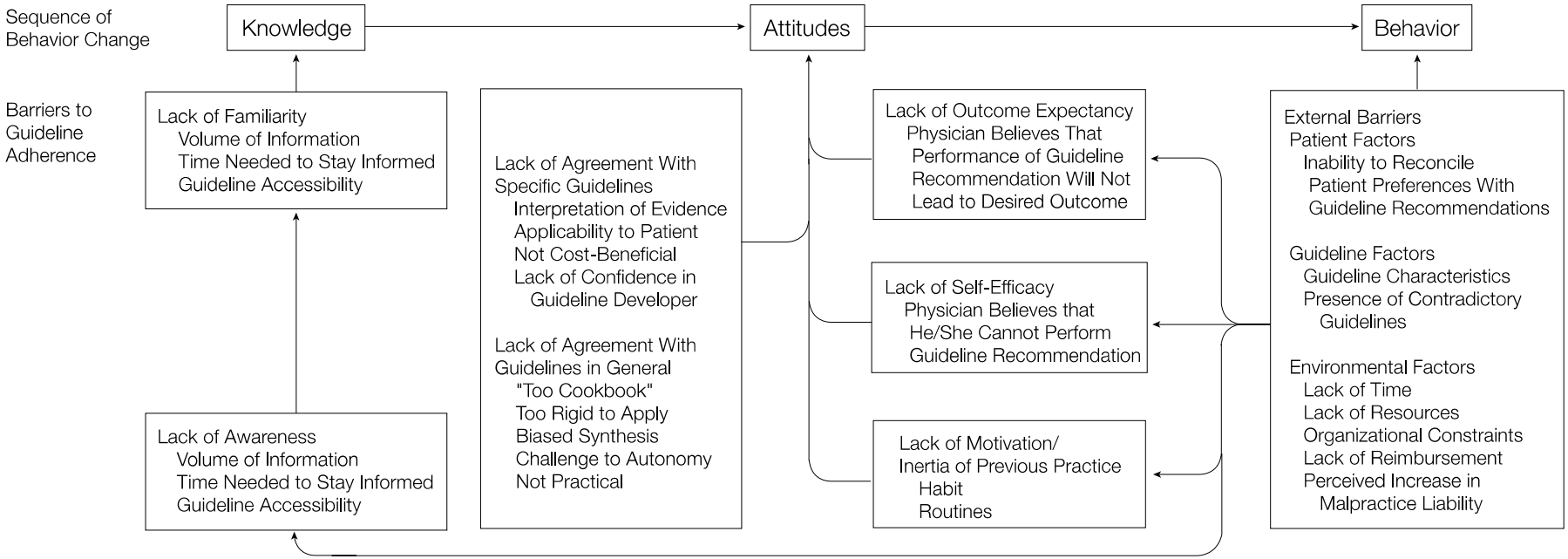


Figure 3-3: Barriers to physician adherence to practice guidelines in relation to behaviour change (Cabana et al., 1999, page 1459).

Cabana et al's model has the strength of being based on a specific (albeit somewhat restricted) literature review focused on the issue of behaviour by doctors. It is not a psychological model as such, and the review on which it is based did not target the psychological literature, but it does draw on some psychological constructs and at least two psychological theories (social cognitive theory and the transtheoretical model of change). Moreover, the overall model is inherently psychological in nature, conceptualising the process primarily at the psychological level of the physician, although the model does also integrate constructs from other levels of explanation (such as cost:benefit, content of guidelines, external barriers and environmental factors).

The theory of planned behaviour (or its closely related predecessor, the theory of reasoned action) is the most used in implementation research; see Figure 3-4.

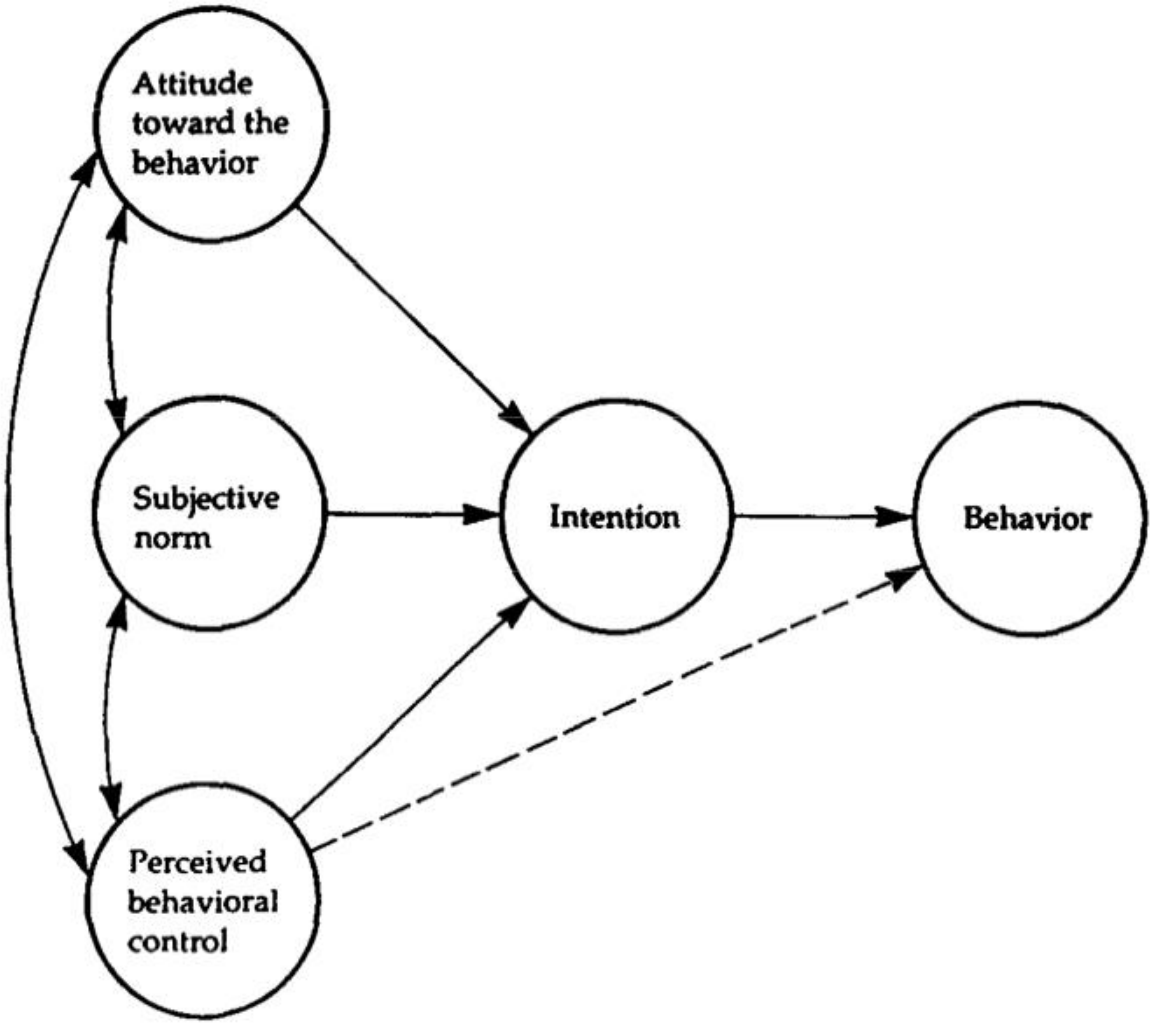


Figure 3-4: The Theory of Planned Behaviour (Ajzen, 1991, page 182).

A systematic review of the use of theory in implementation found the theory of reasoned action to be the only psychological theory explicitly used in the studies they identified (Davies, Walker, & Grimshaw, 2010), though even then it was only explicitly used once in the 235 studies they identified. Another systematic review of factors influencing the intentions and behaviours of health professionals based on social cognitive theories (Godin, Bélanger-Gravel, Eccles, & Grimshaw, 2008) identified 76 papers assessing the predictive value of social cognitive theories, covering a wide range of behaviours and health professions. This found that the theory of planned behaviour was the most used to predict

both intentions and behaviour, though for intentions the technology acceptance model (also widely cited, in particular in more technologically-focused literature) and the theory of interpersonal behaviour were also widely used.

The PRIME project aimed to investigate how effective the principal theories are empirically through a series of studies evaluating how well different theories explained and predicted health professional behaviour (Eccles et al., 2012; Walker et al., 2003). Using the same typology as Hutchinson and Estabrooks (2013) of theories related to motivation, action and stages of change, Walker and colleagues chose to look at the theory of planned behaviour, social cognitive theory, operant conditioning, implementation intentions, self-regulation theory and stages of change as a generic approach. They also considered what they described as the "implicit model" of knowledge-attitudes-behaviour – the idea that providing knowledge will bring about a change in attitudes, and that in turn will produce a change in behaviour. This is the same approach as that proposed by Cabana et al. (1999), though that model included more detailed specification underneath those three main parts. This series of studies then investigated how well each theory and its core constructs performed in predicting intention and behaviour through a series of studies of specific guidelines, collecting data on their implementation and related attitudes and beliefs from a sample of 600 dentists and 800 general practitioners in the UK.

These studies found that four of the theories were moderately effective in predicting intentions: the theory of planned behaviour, social cognitive theory, implementation intentions and operant conditioning predicted 25% to 42.6% of variation (R^2) in intention. However, the performance of the theories declined strikingly when considering actual behaviour (measured through administrative data), where even these four best-performing

theories only explained 2.4% to 6.3% of the variation in behaviour. This difference is not that surprising; Eccles et al. (2006) had already reported on a systematic review showing that the correlation between intention and behaviour varied widely, from -0.42 to 0.52, with results varying substantially according to study methodology; the PRIME results also suggest that the link between intention and behaviour is weak.

Fishbein and Ajzen have developed a further refined version of the theory of planned behaviour, which is called the Reasoned Action Approach (Fishbein & Ajzen, 2011); see Figure 3-5 below.

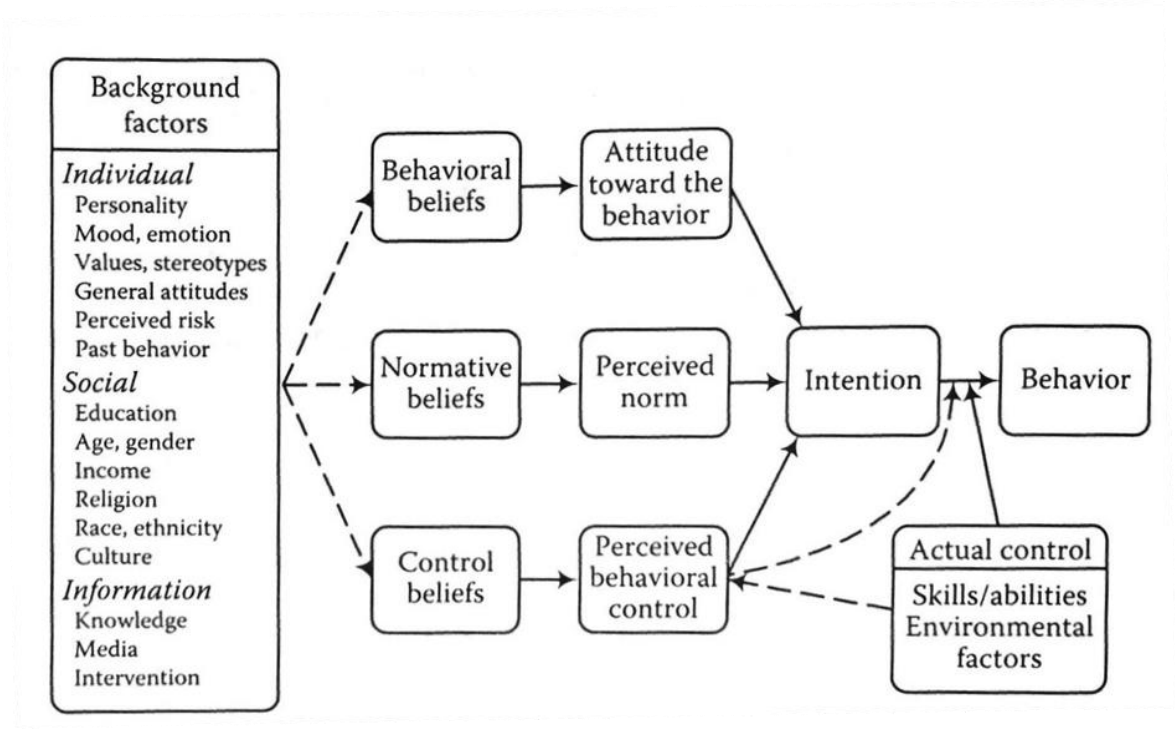


Figure 3-5: Schematic presentation of the reasoned action model (Fishbein & Ajzen, 2011, p. 22).

In terms of its structure, the reasoned action model includes a wider range of factors and stages than the theory of planned behaviour. However, the reasoned action model is still focused on individual cognition, without integrating the wider social or organisational

dimensions; and though it could be seen as being closer to a stage model of behaviour, it does not take advantage of that to incorporate additional psychological theory and explanation for those stages, much less integrate those psychological processes into their wider context. So although the reasoned action approach may be a more sophisticated model than the theory of planned behaviour, even if this were to be more widely used within implementation research (which so far it is not), it would still suffer from similar weaknesses to the theory of planned behaviour, which I discuss further below.

Three conclusions can be drawn from this work. The first is a positive one for my research question; using psychological theories such as those identified by Walker and colleagues can add value to the commonly-used model of changing knowledge changing attitudes and thus behaviour, and thus offers the potential to help improve implementation. The second conclusion is that some theories seem to perform better than others, but all have varied results that are not yet explained. And the third conclusion – less positively – is that the level of variation explained remains relatively low even for intention, and becomes lower still for actual behaviour. This suggests that even the most useful individual theories are not yet sufficient to understand variation in implementation.

3.4.3 Second strand: using multiple theories

If the use of single theories is insufficient, perhaps using multiple theories and adapting them to individual profiles might be more effective? This is the approach taken by the second strand of research that I identified. This has the potential advantage of drawing on a wider range of the psychological theories that might be relevant to a situation and individual, and thus perhaps better adapting interventions to their specific needs.

Robertson, Baker, and Hearnshaw (1996) proposed taking such a targeted approach, and provided an example of how it might be used; see Table 3-2 below.

Table 3-2: Framework for integrating obstacles to change, theory and strategies for change at the personal level. Adapted from Robertson et al. (1996, p52).

Observed behaviour	Obstacle	Theory	Strategies	
			More effective	**Least effective**
Doctor not following a clinical practice guideline	Thinks he or she lacks knowledge/ability	Self-efficacy (*based on social cognitive theory*)	Involvement in guideline development Practical support and training	Dissemination alone Feedback showing poor performance
	Clinician unwilling to consider change (thinks current practice is good enough)	Preparedness to change (*based on transtheoretical model*)	Feedback showing poor performance	Practical support and training
	Source of guidelines not perceived to be reputable	Social influence model	Endorsement by respected opinion leader with no likely gain to self	Endorsement by group with commercial or political interest
	Denial (of evidence of performance deficiency)	Bereavement reaction (*related to stages of loss response*)	Provision of safe and facilitated setting to admit deficiencies	Feedback on performance through league tables

As well as illustrating the potential approach, the strategies described in Table 3-2 illustrate one of the central theoretical advantages of this proposed approach, which is that the same strategies might be more or less effective depending on the obstacles to change of the individual clinician concerned. For example, feedback about poor performance is proposed

to be an effective strategy if the issue is that the practitioner thinks that their current practice is good enough; but less effective if their concern is that they lack the knowledge or ability to implement the guideline, or they are reacting to the issue with denial. So this approach may thus reduce the risk of a one-size-fits-all approach leading to counter-productive interventions for individuals in their unique situation.

Given the quite different mechanisms and potential interventions envisaged by different psychological theories, this seems to be a plausible proposal. However, it depends heavily on the accuracy of the assessment of the appropriate model for each individual, as well as then the effectiveness of each individual model in bringing about change. Given the lack of evidence that any one of these models is consistently effective, combining them might create a whole that is greater than the sum of the parts – but it might also combine their flaws. This can be tested empirically; how has it fared?

In short, there is a lack of evidence that it is more successful than the (simpler) approach of using single theories. Baker, Reddish, Robertson, Hearnshaw, and Jones (2001) investigated this proposed approach using a randomised controlled trial looking at the use of tailored strategies to improve GPs' adherence to guidelines for management of depression. They found some improvements in adherence to guidelines, though their study did not compare the multiple-theory approach with a single-theory approach (eg: theory of planned behaviour), so it is not possible to say which approach was more effective.

A Cochrane review of tailored interventions to improve professional practice in 2010 drew similar conclusions (Baker et al., 2010). The review searched for randomised controlled trials of tailored interventions (not necessarily at an individual level, with group or organisational analysis also included) with objectively measured professional performance

(so excluding changes in intention), identifying 26 for analysis. The review found only a modest effect of tailoring in comparison to no intervention or simple dissemination of guidelines or information, with wide variation between studies. The review was unable to draw firm conclusions about the best way to design interventions, nor about how a tailored approach compares with a single-theory intervention. This also reflects the limited use made of the multi-theory approach, perhaps because of the complexity of the approach and the need for prospective assessment of barriers.

3.4.4 Third strand: compiling psychological theories related to implementation – the Theoretical Domains Framework

This potential complexity of psychological theory hindering its use to support implementation was the basis of the third strand of my review; the Theoretical Domains Framework.

Michie et al. (2005) aimed to simplify the complexity of psychological theories that might be relevant to implementation science by identifying a core set of psychological constructs that would be usable by interdisciplinary implementation researchers. To achieve this, they conducted a consensus exercise with experts in health services research and health psychology. This process identified 128 constructs drawing on 33 different psychological theories. These theories included the principal individual models identified above by Hutchinson, Estabrooks and Walker, for example, but not all the theories mentioned by Robertson et al (neither credibility of the source of guidelines nor bereavement reaction are explicitly included), suggesting that even the broad reach of this consensus exercise was not comprehensive. The experts then regrouped these 128 constructs into 12 domains:

1. Knowledge;

2. Skills
3. Social/professional role and identity;
4. Beliefs about capabilities;
5. Beliefs about consequences;
6. Motivation and goals;
7. Memory, attention and decision processes;
8. Environmental context and resources;
9. Social influences;
10. Emotion;
11. Behavioural regulation;
12. Nature of the behaviours.

Each of these 12 domains contains between four and 25 constructs, and is accompanied by example interview questions that might help to illustrate the domain. This Theoretical Domains Framework has since been refined through a further process of expert input through card sorting (Cane, O'Connor, & Michie, 2012). This resulted in a slight expansion of the framework to 14 domains (adding “optimism”, removing “nature of the behaviours”, and replacing the “motivation” part of motivation and goals with two new separate domains of “reinforcement” and “intentions”).

The development of the Theoretical Domains Framework was a milestone in the use of psychology in the support of implementation research. Its stated objective was to improve the accessibility and use of psychology for implementation research, and it has had a lot of success in achieving this. A recent review in 2012 found that the Theoretical Domains Framework had been cited 133 times in only around six years, and used as the basis of

empirical investigation of health professional behaviour in 17 studies (Francis, O'Connor, & Curran, 2012).

Despite its popularity, the Theoretical Domains Framework (in my view) has a number of limitations. I discuss two that are relevant for my thesis: the implications of detaching constructs from their theoretical frameworks; and how the Theoretical Domains Framework relates to the context within which healthcare professionals work.

On the first issue of separating constructs from theories, it is essential to be clear about what the Theoretical Domains Framework provides and what it does not. As Michie and colleagues acknowledge:

> *"Thus, our 12 domains identify key constructs but not the causal processes that link theoretical constructs in a coherent explanation of behavioural regulation or behavioural change. Our domain list provides a guide to relevant explanations of current behaviours and key prompts to behaviour change, rather than an articulated theoretical explanation of a particular set of behaviours." (Michie et al., 2005, p31).*

In other words, the framework provides a valuable checklist and compilation of psychological issues, but it does not provide a theoretical model of how these constructs relate to each other.

To illustrate why this matters, consider the construct of 'feedback'. This is included within the Theoretical Domains Framework (in fact, it is included twice, under two different domains: domain 9, social norms; and domain 11, behavioural regulation). A psychological construct is a psychological state or process that we hypothesise to exist, but which we cannot observe directly (Coolican, 2009). A psychological theory will include such constructs, and also make propositions about the relations between them. Thus, exactly how the construct is conceived depends on the theory of which it is part. In the case of

feedback, this construct is understood in quite different psychological terms depending on which theoretical perspectives it is situated within. For example:

- social cognitive theory: within this perspective, feedback plays several roles; as a mastery experience building self-esteem, and at a physiological level with stress and tension reducing self-efficacy (Bandura, 1986);
- expertise and expert performance: as part of the process of changing an existing pattern of behaviour and adapting to a new one, appropriate feedback on the execution of the expertise is information used to adapt future performance strategies (Ericsson, 2004);
- social influence: in this context, feedback is linked to our perceptions of social norms and our interpretation of the actions of others, with specific implications for action from the kind of feedback provided (Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007);
- organisational psychology: from this perspective, different forms of feedback interact with characteristics of the workplace and the individual and affect their motivation and their psychological contract with their employing organisation (Furnham, 2005).

So the precise meaning of the construct of feedback differs within each of these theoretical perspectives. Thus, simply treating 'feedback' as a disconnected term not only loses the links with other constructs within a theoretical framework, but also leaves ambiguity about the precise meaning of this construct as well. The case of 'feedback' is a striking example, and indeed it was removed from the updated version of the framework because the experts consulted could not reliably attribute it to a single domain, which could be seen as a

reflection of precisely these problems (see Cane et al., 2012, additional file 4). Nevertheless, the fundamental weakness arising from separating constructs from their theoretical models remains for the Theoretical Domains Framework as an approach.

Michie and colleagues have aimed to develop the Theoretical Domains Framework by proposing an overall theoretical framework, accompanied by a collection of interventions (at individual and policy level) linked to different aspects of the framework (Michie, van Stralen, & West, 2011). The overall theoretical model (the COM-B model) is conceptually based on a lawyer's 'means, motive and opportunity', as shown in Figure 3-6. This is deliberately simple, as the target audience for the approach are non-specialist users and policymakers.

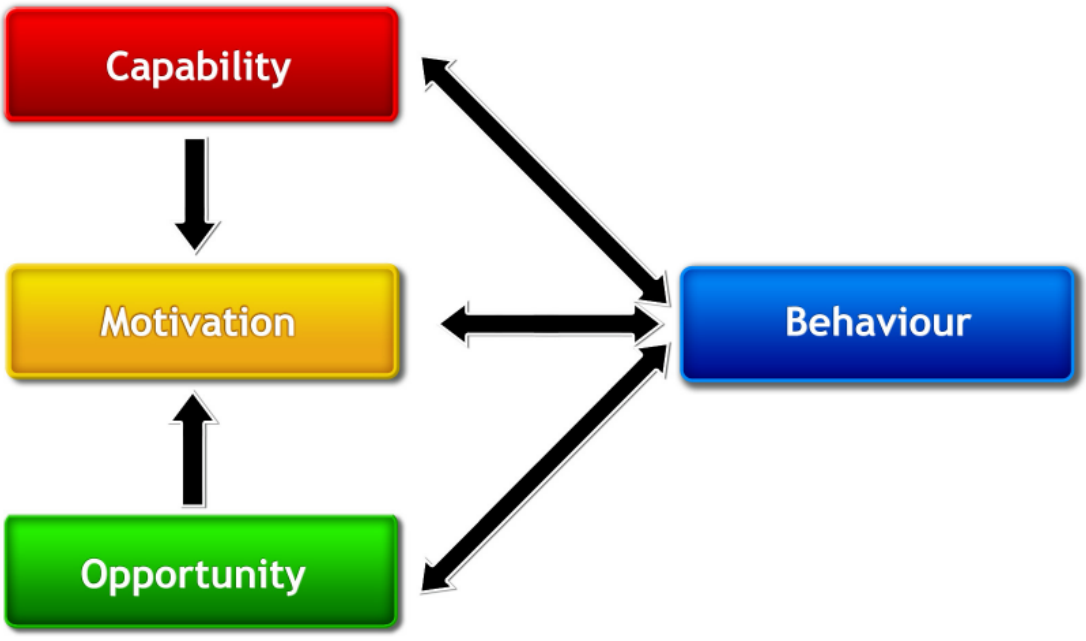


Figure 3-6: The COM-B framework (Michie et al., 2011).

This overall theoretical framework could be seen as a way of addressing the lack of theoretical linkages within the Theoretical Domains Framework. But the COM-B model is

not sufficiently detailed to replace the links and definitions lost through the compilation of the dozens of theories from which the constructs of the Theoretical Domains Framework are taken. Returning to the example of the construct of feedback, the COM-B model does not provide sufficient theoretical clarity to avoid the ambiguities identified above. So although the COM-B model and its accompanying Behaviour Change Wheel of interventions continue the valuable work of the Theoretical Domains Framework in making psychology accessible for non-specialists, I am concerned that they do not appear to address the theoretical weakness inherent in the approach of separating constructs from their originating theories.

The second issue of how to consider the context in which healthcare professionals work can be illustrated with a related study by Michie and colleagues using the Theoretical Domains Framework. This looked at psychological factors underlying GPs who have achieved National Service Framework outcomes for coronary heart disease in comparison to those who have been less successful (Michie, Hendy, Smith, & Adshead, 2004). The study used three key psychological constructs to differentiate GPs, with low implementers a) having less belief in evidence-based guidelines, b) having more concerns about losing control over their own professional practice, and c) seeing a more negative balance of benefits to themselves and patients from following guidelines.

But what if the contexts differ in ways that make the guidelines more or less helpful? For example, it may be that the more negative balance of benefits seen by some GPs in this case may reflect an accurate assessment of their specific organisational context and variation in availability of specialist services. Rather than conceptualising this as a psychological difference in individual perception, this could be framed as a separate factor at the

organisational or health system level. In systems terms, the relevant systems may not all be at the psychological level, but also interact with relevant systems at other levels. The review and model put forward by Greenhalgh and colleagues certainly suggests that factors beyond the individual are relevant, as do other general models in this area (discussed in more detail below). By interpreting all these levels of explanation in psychological terms, the Theoretical Domains Framework risks misattributing explanations to the individual level, which are in fact related to the wider context in which they work.

One recent article attempts to address this by using the Theoretical Domains Framework alongside the diffusion of innovations framework, in order to try to capture issues at both levels. Tavender and colleagues (2015) used this combined approach in order to identify issues and interventions to improve the management of mild traumatic brain injury in the emergency department. This is an interesting approach, and is a first step towards bringing together both psychological theory and wider implementation theory in a single empirical study. However, in theoretical terms, the two frameworks are used separately, not integrated into a single framework or multi-level model of the system as a whole. This means that although factors related to the organisation (eg: implementation processes, system readiness for innovation) are considered as well as psychological factors, the linkages between the psychological level and the wider organisational and systems levels are not. Yet it seems clear from the diffusion of innovations model that there will be linkages between the social and organisational context and the individual adopter, which psychological theories should help to illuminate. By not integrating these two perspectives into a single model, however, the linkages remain undefined.

So, although this approach has the potential to address the different individual topics covered by both psychological theories and the diffusion of innovations framework, the theoretical basis for analysis remains fragmented. It will nevertheless be interesting to see what empirical findings emerge from the use of these two theoretical frameworks alongside each other. At this stage, Tavender and colleagues are reporting on only the theoretical stage (selecting these theories and using them to identify issues and interventions). The empirical results are being evaluated as part of a cluster randomised trial (Bosch et al., 2014), and had not been published at the time of submitting this thesis.

The Theoretical Domains Framework has made a major contribution to the use of psychology in wider implementation research. It provides a useful synthesis of a range of psychological theories related to implementation, and it has rapidly become one of the most popular means of drawing on psychology in implementation research. However, it does have inherent weaknesses: despite its name, and by the authors' own admission, it is not a theory or a theoretical framework; and it does not incorporate the organisational or system dimensions.

On this last point, there is an emerging consensus from the implementation research literature about the need for multi-level models integrating the individual level but also incorporating factors relating to the wider context. The use of psychology within these frameworks is the fourth strand to which I now turn.

3.4.5 Fourth strand: integrating psychological constructs into wider implementation frameworks

There are now so many different theories about implementing good practice in healthcare that this has become a problem in itself. Accordingly, there has been a trend towards consolidation; bringing together different issues and theories into more integrated models. From this a pattern emerges, with two key points emerging for my literature review:

- an emerging consensus around multi-level models, with characteristics of the individual clinicians as one of the core levels;
- with the individual level characterised in terms of individual constructs, rather than use of theories as such.

In their systematic review of implementation frameworks, Moullin, Sabater-Hernández, Fernandez-Llimos, and Benrimoj (2015) identified 49 healthcare implementation frameworks published between 2004 and 2013. Within these frameworks, the two most common domains were the organisation and the characteristics of the individuals involved in implementation (followed by the innovation itself, the local environment surrounding the implementation and the external system). One of the most comprehensive frameworks they identified is the Consolidated Framework for Implementation Research (CFIR) developed by Damschroder and colleagues (Damschroder et al., 2009) and based on the model proposed by Greenhalgh and colleagues (Greenhalgh et al., 2005) along with key subsequent literature. This brought together constructs from across 19 implementation theories into a single framework. Damschroder and colleagues propose a five-level structure for the CFIR: intervention characteristics, outer setting, inner setting, characteristics of the individuals involved; and the process of implementation.

Within this strand of literature, the individual is seen as central to the process of implementation, but as part of a multi-level model, with other levels also relevant. So although psychological explanations are in principle relevant, they should sit within wider explanatory frameworks concerning the other levels, too. How has this been done?

Davies et al. (2010) carried out a systematic review of the use of theory in the design of guidelines dissemination and implementation strategies. Their findings showed that psychological theories were little used. Rather, psychological constructs were used, notably self-efficacy.

This focus on psychological constructs is the approach adopted by Damschroder and colleagues in their Consolidated Framework, where (similarly to the Theoretical Domains Framework) they compiled constructs within a list of general domains, but did not attempt to specify the theoretical links between them. This analysis is supported by Moullin and colleagues, who noted a lack of predictive frameworks in this field overall, seeing that as perhaps due to the relatively emerging nature of this area of research.

This approach suffers from the same weakness as described above for the Theoretical Domains Framework. By separating psychological constructs from their originating theories, these consolidated, multi-level models risk creating ambiguity about how exactly each construct is to be understood, and they lose the explanatory links between constructs that are present in a theoretical model.

Wisdom and colleagues aimed to address this lack of theoretical linkages; not by keeping the original theories, but by proposing a new model (Wisdom, Chor, Hoagwood, & Horwitz, 2013). Their review is a realist narrative synthesis, aiming to bring together constructs from

different theories related to the adoption of innovations with the aim of identifying elements that could be the subject of interventions to improve adoption of evidence-based practices. On the basis of their review, they propose a theoretical model combining elements from across the different theories they identified; see Figure 3-7.

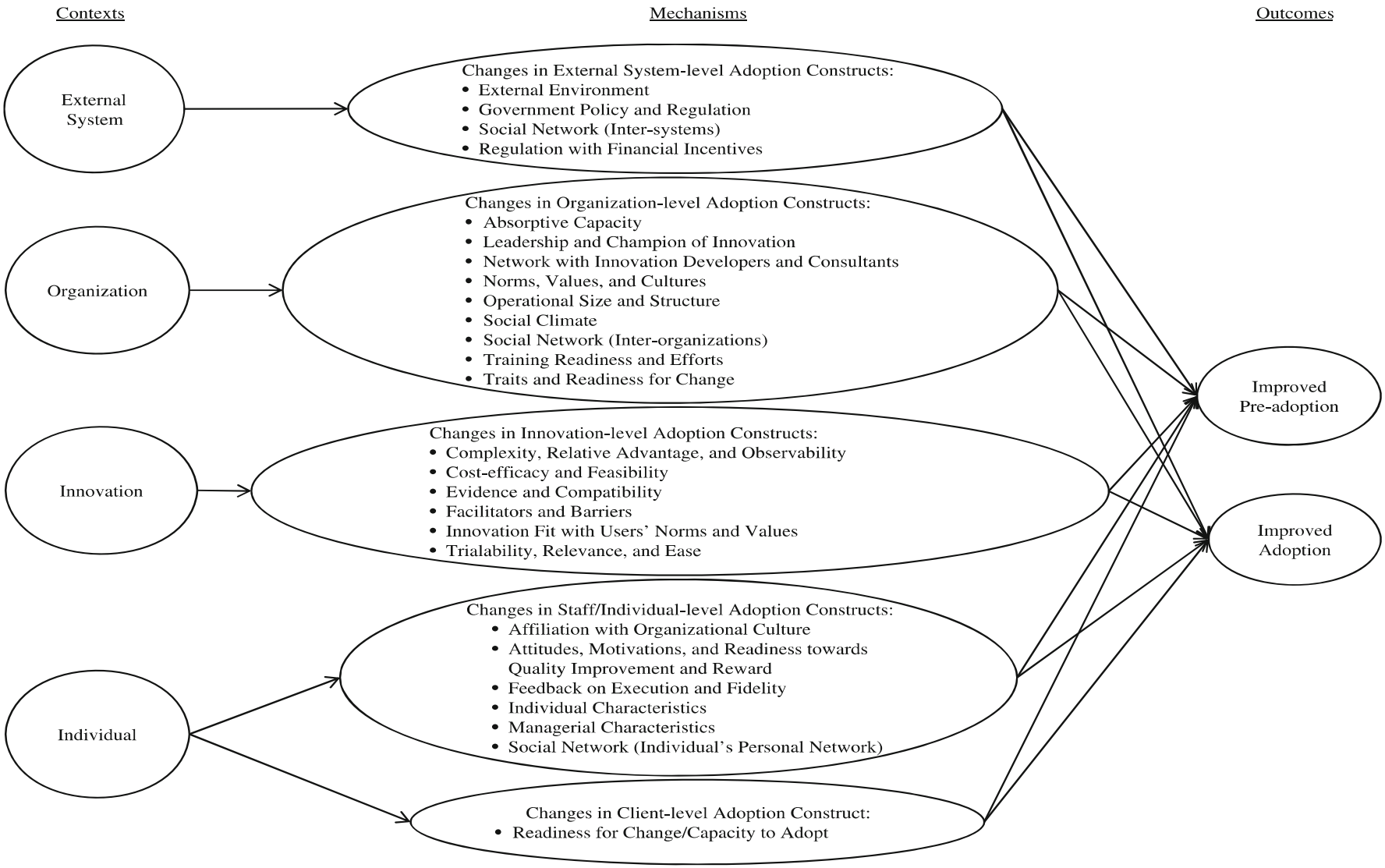


Figure 3-7: Context-mechanism-outcome configurations proposed by Wisdom et al. (2013).

Similarly to the Behaviour Change Wheel developed by Michie and colleagues (described above), this can be seen as an attempt to recreate theoretical linkages between constructs in a way that can guide action. This does have the advantage of creating predictions that can be empirically tested, although so far its use has been limited.

However, though it represents a step forward, this proposal still appears to be hindered by the fundamental problems arising from the detachment of constructs from theories. The ambiguity of the constructs remains – for the psychological constructs at least, this reflects the literature on which the review was based, with most of the studies used for the review similarly using any psychological constructs in a standalone way. For the predictive potential of theoretical linkages, even though this model proposes linkages which could be tested, existing psychological literature suggests that many different models could explain linkages between these contexts, mechanisms and outcomes. So even if empirically linkages do seem to emerge, ambiguity about why and what mechanisms are actually at work will remain.

Another proposal aiming to integrate some psychological constructs within a model specifying new theoretical linkages is the General Theory of implementation proposed by May (May, 2013). This builds on Normalization Process Theory (May & Finch, 2009) and incorporates ideas from sociological theories of social systems and social cognitive theories of behaviour change from psychology into the overall model set out in Figure 3-8: Concepts, constructs and dimensions of the General Theory of Implementation (May, 2013).

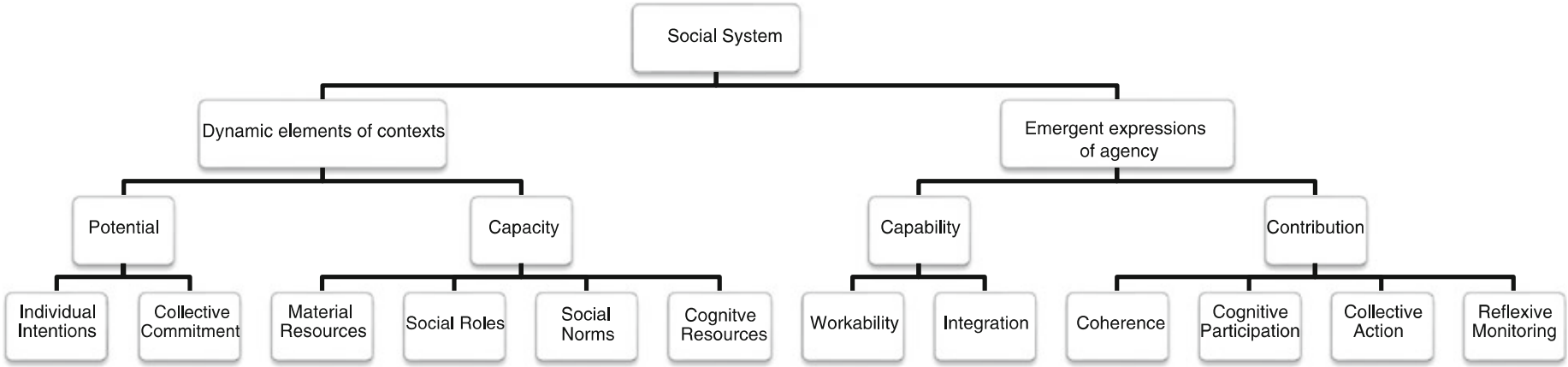


Figure 3-8: Concepts, constructs and dimensions of the General Theory of Implementation (May, 2013).

This General Theory incorporates constructs from the psychological literature into an overall model of implementation, including individual intentions, social roles, social norms, cognitive resources, coherence, and reflexive monitoring. Although these are again detached from their originating theories, May sits these constructs within a model proposing new theoretical linkages (similarly to Wisdom and colleagues, above). Indeed, May makes four specific propositions in his paper, such as the first proposition that "The capability of agents to operationalize a complex intervention depends on its workability and integration within a social system" (May, 2013, p23).

This General Theory is a valuable synthesis of concepts into a testable theoretical model that emphasises the importance of social structures and of individual agency, and as such takes a perspective that is closer to a psychological one than most of the integrated models of implementation. However, the coverage of psychological theories and components appears limited; the vast majority of theories drawn on by the Theoretical Domains Framework are absent from this General Theory, for example, though there is no explanation provided as to why they were not included. The problem of ambiguity of constructs also remains; terms such as individual intentions, social norms and cognitive resources are not sufficiently specified to remove the ambiguity of meaning created by separating them from their original theories. Nor are the mechanisms underlying the links between constructs specified, so though there are explanatory links proposed, it is not clear what the mechanisms involved are. Overall, therefore, whilst this General Theory represents an innovative approach to generating a complete theory of implementation that does incorporate psychological elements, it does not appear to fully overcome the core difficulties of integrative

theories recombining individual constructs, and its coverage of potentially relevant psychological theories is, arguably, less than comprehensive.

3.5 Discussion

The aims of this literature review were first to identify literature linking psychological theories with the model of diffusion of innovations in health services developed by Greenhalgh and colleagues, and second to review how psychological theories have been used in implementation research. My review has shown that the gap identified by Greenhalgh and colleagues remains.

More broadly, I have identified four principal strands of the use of psychological research and theories to support implementation research:

1. using individual psychological theories as a means of understanding the behaviour of health professionals;
2. using multiple psychological theories, chosen according to the specific issues of the individual health professional concerned;
3. compiling a wide range of psychological theories and constructs relevant to implementation into a single compendium; and
4. integrating psychological constructs into wider frameworks for understanding implementation.

However, each of these approaches is problematic. The scope of psychology used is limited, focused on theories of personal behaviour change and taking a cognitive perspective, leaving large areas of relevant psychology virtually unused, such as organisational and social psychology. It seems that although there is developing

interest in the psychological dimension of knowledge utilisation, research so far has struggled to find a way to make sense of the psychological literature and integrate it within wider frameworks related to implementation.

These findings raise three issues in particular that I will discuss further. The first is the apparent separation of psychology from mainstream literature on implementation research. The second is the relative narrowness of the psychological literature that has been used. And the third is the challenge of complexity that appears to face implementation science in general – in which psychological concepts and theories, to be meaningful, must be integrated with other theoretical perspectives.

It is clear from this literature review that the gap identified by Greenhalgh and colleagues in 2005 remains; despite significant progress made by some scholars, the psychological literature has not yet been adequately integrated into the framework for diffusion of innovations in health service organisations that they proposed. More generally, though, it is striking just how much the psychological literature continues to exist as a separate field of knowledge from the rest of the literature dealing with implementation research.

As this overview has shown, there have now been many different reviews and attempts to integrate different models from across different strands of social science, as described above. Moreover, behaviour change has been a long-standing area of work within the psychological literature, both in general and in health in particular, with some well-established models developed and applied over decades (Greyson & Johnson, 2015).

Despite this, these areas of literature have remained stubbornly separated despite their seemingly logical connection, and seem to reflect different epistemic communities; different approaches and histories that in particular areas both underpin and delimit what is known and how (Knorr Cetina, 2005). Perhaps this reflects the origins of much initial work on implementation science in North America, where psychology has traditionally been more aligned with the natural sciences, and where psychological research has been more concentrated at the biological and cognitive level. In that context, it is interesting to note that much of the work seeking to apply psychology to implementation research is in the UK (Michie et al., 2005), which occupies an interesting space in terms of psychology, combining both the more natural-science approach that is typical in North America with the more sociological approach that is more predominant in mainland Europe, and which is world-leading in behaviour change in health (Economic & Social Research Council, British Psychological Society, Association of Heads of Psychology Departments, & Experimental Psychology Society, 2011).

Thus, the use that has been made of psychology so far has been relatively limited. As described in the findings above, the range of theories that have been used so far is fairly narrow, focused on a few key theories of behaviour change (principally the theory of planned behaviour and Bandura's social cognitive theory), and mostly in the form of integrative theories abstracting constructs into new frameworks. This appears to have resulted in psychological contributions that are either theoretically quite restricted, or which lose the explanatory power of psychological theories entirely.

Even the psychological perspectives that are used appear to leave out substantial areas of potentially relevant psychology. For example, although the organisational dimension is clearly relevant for healthcare provision, organisational psychology seems to be virtually unused in implementation models. The principal model used – the theory of planned behaviour – was developed and is principally used with regard to personal behaviours (eg: smoking, exercise). Yet professional behaviour is fundamentally different (Grol et al., 2013). When we act as professionals, our behaviour is shaped in relation to others, and shapes the behaviour of others in turn: our objectives in relation to our employer or our client (and our shaping of those objectives); our actions in relation to professional standards; our outcomes in relations to outcomes for others as well as ourselves. In contrast, when we act in our personal lives, our focus is primarily internal. It would therefore seem essential to take into account this specifically professional context in psychological terms, yet it appears to be largely absent.

Wider social psychology is also largely unused. This is especially striking given the material from social psychological perspectives illustrating the importance of how knowledge is socially constructed amongst health professionals (Gabbay & le May, 2004; Kristensen, Nymann, & Konradsen, 2016), for example, or how professionals construct their identities in relation to safety and expertise (McDonald, Waring, & Harrison, 2006) and the importance of the social context (Dopson & Fitzgerald, 2005). Though topics such as social norms are often mentioned, the extensive psychological literature about the mechanisms through which such social mechanisms function does not appear to be drawn upon (Cialdini & Goldstein, 2004), despite the evidence for the

distinctive social structure of healthcare and its potential impact on implementation (West, Barron, Dowsett, & Newton, 1999). Moreover, consideration of this social dimension must take account of the interactive way in which individuals are both shaped by and shape their environment.

Thus, the use of psychology in implementation research seems to have been focused somewhat narrowly on cognitive psychology, drawing principally on behaviour change models used within health psychology more generally and not making use of more complex and social perspectives. This has meant a psychological contribution that is somewhat two-dimensional, seeing the health professional as an information-processing entity, but not making visible the psychological insights into their motivations and feelings about why they do what they do, or situating them in their social and organisational contexts.

Doing so does mean increasing the complexity of the perspectives involved in relating the individual to the social dimensions, and perhaps therein lies the problem. The repeated attempts to produce integrative models of implementation in recent years can be seen as a struggle with complexity. The initial models for understanding implementation were relatively simple, but their explanations were not adequate to address the issue. This led to a proliferation of new models – perhaps too many for an applied field such as implementation research. Hence the attempts now to reduce this complexity through simplified, integrative models.

This simplification comes at a price, though. To use Einstein's aphorism, everything should be made as simple as it can, but not simpler. From a psychological perspective, the ways in which psychology has been used in implementation research seem to me

to be too simple; too narrow in theoretical coverage, and losing too much by borrowing psychological constructs for reuse in wider integrative models.

This analysis suggests that the core challenge for integrating psychology into this field is not only to identify a broader range of relevant psychological literature, but to find a way of managing the complexity that it brings. In other words, to make fuller use of psychological perspectives, but in a way that is still practical within the wider context of implementation research.

It also suggests that the issue of complexity is a central one for implementation research as a whole. It may be that part of the reason for the relative lack of success of implementation research is that we are seeking simple, predictive models when what we are dealing with are complex interactive systems with emergent properties that can never be fully explained in such linear terms. This is a topic that I will return to in Chapter Nine.

3.6 Conclusion

The relative lack of use of psychology in implementation science is not for want of possible theories on which to draw. As described above, there are many potentially relevant theories in the area of behaviour change alone, and many other potentially relevant areas of psychology besides. It seems that although there is developing interest in the psychological dimension of knowledge utilisation, so far implementation research has struggled to find a way to make sense of the psychological literature and integrate it within wider frameworks related to implementation. It is to this challenge that I turn in the next chapter.

Chapter 4. Integrating psychological theories into the Diffusion of Innovations model

In the previous chapter, I reviewed how psychological theories have been used in psychological research. On the basis of that review, I argued that an effective link between psychological theories and the model of diffusion of innovations in health systems has still not been made, and that each of the strands of use of psychology in implementation research is problematic. In this chapter, I put forward my proposed approach for linking psychological theory to the wider framework for diffusion of innovations in health systems. I describe my overall proposed approach, and then go into detail about what this means in terms of specific psychological theories and how they link to their wider context.

The aim of this chapter is to propose a way to bring together psychological theory and the diffusion of innovations model in order to better understand the implementation of evidence in practice.

4.1 Proposed approach to linking psychological theories with the diffusion of innovations model

As I described in Chapter Two, I am using the overall diffusion of innovations model developed by Rogers and the conceptual model of diffusion of innovations in health service organisations developed by Greenhalgh and colleagues as a theoretical model for innovation adoption in health systems as a whole, within which I am situating the psychological level of explanation that is the focus of this research.

My proposed approach is to use the theoretical model of diffusion of innovations as a framework for integrating psychological theories. Specifically, I propose using the individual stages of adoption described by the diffusion of innovations model to identify and situate relevant psychological theories.

Rogers' diffusion of innovations model sees the adoption of a particular new idea, technology or practice not as a single event but as a process, as set out Figure 4-1.

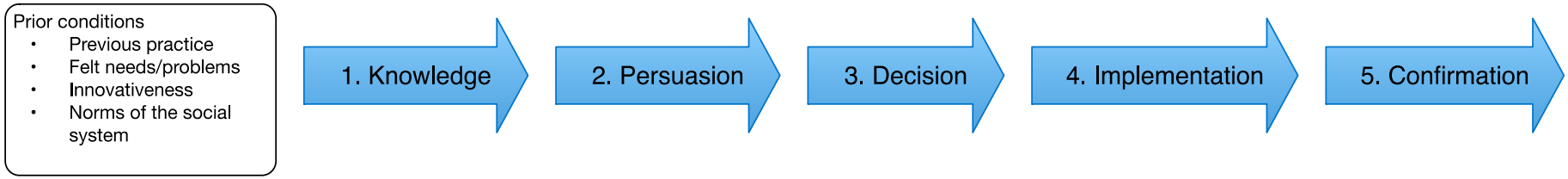


Figure 4-1: The innovation-decision process (adapted from Rogers, 2003, page 170).

As I discussed in Chapter Two, this does not necessarily mean that every individual will go through each stage in precise sequence. Nevertheless, there is evidence that different processes operate at each of these different stages, such as different communication channels being relevant, for example (Rogers, 2003). So even though an individual might not follow this precise sequence, the model provides a useful theoretical framework for differentiating relevant processes for different stages of adoption, which is my intended use.

This model also illustrates how each element of the stages of adoption are affected by the organisational and professional context within which the individual health professional works. The first stage of 'knowledge' will be affected by professional communication channels (eg: networks of peers, professional journals) and organisational systems (eg: notification of some innovations and how they are described). 'Persuasion' is not merely an individual evaluation, but is couched within a context of fellow professionals and the organisation's view. An adoption 'decision' may be made by the organisation, regardless of the consideration of the individual professional. And the processes of 'implementation' and 'confirmation' will be heavily affected by the organisation's resources and commitment, as well as those of the individual. So this simple-looking sequence of individual adoption and the relevant psychological theories must be understood as being situated within its professional and organisational context, which shapes and is shaped by these individual adoption processes.

I aim to explore how different psychological theories can help to illuminate different stages of this adoption process. I suggest that part of the difficulty with the use made to date of psychological theories is the approach of seeking single theories that attempt to explain the

entire adoption process, rather than looking at the distinctive psychological aspects of each stage. For example, looking back at the different psychological theories examined by Eccles and colleagues (2012), the different theories seem relevant to different stages of the adoption process. The theory of planned behaviour focuses on intentions and the initial decision to adopt or not, which seems particularly relevant to stages two and three on persuasion and decision. The theory of implementation intentions, however, is focused later in the process on implementation, as the name suggests. I argue that by taking the adoption process stage by stage and looking at the psychological theories of relevance to that specific stage, I can gain a clearer picture of the relevant psychological processes and add more explanatory power to overall theories of implementation than the approaches used so far and described in the previous chapter.

As outlined in the previous chapter, the repeated efforts to produce integrative theories of implementation can be seen as a struggle with complexity. My approach addresses this issue of complexity in a different way. By breaking down the process of adoption into the stages identified by Rogers, I can focus on the relevant psychological theories to that stage, and thus reduce the potentially vast numbers of theories to a more manageable number at each stage. As I describe below, this may well still result in quite a large number of potentially relevant theories. Nevertheless, it reduces the number of theories at any one stage to a manageable number.

4.2 Proposed framework for linking psychological theories to diffusion of innovations

In this section I describe my proposed theoretical framework for linking psychological theories to diffusion of innovations. The overall framework is structured around the adoption process shown in Figure 4-1. For each stage, I propose potentially relevant psychological theories, based on my review of the literature described in the previous chapter.

4.2.1 Prior conditions

Before the adoption process of any given innovation, a set of characteristics and circumstances are already in place which will affect it. Rogers describes these as prior conditions, and these include a range of ways in which individuals differ in ways that affect innovation. This section describes how these individual differences might be thought of in psychological terms, and considers how far these might form a basis for intervention to promote adoption of innovations.

Rogers summarises extensive empirical work about the attributes of adopters of innovations and identifies some characteristics of adopters which research suggests tend to favour earlier adoption of innovation (Rogers, 2003), some of which can be seen as psychological:

- greater empathy;
- less dogmatic;
- great ability to deal with abstract information;
- greater 'rationality';
- more intelligent;

- more favourable attitude toward change;
- more comfortable with uncertainty and risk;
- more favourable attitude toward science;
- less fatalistic (linked to self-efficacy and locus of control, citing Bandura (1997));
- and higher aspirations.

In psychological terms, these characteristics can be understood principally in terms of personality traits (apart from intelligence in particular, which I discuss below). Costa and McCrea's five factor model (Costa & McCrae, 1992) is the principal psychological model used for describing personality characteristics (Jarrett, 2011), and sees personality in five basic dimensions:

- neuroticism (sensitivity to negative emotion);
- extraversion (motivated in the pursuit of reward);
- openness (to new experiences and novelty);
- agreeableness (friendliness and ability to engage with others);
- and conscientiousness (ability to resist immediate temptation for longer-term gain).

Looking at the list of characteristics summarised by Rogers, this suggests to me that two of those personality dimensions in particular would be linked to early adoption: openness (which would cover characteristics such as being less dogmatic, dealing with abstract information, having a favourable attitude toward change and being comfortable with uncertainty and risk, though this also links to extraversion (Hardman, 2009)) and conscientiousness (which would cover being less fatalistic and having higher aspirations).

Openness also correlates with intelligence, but these are quite different constructs; indeed, even the idea of 'intelligence' as a single construct is problematic. Despite intelligence being one of the earliest focuses of psychology, there is still much debate about what 'intelligence' is, or even whether it corresponds to a single attribute at all. Although intelligence was originally conceptualised as a single construct of 'general intelligence', what is now the principal psychological theory of intelligence, the Cattell-Horn-Carroll theory, describes intelligence in three layers: general intelligence, underneath which are eight broad cognitive abilities, with a variety of more narrow abilities underneath each of those (over 70) (Ness, 2010). This model has extensive empirical research supporting it, but also updating and refining the theory. Given this, the simple characteristic of 'intelligence' identified by diffusion of innovations research conducted in many cases decades ago does not appear to be a helpful criteria on its own.

Alongside general models of personality, there are a multitude of specific models linking individual differences in personality to specific issues or behaviours, including for innovation for adoption. In particular, Oreg has also developed a model for resistance to change as a specific personality trait (Oreg, 2006) and a scale for measuring it (Oreg, 2003), though this has not yet been widely empirically tested.

To the extent that particular personality traits account for innovativeness in individuals, and given the rapid pace of progress in medicine and healthcare (hence the need to be open to innovation), the question arises whether health professionals should be selected for such traits. Evidence suggests that once established, personality traits are stable throughout adult life (Costa & McCrae, 1986), which raises the possibility of using personality tests to select undergraduates or recruit to particular jobs. Even if we understood links between

personality and adoption well enough for this to be reliable (and empirical evidence so far suggests that while there are associations, there are far too many other factors at work for such associations to be reliable), there are several arguments against this approach. Adoption of innovations is only one of numerous characteristics required of health professionals. Moreover, a propensity to adopt innovations is only helpful if the innovation has positive attributes. Selecting for pro-innovation personality traits may produce a cohort of health professionals who lack an appropriate degree of caution when confronted with new drugs, devices and procedures. However, in situations where specific strategies are being used to support the implementation of particular innovations, understanding how personality traits relate to adoption propensity might enable different strategies to be adapted to the profiles of individual health professionals.

Other areas of individual difference may offer more scope for intervention. In a review of empirical research on individual reactions to organisational change, Vakola, Armenakis, and Oreg (2013) identify other prior conditions affecting reactions to change at individual level:

- dispositions: including personality traits but also other issues such as whether people primarily see desired outcomes as being shaped by their actions or by external forces (in psychological terms, whether or not their 'locus of control' is internal or external; see Colman, 2015) and self-esteem;
- motivational needs: such as learning orientation, personal initiative;
- coping styles (eg: problem-focused, emotion-based or avoidant);
- demographics (eg: age, tenure).

The person's experience and history will also be relevant – for example, the wider context of their relations with their organisation, or their past experience of change and innovation –

as well as their adaptability, resilience and habits (Ericsson, Krampe, & Tesch-Römer, 1993; Neal, Wood, & Quinn, 2006).

Overall, research in these areas underlines the importance of seeing people as individuals, with their own histories, preferences, wants and skills, all of which will be relevant in how they consider and respond to any possible change.

4.2.2 Knowledge

Gaining knowledge about a particular new idea, practice or technology is not a neutral process. This section describes two interacting theories; psychological theories about biases in how we seek and take in information, and how that flow of knowledge is shaped by the structure of social networks of healthcare professionals.

A central psychological issue in how we acquire knowledge is our preference for information that is consistent with our existing attitudes, beliefs and behaviours. Hart et al. (2009) carried out a meta-analysis of evidence for this 'congeniality bias' or 'confirmation bias', which identified substantial evidence for this bias and broke down some of the factors underlying our defensive motivation to select information that is consistent with our existing attitudes, beliefs and behaviours, but also motivations for seeking accurate information regardless of its impact.

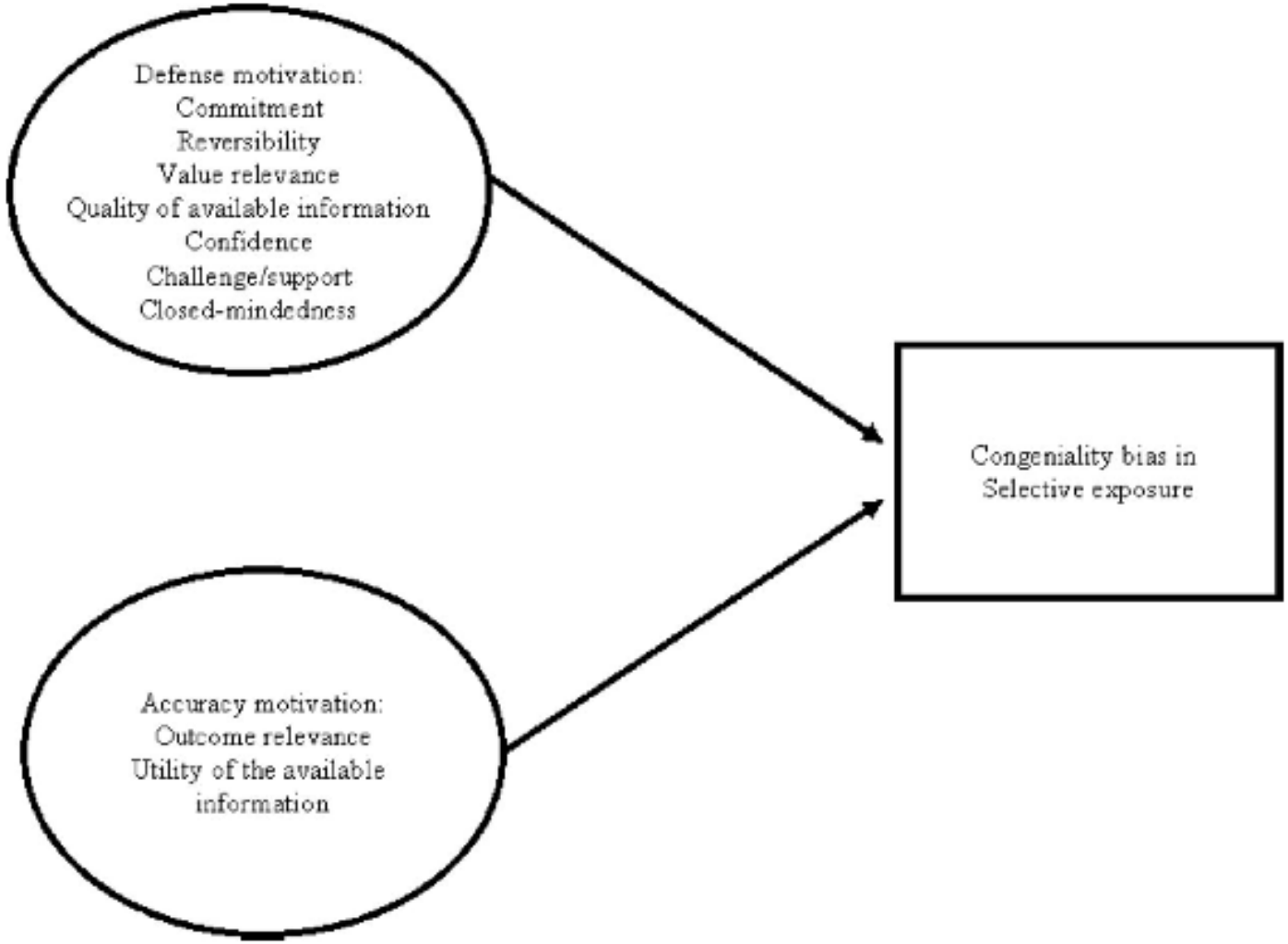


Figure 4-2: Opposing motivations influencing exposure to congenial versus uncongenial information (Hart et al., 2009, page 557).

For clinicians, this might be relevant in several ways. The flow of information about new evidence and innovations in healthcare is vast and unremitting, and requires constant filtering; this is a highly likely situation for selective exposure. For specific patients, having come up with an initial diagnosis, clinicians may then be selective in seeking information that supports that diagnosis rather than putting it in question. Tschan and colleagues found this in a simulation exercise for emergency diagnosis of a pneumonia patient (Tschan et al., 2009); McCormack and Greenhalgh (2000) discuss a larger-scale example of interpretation of data regarding diabetes care.

The channels through which knowledge is passed are also important, and quite distinctively structured for healthcare. Rogers proposes some social characteristics linked to earlier adoption of innovations, such as greater social participation, greater connection through social networks and more exposure to interpersonal communication channels. However, more recent research paints a more complex picture than simply greater social contact facilitating earlier innovation adoption. West et al. (1999) looked at the social networks of health care professionals, and found that they were quite differently structured by profession, with nurses in social networks that are more hierarchical but less dense (covering a wider variety of people), whilst senior doctors are embedded in denser networks of immediate peers (see also Tasselli, 2014, 2015). The importance of the structure of professional networks is also important for primary care physicians, with informal links potentially more important than formal ones (Mascia, Dandi, & Di Vincenzo, 2014). These different structures of social networks have implications for the likely uptake of innovations, as Baer, Evans, Oldham, and Boasso (2015) have shown with their analysis of the relationship between social networks and individual innovation. This presents what they

describe as a contradictory picture of the impact of networks, with more closed networks being more effective at spreading and implementing innovations within that network, but less open to innovations in the first place than more boundary-crossing networks, which are in turn less effective at implementing innovations. This suggests differing impacts on implementation for different healthcare professions reflecting their different professional and organisational networks. These different social structures are also likely to affect how innovations are viewed, which is the focus of the next section.

4.2.3 Persuasion

This section starts from the behaviour change perspective that has been the main psychological perspective taken within implementation research so far, as described in Chapter Four. However, there are other distinctions that seem relevant to how persuasion takes place which I also describe. I explore two areas. Firstly, the social context; how social, professional and organisational contexts shape the process of persuasion. Secondly, what individuals themselves want to do; their motivations and how those relate to their persuasion or not in regard to a particular innovation.

In psychological terms, persuasion can be seen as the formation of attitudes towards and beliefs about the innovation. Attitudes, in the psychological sense, are an enduring pattern of evaluative responses, including both feelings (affects) and thoughts (cognitions) (Colman, 2015). Beliefs are what the person understands the innovation to involve (meaning their perception of it, which might be different from that of someone else).

The stage of persuasion is the principal focus of the main behaviour change theories used in implementation research, and in particular the theory of planned behaviour. The theory of

planned behaviour proposes that behaviour is based on a combination of the attitude of the individual toward the behaviour, what they think relevant others think and do about the behaviour, and how effectively they feel able to carry it out if they wish, as described in Chapter Three.

However, there are more specific theories that can shed light on elements of persuasion in the specific context of healthcare professionals, in particular relating to their professional and organisational contexts.

The issue of social norms has been explored within social psychology, and it is useful to break it down further. One type of norm is a descriptive norm (what we perceive that others do); this is different from an injunctive norm (what we perceive to be approved or disapproved of) (Schultz et al., 2007). It is useful in this context to note that communicating information about descriptive norms alone can have perverse effects; those who are on the 'wrong' side of the average may act to do better, but those who are already above average may then be complacent and fall back; this has been shown to happen empirically, and termed the 'boomerang effect'. It is easy to see how this might apply within the context of feedback about compliance rates with a particular guideline, for example. When information about performance against the descriptive norm is accompanied by an injunctive norm, though, this boomerang effect can be reduced (Schultz et al., 2007).

This distinction between descriptive and injunctive norms is related to the distinction between ostensive and proxy routines described by Feldman (2000), where proxy routines are what should be done, and ostensive routines are what people say they do in practice. Although this could be taken as meaning that ostensive routines constitute descriptive norms and proxy routines constitute injunctive norms, of course if a sufficient number or

sufficiently respected or authoritative colleagues all follow shared ostensive routines, this is likely to be perceived as an injunctive norm in its own right.

Cialdini and Goldstein (2004) describe three core motivations shaping responses to social influences; accuracy, being correct in their behaviour; affiliation, or being an accepted part of a group (which in this context might mean a workplace team, or might mean their healthcare profession, for example); and maintaining a positive self-concept (ie: behaving in a way that matches their idea of themselves). A consistent performative routine within a team and the social norm it implies may thus particularly shape behaviour for those who are focused on their membership of the group (ie: recent arrivals, junior members, those in training).

As well as emergent social norms, actors may actively seek to persuade and influence behaviour, for example in seeking to promote adoption of a new guideline. In diffusion of innovations theory, some distinguish between diffusion as a spontaneous process of innovation spread, but use the term dissemination for diffusion that is actively planned and undertaken (Rogers, 2003). A leading psychologist of social influence, Cialdini, has summarised extensive research on the psychology of influence around six factors, which are listed below with a brief informal description after each (Cialdini, 2007):

- Consistency (I've said I'll do it, so I will);
- Reciprocation (you did something for me, so I'll do something for you);
- Social proof (everyone is doing it);
- Authority (I was told to do it);
- Liking (I like you, so I'll do it);
- Scarcity (I might not get another chance, so I'll do it).

Although these are based on extensive empirical research, it is worth noting two issues with these principles and social psychology more generally. First, much social psychology research is laboratory-based and researched in a way intended to be isolated from social context; yet of course social influence takes place in specific social situations, and this leaves an inevitable gap between social psychological theories and the real world. Second, most social psychology research is based on WEIRD samples; participants who are from Western, educated, industrialised, rich and democratic societies – and specifically, lots of American undergraduate students (as in this case, as Cialdini has spent his career in the United States). There is evidence suggesting that social mechanisms do not operate in similar ways across all societies, as one might expect (Henrich, Heine, & Norenzayan, 2010). So whilst Cialdini's research is extensively cited, and seems likely to be applicable in a western European country like the UK, the potential variations this implies should be borne in mind.

From a marketing perspective, these factors are well-known and widely applied within healthcare as in other sectors (Sah & Fugh-Berman, 2013). However, they do not appear to be widely used in analysing the uptake of guidelines and implementation of good practice more generally.

So far, I have discussed persuasion in terms of the attitudes and beliefs of the individual, and how these may be shaped by their social context. However, the process of forming attitudes and beliefs does not only happen at the individual level, but also for the group. Tindale, Meisenhelder, Dykema-Engblade, and Hogg (2002) describe how small groups somewhat share their cognitive processes, both through their shared understandings and interactions, and through the influence of those members of the group who are seen as holding more of the group's shared knowledge on a particular topic. This illustrates the

importance of taking a multi-level approach, situating the individual in their social and organisational context.

This process of social cognition does not always lead to optimal outcomes. Janis proposed one of the best-known ways in which group decision-making can be sub-optimal in his theory of 'groupthink', where the desire to maintain cohesion and membership of a group hinders the group's decision-making itself, limiting critical analysis within the group and making the members of the group resistant to contradictory information or suggestions from those outside it (Janis, 1982). Although subsequent research has had mixed results on the detail of the model, this core idea that issues related to group identity and belonging can strongly shape group cognition has substantial support (Esser, 1998). In the case of teams of clinicians with frequent new staff (eg: junior doctors) who enter the group uncertain of their position in the group and the profession, this process seems to be potentially relevant.

Perhaps the inverse of this is the concept of 'group psychological safety'. This describes a group with a shared belief that it is safe to take risks such as asking for help, admitting errors and seeking feedback (Edmondson, 1999). This has been shown to be relevant for clinical teams, and in particular for sharing new ideas and improving performance (Kessel, Kratzer, & Schultz, 2012).

Taken together, these two theories illustrate the importance of group structure and processes to persuasion. Where members are uncertain of their position within the group, groupthink is likely to limit the scope for innovations from outside the group to be fully considered. On the other hand, where there is a perception of group psychological safety, this is likely to facilitate identification of ways in which current practice could be improved

and external alternatives openly discussed. There is evidence that maintenance and development of professional expertise (including medical expertise) requires quick, informative feedback, opportunities to practice and make mistakes, and a supportive environment (Ericsson, 2004).

Persuasion is also linked to the identity that the individual has; how they see themselves and wish to be seen. If an individual perceives that their identity as a member of their workplace team is linked to a particular behaviour, this will also shape their attitudes towards it and thus act as a channel of persuasion. Burke and Stets (2009) describe three bases of identities: a personal identity (linked to one's concept of oneself); a role identity (linked to one's perceived expectations of that role); and a social identity (linked to the meanings associated with the relevant social group). Which of these is the most relevant depends on the circumstances. Nevertheless, this again highlights the social and group dimension in defining for a nurse in a particular unit, for example, what the perceived expectations are of that role in that specific social and organisational context.

A useful way of thinking about how those expectations are negotiated is sensemaking; the ways in which shared meanings are negotiated between people concerning events and what they should do about them (Weick, Sutcliffe, & Obstfeld, 2005). Identity is a key part of sensemaking; the expectations of that nurse in the particular unit are not universal or uniform, but a shared construction in that situation, making sense of the particular circumstances and pressures in that place and time and among those specific people.

Despite the importance of these social dimensions to forming our attitudes towards innovations, we typically underestimate how much social norms affect our behaviour, often coming up with alternative individual-level explanations for our decision when these seem

to have been strongly shaped by group processes (Barth, Jugert, & Fritsche, 2016; Cialdini & Goldstein, 2004). This raises methodological challenges; simply asking clinicians for the reasons behind their particular practices are likely to be inaccurate, underestimating the influence of their social and organisational context. Rather, people represent their decisions (both to themselves and to others) in ways that reflect the different identities described above, the situations in which they find themselves, and what they wish to achieve (Billig, 1996). Persuasion is thus not simply a matter of neutral, internal thought by individuals. The formation of individual attitudes is also a function of social processes and structures, including active efforts by people to shape those social processes and position themselves within them.

Underlying these issues of processes of persuasion lies another issue; motivation. In recent decades, it has become increasingly common to consider people's motivations as selfish. This view of motivation reflects not only an analytical change and the rise of economics as a paradigm for social science as a whole, but also an ideological shift in values, at least in Europe and North America (Le Grand, 2003). In terms of motivation, this shift has been understood as a focus on remuneration as a primary source of motivation for people in the workplace. This is related to behaviourist approaches that characterised the process of learning as a simple model of stimulus-response conditioning (instrumental or operant conditioning), with financial reward playing the part of the stimulus.

However, extensive psychological research suggests a much more limited and complex role for financial reward; it can be a motivator, but under much more narrow circumstances than often thought in lay situations (eg: company management). For example, financial reward is unlikely to be a key motivator for most clinical staff (Furnham, 2005). Moreover, there is

substantial (though not uncontested) evidence that providing external rewards for a particular behaviour undermines people's own internal motivations for it (Deci, 1999). Thus though providing external incentives such as financial rewards for a particular behaviour may well be effective in the short term, by replacing internal motivation with an external motivation, once that external reward is removed the behaviour is likely to follow.

The debate around motivation is linked to wider debates in psychology as a whole, which it may be useful to briefly describe. Part of the reason for the contested nature of evidence around internal and external motivation is that it challenges the 'behaviourist' approach, which focuses purely on the observable aspects of psychology (ie: behaviour), and which sees actions as learned responses to particular stimuli – this is the approach argued for by Watson in the 1930s and particularly associated with Skinner, for example (Kaye, 2010). However, this approach was argued convincingly to be inadequate to understand many dimensions of thought and action. Particular arguments put forward by psychologists such as Lashley and Chomsky focused on language learning in particular, where evidence from how people learn languages cannot be explained using behavioural models alone (Kaye, 2010). As a scientific discipline, psychology has largely moved on from behaviourist approaches, though they remain relevant in some specific circumstances. However, the idea of stimulus-response learning was widely referred to in popular culture and thus seems to remain more influential in general discussion than within psychology itself (Jarrett, 2011).

One of the key strands of work which developed as an alternative and a challenge to behaviourism was the humanistic psychology movement started in the 1950s (Stevens, 2007). Humanistic psychology focuses on individual experience and development, such as

Maslow's proposed 'hierarchy of needs', or the importance of personal 'self-actualisation' put forward by Rogers.

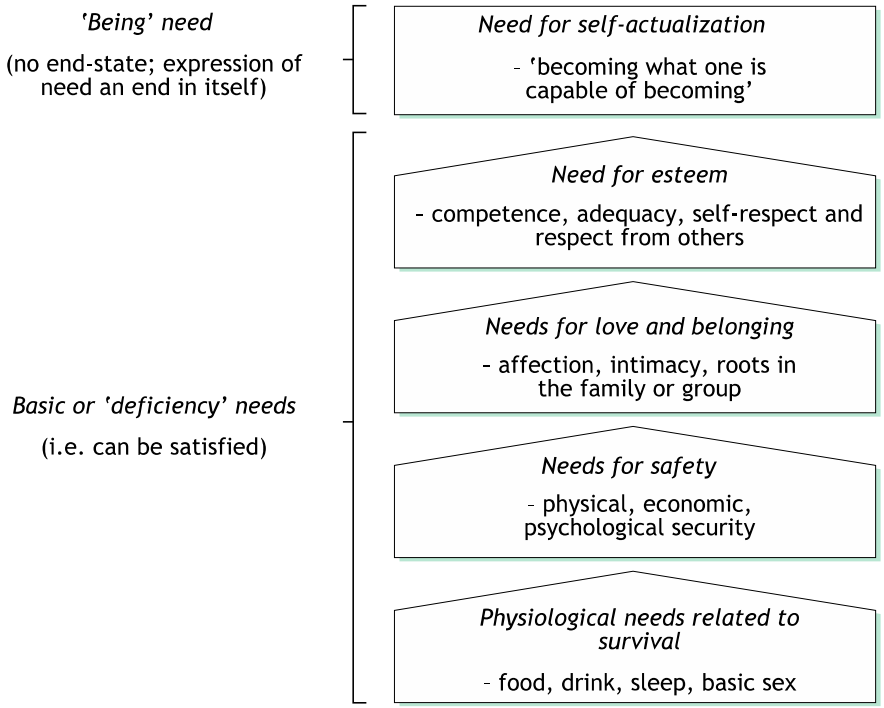


Figure 4-3: Maslow's hierarchy of needs (Stevens, 2007, page 204).

Building on humanistic psychology and the subsequently developing empirical evidence base regarding psychological well-being, a more modern approach to conceptualising motivation is self-determination theory. The theory sees people as inherently motivated, with three core psychological needs: autonomy, competence and relatedness (Deci & Ryan, 1985, 2008). Deci and Ryan argue that people are intrinsically motivated toward action in relation to those needs; where that is not the case, extrinsic motivations are required. This is not a black-and-white distinction, though; Deci and Ryan argue that people internalise external motivations to greater or lesser degrees (depending on how well the motivations relate to their own psychological needs), and thus become motivated themselves to carry out the actions in question without needing the external motivation. In an organisational

context, self-determination theory provides a framework for understanding the importance of issues such as autonomy and control in the structure of the work and its requirements, and the relevance of the social context of the workplace in how people relate to each other (Gagné & Deci, 2005). This may be particularly relevant for guideline implementation, which carries the risk of being perceived as reducing autonomy and control, not increasing it.

Exploring issues of motivation illustrates the importance of how professional roles are designed from a psychological perspective. With the industrial revolution came a change in how work was structured, from the holistic, apprenticeship-based model of trades and guilds to the breaking up of complex processes into simple, standardised and often repetitive tasks for individual workers (Parker, 2002). As the negative consequences of this for both employees and employers began to become clear, organisational psychology has developed theories about how to structure jobs in order to maximise productivity and motivation, such as the Job Characteristics Model and psychological empowerment theory. This is not only a matter of individual jobs, but also how work is structured within teams and indeed by teams themselves, illustrated for example by the socio-technical systems approach developed by the Tavistock Institute. Without going into the detail of each of these models, they highlight a key message of relevance to my research question, which is the importance of issues such as empowerment and a sense of competence in designing satisfying jobs for individuals and teams. Thus, the adoption of an innovation is not only a question of that innovation itself, but also the nature of its implementation in work terms, and the processes through which that implementation takes place.

So far, I have discussed general theories of motivation. Many healthcare professionals, though, would describe their motivation in quite specific terms about working to benefit others. The specificity of this has been explored through research on public service motivation. This has been seen as a specific type of motivation leading some people to choose public service work, and to provide additional motivation for those people when undertaking public service work, with some empirical support (Perry, Hondeghem, & Wise, 2010). Issues remain, though; for example, do high levels of public service motivation amongst public sector workers derive from an initial motivation leading to that choice; or rather, is a higher level of public sector motivation an internalisation of the values of those organisations? (Wright & Grant, 2010)

Slightly more narrow is the concept of high professional standards. Andersen has carried out a small but fascinating mixed-methods study comparing the relative strength of economic incentives, public sector motivation and professional norms amongst Danish dentists, GPs and orthopaedic surgeons (Andersen, 2009). This suggested that all three are important, and have a hierarchy, with professional norms taking precedence over economic incentives, but with economic incentives nevertheless being relevant where strong professional norms were absent.

Having a particular motivation may not always result in an action. Festinger's theory of cognitive dissonance proposes that when we have two contradictory thoughts (cognitions), we are motivated to change; either changing the thoughts themselves, or finding a way to reduce the tension their contradiction creates (Festinger, 1962). Thus, the motivation provided by a contradiction between knowledge of one's own practice and a guideline or evidence of (different) best practice might result in persuasion to adopt the new practice.

But it might also be resolved by finding some other way of thinking that reduces the contradiction, such as considering that the guideline is inappropriate, the resources are not available, or that the action is actually for someone else.

The psychology of motivation is a complex and contested area. The key dimensions that are crucial for my research question are that simplistic lay theories of motivation focused on money and external control are quite inadequate, and likely in many cases to be counterproductive. Understanding the broader psychological bases of motivation is an essential part of understanding why a particular healthcare professional might be persuaded to adopt a particular innovation.

Looking back to the theory of planned behaviour, this section illustrates the additional complexity that affects healthcare professionals and should be taken into account. Individual attitudes and social norms cannot necessarily be so easily disentangled, and social norms are both more complex and less easily reported on than they may seem. People also have their own reasons for acting, and thus innovations do not fall into a neutral space; they are evaluated in relation to what people want, and simple models of worker's motivations as being focused on incentives and rewards are far from giving a complete picture.

4.2.4 Decision

The theory of planned behaviour sees decisions as a product of individual attitudes, social norms and perceived behavioural control, but does not go into detail about how this process of decision-making works. Here again, it seems to me that there are several more psychological theories that are relevant to these processes of decision, concerning the

underlying processes of judgement and decision-making at an individual level, and how these are embedded within their social and organisational context.

Kahneman has summarised much research on judgement and decision-making in his book "Thinking, fast and slow" (Kahneman, 2011). He describes two 'systems' of thinking; one fast, processing multiple streams of input in parallel, quick to recognise patterns and associations, and largely effortless, but subject to some systematic biases, such as the tendency to construct an explanation out of currently available information, rather than allowing for information that we don't have; searching for supporting information, rather than contradiction; allowing how we feel about things to affect how we evaluate them; focusing on causal stories more than statistical likelihood. The other system is slow, effortful and serial, but better at solving complex problems (and not immune to its own errors, either). In particular, Kahneman highlights the issue of overconfidence; the many ways in which we think we know more about issues than we do, including in professional contexts such as medicine. Kahneman argues that our confidence in our judgment depends on the coherence of the explanation we construct (eg: a diagnosis) on the basis of the information that we have, rather than allowing for information that we don't have, for example. Our actions affect our confidence, too; the more that we use skill in a process (eg: surgery), the more we consider that the outcomes must be a factor of that skill, whether or not they are. Of course, this does not mean that expert judgement is always wrong or should not be relied upon. It does suggest, however, that when confronted with a new practice or idea or technology, that our decisions about it are likely to be subject to some psychological biases, and understanding these may help to better understand the decisions that are made.

These processes of decision-making also relate to the specific context within which the healthcare professional is working. Our 'fast system' quick judgement and pattern recognition may indeed be very accurate, and there is evidence to suggest that a large part of medical training and expertise consists of learning to recognise certain patterns and their relations to illness and respond appropriately (Norman, Eva, Brooks, & Hamstra, 2006). Such mental representations supporting our thought processes and based on experience and memory are termed schemas in psychology; schemas of sequences of events (eg: how to respond to a particular diagnosis) are termed scripts (Colman, 2015). Gabbay and May have described how such schemas and scripts are constructed in a medical context using the term "mindlines", emphasising their collective formation and reinforcement within a group of clinicians and their dynamic nature (Gabbay & le May, 2004).

Sometimes, though, intuitive judgement based on previous experience is not accurate. A crucial factor lies in the feedback that is provided. Clear, quick feedback on decisions in a predictable environment helps to form intuitive expertise; unclear or delayed feedback does not (Kahneman & Klein, 2009). However, the complexity of the processes of healthcare, plus the sheer volume of areas where certain practice is desired (Vincent & Amalberti, 2016) mean that in a medical context this feedback is frequently lacking. This undermines the accuracy of individual judgements about the utility of adaptation or innovation (as well as undermining their trust in the organisation and their motivation (Furnham, 2005)).

It can be tempting to conclude from the description above that the solution is to somehow oblige clinicians to use their slower, conscious process of reasoning (Kahneman's system two) in assessing innovations – and to equate that conscious process of reasoning with being 'rational'. However, this process of conscious reasoning is also not as straightforward

as it might seem. The standard expected-utility model of economic decision-making envisages the process of decision-making as being one of trade-offs; adding up advantages and disadvantages. Kahneman has illustrated a range of problems with that model, such as not allowing for what we do not know, and weighting equivalent possibilities differently (eg: losses higher than gains, rare events more than frequent ones, causal explanations more than statistical likelihood) (Kahneman, 2011).

A useful complementary approach to understanding conscious decision-making is behavioural reasoning theory, proposed by Westaby (2005). Westaby argues that reasons are crucial in shaping decisions, and that we will be more likely to choose to do things for which we can think of plausible reasons – and moreover, that a key aspect of those reasons is social, in that they are reasons that we can use with regard to others. Indeed, Mercier and Sperber go further, proposing that the function of reasoning is to generate arguments whose criteria is how good they are at convincing others, rather than how well they conform to an abstract model of rationality (Mercier & Sperber, 2011). If individual reasoning has this social dimension, then the judgement processes of individual clinicians cannot be separated from their organisational and professional context, for that is the social environment in which their reasons count. This links also to the concepts of role identity and social identity discussed earlier, as these identities provide a key reference point in relation to which reasons and arguments can be situated.

This perspective puts the process of group cognition described above into a different light. Rather than group cognition being simply a process of reasoning, from the perspective of behavioural reasoning theory this process can be seen as a group deciding which reasons are acceptable within that group. This will depend on the members of that group and the

relations between them, their individual and collective histories, and their motivations, among other things. This element of dynamic, on-going social construction of what is considered appropriate is emphasised by Gabbay and le May in their concept of mindlines. This process of group cognition does not mean that the decisions within the group are necessarily the same. Rather, where there are different beliefs, people tend to cluster together in subgroups of shared beliefs, reinforcing the validity of their own belief with the shared perspective of that subgroup (Tindale et al., 2002).

In an organisational context, the group formally responsible for making a decision may not be the group that is required to implement that decision. For example, a hospital board may decide to implement a particular guideline across the hospital, but it will be the individual groups of clinicians in departments or wards that actually implement it – or decide not to. The organisational and sociological dimensions of these processes are outside the scope of this thesis, and have been discussed by Greenhalgh and colleagues among others (Greenhalgh et al., 2005). At a psychological level, though, this raises clear issues about how not being involved in a decision-making process undermines commitment to implement the results of it (Furnham, 2005). From a diffusion of innovations perspective, local 'reinvention' of an innovation is often perceived as problematic. From a psychological perspective, though, the process of engagement and adaptation, or making something one's own increases commitment to it (Kahneman, 2011). Psychologically, reinvention of an innovation is a positive factor in increasing the likelihood of its adoption.

In summary, this section on the decision stage of adoption has identified some psychological theories that are relevant to the decision-making process. Understanding the underlying processes of judgement and decision-making can help to explain how particular decisions

are made (and why these do not correspond to the simplistic but widely-used expected-utility model). These processes are situated within a social and organisational context, with decision-making partly operating at a group level, and organisational structures such as feedback and involvement in decision-making affecting the judgements that are made.

4.2.5 Implementation

Deciding to take an action is one thing; actually doing it is another. Gollwitzer has highlighted the importance of translating goal intentions into implementation intentions (Gollwitzer, 1999). Put another way, this means shifting from a statement about what is intended (eg: I will read this guideline) to concrete plans about where, when and how the action will be taken (eg: setting aside time in my diary to read this guideline at the start of my next shift). In psychological terms, this shift aims to reduce the need to rely on conscious effort for implementation by using environmental cues, such as a diary. Using external cues in this way can also be seen in terms of Kahneman's system one and system two, using concrete plans to reduce the need for the conscious, effortful system two to initiate and control action. This approach can have a surprisingly large impact; a meta-analysis of studies looking at the impact of implementation intentions found that implementation intentions had a medium to large effect on goal attainment (Cohen, 1992) (with a difference of means d=0.65), although none of these studies looked at clinical behaviour (Gollwitzer & Sheeran, 2006).

Clinicians are unlikely to only have one goal at a time. More realistically, clinicians will be dealing with multiple goals for multiple patients, and these goals are likely to compete with each other, especially given time constraints (Presseau, Sniehotta, Francis, & Campbell, 2009). In this context, clinicians develop strategies for prioritising and focusing their effort

on the actions that they consider to be the most important in that situation. This can be seen as a form of satisficing or bounded rationality; choosing an option that is sufficiently good as to be acceptable in that specific case, rather than searching for an ideal option (Colman, 2015). This approach of bounded rationality does not necessarily mean providing poor care. The process of trying to consider all possible options (or cover all guidelines) itself has a cost in time and effort, and that has consequences for the quality of care for patients. Taking a strategy of focusing on priorities and using simple heuristics for decisions may indeed be the most effective (Chase, Hertwig, & Gigerenzer, 1998; Marewski & Gigerenzer, 2012). However, there is clearly a tension between this approach and the sheer number and volume of guidelines that clinicians are expected to follow (Allen & Harkins, 2005). In psychological terms, this suggests that it is essential to understand how clinicians go about their process of satisficing; what they consider to be the priorities, and what are their criteria for acceptable care.

Understanding this again requires situating these psychological processes within the organisational context. The priorities of individual clinicians will be shaped by their perception of what their department and their organisation prioritises and what their profession expects, and the feedback and support that they receive (Zimmerman, 2006). This might be formal feedback, in the form of reporting or assessment, or more informal feedback in the form of how their colleagues behave and react to them. It is worth noting that there is evidence that sanctions are unlikely to be effective at the implementation stage; returning to Gollwitzer's theory of implementation intentions, fear affects the formation of goal intentions rather than implementation intentions (Gollwitzer, 1999); in other words, the decision stage, rather than implementation.

Similarly organisational support might be formal support (such as time for deliberate practice), or ensuring a safe space for reduced performance whilst learning a new approach. The processes of learning and continuing to develop expertise are not as simple as just continuing to undertake a particular activity. Part of medical training is learning to carry out complex tasks quickly and automatically; but making cognitive processes automatic also hinders them being updated as desired practice changes (Ericsson, 2004). So organisations that wish clinicians to update their practice should also provide the time and learning opportunities for clinicians to consciously practice those skills, unlearning previous practice and revising it. This is a particular challenge in medicine, where the normal feedback from everyday practice is frequently not appropriate or sufficient to support effective adoption of new skills, even when there is intention by the individual clinician to do so (Norman et al., 2006).

4.2.6 Confirmation

The stage of confirmation can be seen at an individual level as occurring when a particular skill or behaviour becomes automatically part of updated practice; when it returns from requiring conscious attention to being part of an established pattern or script. This process of becoming automatic requires constant effort over a period of time, though, which brings us back to the question of motivation discussed earlier under persuasion. Whatever the motivation was that linked to the initial decision to adopt an innovation must be sustained over a long enough period of time for the innovation to become a routine part of practice, or be supplemented by other motivations – hence the importance of internal versus external motivations, for example.

One key motivation will be consistency; returning to the theory of cognitive dissonance, having said that we will do something, that itself becomes a motivation for doing it (Festinger, 1962; Rogers, 2003, pp. 189-190). However, there is another way of resolving the tension, which is to adapt our reasons to reflect our actual behaviour. In other words, if there is a gap between a clinician's stated intention and their behaviour over time, another way of resolving that is to adapt the reasons for the intention in the first place (Westaby, 2005).

Establishing a new pattern of behaviour is not simply a process of abstract learning, but about integration of a new way of thinking and acting into the wider practice of the individual professional (Eraut, 1994). It involves linking this new way of thinking and acting into the existing structures of thought and action, many of which will have been established over a long period of time and will no longer be consciously considered at all. Thus making an innovation part of routine practice will involve an unpicking of previously established practice, consciously changing it, and continuing with the effort of the new practice until this in turn becomes automatic and unconscious (Bate, Hutchinson, Underhill, & Maskrey, 2012). But because people are not consciously aware of all of their existing knowledge, built up consciously and unconsciously over years of learning and professional practice, they are unlikely to be able to evaluate the real meaning and impact of a change until this process of implementing it in practice takes place. Thus confirmation of an innovation is likely to relate back to similar issues as in the previous stages of persuasion and decision, but from the different perspective of sustained implementation in practice, rather than consideration and decision in principle.

The organisational level can also play an important role in supporting this process of confirmation. Brewster and colleagues describe different ways in which organisations acted to support the confirmation process, with a small number of staff within a team providing sustained support to confirmation for up to a year (Brewster et al., 2015). Practices then became routine in different ways. Some provided an intrinsic motivation for staff through making their work more rewarding. Some, though, required some kind of organisational change, such as change in performance standards to provide an extrinsic motivation, or a change in automation reducing or removing the need for conscious commitment to the behaviour. This study illustrates how organisational structures interact with psychological processes to affect the overall outcome of adoption. Returning also to Feldman's distinction between ostensive and performative routines, this also underlines the importance of the group level in shaping and reshaping routine behaviour to adapt to new innovations, or not.

4.3 Discussion

My proposed framework is structured around the adoption process as described by the diffusion of innovations framework. For each stage, I have proposed potentially relevant psychological theories:

- for **prior conditions**: personality traits (in particular openness and conscientiousness) and other individual differences, such as internal vs external locus of control; motivational needs (eg: learning orientation) and coping styles (eg: problem-based, emotion-based or avoidant);
- for **knowledge**: congeniality bias and the flow of information through the specific social and professional networks of healthcare professionals;

- for **persuasion**: as well as social cognitive theories (in particular the theory of planned behaviour), social processes of influence and persuasion (including descriptive and injunctive norms); group cognition; psychological safety; identity models; motivation theories (self-determination theory, public service motivation) and their relationship with organisational structures and processes (such as organisational decision-making); and cognitive dissonance;
- for **decision**: theories of judgement and decision-making (including prospect theory, scripts and mindlines, intuitive expertise, behavioural reasoning theory) and their relationship with the organisation (such as involvement in collective decision-making);
- for **implementation**: implementation intentions, satisficing and bounded rationality, self-regulation theory; relation to organisational structures and support such as feedback and support for deliberate practice;
- for **confirmation**: motivation theories, processes of integrating new thoughts and actions into routine practice and organisational support for learning and adaptation of routines at individual and group level.

There are three issues relating to this proposed framework that I wish to discuss: the breadth of psychological theories that it includes; the interaction between these theories and other levels of explanation; and the complexity of this proposed framework.

On the first issue, this proposed framework highlights the breadth of psychological theories that seem relevant to the processes of implementation of evidence and good practice. Taking the adoption process stage by stage helps to show this, enabling the different psychological processes involved to be teased apart and relevant theories to be identified.

When these theories are then compared with the psychological theories of behaviour change primarily used so far in implementation research, these seem much narrower in scope, and to less reflect the variety of psychological issues involved at the different stages of the adoption process.

The second issue is the interaction between these theories and other levels of explanation. For each stage, exploring the psychological theories shows that how they work is bound up with the organisational and professional context in which a clinician works. Clinicians' social networks and organisational structure shape the flow of knowledge to them. Their individual attitude toward an innovation is shaped by the groups of which they are part and how those groups form collective attitudes. Their individual decisions are shaped by (and shape) the decisions of the organisation as a whole, both formally (as part of the decision-making process) and less formally, such as how the organisation provides feedback. Their implementation in practice is affected by the priority-setting of their organisation, the time it makes available and other practice support. Whether an innovation is confirmed in practice and becomes part of their unconscious scripts is affected by the evolution of the norms and routines of their group. For this reason, I consider that it is only possible to have a full understanding of these psychological processes by integrating them within a multi-level system that also takes into account the organisational, social and professional systems in which those clinicians work.

This is entirely consistent with diffusion of innovations theory, which sees diffusion of innovations as an inherently social process. Rogers defines diffusion of innovations as follows: "*Diffusion is the process in which an innovation is communicated through certain channels over time among the members of a social system*" (Rogers, 2003, page 5). Rogers

also acknowledges that the specific case of innovation within organisations creates a specific type of context for diffusion, with decision-making at both organisational and individual level, for example. Reflecting their focus on health service organisations, Greenhalgh and colleagues go into more detail about this organisational context, and their model describes the importance of a wide range of issues including the characteristics of organisation in which the clinician works, the processes of diffusion and implementation, the characteristics of the innovation itself, and the outer context of the system as a whole (Greenhalgh et al., 2005). Given this, it seems essential to take into account these contextual factors in considering the contribution of psychological theories to understanding the implementation process as a whole.

These two issues, though, then lead to the third issue of complexity. Although the breadth of psychological theories covered in my proposed framework and its integration of the social and organisational context can provide greater explanatory power, it is certainly more complex than the psychological theories used so far. This creates additional challenges. Conceptually, this proposed framework is harder to work with than a relatively simple model such as the theory of planned behaviour. Methodologically, the use of multiple theories also makes it harder to evaluate the framework, with no ready instruments available to assess it empirically. The use of the stages of adoption from diffusion of innovations theory helps to provide a ready-made scaffolding for this proposed framework, but it remains substantially more complex than existing approaches.

As I argued in Chapter Four, this issue of complexity is a central one for implementation research as a whole. I argued there that part of the reason for the relative lack of success of implementation research is that we are seeking simple, predictive models when what we

are dealing with are complex interactive systems that can never be fully explained in such linear terms. My proposed framework reflects this at a psychological level. Across all the stages of adoption, the social, organisational and professional context within which individual clinicians work cannot be separated from the psychological processes underlying the adoption of innovations. This does indeed create a more complex model. This may simply reflect what is an inherently complex system.

Ultimately, the answer to whether this (or any other) proposed framework is useful and is pitched at the right level of complexity to be an appropriate model is an empirical one. That is the aim of my case study; a first attempt to see whether this framework can be used in practice, and how useful it is to do so. In the next chapter, I describe the aims and methods of that empirical part of my thesis.

4.4 Conclusion

In this chapter, I have set out my proposed approach for filling the gap identified in the literature review, and integrating psychological theory with the diffusion of innovations framework in order to provide a better understanding of implementation in practice. My proposed approach takes the process of adoption of innovations as described by diffusion of innovations theory, and proposes relevant psychological theories for each stage, identifying also how these link to their wider context. Although this is a more complex model than those currently used, I argue that there are good conceptual grounds for seeing these different theories as being relevant to each stage, and that the use of the stages of adoption can provide a structure within which the number of psychological theories at each stage is manageable. Whether this proves viable in practice and which of the theories are the most

relevant are empirical questions, however, and exploring these questions is the aim of the empirical part of this thesis, to which I turn in the next chapter.

Chapter 5. Aims and methods of empirical study

In the previous chapter, I proposed a theoretical framework for integrating psychological theory with the diffusion of innovations model, and introduced a range of relevant psychological theories within that framework. I argued that this approach can address some of the weaknesses with the main strands of existing use of psychological theory in implementation research that I described in my literature review in Chapter Three. The next stage is to empirically explore whether this is the case in practice, which was the aim of the empirical phase of my research.

I describe this empirical phase in two parts. In this chapter I set out the aims of this empirical phase, and the methodology that I have adopted. This includes discussion of the issues with this approach and how it has evolved and changed over time. In the next chapter I will present my findings and discuss how far they support my proposed theoretical approach.

5.1 Aims

My proposed theoretical framework set out in Chapter Four is relatively complex, and contains quite a few different individual theories. Ultimately, I would want to test not just this overall approach, but the potential relevance and added value of each individual theory. It may also be possible to estimate the explanatory and predictive power of the framework as a whole, and individual theories within it, for different guideline adoption scenarios. However, this would be highly complex in practice and beyond the scope of my DPhil research.

Moreover, such a detailed evaluation should not be the first step in testing a new theoretical approach. Before investing substantial resources in researching the fine print of my proposed approach, the first step should be to explore the basic validity of this approach. How far does it help to explain the psychological level of processes of implementation? Does it add sufficient value to existing alternative approaches to be worth exploring further?

Hence, the aims of the empirical phase of my research were to undertake an initial assessment of the validity and added value of my proposed theoretical framework; and if validated, to identify the most relevant theories as a basis for further research.

5.2 Methodology

In Chapter Two, I described my epistemological approach; looking at psychological processes as one level of systems within the multi-layered, complex system of healthcare. This approach allowed me to situate the psychological processes that are the focus of my research within their wider context (the social, organisational and professional context of the individual health professional). In seeking to explore these questions empirically, I sought a methodological approach that would reflect this, allowing me to explore links between different levels of explanation, to see how different systems interact with each other.

In order to be able to explore these links in depth, I have chosen a case study approach, allowing a detailed, holistic understanding of that case (Silverman, 2015). My case study is instrumental (Stake, 2000), in that I have sought to explore issues and process related to implementation through a particular case. In taking this a case-study

approach, I am aiming for analytic generalisation to theories, not population generalisation to frequencies (Flyvbjerg, 2006; Silverman, 2013). The aim of this approach is not to make generalised statements about healthcare professionals as a group, or to quantify the contribution of my framework or theories within it to variations in implementation, for example. Rather, the aim of this case study approach is enable an in-depth, multi-level exploration of implementation in a particular case, and thus enable me to assess the basic theoretical validity of my proposed approach.

I have taken this approach on the basis that a particular case of implementation is an instance of processes of implementation that are, at least in part, common to different cases of implementation. As set out in my review of the existing literature and my proposed model, I consider that the key challenge for my research is to better understand the complexity of those processes of implementation, in particular at the psychological level, as well as their interactions with the wider context in which they are situated. I consider that studying a specific case, in all its complexity and particularity, is the best approach to enable me to fully explore the issues and processes involved and assess my proposed theoretical approach for analysing them.

In order to study different aspects of my case study and to begin to explore the links between them, I have used a qualitative, naturalistic approach. Qualitative methods are most appropriate for exploring the many different aspects of a complex issue, helping to tease out different mechanisms, interactions and meanings, including the social and locally specific aspects of phenomena (Silverman, 2013). For my research question, this was essential, as I aimed to explore the different psychological processes related to individual adoption and how they link to other levels of explanation, which

in the complex world of health systems will be specific to the local context and social, organisational and professional environment of the healthcare professional concerned. This enabled me to look at individual healthcare professionals within their real working situation, not as abstract actors or isolated events.

At a later stage, it would be valuable to take a more experimental approach, seeking to isolate particular psychological processes and assessing their contribution to particular outcomes, for example. But this can only be done once we have a basic understanding of how those processes relate to their context; what is relevant and what is not. At this first stage of testing my model, those links remain to be explored. Given that what I am proposing is a complex model, the added value of which depends precisely on those links and the relations between psychological processes and their wider context, it is qualitative data that are necessary in the first instance for this empirical exploration.

5.2.1 Evolution of methods

Initially, I planned to take a mixed-methods exploratory approach. Following a two-stage exploratory design (Creswell & Plano Clark, 2011), the first qualitative phase was intended to enable me to explore which of the potentially very wide range of psychological factors and theories were relevant in practice and how these related to wider organisational and system factors. I then intended to undertake a second, quantitative phase which would have drawn on the results from the qualitative assessment, and in which I would develop a quantitative instrument to measure the most relevant psychological influences and quantify their relevance in practice.

However, this initial plan proved too complex for a doctoral thesis. As my literature review proceeded, it became apparent that the number of potentially relevant psychological theories was much larger than I had anticipated. Moreover, there was no existing measurement instrument that I could use or readily adapt, and developing such an instrument would be a major research undertaking in its own right. In my first doctoral review (at Queen Mary University of London, the equivalent of transfer of status at Oxford) my psychologist assessor strongly advised me that developing such a quantitative instrument was simply not feasible within the scope of a PhD, and recommended that I narrow the scope of my research considerably.

Taking this advice, I focused on the qualitative exploration in my research, in order to lay the ground for more detailed analysis and potentially quantification in subsequent research. I discuss proposals for how this could be done in Chapter Ten.

5.3 Methods

In taking a psychological perspective, my focus is on the individual. As I argue above, this should take account of their context and wider issues; nevertheless, as a psychologist, my core focus is on how these wider influences operate at the individual level. Therefore, I sought to look at a case concerning behaviour that is within the control of the professional concerned. Of course, for anyone working within a health system, wider organisational and system factors are always present. My aim was to focus on behaviour where a clinician can make their own individual decisions about what they do, rather than where actions are collective (eg: surgical teams) or primarily determined by organisational factors (eg: whether particular resources are available).

Given the collective and team-based nature of much healthcare, and its dependence on resources and availability of particular facilities, this consideration excluded a lot of potential topics. For example, though there are well-identified variations in cancer outcomes, the processes involved are dependent on action across multiple different healthcare services, as well as resources to ensure availability of particular diagnostics and treatments, making it difficult to tease out factors affecting action specifically at the individual level (Organisation for Economic Co-operation and Development (OECD), 2013).

As the focus of my research is on the 'implementation gap' between recommended practice and what actually happens, I also sought to identify a case study where this gap was evident. This meant seeking a case where there was explicit and authoritative guidance, together with evidence that the behaviour in question varies substantially between individual professionals. Again, this was surprisingly tricky to find. Whilst there is more generally available data about collective actions (eg: wards, hospitals, GP practices), finding an example of clear guidance combined with individual-level data was not straightforward.

Whilst I spent considerable time researching potential case studies that fitted my theoretical criteria, the final choice was driven by practical considerations and personal networks. Following a presentation on my research, an academic colleague suggested the topic of HIV testing as something that I should explore. That colleague put me in touch with a senior clinician-researcher in the HIV field, who in turn helped me to understand the issues and to gain access to my research sites. Her own interest was sparked by a previous study on HIV testing which had thrown up issues of

implementation that she was still seeking to understand (Rayment et al., 2013; Rayment et al., 2012). So whilst I had clear criteria in mind for the kind of case study that I was looking for, the process of actually identifying it and enabling it to take place was contingent upon my local contacts.

The case study that I chose on this basis is the implementation of guidance on universal offering of HIV testing in hospitals serving populations meeting the criteria for high HIV prevalence in the catchment population (British HIV Association, British Association of Sexual Health and HIV, & British Infection Society, 2008). This guidance recommends that universal HIV testing should be considered for all general medical admissions and everyone registering in general practice for areas where diagnosed HIV prevalence in the local population is greater than 2 per 1000 people; this includes all of London, for example (Public Health England, 2015). However, the experience in implementing this guidance shows great variability in testing rates at the level of individual clinicians (Health Protection Agency, 2011).

I identified research sites within my overall case using pragmatic criteria. My initial links had put me in touch with colleagues at what became my site one, a major London teaching hospital that had been piloting initiatives in HIV testing, and were keen to better understand individual variation in testing. In researching the case study, I also identified another site in London, which was also a major teaching hospital and which had specifically identified challenges concerning individual variation in testing rates. In both cases, the senior clinician-researcher I referred to above put me in touch with the lead consultant, both of whom agreed that I could undertake research at their site.

Given the difficulty of identifying cases that would allow me to address my research aim, and the complexity of the issues that emerged rapidly from my initial interviews, I decided that my best approach was to concentrate my efforts on fully exploring this single case study. Preliminary analysis of my initial interviews suggested that this case study did indeed address the range of issues and stages that I had proposed in my theoretical model, as well as raising further issues that I had not considered. As the aim of my research was to undertake that preliminary exploration, I concluded that this single case study was sufficient to achieve that aim, and that I would gain best insight into the complexity of the issues involved by an in-depth exploration of this single case rather than through a shallower exploration of a greater number of cases.

Moreover, when I interviewed the lead HIV consultant at site two, she described a high degree of organisational commitment to implementing the guidance, with the organisation putting funding in place including a specific staff member to support implementation. On that basis, I considered that site two could serve as a critical case (Flyvbjerg, 2006), one with circumstances that make it particularly illustrative of the wider issues being investigated. The efforts that the site two hospital had made at organisational level to remove barriers to implementing the guidance meant that the psychological issues could be expected to be as visible as they would ever be, and thus this case would provide one of the best possible cases for understanding those psychological factors. From then on, I concentrated my interviews on that site.

Within each site, I had an initial discussion with the lead consultant. As well as interviewing them, I asked for their help in identifying potential participants. My aim was to have a purposive sample of participants at different levels and with different

perspectives on the adoption of this 'innovation' of routine HIV testing; positive and negative, senior and junior, and in different organisational contexts. The purpose of this sampling strategy was to test how well my theoretical model seemed to be valid across these different perspectives. As my contacts and interviews progressed, I opportunistically sought further onward contacts on the same basis. This process worked better at the second site than the first, though in both cases the process of identifying participants and getting their agreement to participate was time-consuming.

I collected data primarily through semi-structured interviews with individual clinicians. I chose individual interviews (rather than focus groups, for example) in order to be able to assess my proposed model at the individual level, and to minimise the risk of participants feeling obliged to shape their answers for the benefit of other colleagues (through groupthink and social influence mechanisms as described in the previous chapter, for example). This seemed likely to be an issue, given that I was (for many) asking them to discuss a gap between their own performance and performance required by the guideline. The semi-structured approach was intended to strike a balance between testing my proposed model (which suggested a specific set of questions that I wished to explore) and leaving enough space in the interview for the participant to redirect discussion, or raise other issues which might provide disconfirmatory data.

Reflecting my proposed model, my interview structure was based around the adoption process as described by Rogers; see Table 5-1. The questions were selected to explore different aspects of the potentially relevant psychological theories, whilst remaining

general enough for participants to interpret them as they wished and thus to leave scope for unexpected information or topics to emerge.

Table 5-1: Interview structure.

Interview structure	Stage of adoption
Introduction (as per information sheet) and consent	(Not applicable)
How do you find out and act on new guidance or good practice? What is the attitude of your organisation towards new practices and innovations?	Prior conditions
What are the key points of guidance on HIV testing for high HIV-prevalence populations? What have been your sources of information for this guidance? • If necessary: From where have you found out about this guidance (eg: mass media (including professional journals), professional/personal networks)? What do you think about this guidance?	Knowledge
In your perception, what do your colleagues think about this guidance? In your perception, do other health professionals follow this guidance? • If needed: a few? Many? Most? Nearly all? Varies by profession? What would you expect to be the results of you following this guidance? If you wished to follow this guidance, do you foresee any difficulties in doing so? • Only if necessary: how capable do you feel to offer HIV testing to all your patients? Have you tried out this innovation? Or observed others doing so?	Persuasion
Have you decided to offer HIV testing to all of your patients? Has there been an organisational decision to do so?	Decision

How has this HIV testing approach worked for you in practice? • What challenges have you encountered? • What support have you received? • Have you adapted this innovation? What feedback do you have about this innovation?	Implementation
What would affect your use of this innovation in the future?	Confirmation
Is there anything else that I should be asking you? Do you have any questions for me? Thanks for participation.	(Not applicable)

The interviews were carried out wherever was convenient for the clinician concerned; for most, this meant a side room in their normal place of work at the hospital (though one interview was done by Skype). I recorded each interview and transcribed them, and then used the transcript as the raw data for my analysis. My dataset also included my contemporaneous field notes (done alongside the interviews) and other documents referred to by participants to provide contextual knowledge (for example, the admissions notebook for each new patient for one of the departments).

5.3.1 Ethical and research approval

As this research does not involve patients or patient-identifiable data, many typical ethical concerns for health service research do not apply. Given that the subject of my research is the gap between what should be happening and what actually is, my main ethical concern was around the possibility that clinicians would disclose information to me suggesting that they were intending not to follow the guideline, and what (if anything) I should do about that. After discussion, I agreed that should this occur, I would seek advice from my first supervisor (who is also an experienced medical

doctor), and who would make a judgement about how to handle the particular situation. However, I did not expect that this would happen in practice, and indeed it did not. To avoid any risk of identifying the professionals concerned, I have anonymised the sites and participants throughout this thesis.

A secondary concern was related to my recruitment strategy of first contacting a senior consultant, and then drawing on their help to contact other colleagues within the site. I was concerned that this might result in undue pressure to participate, especially for more junior staff, and was sensitive to the need to emphasise their free choice to participate and right to withdraw. In practice, though, clinicians of all levels were well used to the processes of research (as discussed while they were reviewing the information and consent sheets, for example) and proved entirely willing to disregard requests from a consultant to take part in my study if they did not wish to participate.

Ethics approval for my qualitative research was granted by the Queen Mary Research Ethics Committee in June 2014 (QMREC1362c); NHS approval through IRAS was also given for both sites. Following my transfer from Queen Mary University of London to the University of Oxford in January 2015, the relevant authorities at both universities confirmed that these approvals remained valid and appropriate, given that interviews were already nearing completion and the research was low-risk in character.

5.4 Description of data

In this section I describe the data on which my analysis is based – the interviews that are the core data set, the nature of this sample, and the nature of the innovation itself.

My main data set is the transcripts of twenty semi-structured interviews with individual healthcare professionals. These are mostly around 30-40 minutes long (the longest is just over an hour, the shortest just over 11 minutes). I have transcribed each of these interviews, and then worked with the transcribed text to code them thematically (occasionally updating the transcription after double-checking against the audio when close analytical reading suggested a transcription error). I also have some additional documents (eg: the patient booklet used in the acute admissions unit of site two) as well as my own field notes; these have been used as background material in my analysis and not coded.

My interviewees were spread across two trusts (the first of which was dispersed geographically across two physical sites), and eight different departments within them, as set out in Table 5-2.

Table 5-2: Interviews by site, department and role.

Department	**Site 1**		**Site 2**
	1	**1b**	
HIV	Consultant Junior doctor		Consultant
A&E	Consultant Technician		Junior doctors x3 Nurses x8
Other		Lymphoma	Acute admissions unit

		consultant	consultant Colposcopy nurse Geriatrics consultant
Total	4	1	15

The guidance on routine HIV screening focuses on patients admitted to hospital, so action to implement it focused on the key routes to admission, and I also focused my interviews on those departments. Some other departments were also identified by the HIV consultants in each trust as particularly relevant for HIV screening (eg: Lymphoma in site 1, Colposcopy in site 2), and I included a small number of interviews from those, too, in order to get perspectives from different parts of the organisation with different processes. One clinician was specifically mentioned as resisting the guidance (the former clinical director of site 2) and so I also interviewed him in order to explore reasons for overt resistance to the guidance, which generally was not overtly contested. I review the advantages and disadvantages of my data set when considering limitations in chapter nine.

5.5 Analysis

My thematic analysis of the transcripts examined three dimensions:

- the innovation itself (HIV testing), drawing on the characteristics of innovations described by Rogers of relative advantage, compatibility, complexity, trialability, and observability (Rogers, 2003);

- the psychological processes involved, drawing on my proposed theoretical framework described in chapter four;
- and wider organisational and system factors, drawing on the overall diffusion of innovations model together with its application to health service organisations (Greenhalgh et al., 2005).

I avoided taking a deductive approach in my analysis. A deductive approach starts with a theoretical framework and hypotheses and seeks to confirm or refute that hypothesis through empirical investigation (Patton, 2015). However, with qualitative investigation of a single case study, there is a risk of the researcher finding what they are looking for precisely because they are looking for it. I therefore took a more inductive approach, seeking first to observe, explore and analysis my specific observations from my interviews, and only after to seek to progress towards analytic generalisations.

Of course, I could not forget or ignore the theoretical concepts from my proposed framework entirely during my analysis. Rather, I used the ideas from my literature review and my proposed framework as sensitising concepts (Blumer, 1954) in analysing the content of the data. At the same time, I looked for issues that did not fit within this framework or align with the potentially relevant theories within it; data that suggested that processes were at work that I did not expect, or that the overall theoretical model that I have proposed did not fit well with what was being described by participants.

In practical terms, my analysis proceeded in several stages. As I transcribed my interviews, I made notes on points that particularly struck me for later analysis. I then

reviewed the transcripts line by line, seeking to identify parts of the transcripts which related to the three dimensions described above of the innovation, the psychological processes involved and organisational and system factors; I marked these and allocated 'codes' to them; short analytical labels to identify concepts within the data, drawing on coding procedures developed in the context of grounded theory (Corbin & Strauss, 2008).

In carrying out this analysis, I used computer-assisted qualitative data analysis software; specifically, MAXQDA (produced by VERBI Software GmbH, Berlin; see http://www.maxqda.com). This enabled me to code different parts of the transcripts using multiple different codes (eg: for the different dimensions of analysis); to draw out codes which seemed to me to be converging or related into higher-level codes and concepts; to compare different codes within and between participants, and to combine analysis with other characteristics (eg: the site, or the profession of the participant). An example of my coding an interview in this way is in Figure 5-1.

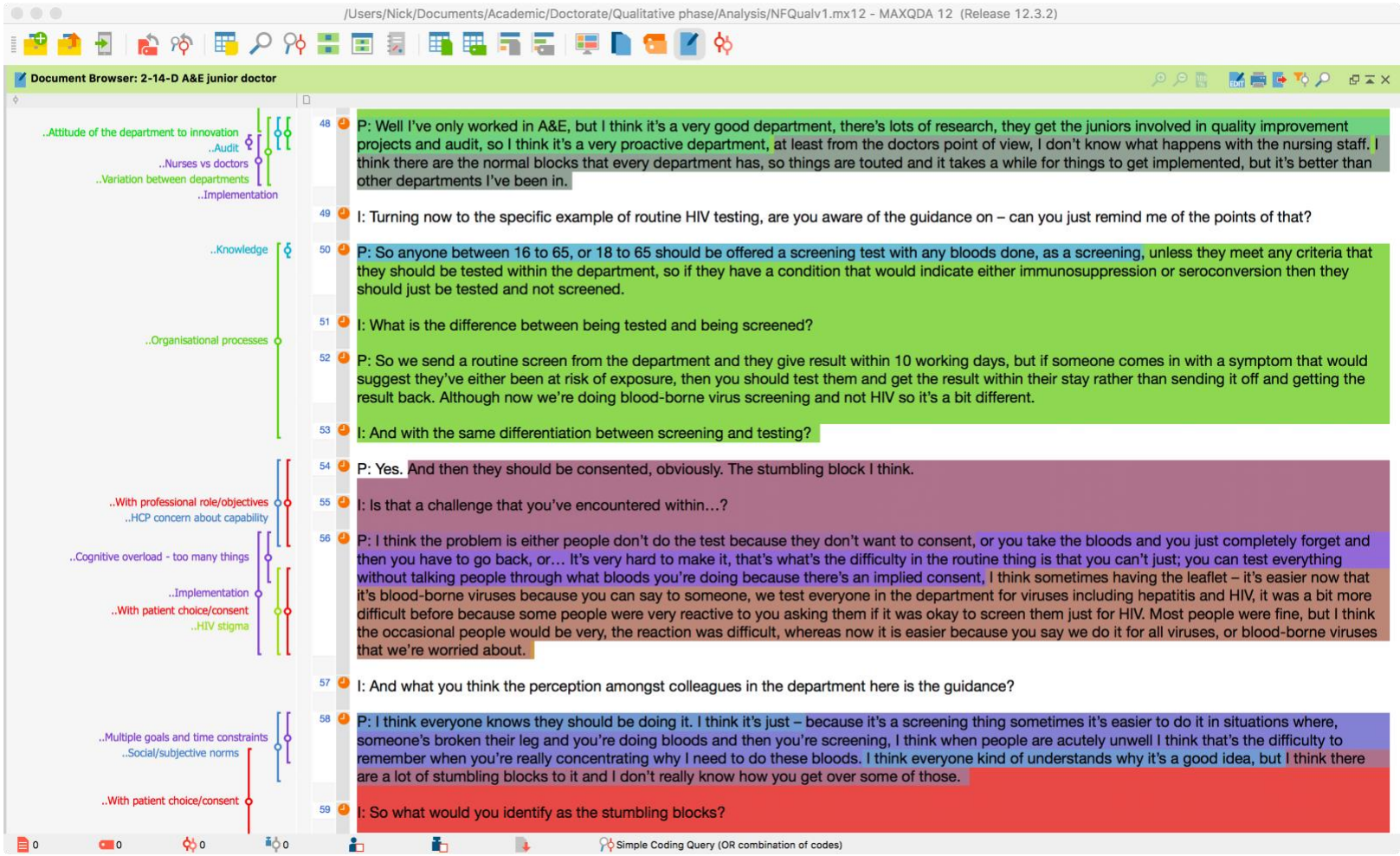


Figure 5-1: Example extract of interview coding

I did not initially define a structure or hierarchy within which to situate these different codes; rather, I went through the first few interviews seeking to identify relevant concepts within the interviews and to code them. In doing so, some seemed related to each other, and I began to group codes together and to relate them to each other in a hierarchical 'tree' structure, beginning to identify higher-level concepts which I considered to combine or emerge from multiple first-level codes. I quickly found coding each interview for all three dimensions (the innovation, the organisation and psychological factors) simultaneously to be impractical. Instead, I went through each interview at least three times, each time focusing on one of those three dimensions. This led to three groups of codes, one for each of these dimensions; see Figure 5-2, with the different major groups of codes coloured shades of blue, green and red.

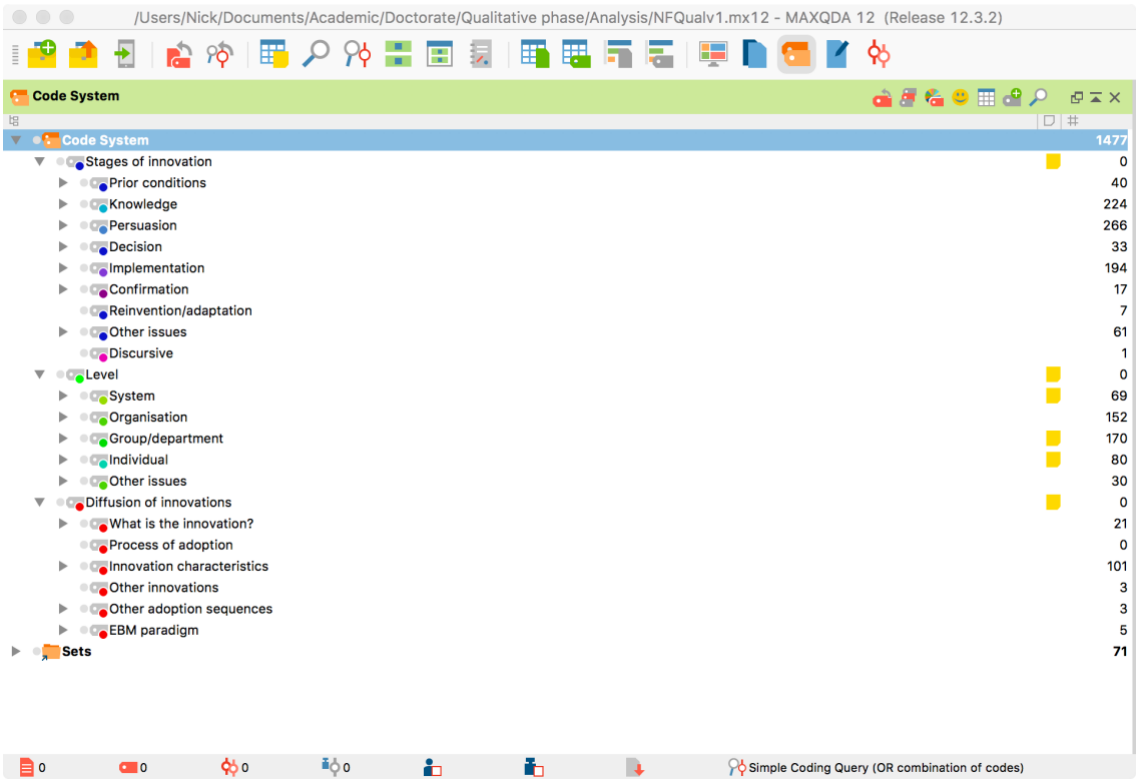


Figure 5-2: Overview of final code tree

I organised those codes according to the basic structures from my proposed theory (so the stages of innovation adoption for the innovation codes; organisational levels for the organisational codes; and by the different psychological theories that I had identified in my literature review and proposed theory – but, in order to leave room for unexpected themes, I left room for 'other' codes in each part of the structure, and did not seek to immediately slot new codes into a particular part of this structure.

As I coded different interviews, initially my codes and their groupings were quite flexible; concepts emerged from some interviews which cast those already coded in a different light, and I changed my codes or their organisation, going back to earlier interviews to check that the revised structure still corresponded to the concepts I had previously identified. As I continued to code the interviews, this 'tree' of codes became more developed and also more stable, with my review of each additional interview changing less about the codes and their interrelations.

To illustrate this process, consider paragraphs 54-56 in the example in Figure 5-1 above. In this part of the interview, this junior A&E doctor from site 2 talks about different problems with the routine HIV testing. Some seem to relate to having too many things to remember; this I coded as "Cognitive overload – too many things", and ultimately integrated into the codes for the 'Implementation' stage of adoption (also marked). The doctor's description of people's reaction to being tested to HIV being different to being tested to blood-borne viruses in general seemed to me to relate to issues of HIV stigma; this is marked green, as I ultimately included this as a system-level issue. This also seemed to relate to acceptability of the innovation itself; I interpreted this under the heading of compatibility with patient choice or consent, and

under the same heading compatibility with professional role/objectives (and separately considered whether this reflected HCP (health care professional) concern about their own capability, an area which I later integrated into the coding structure as relating forming attitudes towards the innovation, and thus under the Persuasion stage.

Once I had coded all of the interviews, I then reviewed the codes overall and their structure. By this time it had become clear that the codes that I identified did broadly fit into the structure of my proposed theoretical approach, as I discuss further in my findings chapters. However, some aspects emerged that I did not initially expect, such as a differentiation between the organisation as a whole and the department within which individuals worked; I discuss this further in chapter seven.

Finally, as I moved from working with codes to writing up my analysis in detail, I reviewed the text that I had coded against the overall analysis and findings that I had drawn from it, checking my findings against the relevant text of the interviews in order to ensure that my findings did indeed related solidly back to the interviews and codes on which they were based.

5.6 Methodological issues

There are four issues related to my methodology that I will discuss further: the nature of the innovation that I am studying; the exceptional nature of HIV; the nature of interviews as psychological data; and the limitations of a qualitative case study approach.

5.6.1 What is the innovation that I am studying?

The starting point for this case study is the recommendation of routine HIV testing for all general medical admissions in areas where diagnosed HIV prevalence in the local population is greater than 2 per 1000 people. I selected this innovation precisely because it appeared to be focused purely on individual level behaviour, that of offering an HIV test. However, the case study shows that even a relatively simple and individual-level change such as this can only be understood within its wider social and organisational context. My data illustrates this in two ways.

First, both the organisations that I studied have re-interpreted the guidance to fit better with their organisational processes. The guidance refers to "all general medical admissions" (British HIV Association (BHIVA), British Association of Sexual Health and HIV, & British Infection Society, 2008, p. 5), but this is organisationally complex. The principal route for people arriving into hospital which is relevant for this guidance is through the acute admissions unit (AAU), having been referred for admission by the A&E department. But organisationally, the blood tests mostly used to screen for HIV are easiest done as part of initial blood tests done by A&E, even though those take place before any decision on admission. To address this, both organisations have effectively extended the guidance to cover initial contact with patients in A&E, and not just the formal admissions process itself.

Second, the guidance was understood by all my interviewees as requiring specific, explicit informed consent for HIV in a way that is not necessary for other blood tests on admission ("*…well you can't send the test without asking them, so even though we can send every other test in the book pretty much without asking, HIV is one you just*

have to say, can I do a viral screen on you, that's all you have to say, but if you haven't said it you can't send it" (Site 2\Interview 2-15-D A&E junior doctor: 79)). But this HIV-specific and explicit consent is not what the guidance recommends. Rather, the guidance states that consent should be sought in the same way as for "any other medical investigation" (British HIV Association (BHIVA) et al., 2008, page iii), with a cross-reference to wider GMC guidance (General Medical Council (GMC), 2008), which also makes no mention of any different or specific requirements for consent for HIV. Yet this practice was universally not the understanding of the professionals that I interviewed, who described similar requirements to the quote above. This is particularly interesting as the perceived requirements for specific consent for HIV testing appear to be a key barrier to implementation.

I initially considered the innovation to be the recommendation for routine HIV testing. However, the data from my interviewees makes clear that in reality, this innovation requires complex organisational changes for implementation, which can only be defined within the specific context of the organisations and departments involved. For instance, organisational-level decisions about funding, departmental processes about blood tests, implementation of different technologies for HIV testing, electronic systems to track tests, training for staff in the associated systems, and monitoring mechanisms for implementation. So though the innovation of 'routine HIV testing' looks superficially simple and universal, it is not; it requires interpreting and adapting to different contexts, even within the same hospital.

5.6.2 'Exceptional' nature of HIV

Despite improvements in treatments (as well increased legal protections) for people with HIV, the condition is still widely considered to have an 'exceptional' character (British HIV Association et al., 2008). There is particular stigma still associated with HIV, which gives rise to unique concerns both in patients and professionals – although ironically, the concerns of professionals now seem to be greater than those of patients themselves (Rayment et al., 2012; Thornton et al., 2012). This could be seen as putting in question how far this case study is appropriate to explore my proposed model and its psychological theories.

In other ways, though, routine testing for HIV is similar to other implementation issues. The guidance represents a broad professional consensus. Despite that, the implementation gap for this guidance is similar to other topics (Health Protection Agency, 2011). In considering the utility of my proposed model for understanding these issues, I see no reason why those psychological processes should not be illustrated through this case study. It seems likely that HIV will raise additional issues related to the historical sensitivity around the condition, but there is no obvious reason why it should exclude psychological or adoption processes that would otherwise be relevant for adoption more generally. Therefore, I think that this case study is appropriate to enable empirical exploration of these issues. It may also illustrate other, case-specific issues, but this is likely to be the case for any topic.

5.6.3 Interviews as psychological data

There are different psychological perspectives on which one can draw in understanding how people think and act, and language data from an interview is seen quite differently between them. In a cognitive social perspective, for example, the individual is seen as an information-processing entity in a social context, and language as a (reasonably) neutral medium for conveying information (Hollway, 2007a). In a discursive psychological perspective, though, the individual is seen as socially constructed and situated, and language as a tool used actively by people to present themselves, others and issues in ways that suit them.

These two different perspectives illustrate a challenge with my methodological approach, in that interview data are seen quite differently within them. From a cognitive social perspective, the interview data can be taken as communicating information about the related psychological processes which are the focus of analysis, and thus potentially providing a basis for better understanding them and making some form of explanation. From a discursive psychological perspective, though, the language used is itself the focus of analysis. The discourse does not illustrate some invisible, underlying process; rather, the discourse itself is constituting and constructing the world, and the aim of analysis is to explore that construction. As Hollway describes, the tensions between these different perspectives (and others) in social psychology is an ongoing debate. It is certainly not going to be resolved in my research. Nevertheless, it is important for me to be aware of the different potential perspectives that could be taken.

The psychological theories in my proposed model fall broadly within the cognitive social perspective. On this basis, the use of interview data to explore those processes seems appropriate and reflects wider research practice (Coolican, 2009). There are of course alternatives such as experimental approaches, but these would be more appropriate at a later stage of research, rather this this initial exploratory phase. Nevertheless, I have sought to remain aware that interview data may not simply represent a neutral platform of communication, and taken account of this in my analysis; I discuss this further in chapter nine.

5.6.4 Limitations of a qualitative case study approach

Even within a cognitive social perspective, a qualitative case study approach is better suited to assessing some of the theories that I have identified than others. In particular, individual differences such as personality traits or coping styles would seem to require a different kind of data in order to assess their impact, such as a specific instrument assessing individual personality and then comparing that with research outcomes. Similarly, congeniality bias is difficult to evaluate without using experimental methods, not least as such underlying preferences for different types of information will not necessarily be accessible to conscious awareness. However, looking at the other theories that I identified in chapter four, there seems no reason in principle why they should not be visible in a qualitative case study.

More generally, a case study approach assumes that in any given case, similar psychological processes are at work with regard to implementation, and thus that by exploring this case, I will gain insight into those processes and how best to understand them. Given the overall weight of empirical evidence supporting the general nature of

the processes described by these theories, that seems to be a reasonable assumption. However, it is important to be clear that this case study can only provide information about this specific case. It does not guarantee that the same psychological processes are involved in all cases of implementation by healthcare professionals. However, it will allow an initial empirical test of my proposed model, and thus provide a basis for further research that might lead to such general explanations.

5.7 Conclusion

Through the process of undertaking this empirical phase, my methodology has required adaptation and flexibility; initially with regard to my overall methodological approach, then in building on personal contacts to identify a topic and obtain agreement from research sites. My concept of what the innovation is that I have studied has also changed during this process. I consider that these adaptations have been appropriate in seeking to answer my research questions and provide a suitable basis for my empirical findings, to which I now turn.

Chapter 6. Psychology findings by stage of adoption

This is the first of four chapters of empirical findings. In this chapter I set out my findings at the individual level, using my proposed framework of the stages of adoption from the diffusion of innovations model. In Chapter Seven I turn to the organisational level, Chapter Eight looks at the systems and policy level; and Chapter Nine brings those findings together into an overall synthesis and relates these findings to my literature review (Chapter Three) and proposed model (Chapter Four).

6.1 Knowledge

The first phase of adoption is about how professionals find out about innovations and good practices. The literature suggests that health professionals find themselves in a situation of information overload, with the volume of information that they should in principle be processing to be far beyond what is feasible, and this was a strong theme in my own data. I found that the health professionals I interviewed had strategies that enabled them to cope with information overload, which would enable them to get the information that they sought without having to try to process everything. In psychological terms, I suggest that this can be understood as a bounded rationality strategy – a means of coping with too much information. The way in which certain types of information are prioritised also suggests a balance between selecting a manageable set of information sources whilst also not missing critical information; psychologically, this reflects the theory of selective exposure to information.

As described in Chapter 4, the volume of information that doctors should in principle be processing has long since exceeded any reasonable cognitive capacity of individuals to do so (Bate et al., 2012; Carthey, Walker, & Deelchand; Fraser & Dunstan, 2010; Vincent & Amalberti, 2016, pp. 79-80). This was a theme in my own data; for example, from the junior doctors who all expressed the impossibility of being aware of all the different items of guidance that they should in principle know, in different ways.

Four strategies emerged from my interviews for how my interviewees coped with this information overload:

- Getting most of their information through networks of their peers (and as those professional networks vary according to their profession and role, so does their information);
- Being selective about additional sources of information that they consider to be useful, such as email alerts;
- Prioritising safety-related information received through more general NHS information channels; and,
- Exploring additional information on the basis of what personally interests them.

In this section, I describe each of these in turn, before turning in the next section to how these can be understood in terms of psychological theory.

Knowledge about innovations came principally to all of my interviewees through the individual's social network:

> *"A lot of it is word-of-mouth, particularly working within an acute care setting like I do, where the interactions with lots of specialty*

> *physicians, they are the ones who will make things apparent in terms of, oh, have you seen this new thing that's come through." (Site 2\Interview 2-3-C AAU consultant: 14)*

As in this quote, interviewees talked about transmission of information 'in the field', by 'word of mouth'. This pattern of information flow partly reflects the model of spread through a social system described by Rogers' diffusion of innovations model, with the social system constituted in this instance primarily by the professional networks of individual health professionals. Interestingly, though, Rogers argued that mass media channels were relatively more important for spreading knowledge, with local and information social networks more important at the persuasion stage (Rogers, 2003).

As described in Chapter 4, existing literature suggests that the networks of healthcare professionals are structured differently according to their profession and role. Nurses tend to be in social networks that are more hierarchical but less dense (covering a wider variety of people), whilst senior doctors are embedded in denser networks of immediate peers outside their own organisation. Whilst a formal social network analysis was beyond the scope of this doctoral study, I found that the networks that my interviewees described to me appeared to closely reflect this pattern already reported elsewhere (Tasselli, 2015; West et al., 1999). If the principal source of information is indeed through professional networks, as I argue, then the different structures of these networks by profession will also affect the dissemination of knowledge.

In my interviews, though, the picture was not as clear cut as suggested in the wider literature. Nurses described following what their colleagues said even when this contradicted what they had understood from their training. One A&E nurse from site

2 described having understood that the routine HIV testing in the A&E department was for everyone of all ages, but then getting different information from her colleagues in practice:

> *"P: So I start doing everyone, but then they told me, you don't need to do everyone, it's only people less than 65, so I started that.*
>
> *I: Okay. So how did that conversation happen? Was that other nurses here? Was it doctors saying…?*
>
> *P: It was other nurses here." (Site 2\Interview 2-6-N A&E nurse: 21 - 23)*

On the other hand, the junior doctors that I interviewed referred to seeking information actively from senior doctors, who they relied on to point out guidance or other information where relevant:

> *"So then it's a case of every time you get a scenario, every time you see a patient, if it's something you think you should follow certain guidance about, you might talk to your seniors who might point you in the right direction of the guidance." (Site 2\Interview 2-15-D A&E junior doctor: 13).*

Information flows for consultants were more about keeping up to date, and their networks reached wider outside their department and organisation than for more junior colleagues:

> *"It's about moving out, not just sitting on your laurels but looking way out there, looking at what should I be doing,.." (Site 1\Interview 1-1-C HIV consultant: 329)*

As with the other consultants, this quote illustrates that this consultant was aware of wider practice in her field more generally and how it was changing, and was thus drawing on a wider range of knowledge sources than just those within her organisation – a more cosmopolite range of sources, as Rogers terms it (Rogers, 2003, pp. 207-208).

Several of the doctors also described having selected additional sources of information (in particular email alerts) to inform them of changes as they emerged:

> *"I suppose our external guidelines, things like NICE and public health, well, mainly by email, because I've put myself down for alerts for that kind of thing." (Site 2\Interview 2-1-C HIV consultant: 17)*

Sources such as the ones described in this quote were chosen by the individual interviewees, and thus other sources were by implication not chosen. I suggest that this was a means for individuals to control the information flow that they received, rather than the wider organisation or system.

However, there was one exception: safety-related information with direct relevance for their clinical practice. In this instance, the formal channels were repeatedly identified as how my interviewees found out about that kind of information:

> *"So if something is, you know, so if there is a new alert, for example, around a safety of a medication, with new guidance for example, that will be emailed out to the relevant teams. Sometimes that will come through the, the kind of the structure of the departments, in terms of to the medical director for that division, or the clinical directors and then through to the individual teams. Sometimes it will be a mass email to all consultants or all doctors and nurses or whoever may be involved." (Site 2\Interview 2-3-C AAU consultant: 68)*

This quote illustrates not a different process but a difference in attention. As this consultant describes, safety-related information came sometimes through the same processes (what could be seen as mass media channels, as the information is being broadcast to many recipients) as much other information that was not being focused on. I concluded that the difference with the safety-related information was not the process through which the information was coming (ie: the information channels), but

rather the attention that was being paid to this type of information in comparison to other information being disseminated through those channels.

Another way in which differences in attention were important was individual, personal interest to investigate or make oneself aware of particular topics:

> *"But for the majority of things it really requires someone to be interested and looking to, um, you know to have picked up on it." (Site 1\Interview 1-3-C A&E consultant: 10)*

There were many different examples of the importance of this personal motivation from my interviews. A consultant who helped shift a whole unit to routine HIV testing not because of the guidance, but because she happened to have come across HIV as an issue during her training in Spain (1b-1-C); a junior doctor who acquired a long-term interest in HIV because of having previously trained under a registrar who was "*passionately advocating picking up HIV in undiagnosed patients*" (Site 2\Interview 2-5-D A&E junior doctor: 19); another who was aware of the guidance because it was "*an interest of mine has been since I've been a medical student, so I just sort of knew about it*". (Site 1\Interview 1-2-D junior doctor, infection and immunology: 33).

I propose that the approaches to acquiring knowledge described above can be interpreted in psychological terms as a filtering mechanism, through a combination of two psychological processes: selective exposure to information, and bounded rationality.

Satisficing, or bounded rationality, was originally developed by Simon (1956) precisely to describe how the mind copes with cognitive overload. As described in Chapter 4, bounded rationality refers to strategies of replacing laborious cognitive processing of

all available information with simpler reduced processes (Marewski & Gigerenzer, 2012). This is typically applied to decision-making (eg: the use of heuristics), but I suggest that it can also be applied to the strategies used by health professionals for how they acquire knowledge in the first place.

Bounded rationality as described by Simon sees behaviour as being the product of both cognitive processes and the environment in which they are set. Marewski and Gigerenzer argue that therefore simplified approaches can be "ecologically rational" (Marewski & Gigerenzer, 2012, p80) when they fit the goals of the actor combined with the environment in which they find themselves. In the situation of cognitive overload facing today's healthcare professionals such as my interviewees, finding satisficing strategies for reduced processing of information is not merely optional, but essential.

I suggest that the strategies outlined above are such a 'satisficing' strategy. For information to come from colleagues means that a professional peer has already processed this information and considered it relevant. And the self-selection of other sources such as email alerts provides a means of filtering those sources to those which the individual concerned perceives to be the most relevant, and to limit the flow of information to an amount that they are able to process.

Selective exposure is a psychological mechanism through which people avoid information likely to challenge their attitudes, beliefs or behaviours. Patterns of this selective exposure to information are well established, as outlined in chapter 4 and summarised by Hart et al. (2009). The theoretical model for selective exposure contrasts two conflicting motivations: a 'defence motivation' (avoiding information

creating a cognitive dissonance) and an 'accuracy motivation' (seeking out the most relevant information whether it is comfortable or not).

Information about new practices and techniques can be expected to create some cognitive dissonance. By definition, it is likely to challenge the professional's current practice, and thus create a cognitive gap between what they are currently doing and what information about new practices suggests they should consider.

Nevertheless, the accuracy motivation does sometimes trump this discomfort. I suggest that this is the case with regard to safety-related information. It was striking that the general flow of information through formal dissemination mechanisms appeared to be largely ignored by my interviewees, with the exception of safety-related information. This would fit with the theory of selective exposure, on the basis that the accuracy motivation to note safety-related information would be strong enough to overcome a more general defensive ignoring of that information flow.

In summary, healthcare professionals need strategies to deal with an overwhelming flow of information. I identified four strategies for dealing with this information flow from my analysis: getting most of their information through networks of professional peers (with those networks varying in structure according to profession and role, as described elsewhere); being selective about additional sources of information they consider useful; prioritising safety-related information from general information flows; and exploring additional information on the basis of personal motivation and interest. In psychological terms, I propose that these can be explained through a combination of bounded rationality and selective exposure to information. It is worth noting that because a strategy involves bounded rationality and not trying to process all

information, that does not mean that it is less effective – in a time-critical situation such as medicine, it may be highly effective. Nevertheless, the strategies used are important to understand, as they have implications for how to get information to the right people within the organisation and system as a whole.

6.2 Persuasion

As described in Chapter 4, in psychological terms persuasion can be seen as the formation of attitudes towards an innovation, as well as beliefs about it. Those who work on guidelines focus a great deal on ensuring a robust evidence base as central to this process of persuasion, by ensuring that guidelines are seen as credible and that they influence action. On the basis of my interviews, though, I suggest that the key issue affecting the attitude of individual clinicians towards my case study guideline was not whether they agreed with the guidance (which they almost universally did). Rather, it was how far each clinician saw the guidance as relevant to them and their practice in particular. In other words, the issue was not why this action should be done; but why this individual felt that they should be the one doing it.

Only one of my interviewees explicitly contested the routine HIV screening guidance (the former Medical Director of site 2, 2-2-C, now a consultant in acute internal medicine and geriatrics), who was unconvinced about whether the HIV testing recommended by this guidance was bringing real benefit (referring in particular to his predominantly elderly patients). Otherwise, I was struck that none of my other interviewees contested the guidance (its content or evidence base).

Rather, the key issue that my interviewees described in relation to their attitude towards the guidance was how relevant it was to them and their specific professional responsibilities. This was described clearly by the HIV consultant in site 1:

> *"It sort of depends on the focus of the department. It's more about the focus of the department than about the guidance. The guidance is the guidance. It's whether you can perceive messages outside of your own focus of control and take them on board and understand how they connect to your area of, of specialty." (Site 1\1-1-C HIV consultant: 135).*

In psychological terms, the attitudes of my interviewees seem linked to two concepts: identity and bounded rationality. As described in Chapter 4, Burke and Stets (2009) describe different levels of identity: personal, role (their professional role, in this context) and social. In this context, the clinicians that I interviewed consistently defined their professional role in terms of the department where they worked; so not just 'doctor' or 'nurse', but 'emergency department doctor' or 'colposcopy nurse'.

Simon links this concept of professional role to bounded rationality through the role being identified with one part of an organisation (Simon, 1997), very much as my participants described. Simon argues that this simplifies decision-making by reducing it from the whole scope of possible actions that this person might take to only those that are within the aim and scope of that part of the organisation.

By linking their professional identity to their particular department, my interviewees thus created a filtering process for potential actions. As with the knowledge stage, this provides a means of reducing a very large set of potential actions to a more manageable, smaller set. As so clearly described by the Site 1 HIV consultant, the key

question then became how far individuals perceived this guidance as relevant to their specific role, and how far they did not.

There were three factors in particular that interviewees referred to with regard to the relevance of guidelines:

- relevance to their primary area of responsibility;
- a specific position within their organisation that gave them a particular responsibility to act;
- and the specific characteristics of the patients they were dealing with.

For the HIV consultants and the junior doctor in immunology and infection at Site 1, my case study guidance was directly related to their primary professional role. One other participant who also saw the guidance as directly related to her primary professional role was the lymphoma consultant in Site 1. Her perception was that HIV infection created specific care needs for her patients directly related to care for lymphoma, and thus considered that HIV testing should be a routine part of care for them.

A junior doctor in the Site 2 A&E (2-5-D) was initially persuaded about the relevance of routine HIV testing because of having helped with an audit earlier in his career that had shown the impact for specific patients who could have been diagnosed with HIV earlier and who had worse outcomes as a result. He had thus become convinced of the consequences concerning the guidance arising from his care in any department, and appeared to have integrated routine HIV testing into his perceived core professional role. Indeed, he had gone on to play a leading role in promoting routine HIV testing for the site 2 A&E.

Some participants saw relevance linked to their awareness of a specific problem within their organisation that they could act to overcome because of their role within the organisation. This was the case for the consultants in the A&E and AAU departments, in that they recognised that their departments had a particular opportunity to carry out such screening, even though this was not strictly required by the guidance in A&E (see Chapter 5).

> *"…essentially that the emergency department was doing blood tests, but not testing HIV and then they would get up to the ward where they were expecting to do the HIV test but they weren't having blood tests. And so there was a kind of a missed opportunity. […] So, in ED the guidance itself doesn't apply necessarily to the ED part of the pathway, but in fact it's the ED that has the opportunity to apply the guidance, if you see what I mean." (Site 2\1-3-C A&E consultant: 54-56)*

Similarly, the HIV consultant on Site 1 had originally got involved only because she saw a gap within the organisation, with no-one senior addressing routine HIV screening, and decided to try and address it.

It was also the case that more junior staff who had not themselves taken these organisational decisions still saw the specific organisational responsibility as making the guidance relevant to them (eg: A&E nurse 2-9-N on site 2). The specialist colposcopy nurse (2-4-N, in site 2) was an interesting example of this. She was explicitly <u>not</u> persuaded about any particular relevance for her patients – indeed, she described having conflicting messages about whether routine HIV testing should be carried out in her specialism (she understood her own professional body as <u>not</u> recommending such routine HIV testing as part of colposcopy). At the same time, though, she accepted that the colposcopy service had a unique organisational

possibility to screen their patient group which they had been asked to do by the HIV department, and they were integrating it into their routine care.

Several participants at site 2 referred to the specific needs of the local population as making HIV screening relevant for their professional role, meaning the particularly high HIV prevalence in both catchment areas:

> *"…we're in a quite a high risk area for HIV, I think she said something like 24%[a] of our borough, this hospital have HIV, so it's quite a high area for HIV.*
>
> *I: Gosh, that is high isn't it…*
>
> *P: So it's a good – when people come in, it's a good point to ask as they come in." (Site 2\2-9-N A&E nurse: 21 - 23)*

Some interviewees appeared to have a negative attitude towards the guidance, again not because they contested whether routine HIV testing was a good idea in principle, but because they did not see that they specifically should be carrying it out as part of their role – though all of them worked in places where in principle, it should be. The junior doctor testing champion in site 2 A&E (2-5-D) described this as a key reason for low HIV testing rates in that department, as did the A&E consultant in site 1:

> *"…often, it's sometimes seen as not an emergency department job to test for HIV. Not in terms of screening, but just in terms of making the clinical diagnosis. So if someone presents to the emergency department making the diagnosis of HIV isn't really seen as an emergency diagnosis. It's seen as something where you exclude, you know, a severe emergency and then if they haven't got a severe emergency you can discharge them and someone else can make that diagnosis if that's the underlying diagnosis." (Site 1\1-3-C A&E consultant: 36)*

[a] The actual figure is 9 per 1000, so 0.9% (Public Health England, 2015).

Several other interviewees (particularly nurses and junior doctors in the Site 2 A&E) explained their attitude towards the guidance in this way, describing it as not directly related to their core professional role.

Relevance was not the only mechanism through which attitudes were formed. When asked about their own attitudes, some participants described the exercise of authority by their senior colleagues, as described by the HIV consultant in Site 2:

> *"P: I think, and certainly the SHOs in AAU have said to me personally, that as soon as our consultants say you have to do this, we'll do it. Until they say you have to do it, we've got so many…" (Site 2\2-1-C HIV consultant: 117 - 117)*

How this authority by senior colleagues was exercised in practice seemed more nuanced than a simple instruction. In fact, the senior clinicians of both the AAU (which the quote above refers to) and the A&E department in site 2 were formally committed to routine HIV testing, so one might conclude that the junior doctors have been told to do the testing – and in one way, they have. But junior colleagues also seemed to be aware of what their senior colleagues would actually insist upon, and what in practice they would not pursue, as illustrated by this quote from a junior doctor from the emergency department:

> *"I: And how about feedback from senior colleagues? Because at start we were discussing quite a lot about the role of senior colleagues in terms of that guidance, you'd be discussing with them before you discharge the patient, or sent them on for admission; is this something that would come up in those conversations?*
>
> *P: Never." (Site 2\2-15-D A&E junior doctor: 86 - 87)*

In psychological terms, authority is one of the six mechanisms of influence described by Cialdini and described in Chapter 4 (Cialdini, 2007). I had expected to see all six of these mechanisms of influence in my data, but only authority appeared to be playing a

substantial role. More unexpectedly, social proof (adapting one's own behaviour to follow what others are doing) did not seem to be playing the role that theory would have predicted. On the contrary, interviewees seemed quite clearly able to separate their own practice from what they perceive others to be doing:

> *"… some people, just from what I've observed, some people just won't do it at all, won't, I don't know whether they don't know the guidance and that's why they won't do it? Or because it's not, it's not what they normally do, they just won't, or they don't want to ask, or they don't know how to ask to take it… Whereas, for me it just comes, I just do it sort of naturally, and it just becomes part of the routine." (Site 2\2-7-N A&E nurse: 34)*

For some staff, the novelty aspect of the guidance was appealing in itself; as a new challenge for the consultants, and as a learning opportunity for the technician and some of the nurses:

> *"I find life is boring if you do things, like, the bit of the lowest common denominator, to the lowest common level, you know, if you try harder, and try and do something different, and exciting and interesting, you might actually enjoy it and you might actually, get some interesting findings, and life can be better if you try harder than just the minimum. So, if I'm going to do this thing, which I wasn't interested in at all, ok, I became interested in it by doing it, you know it became interesting to me, and it's become something I'm really passionate about." (Site 1\Interview 1-1-C HIV consultant: 337)*

More generally, several of the nurses had a positive attitude towards working in A&E precisely because of the constant novelty and the lack of routine, in contrast to what they saw as more routine work on the wards. But for the junior doctors that I interviewed, novelty did not seem to be a positive attribute; rather, this guidance was seen as just another thing to remember in a situation where there was already too much to do.

In summary, the key issue that I identified for the formation of attitudes towards the innovation was not views about the content of the guidance, but rather how relevant each clinician saw it as being for them – why they should do it and not somebody else. I suggest that this can be seen in psychological terms as a combination of identity (defining their professional role in terms of their department) and bounded rationality (using that identity with one part of the organisation to simplify and reduce their scope of potential action). Authority could be exercised by senior colleagues, but there was a clear gap between what was stated formally and what was actually pursued in practice, and individuals were well aware of this. While awareness of what their colleagues was doing was mixed, it did not seem to have any particular impact. The impact of the novelty of an innovation seemed mixed, with junior doctors seeing that as meaning just another thing to remember, whilst some other staff saw it as an opportunity for learning and development.

6.3 Decision

Psychological theories such as the theory of planned behaviour typically represent decision-making as essentially individual; a cognitive calculation based on a range of inputs, with an unambiguous output. However, from my interviews, the decision processes seemed to be much more social; more complex and multi-level, with the key decision-making level being the group. Decisions tended to emerge over time from informal interactions within the group, not from formal processes – or even necessarily being consistent with them. In this section I begin by focusing on the group level of decision-making, and then look at how this relates to individual decisions.

In the next chapter, I explore in more detail how the group is constituted within the department, and how the departmental level is distinct from the wider organisation. For the purposes of this section on the decision stage, though, the key group for decision-making was the department:

> *"It's unique across a department, you know, whether the message… Whether they take the message on as a personal message, you know, this affects their patients and it's important and it will affect their patient outcomes, or whether they just see it as some extra public health of someone else's they have to do." (Site 1\1-1-C HIV consultant: 153)*

This quote illustrates a general pattern in my interviews, with participants perceiving different departments as having different attitudes and approaches, and forming collective views. These perceptions also relate to the previous section and the identification of individuals in terms of their departmental roles and scope of practice.

In terms of processes of departmental decisions, interviewees described similar processes at both sites, with departments creating and updating their own guidelines, collectively considering which parts the group accepts – and, indeed, which parts of external guidance the group chooses not to take on board, or feels unable to because of constraints such as resources.

My analysis suggested that this formal process of guidelines was only part of the picture. Much decision-making was informal, and in fact preceded the formal change to the guidance within a department. This was set out particularly clearly by the lymphoma consultant in Site 1 who I described above as helping to shift a whole unit to routine HIV testing. Her description of how this took place was of a gradual shift in

the collective view of HIV testing , with the formalisation of this decision only occurring after this informal shift of views among the consultants:

> *"P: At the beginning I mean when I arrived, I had two old-fashioned professors and, they were of the view this patient has no risk at all. But when they understood that lymphoma is more common blah blah blah, and then they started doing it.*
>
> *I: And how did that come about? Was that you talking to them, or?*
>
> *P: Yes, just, yes or mentioning in the MDTs [Multi-Disciplinary Team meetings] when they were mentioning, well, we should do it in all the patients and then it became the routine." (Site 1\1b-1-C Lymphoma consultant: 107 – 109)*

Overall, this process of a slow shift in the view of the group reflects the kind of dynamic, ongoing collective construction of shared scripts or 'mindlines' for each group described by Gabbay and le May (2004). Guidelines clearly play a role, but not a straightforward one; external guidelines were perceived as requiring processing and consideration by the group before being taken on board, and decision-making seemed to take place through informal, group consideration rather than through formal mechanisms.

This collective process of decision-making was not universal for all my interviewees. In particular, the specialist HIV consultants in both sites described a more individual decision-making process within their department; both seemed to have been quite individual in their decision-making (though they both also described this group-level decision making when trying to implement testing elsewhere in the hospital). On the other hand, they were both highly aware of decisions being made and actions taken across their wider network of similar specialists. It may be that for these very specialised clinicians, the 'group' that they refer to as forming a collective view about

HIV testing is actually a wider network of peers beyond their own organisation, rather than the rest of their own department.

The picture from my data about the nurses and the technician was unclear. From my non-doctor interviewees, there was a consistent perception of collective decision-making as being done by others; the senior people within the department (apart from the specialist colposcopy nurse, who was directly involved in decision-making about routine HIV testing for her service). This perception of decision-making being done by others suggested that these professions are not involved in the decision-making process. But on the other hand, the consultants that I interviewed clearly described nurses as needing to be persuaded, rather than told, which suggests that they are in some way part of the decision-making process:

> *"P: …you have to win the battle by going over and winning over the consultants, and then you have to win over the nurses […] you'd just speak to the chief nurse who's this person, and then you go and you meet that person and then you have training sessions with the nurses. So, that, so it starts with the consultants and moves to the nurses. And then the more junior members of staff fall into place" (Site 1\1-1-C HIV consultant: 201; 207)*

This mixed picture of the degree to which nurses and other professions were involved in decision-making may be due to my specific sample. The nurses that I interviewed were relatively junior. I was unable to get access to interview senior nurses on either site (such as the "chief nurse" that interviewee 1-1-C refers to above) who may take part in the collective decision-making of the department.

In the first part of this section, I have focused on the group level of decision-making. Decisions by individual clinicians were shaped by the wider departmental view, though mostly not determined by it. There was also a clear sense of individual clinical

autonomy. Individual clinicians felt that it was appropriate for them to make their own decisions about the care required by individual patients, despite the wider expectations of the department. Indeed, this autonomy was described by one A&E junior doctor (in his first year of speciality training) as being part of development as a doctor:

> *"But my flexibility this year perhaps to do things, you slowly become more autonomous and less reliant on your supervising senior clinicians to drive the decisions, and so I imagine with that you become more able to follow what you think is best practice. Of course, you would never do anything that you didn't think was best practice even if supervising clinicians were suggesting, or you would have to have a discussion around that if you thought something was bad practice, obviously." (Site 2\2-5-D A&E junior doctor: 9)*

Others described exercising their own judgement, including to not carry out routine HIV screening. For example, three of the A&E nurses that I interviewed cited the urgent nature of some care in A&E as a reason for them not to carry out routine HIV screening. The AAU consultant at site 2 described confusion of patients and difficulties in communication as another circumstance in which she felt that routine HIV testing would not be appropriate, as did the internal medicine/geriatrics consultant (though it was not clear from either interviewee how often such cases actually arose). These were not formally part of the guidance, nor were they positions held universally among my interviewees. Rather, each person seemed to have justifications for the particular approach that they had decided to take.

It is not clear from my data how far these were reasoned decisions in advance, or justifications after the event. The most senior doctor that I interviewed (the former medical director at site 2, consultant 2-2-C) gave an explicit description of doctors using their clinical autonomy to avoid carrying out burdensome actions:

> *":…we allow ourselves a latitude, and we say, well, it is our clinical decision, we are not going to do that. And we do it either because we're lazy, it's too much bother, and all those sort of things. To be a good doctor for a patient, you've got to follow the steps all the way. But some people get bored with doing it, so they don't do all the steps." (Site 2\2-2-C Internal medicine/Geriatrics consultant: 39 - 39)*

It is also worth drawing attention again to the ways in which some collective decisions were enforced much more strictly than others. An example was a change in diagnostic test for cardiac damage. This had been implemented in the site 2 A&E shortly before I did my interviews, and two of my participants (a junior doctor, 2-15-D, and a nurse, 2-12-N) referred to the implementation of this change in practice. From their description it was clear that this change was a collective decision that was being implemented strictly, with close supervision from the doctors in charge:

> *"The seniors were very much, if you're using troponin this week, we want to talk to you about it, just to check that everyone was doing it appropriately." (Site 2\Interview 2-15-D transcript: 27)*

By contrast, the collective decision on routine HIV testing for A&E was not being routinely supervised by the doctors in charge. I suggest that this is an example of how a formal decision may not be the same as the collectively constructed 'decision' about what is expected within the group. Even though the formal decision to routinely test for HIV had been taken, the collective expectation was clearly not that this decision was vital for every patient, and the staff in the department were well aware of that.

In summary, the decision-making process that my interviewees described about guidance for routine HIV testing was a complex one. In psychological terms, decision-making can be seen as a process of group cognition interacting with individual cognition. Though there were formal group decision-making processes (in particular to establish departmental guidelines), these were not the primary mechanism for

decision-making. Rather, decisions emerged from a complex and ongoing process of interaction within the department; a dynamic and collective construction of shared scripts or 'mindlines' – processes which my interviews only partially illuminated. Individuals then took their own decisions within that wider group context, and exercised individual autonomy in deciding what was or was not appropriate in each case. Part of that informal collective decision-making also seemed to involve not just what should be done, but how much effort should be invested by the group in enforcing that decision for each case – with the strikingly low levels of enforcement for routine HIV testing contrasting with much tighter enforcement of other decisions.

6.4 Implementation

Implementation rates for HIV screening at the sites I studied were generally low. There was variation both within departments and between departments that helped me to explore some of the factors affecting implementation. This implementation phase was the stage that my interviewees identified as where most of the problems were with HIV screening; not a lack of commitment in principle, but difficulties with doing it in practice. In this section, I argue that the key psychological issue underlying this is our limited capacity to think about and act on many things at once, and I describe how implementation was affected by three key strategies for overcoming our limited cognitive capacity: prioritisation, routinisation and using external cues. I also explore how 'implementation rates' do not tell the whole story about how effectively HIV screening is really being implemented.

Implementation rates for routine HIV screening were low. In the principal venues for such routine screening, the A&E departments and the AAU department at site 2, interviewees reporting coverage rates of 40% in site 1 A&E; 35-40% in A&E site 2; and 10% in the AAU at site 2. This is particularly striking given that other screening tools being used in the same departments were achieving much higher implementation rates (eg: 95% implementation of risk assessment for deep vein thrombosis in the AAU on site 2).

There was also variation at the individual level within departments, as described by the HIV consultant for site 2:

> *"So there will be some junior doctors [in the A&E department] who offer 15 tests a week and others who offer one. So, obviously, you look at the patient mix, and it's the same, so it's not like those people are seeing a lot more, they're seeing sprained ankles that aren't so serious, that need more attention. So, there's definitely something around the person who isn't offering the test." (Site 2\2-1-C HIV consultant: 55).*

That said, there were also examples of departments on both sites where the implementation rates were much higher, such as the lymphoma unit in site 1, which had 90% coverage of HIV screening; or the colposcopy unit in site 2, which had 80% coverage. I discuss how these departments differed below.

In psychological terms, the implementation stage is distinct from persuasion or decision, which are about forming attitudes and goals. As described in Chapter 4, the implementation stage is about turning goals into actions.

The overall impression from my interviewees is that this is where the achievement of the guideline falls down, as the AAU consultant in site 2 describes:

> *"I don't think anybody would disagree with the guidance in terms of it's a good thing to offer HIV testing to everybody that comes into a hospital. I don't think you would find anyone that disagrees with that. I think where they find it difficult is often the practicalities of getting that test done." (Site 2\2-3-C AAU consultant: 84)*

In this section, I review the main issues that I identified as affecting implementation at the individual level. (Wider organisational and system issues are discussed in the next chapter.)

The central theme from my interviewees relating to the implementation phase was that the problems came from having just too many things to remember. An A&E junior doctor put it particularly clearly:

> *"And I think that that certainly was the overriding feeling amongst my colleagues at my level was not that this isn't a good thing to be doing, not that I find patients have a big problem with me asking them to do the test, not that I feel uncomfortable with doing this test, but I just forget. Because it's busy and there's lots going on and I just forget. And I think that, certainly for me that was the reason why I didn't test every patient was because sometimes it's just not at the front of your head." (Site 2\2-5-D A&E junior doctor: 61)*

In psychological terms, this challenge to remember so many things can be understood in terms of our limited capacity for cognitive processing and working memory. It is well established that people have limited capacity to consciously keep items in their working memory, process information and make decisions (Kahneman, 2011). Training and experience establish some patterns of thought and action, such as recognising certain patterns of symptoms as indicating a particular disease, or automatically knowing how to undertake certain tasks such taking bloods, as described in Chapter Four. This reduces the effort needed to think through and implement actions consciously, but does not overcome such limits entirely.

I identified three strategies in particular that were used in this implementation phase to manage these limits on how much individual healthcare professionals can think about and remember at any one time.

One way of reducing cognitive challenges to a manageable level is prioritisation – focusing on those issues that are most immediately relevant. This emerged as a clear theme in my analysis of interviews, particularly in relation to A&E/AAU doctors. As with the earlier discussion about relevance in the Persuasion stage of adoption, participants referred to their responsibilities within their departments to draw similar distinctions of what was most immediately relevant for them. Again, for participants in A&E and AAU, implementing routine HIV screening was not seen as so immediately relevant as other aspects of care:

> *"I mean, there was a little bit about you know, getting everyone to remember to do it, to do a test which is not particularly, you know, it's not a test that they, the patient needs, if you see what I mean. It's not that you need to know, you know, urgently whether this person's renal function is abnormal or normal, if they test that and you do, and you never get the result of. So it's just remembering to do something which is by-the-bye, if you see what I mean." (Site 1\1-3-C A&E consultant: 74).*

The link between relevance and prioritisation is illustrated by the counter-example from the lymphoma unit in site 1, with its 90% coverage. This unit had successfully integrated HIV testing into their routine care, and the participant from that unit described how this had taken place through changing perceptions to see HIV testing as directly relevant to their specific responsibilities because of its impact on lymphoma treatment.

The other specialist unit with good implementation rates (colposcopy in site 2, with 80% coverage) had implemented HIV testing because of their participation in a research project, which seemed to create a relevance for that activity for the staff in that unit.

Another way of reducing cognitive effort is to change an activity from something that requires conscious attention to something which becomes routine and part of normal practice. From my interviews, it was clear that most doctors found getting explicit consent for HIV testing to be an awkward additional element that was not part of their routine. As one junior doctor replied when I asked her what the stumbling blocks were to implementation:

> *"I think the consent. Because it's not, it just adds that degree that you have to remember to do the tube, but then in amongst putting someone through the pain of cannulation and taking those blood tests and talking them through their illness, it's just remembering I think"(Site 2\2-14-D A&E junior doctor: 63)*

There are counter-examples of staff for whom HIV testing had become routine – in particular, many of the more junior staff (the nurses and the technician). Interestingly, though, many of the nurses for whom this had simply become part of their blood-taking routine in A&E were relatively new to the department, having been there only a few months. I suggest that the process of moving to a new department had obliged people to review their routine practice and adapt it to the local practices – or in psychological terms, shifting routines from being unconscious competence to being consciously considered (Bate et al., 2012). This process of having to take established routines and re-evaluate them as part of changing organisations had made it easier for

those people to incorporate this particular action as part of their re-established routine.

As described in chapter four, using external cues to support implementation aims to reduce the need to reply on conscious effort or recall by providing environmental cues. This strategy had been widely used in both sites. For instance, in site 2 a booklet was completed for each patient in AAU (the 'clerking booklet') with two specific prompts for HIV screening; prompts being included in the IT systems in both AAU and A&E across both sites; and reminders for HIV testing in trays containing vials for blood tests.

Such environmental cues have proved widely successful in other contexts (Gollwitzer & Sheeran, 2006). However, given the low implementation rates described above they had clearly not been successful in the sites studied (although other uses of external supports to implementation had been more successful, such as pre-set standard blood tests incorporating HIV within the lymphoma unit on site 1). Understanding the reasons behind this is not simple, and involves interaction with organisational factors such as the stage in the process at which the prompt intervenes. I return to this issue in the next chapter.

Alongside the issues around limits on cognitive capacity described above, there was also a degree of nuance around what in fact constituted 'implementation' of this guidance. On the one hand, this can be seen as a binary question; was the patient offered an HIV test or not? On the other hand, it was clear from several participants that <u>how</u> the question was asked was as important as <u>whether</u> it was asked; individual practitioners could 'implement' the guidance in ways that were clearly more or less effective.

One A&E nurse discussed this in particular detail:

> *"I think, to be honest when I start taking, when I start asking people if they want HIV tests, the way that I was asking, everyone refused. And I was like, everyone here in the hospital was given a chocolate for people who takes more HIV, and I told the lady was giving a chocolate I told, I want a chocolate too! And she was like saying, you need to change your way that you are going to ask people. So the next month I received a chocolate for taking HIV tests!" (Site 2\Interview 2-6-N A&E nurse: 40)*

When she discussed different ways of seeking consent for HIV testing with other colleagues, this nurse described some of them as being interested and willing to adapt their processes; but others as not:

> *"I think some of them, they only do their jobs. Want? yes, no, straight." (Site 2\2-6-N A&E nurse: 47)*

This nurse was from Portugal and her English was not entirely fluent; I understood this quote as meaning that some of her colleagues were not willing to invest effort in finding the most effective way of seeking consent, but rather were simply asking the question in blunt terms of whether the patient wanted the test or not. In psychological terms, I suggest that this can be seen in terms of personal motivation, and how far individuals invest effort in achieving a particular outcome.

This links to the use of incentives. The role of incentives is typically taken as being to change prioritisation and motivation; to provide an extrinsic motivation to do something where an intrinsic motivation may be lacking. However, this is problematic, for the reasons discussed in chapter 4; such extrinsic motivations are less effective than often thought, and may backfire in the longer term.

Interestingly, direct economic incentives were not used for the implementation of this guidance (in contrast to incentives at the organisational level, which I discuss in the

next chapter). But the A&E department at site 2 which used a range of minor incentives (such as a chocolate bar, which the A&E nurse above refers to) to reward those with the highest testing rates. This could be seen as trivialising the issue through using such basic rewards. However, in psychological terms, I argue that this approach was actually sensibly constructed. By pitching the 'reward' at a level which was clearly not economically meaningful, this 'incentive' instead provided an effective system of positive social feedback that supported good practice.

In summary, having more things to do and/or remember is a challenge that we all face, not just health professionals. Nevertheless, the scale of the challenge of complexity that health professionals face is enormous, and effective strategies such as prioritisation, routinisation and use of external cues seem essential. However, the effectiveness of these strategies also depends crucially on the organisation and system environment in which implementation takes place. A full picture of factors affecting implementation therefore requires considering those organisational and systems factors as well, which I do in the next chapter.

6.5 Confirmation

As Rogers describes it, the confirmation stage is not merely the continuation of implementation. Once an innovation is implemented, people may still not be settled in their view of it; experience of implementation itself may change their mind (or indeed, confirm their confidence in continuing with the innovation), or further information about the innovation from elsewhere might cause them to reconsider (Rogers, 2003, pp. 189-191).

The most visible aspect of confirmation is thus its opposite; when someone decides not to continue with an innovation, to discontinue their current implementation. As this was not the case for any of my interviewees, it was difficult to draw out firm conclusions about the relevant psychological factors for this stage. Nevertheless, one key factor emerged: the importance of supportive evidence, and what precisely that means.

Overall, participants referred to two key factors as affecting confirmation, neatly summarised by an A&E nurse in site 2:

> *"I would keep doing it unless I was told otherwise, or if some new piece of research or new evidence came to light and said right, we need to change or to not do it or something like that." (Site 2\2-10-N A&E nurse: 63)*

The first factor that she refers to relates to the role of the wider organisational decision concerning testing, which I will return to in the next chapter (focusing on how psychological processes are situated in their wider organisational and social context). The second factor - that is relevant for this section - is the importance of supporting evidence for change. In psychological terms, this can be seen in terms of cognitive dissonance, as described in Chapter 4. Being committed to implementing a particular innovation would sit uncomfortably with evidence that it was not actually valuable.

For most participants, this 'evidence' was simply referred to in general terms. For several, though, the supporting evidence they described was more local in character; specifically, whether the routine HIV testing carried out in their hospital had identified cases of HIV. This was neatly summarised by the A&E department technician in site 1 when describing why a trial of routine HIV testing had continued:

> *"It wasn't really an expectation that we're going to find some [HIV positive patients]; that's why we were doing the test, to see if we could find some. And then, because we found some, that's why we continued with it. It shows the importance of having it done." (Site 1\1-4-T Technician: 95)*

The importance of such local evidence was also identified by my only interviewee who was not persuaded of the need for routine HIV screening. He identified that it was precisely this kind of local evidence that would change his mind:

> *"Until I see information which suggests that we have missed patients by failing to routinely screen everybody, I'm not persuaded." (Site 2\2-2-C Internal medicine/Geriatrics consultant: 109)*

This quote identifying information about patients with HIV not being identified by the hospital because of not implementing routine screening is particularly interesting given that earlier in the interview, he had acknowledged that the guidance was appropriate and cost-effective, which suggested to me that he accepted the underlying evidence for the guidance. I suggest that this is an example of a participant drawing a distinction between external evidence (general, published evidence; guidelines from authoritative bodies) and evidence from their own situation; their department, their colleagues; what one might describe as third-person evidence versus first-person evidence. I also found it interesting that references to this local evidence emerged at this confirmation stage of the interviews, and not in relation to the earlier stages of persuasion or decision. This suggests to me that these participants were willing to consider an innovation, decide on it and implement it on the basis of evidence from outside their immediate situation, but then looked for confirmatory evidence from their specific local situation that it was really worth persisting with.

This importance of local evidence was illustrated by another example concerning the colposcopy service. As I described in the Persuasion stage above, the specialist colposcopy nurse that I interviewed had mixed views about the routine HIV screening. However, what appeared to have influenced her and her colleagues to adopt routine HIV screening was a combination of the practical experience of the feasibility of offering the test (having piloting it through a research project), combined with evidence of a local need from elsewhere within the hospital:

> *"Well, the HIV department has said to us, because obviously that's their speciality, and we know there's undiagnosed HIV up there, so colposcopy, because it works so well at offering the test, they've asked if we will continue to offer the test as a routine." (Site 2\2-4-N Nurse colposcopist: 68)*

In summary, the difference between the persuasion and decision stages and the confirmation stage is that the person has experience of the innovation in practice. Whilst the theory of cognitive dissonance certainly seems relevant in terms of consistency between current actions and awareness of evidence about its usefulness, my analysis suggests that there is also a shift in focus in the type of evidence that people look for. External evidence clearly plays an important role in the earlier stages of persuasion and decision, as described above. However, my analysis suggests that once an innovation is being implemented, context-specific evidence about its local implementation becomes more relevant for people's consideration of whether or not to persist with it.

6.6 Conclusion

The overall picture from this analysis of the psychological factors related to each stage of adoption is one of coping under enormous pressure. For the first stage, knowledge,

the key issue is of satisficing strategies for coping with information overload. For the second stage, persuasion, the central issue is again about coping, with healthcare professionals focusing on their specific identity and role within the organisation as a means of managing and limiting what they feel that they should be doing. The third stage of decision-making was more complex than a simple 'decision to implement the guidance', with individuals clearly able to identify the gap between the 'formal decision' to implement and what would be enforced in practice, and to prioritise their own actions accordingly. For the fourth stage of implementation, which my interviewees identified as the stage where the problems were, the central issue again appeared to be cognitive overload, with simply 'too much to remember'. For the fifth stage of confirmation, interviewees seemed to look for context-specific, local evidence to support their view about whether it was really worth persisting with the innovation.

In this chapter, I have primarily focused on the individual level. Of course, the capacity of individuals to handle the challenges at each of these stages is crucially shaped by the organisation and system within which they work. How these organisational and system factors relate to these issues is the subject of the next chapter.

Chapter 7. The organisational context

The previous chapter set out my findings at the psychological level. In this chapter, I turn to the organisational context for this innovation; the ways in which this organisational context interacted with and shaped the action at the individual level, and the implications in terms of psychological theory.

To structure my findings for this chapter, I have drawn on the framework for applying the diffusion of innovations model in a health service context proposed by Greenhalgh et al. (2005, pp. 220-225), as described in chapter two.

My findings broadly aligned well with that framework, and the organisational elements that it described. As my research question concerns psychological factors, I focus on those aspects of the organisational context that are relevant for psychological theory and specifically on the ways in which psychological theory can be used to extend that existing model, and will only briefly summarise those findings which were consistent with that existing framework.

7.1 Distinguishing the departmental and organisational levels

Building on Rogers' diffusion of innovation theory, Greenhalgh et al's framework for applying this to health service organisations describes two levels beyond the individual adopter, which are conventionally interpreted as the organisation within which they work, and the wider system and context (see Figure 2-3). I propose that (at least for large organisations such as hospitals) the organisational level should in fact be split in two: individual departments within the organisation, and the organisation as a whole.

In psychological terms, this relates to the kinds of social relations that can be sustained across the size of a department, which are quite different from those that can be sustained for the organisation as a whole.

This distinction was striking across my interviews, in different ways. It was described clearly by some of the more senior staff, including the HIV consultant in site 1:

> *"So... you know, so, we find a lot of difficulty in MAU [Medical Admissions Unit] but very easy in other departments in the same hospital. So we realised it's not the hospital, it's, it's about the organisational structure of where you're trying to introduce it." (Site 1\1-1-C HIV consultant: 109)*

This quote was part of a wider discussion about her experience of trying to introduce routine HIV testing in the hospital and having very varied experiences in different departments. As she emphasised later in the interview, this was not just a question of the functionally different roles of different departments:

> *"So, it's, you know, it's different, it depends on a number of things. It's not just some departments are good others are bad, it's about the ethos and, you know, of, of, what they stand for." (Site 1\1-1-C HIV consultant: 139)*

This differentiation of departments within the same hospital did not only concern HIV, but was more general. The same consultant gave an example of seeing the same differentiation by department for another innovation:

> *"Well, if you think about it in terms of like, venous thromboembolism testing, that's a national standard across the country, it still doesn't happen, because some departments do it and some don't" (Site 1\1-1-C HIV consultant: 161)*

Differentiating between the organisation and the department was put even more starkly by another consultant, this time from A&E in site 1. He described how each department develops its own guidelines, addressing the parts that they saw as

relevant to them. I asked him what kind of role the trust as a whole played in that process:

> *"Well, the trust doesn't… there is no sort of trust, really. The trust as an entity doesn't exist. The trust is just a group of people, you know, we've got the chief executive, obviously, and the chief executive has those things which he has to mandatorily implement, but for the vast majority of things the trust are the clinicians on the shop floor who are making, who are writing the guidelines and so, we are as engaged as we want to be with that process. But, I don't think there's any - within our trust there's no standard which says you know, if NICE issue a guidance we then have to be compliant with that guidance within X amount of time. Or that we even have to be compliant with that guidance at all. In fact sometimes it's the other way around with clinicians saying we need to be compliant but there not being resources around." (Site 1\1-3-C A&E consultant: 22)*

Of course, the trust as an entity certainly does exist in legal terms. Within the context of my question, I took this answer as underlining the primary and distinctive character of different departments within the organisation for this interviewee. His answer does also illustrate one distinctive aspect of the organisation, rather than the department, when he refers to 'there not being resources around' – this issue of allocation of resources emerged as the key role that the organisational level does play, and I return to it in Chapter Eight.

This distinction between department and organisation emerged more indirectly throughout my interviews, simply in the way that interviewees took their reference unit as being the department, rather than the organisation. This was the case even when I asked a question specifically about the organisation. The clearest example was following one of my prepared interview questions, which was to ask about the attitude of the organisation towards innovation, but to which nearly all of my interviewees either explicitly queried whether I meant the organisation or the department (thus

implicitly distinguishing the two), or simply replied in terms of the department. Similarly, in their general answers, interviewees rarely referred to the hospital or trust as a whole; rather, their unit of reference was overwhelmingly their department within the organisation. When they did refer to the larger organisation (for example, several of my interviewees at site 2 referred to the hospital as being particularly focused on HIV, and as having a special responsibility to deal with HIV because of the high prevalence in their catchment area), this was described as a different and distinct identity.

Rogers describes the importance of interpersonal communication (as opposed to communication through mass media) and local communication within the social system of the adopter (Rogers, 2003). Rogers (and the subsequent literature as described by Greenhalgh et al. (2005)) characterised the social system in terms of the personal relations of individual members, and the individuals concerned being similar in relevant ways for the social network (homophily, as termed by Rogers; "*when similar individuals belong to the same groups, live or work near each other, and share similar interests*" (Rogers, 2003, p. 19)). But neither Rogers nor the subsequent literature reviewed by Greenhalgh and colleagues then make a link between these interpersonal relations and the differentiation between department and organisation in a hospital context that I identified.

In psychological terms, this can be explained in terms of different layers of personal relationships. A range of evidence from anthropology, psychology and related disciplines suggests that not only do we have layers of social relationships with different degrees of strength and intimacy, but that the rough size of the number of

connections in these layers is reasonably consistent (Sutcliffe, Dunbar, Binder, & Arrow, 2012). Most relevant for this discussion is the empirical maximum of the number of meaningful social relationships that people can sustain – which is of course variable and depends on definitions. Thus for larger entities – such as hospitals – our relationships beyond our personal social network tend to become structured around rules, roles and procedures, and less around personal relationships.

I suggest that this is particularly pertinent for health professionals, who draw on their personal relationships at work as a key mechanism for managing knowledge and their professional practice. Gabbay and le May (2004) have explored this for general practitioners, and their description of collectively constructed 'mindlines' (or schemas, in psychological terms) illustrates the social nature of professional practice for health professionals, drawing on their personal social networks with immediate colleagues and other external actors who they trusted in different ways. More generally, Weick has described these processes as sensemaking, as outlined in chapter four. In Weick's discussion of sensemaking in organizations, Weick describes the "intersubjective" level, where people interact to create a collective, social understanding (Weick, 1995, pp. 70-72); in psychological terms, this could also be seen as group cognition.

I propose that combining these concepts of socially constructed professional knowledge with the empirical size of personal social networks identified by Sutcliffe and colleagues illustrates why departments are distinct from organisations for health professionals working in hospitals. Hospitals are simply too large for the collective social construction of knowledge as single entities. In the case of my two sites, the trust at site 1 employed a total of 15,000 staff; site 2 was smaller, but still employed

around 5000 staff. This is simply far too big for the people working there to treat the hospital as a single entity and to maintain personal relations across it. Departments, on the other hand, do more often correspond to the size of entity within which an individual can construct and maintain personal social relations with their colleagues. I suggest that this is why I find that the salient organisational unit for my interviewees was the department, not the organisation as a whole. The practice of healthcare requires constant resolution of difficult problems and dealing with uncertainty, which healthcare professionals do in constant collaboration and interaction with their colleagues, collectively creating solutions that they find acceptable, as Gabbay and le May have described. This depends upon personal contact and trust, and that in turn cannot be extended too far, as Dunbar and colleagues have argued. Thus departments are the psychologically functional unit for these social processes to work. This leads me to update the model of the individual in their social, professional and organisational contexts and relationships set out in Figure 2-1 on page 18 to distinguish the levels of the organisation and the department, as in Figure 7-1 below, at least for this case.

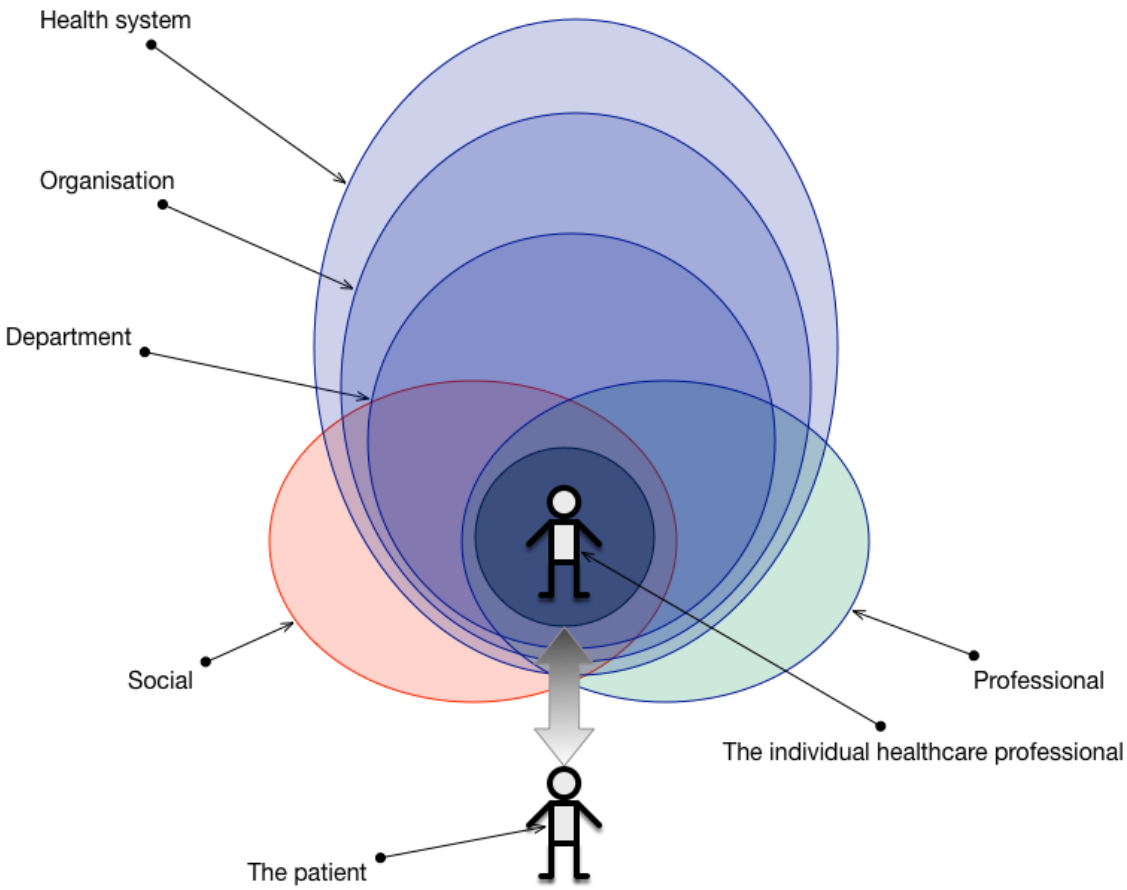


Figure 7-1: The individual healthcare professional in their social, professional and organisational contexts and relationships (updated)

In using the term 'department', I am following the terms used by my interviewees. However, department is an organisationally defined term. It may be that in particular cases, this was just a convenient and familiar term for my interviewees to use, and the group of people who are working together and collectively developing their approach does not correspond exactly to a department, as organisationally defined in that specific case. For example, the lymphoma consultant at site 1 was part of a haemato-oncology department dealing with lymphoma, leukaemia and myeloma as well as some rare blood cancers. Although she referred to 'the department', she also said that she only dealt with new cases of lymphoma. It was not clear, therefore, whether by

'department' she was referring to the entire department, or more to the group of clinicians specifically dealing with lymphoma. So although I use the term department, following the approach of my interviewees, it may be that the group of people being referred to does not always correspond to the organisational definition of a department.

Similarly, distinguishing this departmental level does not mean that the organisational level is irrelevant. Indeed, the organisation's definition of the department itself helps to define that collective group of people; where performance measures, accountability and budgets are set by the organisation for departments, as was the case in the two sites in my case study, the organisation itself reinforces a group identity for the people working in those departments. Rather, I suggest that the psychological and social roles that are played within a hospital by the organisation and the department in relation to innovation and change are different. Thus, in analytical terms, these two levels should be treated separately, and that is how I will approach my analysis.

7.2 Attributes of the innovation

As described previously, the diffusion of innovation model identifies five key attributes of an innovation, as perceived by potential adopters:

- Relative advantage;
- Compatibility;
- Complexity;
- Trialability; and
- Observability.

Their diffusion is also helped by their potential for reinvention.

My findings aligned well with these attributes, which I will briefly describe for each attribute.

Rogers defines relative advantage as "the degree to which an innovation is perceived as better than the idea it supersedes" (Rogers, 2003, p. 15). The most pithy description of two key assessments of relative advantage was given by the HIV consultant at site 1:

> *"I think if they actually believe that their patients will do less well if they weren't picked up, or that they'd be penalised then they'll do it. But [..] you, know, I think, it's about perceived risk and perceived benefit, and don't know if they perceive the risk or the benefit." (Site 1\1-1-C HIV consultant: 155)*

I suggest that this shows two ways in which relative advantage is being considered by clinicians: impact on their patients, or impact on themselves.

First, the impact on patients. Returning to the discussion on scope of practice in Chapter Six, a key word in this quote for me is "*<u>their</u> patients*". I suggest that relative advantage is not being assessed in terms of overall impact for the patient in some general sense. As with the discussion of the persuasion section in the previous chapter, the clinicians I interviewed were assessing impact on the patient in terms of the impact of care that they saw as being within their scope of practice. Or in other words, what they consider to be within their specific role to do.

This delimitation linked to their organisational role can be justified in terms of what is most important and necessary, as argued by the AAU consultant in site 2:

> *"It's a problem. Because some [issues] of course are more immediately relevant than others in terms of patient safety and immediate acute care. […] A screening tool therefore maybe falls*

> *down the priority list more than for example documenting the allergies of a patient before you give them a medication that potentially they're allergic to. […] I think as somebody tries to prioritise their tasks for the day, a screening tool, I would suggest is maybe prioritised less highly than actually prescribing the medicine that they need now to be given or getting that investigation ordered that they need now." (Site 2\2-3-C AAU consultant: 129 - 137)*

For my analysis, the key point here is not whether or not it is a reasonable clinical judgement to prioritise one kind of test over another, which it may well be. The key point is rather how the clinicians are evaluating relative advantage in psychological terms. The clinicians I interviewed typically described evaluations related to the relative advantage in terms of the care that they saw themselves as responsible for, in organisational terms, as with the AAU consultant above. Thus, the relative advantage of the 'screening test' of HIV on their patients is not being evaluated in terms of its overall impact on a patient's health, but in terms of its added value as part of that part of the patient's care for which the clinician sees themselves as organisationally responsible. This seems to me to be similar to the focus on 'scope of practice' that I described under the 'persuasion' heading in Chapter Six, with professionals focused on what is relevant for their specific role within the organisation. It may thus have implications for how to communicate relative advantage of innovations, suggesting that it is not enough to communicate general benefits for the patient or for the system as a whole of an innovation such as routine HIV screening. Rather, information is needed that shows the relative advantage of action by that particular department.

Regarding the impact on the professionals, this again linked to the department as the key organisational unit. Monitoring and benchmarking from the organisation was described overwhelmingly by my interviewees as being focused on the department, not on individuals. This was described clearly by the HIV consultant at site 1:

> *"Well, if you think about it terms of like, venous thromboembolism testing, that's a national standard across the country, it still doesn't happen, because some departments do it and some don't. So, it's not all about the top-down, it's about [..] you, know, it's about stick to each department, being penalised, losing funding if they don't do it." (Site 1\1-1-C HIV consultant: 161)*

Consultants in other departments described various performance indicators that applied to their departments. Interestingly, though, among my interviewees, only the consultants explicitly discussed these different departmental performance indicators. Other interviewees described being steered by what their peers and senior colleagues were focused on. I suggest that the consultants are thus the key bridge between the incentives and targets being applied to their department by the organisation, on the one hand, and the perceptions of department staff about what is expected of them on the other. In the previous chapter I argued that the authority of consultants and other senior colleagues was a significant mechanism of persuasion and shaping attitudes within the department. When viewed through an organisational lens, this role takes on a specific importance, as a key bridge between organisational goals and performance indicators and the attitudes and actions of individual staff within a department.

This bridging role by consultants may help to explain the gap between the formal policy of departments on routine HIV testing and the perceived lack of importance attached to this issue by consultants, as I illustrated in Chapter Six with the quote from a junior A&E doctor in site 2 describing the lack of engagement by senior colleagues with whether or not routine HIV testing had been carried out. The HIV consultants in both sites confirmed that although there was some organisation-level support in principle for the innovation of routine HIV testing, there were no specific

organisational incentives or sanctions linked to it (though there were in many other areas). Thus the consultants themselves may be following a satisficing strategy of where they put their effort, and prioritising their active engagement for those areas where there are direct consequences for their department within the organisation, or directly arising from their care for the patient. If this is the case, it would illustrate difficulties with using sanctions and incentives for particular actions. Though incentives may have an impact on those actions (though this itself is problematic, as I will turn to in the next section), they may also have an unintended knock-on effect of effectively downgrading the priority of everything else that is not linked to such incentives.

Another striking element of how relative advantage was assessed by my interviewees concerned the integration of resource implications into their assessment of the innovation. Put another way, a naïve observer might expect that clinicians would assess the relative advantage of a particular medical innovation purely in terms of its health impact; its health benefits and risks for an individual patient. But this is not what came across from my interviews. Rather, interviewees were well aware of the cost implications of different interventions, and talked about these alongside the health impact as part of assessing its relative advantage. For example, a junior doctor describing how the innovation was communicated about:

> *"...this is the public health guidance, this is our, from the [research], this is the acceptability, this is the cost effectiveness of it…" (Site 2\2-5-D A&E junior doctor: 35)*

or another junior doctor, talking about what is needed to persuade people to carry out the testing:

> *"…the cost of a positive diagnosis, so how many tests would you have to do to get a positive one and how much would that cost. So there's like a cost per diagnosis. But I think that we haven't done, like, there's not much research on that, so that would be useful to say to people this much, this is how much money you need to spend on a, you know, two thousand pounds, so you spend £2000 in tests and you get one diagn.. one positive test that is a cost saving, you know, that is cost saving because if you left them, later, they be, you know, they'd get lots more health problems and they'd up say on ITU, which is very expensive. And you just need more cost figures to persuade people that it's cost effective." (Site 1\1-2-D Junior doctor, infection and immunology: 110);*

or another junior doctor, who was a champion for HIV testing, talking about reasons why people were not in favour of the innovation:

> *"…if it's negative it's more about money, time, and maybe also a little bit about embarrassment about asking something about HIV." (Site 1\1-2-D Junior doctor, infection and immunology: 97 - 99)*

For my analysis, I am interested in the psychological components of evaluating relative assessment that this suggests. There is lively debate about the impact of considering choices in economic terms (for an introduction, see Sandel (2012)), and substantial evidence that casting choices in economic terms (as opposed to moral terms, or other non-economic basis) alters how they are perceived and how people respond (Deci, Koestner, & Ryan, 1999; Deci & Ryan, 1985). Indeed, much of this work was prompted by an example from the health field, that of Titmuss's critique of the commodification of blood donation from voluntary to remunerated donation (Titmuss, 2002). As Deci and Ryan's review shows, subsequent research has confirmed that casting acts in economic terms does change how they are perceived, with extrinsic incentives undermining intrinsic motivations for actions.

One could argue that this is a useful understanding by individual clinicians of the resource constraints of the NHS, with doctors balancing a dual role of medical care and

custodian of available resources. Indeed the NHS has made constant efforts in recent years to try to link budgets with practice (Ham, 2009). In practical terms, this approach to evaluating relative advantage suggests that it would be useful to provide information about economic costs and benefits alongside medical risks and benefits for innovations. In terms of research, it suggests a potential area of further research exploring how the changes in perception of decisions cast in economic terms applies to medical decision-making.

The next attribute is compatibility as "the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of potential adopters" (Rogers, 2003, p. 15). The key issue of compatibility was the exceptional character that HIV is still perceived as having, at least outside those specialised in dealing with it, as described in Chapter Six. Interestingly, this was more of an issue for professionals than patients. Rayment et al. (2012) found that over 90% of patients were accepting of routine HIV testing, and this was also the experience of my interviewees; moreover, their perception was that mostly the patients who refused did so precisely because they knew that they were HIV positive, or because they had recently had a test already.

The greater issue of compatibility lay with the professionals, many of whom were uncomfortable with offering the test and who described the process of seeking consent in particular as being problematic. This raises a question; if patients are so accepting of HIV testing, why is gaining their consent so problematic for professionals? From my interviews, it seemed to be more the extra time and inter-personal engagement that the consent process required (or might require) that was the issue:

> *"And the times I don't do it is for example I'll take the blood, and you realise you've printed off the form, and then you are in a real rush and you're really busy and you've forgotten to ask them, well you can't send the test without asking them, so even though we can send every other test in the book pretty much without asking, HIV is one you just have to say, can I do a viral screen on you, that's all you have to say, but if you haven't said it you can't send it, and so sometimes you take it and you don't then send it because you're like, you know what, I haven't asked, I'm really busy, I've got to see the next patient, potentially someone's going to say no, or they're going to say yes, or they're going to want to know more about it, and I just don't have time for that today, so that happens quite a lot." (Site 2\2-15-D A&E junior doctor: 79)*

In psychological terms, this description of difficulties can be seen in terms of the additional cognitive and emotional engagement required (or potentially required) for the communication process necessary to seek informed consent. Effective communication with patients is not straightforward, and though the psychological efforts involved by clinicians remain under-investigated, it is clear that it requires time, effort and specific skills (Meryn, 1998). In the case of this innovation, it appeared to be this communication process around seeking informed consent that was the primary issue of incompatibility, not the actual test itself. This seems to move beyond compatibility into complexity, which is defined by Rogers as "the degree to which an innovation is perceived as difficult to understand and use" (Rogers, 2003, p. 16). Hence these two attributes can be seen as linked; the particular sensitivities over HIV testing leading to a requirement for informed consent which the healthcare professionals involved perceived as particularly difficult to carry out in practice.

Whilst the innovation involved this additional complexity of seeking informed consent, in some ways it also reduced complexity. It removed the need to recall all the potential clinical indicators for HIV that might justify a patient-specific test (this was referred to by one participant, 1-2-D Junior doctor, infection and immunology), and it

normalised testing by removing the potential stigma and need for justification of testing a particular individual, which also reflects existing research (Thornton et al., 2012).

Another aspect of complexity and the interactions between different attributes concerned a strategy used to minimise complexity for the testing done by healthcare professionals. As Thornton and colleagues described, one key area of concern for clinicians was in dealing with the results of the routine HIV tests; having to give the diagnosis to patients who were found to be HIV positive. Both of my research sites had taken an organisational step to address this, by channelling the positive results from the routine HIV screening through the HIV department, with the aim of removing what was also perceived as a difficult task from the clinicians who they were asking to do the routine screening and instead having it carried out by the HIV department, for whom of course it was routine.

However, my findings suggest that this solution itself created a different problem to do with a different attribute; observability, which is defined as "the degree to which the results of an innovation are visible to others" (Rogers, 2003, p. 16). As described in Chapter Six, one of the key issues that I found for persuading a clinician that they should implement the innovation was relevance; why they should be the ones carrying it out. A key part of assessing that relevance was being able to see the result for their own patients; observability of the result of the innovation, in terms of the innovation attributes defined by Rogers. But the organisational change to decrease complexity for the testers by removing responsibility from them for following up the tests had the perverse effect at the psychological level of also making the tests much less observable

and thus much less relevant for the clinicians concerned. This was put particularly starkly by one A&E doctor:

> *"I don't deal with the results when they come back, it's nothing to do with me, if anyone comes back HIV positive I won't be told, I won't know, and it won't be dealt by me, so to be honest it's not something that affects me in any way at all. […] Because it's something that we won't, we don't want to know the result of. So it's very, if you're implementing a test that you have no interest in the result, as I said, in probably 99% of my patients I have no interest in the result. If I have an interest in the result then obviously it's in at the forefront of my mind. But most of the time I have no interest in the result and I'm not even going to know the result, so I… don't care." (Site 2\2-15-D A&E junior doctor: 83 - 87)*

Thus what looked like a sensible and evidence-based organisational initiative to reduce complexity may have actually undermined the implementation of the innovation at the psychological level by reducing the observability and thus the relevance of the test for the clinicians who were being asked to carry it out.

The remaining innovation attribute is trialability, which Rogers defines as "the degree to which an innovation may be experimented with on a limited basis" (Rogers, 2003, p. 16). It was open to doctors in theory, at least, to decide to implement routine HIV testing if they felt appropriate, but this was difficult in practice without wider organisational support or a position of authority. This was illustrated by one of my interviewees (2-5-D), a junior doctor who had previously been a champion for routine HIV testing in A&E at site 2 and who was now working at a different London hospital which had no organisational or departmental policy of routine HIV testing. Though he remained convinced of the importance and utility of routine HIV testing, he had found it difficult to continue routine HIV testing as an individual clinician:

> *"I'm certainly not testing frequently as I would have done last year at [Site 2] despite [being in the borough] with the highest prevalence in London. […]I think it comes very much from within the department that's going to be doing the testing, they have to have an advocate there, they have to have somebody who feels passionately about it, who understands that the emergency development is an appropriate setting to do it, to test, and to take it on. And it has to be quite a senior clinician I think because it's very difficult as a junior doctor to try and implement change that's going to be costly. Even though it's cost-effective, is still going to be costly. […]HIV tests are done of course, but there's not an attitude that everybody who gets a blood test should be tested as routine instance." (Site 2\2-5-D A&E junior doctor: 41 - 43)*

This quote also underlines the importance of the collective nature of decision-making about innovations within a given department, and the ability of an individual to form a clear impression about what is expected of them within their particular environment. Thus while this innovation seems trialable in theory, and indeed had been trialled in different places within both sites (A&E in site 1, colposcopy in site 2), in each case it needed a departmental or organisational decision or an initiative by a senior member of staff to put such trialling in place.

Where there was scope for trialability at individual level was less whether or not to implement the innovation, but rather how to implement it – specifically, how to go about what my interviewees found to be the trickiest part, the process of seeking informed consent from patients. This also links to reinvention, which Rogers defines as "the degree to which an innovation is changed or modified by a user in the process of adoption and implementation" (Rogers, 2003, p. 17).

As described in Chapter Six (under 'Implementation'), exactly how clinicians sought agreement from patients was carried out in many different ways. As that section discussed, some clinicians trialled different ways of seeking consent, and adapted their

practice accordingly. It is debateable whether this would constitute reinvention as such, as the guidelines did not specify exactly how to seek informed consent; but it does illustrate a process of individual clinicians modifying their understanding and practice of the innovation in the light of experience. Similarly, though many different implementation strategies had been tried, these might not count as reinvention because these were not specified in the guidance. For example, one of the primary places where routine HIV screening had been implemented in both sites was the A&E department, which made organisational sense but which strictly speaking went beyond the guidance in that it meant screening all patients, not only those admitted to hospital (as described in Chapter Five). However, I would argue that precisely this lack of central specification of how to implement the innovation can be seen as a strength, in that it facilitated adaptation to local circumstances in adopting and implementing the innovation, which (in relation to reinvention) Rogers argues facilitates the adoption of innovations.

Concluding this section on attributes of the innovation, there are three points that I wish to highlight. The first is that the psychological level is vital to understanding what these attributes mean in practice. As Rogers highlights, the attributes of the innovation depend on the perception of the potential adopter, and unpicking this using a psychological lens can help to provide a better understanding of how these attributes are seen (and thus how most effectively to present them). The second is the inter-relationship between the individual level and their wider organisational context, illustrated by the way in which the organisational innovation of having the results of the HIV tests dealt with by the HIV department reduced the salience of the tests for

the clinicians who were carrying them out. And the third is the inter-relationship between the different attributes themselves, with different attributes affecting each other and thus the overall perception of the innovation.

7.3 Communication and influence

As described in Chapter Six, the channels through which my interviewees got their information were mostly not formal organisational channels of communication. Rather, their personal networks were central, together with specific sources of information that they had selected; and the sources of information that they described were external to the organisation (eg: NICE, professional associations). The leading actor regarding active communication on this innovation externally was the British HIV association (BHIVA), whose role I discuss in the next chapter.

Within the organisations, though, there had been an active effort of communication and influence regarding this innovation from the HIV consultants towards the other departments in their hospitals. This followed a similar pattern at both sites, where the HIV consultants engaged directly with the consultants leading other relevant departments to get initial agreement. This element of peer to peer engagement by consultants appeared to be crucial, as the HIV consultant at site 1 described:

> *"A consultant would find it disrespectful if the HIV registrar turned up to try and introduce, try and deliver this sort of thing in the first instance. It has to be consultant to consultant, discussing it, explaining it, getting buy-in." (Site 1\1-1-C HIV consultant: 271)*

However, even once this process of engagement had taken place and the consultants leading a department had given their agreement in principle, this was not the end of the communication and influencing processes. Returning to the site 1 HIV consultant:

> *"You have to win the battle by going over and winning over the consultants, and then you have to win over the nurses, and then you have to just keep disseminating the same message, the same Powerpoint presentation to everybody, being really clear, you know, what to say." (Site 1\1-1-C HIV consultant: 201)*

This quote illustrates the repeated and ongoing nature of the engagement required to bring about change, as well as the importance of this communication being interpersonal, rather than through more mass media channels.

In the case of site 2, the engagement between the HIV department and the A&E department regarding this innovation had been ongoing for many years (over four years at the time of my interviews). Despite this, constant engagement and effort was required, in the form of training new staff, providing monitoring data on HIV testing rates, and trying different means of influencing staff to improve testing rates. The HIV consultant at site 2 described this ongoing effort:

> *"People will say, yes, you should be doing testing, but for example in ED it's quite successful, we get about 35 – 40% who are offered a test. but that's kind of reliant on myself and (my administrator) who works for me going down every single week encouraging them to test, feeding back about the testing, which is quite time intensive considering everyone signed up to do it." (Site 2\2-1-C HIV consultant: 53)*

The organisational level was striking by its relative absence from this process of communication and influence. At site 2 in particular, the hospital had agreed to support routine HIV testing by providing funding to cover the costs of testing as well as some staff time (part of the time of the lead HIV consultant for the testing, plus the administrator referred to in her quote above). But neither hospital had engaged at organisational level with communication or influence in support of implementing the guidance. At site 2, this was particularly noteworthy as the HIV consultant had asked

for this support, and despite the organisation's financial support for the innovation, they had not been willing to make any explicit communication supporting its implementation beyond that.

7.4 Organisational context and readiness

In this section, I look at the organisation context for innovation; both the readiness of these two organisations for adoption of innovations in general, and their readiness for the specific innovation that I am focusing on in my case study.

As for other areas, many of my findings aligned with the existing model for diffusion of innovations in health service organisations. I did find some specific areas where a psychological perspective can add value, however, and I focus on those in this section.

Greenhalgh and colleagues summarised a wide range of empirical work and identified three areas of structural organisational factors facilitating the adoption of innovations (see Figure 2-5): the structure of the organisation, its absorptive capacity for new information and a receptive context for change. In terms of these factors, both sites provided a broadly positive organisational context for innovation in general: they were both large, well-established organisations, with internal differentiation and specialisation; they had highly trained staff with formal systems for updating knowledge (ie: guideline maintenance).

Regarding this innovation in particular, site 2 was seen as having a specific specialist role as a hospital with a particular focus on HIV, both because of the particularly high HIV prevalence among the catchment population, and because of the well-developed services relating to HIV within the hospital. This came up in different ways from

several of my interviewees at site 2, who cited this specialist role as a reason for pursuing this specific innovation of routine HIV testing. In contrast, none of the interviewees from site 1 saw that organisation as having any particular specialism in relation to HIV.

In general terms, my interviewees seemed to perceive both organisations as having a positive attitude towards change. But at the same time, the organisations at both sites were perceived as being quite disengaged from that process. New guidance leading to change, for example, was referred down to departments, as described above, and it was departments who seemed to lead on deciding what kinds of changes were necessary and how to proceed with them. This was also the case for the specific innovation of HIV testing. At both sites, interviewees leading change (ie: the HIV consultants, and the leaders of the different departments) described the push for change coming at the departmental level; there was no drive for change from the organisation itself.

The main role that the organisation did play regarding change concerned resources, where the organisation had scope to either put resources into a particular area or not. This was not positive in the case of routine HIV testing, where there were not slack resources present in either site, and which in both sites had been an issue affecting implementation – for example, with the HIV consultant at site 1 having to seek an external grant from a pharmaceutical company to be able to get a member of support staff, and overall lack of time being identified as an issue repeatedly.

There were mechanisms for departments to seek additional resources, by putting forward a “business case”:

> *"So, basically when we put in a business case to do HIV testing throughout the trust on the basis of the work that we had done before the HINTS study and that kind of stuff. And it got through, really quite relatively easily, because it was seen as a quality improvement rather than most of the business cases where for investment for profit return and things like that, but this was actually a quality care improvement for patients." (Site 2\2-1-C HIV consultant: 51)*

One striking element of this description was the nature of improvement as being described in such starkly economic terms ('business case', 'investment for profit return'). Later in the same interview, the consultant described her department as being seen as successful by the organisation, referring in particular to having generated a lot of revenue through outreach clinics. I explored what being successful meant, as a department:

> *"I: So, you're successful because you've managed to bring in a lot of revenue in particular; would you say that is the, the primary…?*
>
> *P: Yes. I think that's, underlying, the primary thing. But I think also we, we do deliver good care as well." (Site 2\2-1-C HIV consultant: 80-81)*

So, how receptive the context is to change seemed to be driven by different factors at the departmental and organisational levels. At departmental level, change depended on how engaged individual clinicians were with that change, and how far the department collectively wished to pursue it:

> *Within our trust there's no standard which says you know, if NICE issue a guidance we then have to be compliant with that guidance within X amount of time. Or that we even have to be compliant with that guidance at all. In fact sometimes it's the other way around with clinicians saying we need to be compliant but there not being resources around. (Site 1\1-3-C A&E consultant: 22)*

Then (as the above quote also illustrates) at organisational level, the key issue was the impact of the change on resources and revenue. This was put particularly starkly by the HIV consultant on site 1:

> *"They [the organisation] are very happy for you to fulfil the guidance as long as it doesn't cost any money." (Site 1\1-1-C HIV consultant: 66 - 67)*

In psychological terms, and reflecting the distinction between organisation and department proposed at the start of this chapter, this analysis suggests that innovations are considered quite differently at the departmental and organisational levels, which in turn suggests the different arguments and evidence that may be required for different levels within the organisation as a whole.

On the face of it, both organisations had a mixed picture regarding their capacity to take on innovations. On the one hand, they had well-established formal structures to keep monitoring practice and absorbing new knowledge, through mechanisms such as audits, updating of guidelines and protocols to reflect new knowledge, and there were many projects ongoing with various aims of improvement. On the other hand, there was a lack of resources or slack time, as identified above – both in general, and for this specific innovation.

I identified four specific challenges with a psychological dimension, and I focus on those four challenges in this section.

7.4.1 Leadership and transience

One particularly striking aspect of taking on innovations concerned the transience of most of the doctors. Departments seem quite transient places for all staff below

consultant grade – but above all, for junior doctors, with the more junior doctors changing departments every four or six months, but even more senior 'junior' doctors such as speciality trainees (formerly known as registrars) changing every year or so. This means that sustained implementation seems to depend on consultants and on nurses, as the people who are there for the longest periods of time. This was described particularly clearly by the HIV consultant at site 1:

> *"P: The consultants then involve the nurses and say, you know, yeah, they'd then go, or you'd just speak to the chief nurse who's this person, and then you go and you meet that person and then you have training sessions with the nurses. So, that, so it starts with the consultants and moves to the nurses. And then the more junior members of staff fall into place once.*
>
> *I: And what about the junior doctors?*
>
> *P: The junior doctors change all the time. They are not the stalwarts of these programmes. It's the nurses that are the stalwarts of these programmes." (Site 1\Interview 1-1-C HIV consultant: 207 - 209)*

The junior doctors that I interviewed also talked about this constant mobility from their perspective, with the challenges of having to constantly rotate every few months.

> *"And this is a real barrier to me to change, because actually – it's a barrier to loads of things, really, for me it's a big problem. It's great, because you get experience of an enormous number of different healthcare services, you can take the good bits from each one. But it's an enormous barrier to change because every time you want to repeat an audit or anything like that it's just not, you're not able to do that, because you're stuck moving again." (Site 2\2-15-D A&E junior doctor: 59)*

This frequent turnover seems to me to raise significant psychological challenges to adopting innovations, in two ways. The first is about developing the relationships between different members of clinical staff that facilitate and support innovations and their implementation; in psychological terms, described by the concept of 'group psychological safety' discussed in Chapter Four. Establishing a perception of

psychological safety within a department will depend on a range of factors at individual and group level, including the culture and leadership of the department; and in this situation, the professional roles of the different actors themselves create a basis for trust. Nevertheless, it seems likely that this constant turnover of a large portion of the staff of the department will not help, especially when these junior doctors are hierarchically senior to the more stable nursing staff.

The second way in which this transience creates challenges to the adoption of innovations is in the time taken for new behaviours to become routine. In their study of the adoption of hospital innovations, Brewster et al. (2015) found that it took a year or so for innovations to become embedded and routine, and that during this time, keeping the innovation implemented depended on the active engagement of some key individuals. If this is the case, then indeed as the A&E junior doctor described above, the pattern of rotating every few months effectively disqualifies junior doctors from leading innovation implementation, simply because they are not there long enough (either to sustain an innovation's adoption within the department, or indeed to develop the strong relationships that would enable them to do so).

7.4.2 Training and support

Related to this was a striking difference in the training and support structures between doctors and nurses, in ways that seem likely to clearly alter their effectiveness from a psychological point of view. Although all junior doctors are technically in training grades, the junior doctors among my interviewees consistently described a lack of structured time or resources supporting training and learning for them. Even when starting a new post, although junior doctors were supposed to have a formal

induction, this mostly did not happen, or was very brief (ie: a day or less). They also did not appear to have any regular time set aside for learning and development outside their clinical work, which itself kept them very busy.

This contrasted with the nurses that I interviewed, who had clear, structured processes for ensuring that their learning was supported. This included much more formal processes for checking competences of nurses joining the department, who (despite their professional qualifications and previous experience) were not allowed to carry out even basic procedures until they had been through a formal process of checking and certifying each specific area of competence within that department; had an initial week of just observing practice; and had regular time set aside for study days where they were not providing care.

In psychological terms, the approach taken for nurses is more likely to be effective in structured learning and development relating to a clear and defined body of knowledge than the one for junior doctors. As described in Chapter Four, the psychology of expertise and expert performance shows that developing expertise requires a supportive environment and the opportunity to practice and make mistakes, as well as quick, informative feedback (Ericsson, 2004). In clinical care, trying out new and unfamiliar approaches can be risky, and the benefits of real-world experience and judgement have to balanced with the risks of making mistakes that might directly impact on patients. The time set aside for study and the formal processes of checking competences for nurses thus seem well designed to improve performance from a psychological point of view, at least where the body of knowledge involved is clear and well-established. This may be one reason why nurses were consistently perceived by

my interviewees as more reliable implementers of innovations than junior doctors. On the other hand, there is a substantial body of psychological research showing the value of building skills through experience and naturalistic decision making (Chase et al., 1998); an approach which in psychological terms seems to describe the less structured but more practical training approach for the junior doctors that I interviewed. Which is the best approach depends on the specific characteristics of what is being learned and how; whether the experiential learning provides consistent information in a way that the individual concerned can learn from (Kahneman & Klein, 2009). It may be that the more informal, experience-based training processes for junior doctors are better adapted to their professional role in general, while also being less well adapted to the implementation of specific innovations than the more structured training systems for nurses.

7.4.3 Feedback and monitoring

As mentioned in the preceding section, a key psychological factor in improving expertise and expert performance is timely personal feedback. Here again the organisational systems in place did not seem well-adapted to adoption of the HIV testing innovation, with a lack of clear systems for feedback and monitoring at individual level.

In principle, the electronic systems in use on both sites for patient records and making requests such as blood tests should enable such monitoring of practice to be carried out straightforwardly. But this did not seem to be the case in practice. The technologies themselves did not seem to easily support such monitoring; it was not always straightforward to extract information about the implementation of particular

innovations. For example, there was no easy way for the systems to show which patients had been tested for HIV, or by whom; this required substantial additional effort to generate.

More important, though, was how the systems were used in practice. In theory, each clinician should use their own login for accessing the systems; this is key to ensure that the system can trace and document the actions of individual clinicians. In reality, though, this is not what happened. In the departments I studied, clinicians described a routine practice of the computers being left with the login of whoever had logged in recently; or being logged in under the name of the consultant in charge. This is a labour-saving workaround for the clinicians, but in psychological terms, it makes any individual-level data ineffective for feedback, as the users of the system know that the data is not accurate at an individual level. Perhaps reflecting this, the feedback that was provided seemed to be focused at departmental level, rather than at individual level.

In psychological terms, this represents a significant hindrance to improving performance. As Ericsson and others have identified (Ericsson, Prietula, & Cokely, 2007), timely, relevant feedback for individuals on their own performance is a vital element in improving performance. The feedback and monitoring systems across both sites did not seem designed to support this, and it seemed to be largely absent in practice.

Moreover, the technological systems used to gather and provide health data can in themselves become a platform for engagement. The process of providing data, engaging with it and exploring the reasons for differences can in themselves become a

mechanism supporting change and improvement, as Essén and Sauder have described in their case study of the Swedish rheumatology quality registry (Essén & Sauder, 2017). However, the technological platforms for data collections at the sites where I interviewed generally did not seem to be providing this kind of platform for engagement. This was partly for the reasons described above.

This lack of individualised feedback also related to how the wider processes of feedback and monitoring happened within both organisations, which centred around the role of audit. Audit was described by my interviewees as the primary mechanism for checking standards of performance, or of identifying problems. For example, the lymphoma consultant at site 1 described audits as the primary mechanism for showing a need for change (when discussing a specific change she had worked to bring about concerning anti-sickness medication for a specific type of chemotherapy); the HIV consultant at site 1 described audit as a key prompt for change both internally (auditing departments to highlight low levels of testing) and externally (with BHIVA auditing, again to show low levels of performance), and junior doctors described being involved with audit projects on particular topics.

However, this process of audit was also described as being problematic. Senior interviewees acknowledged that audits should be happening much more often than they actually were. For example, the former clinical director at site 2, when talking about reviews of guidelines and audits, said:

> *"…those reviews aren't always happening, because clinicians are busy and this is a low priority to check." (Site 2\2-2-C Internal medicine/Geriatrics consultant: 25)*

Others referred to the administrative burden of doing audits. This also links to the issue of transience of junior doctors described above, because the work of doing audits appears to be frequently delegated to junior doctors, who then frequently do not have time to complete their audit before they move on to their next post

> *"…and we should be auditing more but it's such a pain. […] we have routine audits that we re-audit from time to time, but in terms of new audits and that, and also because the junior doctors move so rapidly that, they rarely have time to finish an audit when they leave." (Site 1\1b-1-C Lymphoma consultant: 172 - 174)*

Thus overall, mechanisms for providing psychologically appropriate feedback for clinicians did not appear to function effectively or consistently. The picture from my interviews was of feedback that was largely focused at departmental level, not individual, and thus did not provide clear information to individuals about their own practice; that was not well supported by the technological systems in place; and that relied in particular on audits that were a low priority, dependent on the particular initiative of individuals and frequently left unfinished.

7.4.4 Localisation and sense-making within each department

The innovation that is the focus of my case study is set out in a guideline; a national one, and one of many. But one of the striking things about the processes described by my interviewees was the separation between national guidance and local guidance, with processes of making guidance local; of somehow processing existing external guidance and turning it into internal guidance. Internal guidance did not mean at the organisational level, but rather the departmental level:

> *"…we have a clinical governance committee, and so we do internal guidelines that are based on external guidelines, so localising*

> *them. […] That [the clinical governance committee] is just for this directorate. So that means HIV, GU and dermatology." (Site 2\2-1-C HIV consultant: 25 - 29)*

Thus even where there was a single external guideline, this did not result in a single internal guideline; rather, each department formed their own view of it and developed their own guidance:

> *"… the hospital should only have one guideline per se, but there might be an ED aspect to it or an inpatient aspect to it, and different departments might lead on a specific topic. So, for example the atrial fibrillation has lots of different aspects to it - inpatient, outpatient, chronic and acute - and then ED tend to lead on the bits which are the emergency parts, and outpatients might have a separate part for their sort of chronic bits, if you see what I mean." (Site 1\1-3-C A&E consultant: 20)*

In some instances, this internal guidance might have the explicit function of <u>not</u> aligning with the external guidance:

> *"And I've been involved in reviewing external guidelines and saying, are we in line with them? Do we comply with them? If we deviate from them, why do we deviate from them? Do we have a local guideline explaining that?" (Site 2\2-2-C Internal medicine/Geriatrics consultant: 25)*

I suggest that this process of 'localising' guidance is best understood not only as an informational process of checking and summarising information, but crucially as a social process. In theoretical terms, this can be described in a variety of ways. Dopson and colleagues underline that evidence is not a single unitary thing, but rather there are bodies of evidence capable of different interpretations, with many different groups and actors engaged in such interpretation (Dopson, FitzGerald, Ferlie, Gabbay, & Locock, 2002). Greenhalgh and colleagues described the importance of knowledge being "enacted and made social" (Greenhalgh et al., 2005, p. 12) before it becomes meaningful within that group of people. As described in Chapter Four and above,

Gabbay and Le May have also described this social and collective process of clinicians developing a collective understanding of how to proceed through informal 'mindlines'. And Weick has described 'sensemaking', the process through which people generate a shared understanding of their environment (Weick, 1995). From a psychological perspective, the key point is that this process is not simply a cognitive process of processing information, but is also a social process through which the group's understanding about what they should be doing emerges and develops; a process of 'social cognition', as described in Chapter Four.

It was not possible from my methodology to clarify precisely what role the internal guidance plays in this process. For example, how far it was a prompt for change; how far the guidance was the focus of discussion, or rather was a formalisation of a consensus that had already emerged; and how far internal guidance determined action, or whether it was the group discussion process and informal consensus that shaped action, with the guidance as a more formal documentation. In most of the departments where I interviewed, the external guidance on routine HIV testing had not been reworked into internal guidance, unlike many other topics, which limited the data to analyse this issue. But there was one example from the lymphoma consultant at site 1. As I described in Chapter Six, this consultant described a gradual process of shifting views within the department regarding routine HIV testing. The 'internal guidance' that was ultimately agreed came in the form of standardised profiles for blood tests for each of the different blood cancers treated by the unit, prompted by the introduction of a new computer system for requesting blood tests. But this came <u>after</u> the process of having shifted understanding within the department, not before.

Exploring group processes over time regarding consideration of an innovation and related guidance would help to clarify this process.

7.5 Implementation and maintenance processes

Reflecting earlier discussion, implementation of innovations varied by department, as well as by innovation. For the specific case of routine HIV testing, the HIV departments at both sites were the main drivers of implementation, but they depended on agreement and active support from leaders within the departments were the routine HIV testing was being implemented, and this was not always forthcoming (or was given in principle but not applied in practice, as in the AAU department at site 2). Returning again to the role of the organisation as distinct from the department, it was striking that although the organisation had provided financial support to routine HIV testing, they had been unwilling to put the organisation's formal endorsement behind the practice of routine HIV testing. The HIV consultant at site 2 described having asked for the medical director to have:

> *"made some announcement at a meeting or sent out an email to say, right, we are expecting you to do this, and that hasn't really happened." (Site 2\2-1-C HIV consultant: 63)*

There was no overt reason given as to why this was. But it is consistent with the division of roles that I have described above, where the organisation as a whole focuses on processes and the allocation of resources, but where the decisions about actual practice are made within departments.

Otherwise, my findings on implementation and maintenance aligned well with the broader diffusion of innovations framework. The adaptation of the innovation to

different departmental circumstances helped its implementation, with different departments incorporating it into their practice and systems in different ways (eg: a swab while patients were getting changed in colposcopy; integrated as part of their overall set of bloods in lymphoma; supported by specific prompts and IT systems in AAU and A&E). There had been adaptation within departments to change who was responsible for the testing, too. Initially, the approach at site 2 had been generally to use swabs, on the basis that this was a less invasive approach, as the site 2 HIV consultant described:

> *"But it meant that doctors then had to go and get the mouth swab, give it to the patient, take them, and doctors weren't going to do that, it was just an extra thing in their busy clinic, so that just completely went out of the window. And in fact we used to do it in A&E, and then when we swapped from mouth to serology, and doctors to nurses, the numbers doubled." (Site 2\2-1-C HIV consultant: 55)*

This description of the difference in behaviour between doctors and nurses links back to the different roles of doctors and nurses in implementing change that I discussed under leadership and transience above. This difference seemed to go beyond just the transience of junior doctors; more generally, nurses were regarded as more systematic, and more consistent in their practice. A senior doctor at site 2 put it particularly bluntly:

> *"…why do we get nurses to do things, because nurses are not necessarily less intelligent, but they're drilled by the Gestapo to follow things absolutely. They don't have guidelines, they have protocols, and they do things. One of my colleagues, a professor of pharmacology, says in clinical trials for hypertension, when you're running a trial you set up the protocol for the treatment regimes are, and then you have nurses run it, because they don't take any nonsense. […] Nurses are drilled and educated to follow things because if they don't, they are on the disciplinary step. And it's that culture and attitude. Whereas doctors, we allow ourselves a latitude,*

> *and we say, well, it is our clinical decision, we are not going to do that. And we do it either because we're lazy, it's too much bother, and all those sort of things. To be a good doctor for a patient, you've got to follow the steps all the way. But some people get bored with doing it, so they don't do all the steps." (Site 2\2-2-C Internal medicine/Geriatrics consultant: 39)*

In psychological terms, this quote illustrates a potential difference in underlying cognitive processes. For doctors, guidelines and protocols are frequently perceived as a restriction, or a reduction of autonomy and their independent judgement. For nurses, the protocols and guidelines seem to be seen differently; perhaps because of potential disciplinary consequences from not following them, but perhaps also because for a nurse, protocols and guidelines are frequently a way of doing more interesting, varied and responsible work, as the scope of action of the profession has widened over the years (Timmermans & Berg, 2003). In any event, there was a consistent perception from my interviewees, in particular those responsible for implementing change, that nurses were more reliable and consistent implementers of agreed new practices than doctors.

7.6 Conclusion

This chapter has identified ways in which the organisational context shapes action at the individual level, and in particular how a psychological perspective can add value to the existing framework for diffusion of innovations in health service organisations. I propose that one key addition is to distinguish between the departmental and organisation levels, with these two levels playing quite different roles. Collective social construction of knowledge and practice can take place within departments within hospitals in ways that it cannot within the hospital as a whole, due to their size.

Perhaps linked to this, the roles of these two different levels in adoption of innovations seem to be quite different, with the content of changing practice being initiated, agreed and implemented within individual departments, and the organisation's role being focused around the allocation of resources in particular.

This organisational dimension also seemed relevant to how clinicians were evaluating the relative advantage of innovations, with clinicians focusing on health impact related to their specific scope of practice framed in terms of their departmental responsibility, as well as integrating into their assessment the economic cost-benefit of interventions (which is a key focus for the organisational as a whole). Seeking consent emerged as a key issue of compatibility of the innovation – but interestingly, not due to frequent resistance from patients, but more from the psychological engagement required by the clinician for the process of seeking informed consent.

My findings also highlighted why it is important to consider psychological and organisational factors in an integrated way. The seemingly positive step of reducing the organisational burden on testing clinicians by having the HIV department deal with all positive tests had the psychologically perverse effect of reducing the relevance of the testing for the clinicians involved. Likewise, the systems for monitoring and feedback appeared to function better at an organisational level than at an individual level, providing feedback in a way that might be informative for departments as a whole but not providing guidance to individuals about how to change their practice.

There were some aspects of the organisational dimension which reflected wider system-level issues, such as the systems for training of junior doctors which appear to create a transient workforce that is not easily engaged in innovation and change, and

where the structures for training and support for nurses seemed to fit evidence on effective learning and performance improvement better than those for doctors. These in turn illustrate the importance of looking at the wider system level, and that are the focus of my next chapter.

Chapter 8. Systems and policy analysis

In this chapter, I turn to the systems and policy dimension of my findings. The key issue that emerged from my systems and policy findings does not concern specific policy mechanisms. Rather, the key finding concerns the overall policy approaches towards the health system, and the assumptions about the nature of the health system that they involve. In this chapter, I explore the assumptions underpinning policy approaches, and make a distinction between viewing the health system as complicated or complex. I then illustrate the issues raised by this distinction through the lens of my case study on routine HIV testing to illustrate why I consider the complex system approach to be better aligned with my findings.

8.1 Policy approaches to the health system

Ham (2009) describes three overall policy approaches to the health system in England. When the NHS was first established, Ham (drawing on LeGrand in particular) suggests that the NHS operated mainly on the basis of professional self-regulation, with only weak central control. In terms of the metaphors that I proposed in Chapter One for the implementation gap, this approach of self-regulation fits with the metaphor of the guild, with regulation and oversight provided largely within the professions themselves. The establishment of the internal market within the NHS marked a shift in basic policy approach towards competition, and among the metaphors that I proposed aligns with the metaphor of the market. The Blair and Brown administrations marked

another change, this time towards stronger central command and control of the health service, with the establishment of the National Institute for Health and Clinical Excellence and the overall strengthening of central management of performance; this aligns with the machine metaphor.

These approaches represent different strategies for dealing with the challenges of managing a health system that is very large and which contains many different actors and roles. Here, though, I think it is useful to bear in mind the distinction between a complicated system and a complex one (Plsek, 2003; Plsek & Greenhalgh, 2001). As Plsek suggests, sending a rocket to the moon is complicated. There are many different components and interactions to consider, and multiple different components and processes that have to be aligned and integrated. But in principle, this can be done reliably and consistently. Once the rocket works one time, it is likely to work the same way again and again in the future. This is an example of a complicated problem; difficult, but in principle knowable. In contrast, raising a child is a complex problem; it is not reducible to a series of simple problems, the relations between the different elements are not linear or predictable, and doing the same things will not necessarily lead to the same result.

I suggest that the current principal policy approaches are based on understanding the health system as a complicated system, not a complex one. Regarding the market approach, in principle markets can be a way of dealing with complex systems, by allowing autonomy for actors to adapt and change, and for new behaviours (and indeed entire new markets) to emerge from the operation of the market. However, this is not how the internal market has been approached in the NHS. Rather, a high

degree of central control has been exercised over market aspects such as the scope and limits of competition, pricing and tariffs, and potential for actors to enter or leave the market. This is a perhaps inevitable reflection of the wider political context for the NHS as a whole, but has also meant that this tightly managed internal market appears to be based on the underpinning understanding of a complicated but knowable and controllable health system. Similarly, the shift towards central command and control under the Blair and Brown administrations is even more clearly based on the assumption that central policy is able to understand and control the health system as a whole.

However, this conceptualisation of a complicated but knowable and controllable health system does not align with what I found through my research. Rather, my findings showed layers of interactions and mechanisms, some formal but many informal, with results emerging in unpredictable ways. For example, incentives for one outcome (such as deep vein thrombosis management) had an impact on seemingly unconnected issues (HIV testing) through reducing their perceived priority, as I described in the section on attributes of the innovation in Chapter Seven. Different departments developed their own collective understandings of what was appropriate action (whether in relation to routine HIV testing or other issues), as I described in Chapter Six. The boundaries of 'the system' also did not align with the boundaries of the formal health system, as I described in the 'knowledge' section of Chapter Six. These porous boundaries were visible at the individual level (with individuals situated in networks which cut across formal boundaries) and at the organisational level (with non-governmental bodies such as professional bodies playing a vital role, as I discuss

later in this chapter), and information coming to health professionals through the non-specialist media as well as more formal channels.

8.2 Exploring the distinction between a complicated or a complex health system through the lens of my case study

These findings suggest a complex system, made up of individuals and groups acting in ways that are not determined or even predictable, but rather with results that emerge from ongoing processes of action and interaction, which in turn shape what actors do next and the work of the wider health system. I therefore take a complex systems perspective to analyse my findings at the system and policy level. This aligns better with what I found from my research, and so provides an appropriate theoretical perspective through which to interpret my findings. This perspective builds upon the epistemological framework of systems theory that I described in Chapter Two, extending my use of systems theory beyond positioning psychological factors as one layer towards applying this systems lens to the wider health system itself and the policy approaches taken to it.

These wider policy approaches go beyond the diffusion of innovations framework, for which policy approaches are largely external factors. Thus, I have structured this section around four groups of policy tools, drawing on policy analysis approaches:

- setting the structure of the system and the roles of the actors within it through law and regulation;
- resources to enable activities to take place, and to control which those activities are;

- policy to set standards and objectives for what the system should be trying to achieve;
- and information to monitor the performance of the system and the actors within it (adapted from Cairney, 2012)

8.2.1 Structure and roles

For the innovation of routine HIV testing that I am focusing on, the key actor at the system level was BHIVA, the British HIV Association, which led the establishment of the professional guidelines on routine HIV testing in 2008 (British HIV Association (BHIVA) et al., 2008). The HIV consultant for site 1 described what she saw as how this guidance was then translated into action:

> *"So what has to happen is, the guidance has to come out. Then, the organisation, BHIVA, has a big role, because what they'll then do is do an audit. And then they'll do an audit for the whole country and say, my god, you know, this is shocking performance in the whole audit and we'll all see that and go god, this is terrible, and they'll give you some standards of what you should try and work towards. And then you go and look on your own patch, and you try and deal with it." (Site 1\1-1-C HIV consultant: 263)*

This seemingly clear process was not so clear when analysed together with the rest of my interviews. The awareness of the guidance itself was patchy; the HIV specialists that I interviewed described the guidance as being relatively well-known among HIV specialists, but not well known outside that area. This was also what I found in interviews. Moreover, even when people were aware of the guidance, it did not necessarily play the determining role described by the HIV consultant in the quote above. The A&E consultant at site 1 described having a long-standing opinion that there should be more HIV testing in A&E settings. For him, this guidance on routine

HIV testing was not the reason for his initiative on implementing routine HIV testing in that A&E department (nor did the guidance actually even require it, as described in Chapter Six). Rather, he described using the guidance as an instrument to legitimise and support action among his colleagues and within the organisation on an issue which he already felt to be important.

Looking at this in policy terms, the absence of the formal structures and responsibilities of the NHS was striking. Though formal agencies such as NICE were referred to as sources of information in general terms, the key agency at national level in this case was not a formal actor within the NHS structure, but rather BHIVA (acting together with two other specialist professional organisations) which provided what was accepted by professionals as being an authoritative statement of guidance with regard to HIV testing, which in turn formed a basis for their action. In complex systems theory terms, this raises the issue of boundaries, where the boundaries for the system do not align with the formal bodies of the NHS, but also encompass other bodies (in this case, professional organisations). As described in Chapter Six, even general media played a role within the health system, affecting flows of information. At the individual level, too, boundaries did not necessarily align with the organisational structure; for example, the HIV consultants were part of a wider 'system' of HIV specialists that linked across different organisations, as described earlier (see Chapter Six, 'Knowledge'). Thus rather than formal structures and roles being the basis of action, other mechanisms such as professional identity, the authority of specialist professional bodies, a wide variety of communication channels and relationships between individuals seemed to play a more important role in persuasion and decision.

8.2.2 Resources

In funding terms, there was no funding specifically linked to the implementation of this guidance in practice. This lack of resources was not only an issue for the HIV consultants who were attempting to lead the implementation within their organisations. It was also an issue related to the extra costs that implementation of the guidance involved, in particular the cost of the HIV test itself. The additional cost of the HIV testing was mainly an issue for the A&E departments, because of the high volumes of patients that they were dealing with combined with the unit cost of the test. The A&E consultant at site 1 explained the problem this posed:

> *"…it's so expensive, it's a £7 test, to put it into context a full blood count, for the routine kind of blood tests that we would do, you'd expect for the vast majority of patients that we see in the ED to have zero pound cost to the blood test, because we wouldn't for the vast majority of patients we wouldn't do a blood test on. For those who we do we would expect them to have a £1.50-£2 expenditure on blood tests. And this is a £7 blood test." (Site 1\1-3-C A&E consultant: 87)*

For site 1, this had proved to be a decisive factor preventing sustainable implementation in the A&E department. Though they had done a trial and shown the feasibility of implementing the guidance, the funding body (in the form of the local Clinical Commissioning Group, CCG) had "*run out of money*" (Site 1\1-3-C A&E consultant: 91) to fund the testing. At site 2, their funding from the organisation included covering the cost of the test in the A&E department. However, as described above, this was the result of a decision by that particular organisation, not because of funding for this innovation being available at system level.

This lack of specific resources linked to this innovation has to be seen in contrast to other changes and activities which did have linked resources. The AAU in site 2 was a clear illustration of the impact of differential resources, where there were several different specific and substantial financial incentives tied to performance in particular areas. For example, there was around a quarter of a million pounds tied to rates of prophylaxis for deep vein thromboembolism, which was described as '*enough to nurse a ward for a year*' (Site 2\2-3-C AAU consultant: 166). These incentives had clearly influenced the prioritisation of activity by consultants (in their oversight role, most of the items that they specifically checked on in their weekly meetings were linked to financial incentives) and thus also the staff under them. This illustrates the problematic nature of attempting to use economic incentives to steer performance in a complex system where many different aspects of activity are not being incentivised, and it is simply not possible to measure and incentivise all aspects of desirable behaviour within the system. The HIV consultant at site 1 described this in terms of 'hard goals' and 'soft goals':

> *"…the thing is there's priorities, things that are attached to a money stream like, you know, achieving undetectability in viral loads and stuff, that attracts a higher interest than something like testing, where it's more nebulous, and you have [to] show them that you're trying, and show some steps towards trying… you know, there's, there's soft goals and hard goals, and [routine HIV testing] qualifies as a soft goal, I'd say. […] They're not going to lose their core business, or lose their contract for not doing testing. But people will lose their contract if their patients aren't undetectable, if the viral load's [not] undetectable." (Site 1\1-1-C HIV consultant: 69 - 73)*

Thus the funding structures of the NHS seemed to hinder the implementation of this innovation, both through the lack of a specific supporting funding stream and

indirectly through its implicit deprioritisation of this innovation in relation to the financial incentives attached to other aspects of performance.

Resources, though, are not only about money. One striking aspect of the adoption process for this innovation was what is not included; specifically, practical support for the implementation of the guidance, in terms of either expertise or resources. BHIVA did not appear to provide any practical support to help implement the guidance, nor was there any institutional facility from within the health system to provide practical help for implementation (such as practical advice, supporting staff, or funding to buy out clinical time for the consultants to spend time on implementation). Yet at both sites, the HIV consultants who were leading the implementation of this guidance described needing additional practical support to help implement the guidance. In these two cases, they had been able to find some additional support. In site 1, the HIV consultant had managed to get an external grant from a pharmaceutical company to recruit a nurse to provide support. At site 2, the HIV consultant successfully applied for funding from within the hospital to implement testing as a quality improvement initiative, and this included funding for staff support and some additional time for herself. In both cases though, this was the result of their individual initiative, and was neither guaranteed nor permanent. Moreover, neither seemed to have received advice about the process and practicalities of implementing the guidance; they both had come with their own strategies and approaches within their own organisations (and this was also typical of innovation implementation described by my interviewees more widely). On the one hand, this allowed a high degree of adaptation to their local context. On the other hand, it relied entirely on their own initiative and capability, and

did not seem to either draw on or provide wider learning within the system (beyond the reporting of some of the experience at site 2 in the academic literature; see Rayment et al. (2013)).

This lack of support and advice also seems to me to relate to the different perspectives of the health system as a complicated machine versus a complex systems perspective. As described above, an underlying assumption of the principal current policy approaches towards the health system is that the system is complicated but controllable, with the tools and approaches of policy seeking to achieve that control and direction. From a systems perspective, though, bringing about change and improving performance within the system is achieved through supporting learning and adaptation within the system, rather than controlling it directly (Plsek, 2003; Seddon, 2008). The striking absence of practical support and expertise to help implement an innovation seems to me to reflect the difference between these two perspectives, with a focus on using resources as a tool of control, rather than providing resources to support adaptation and learning.

8.2.3 Policy

The guidance at issue in my case study did not appear to have any direct effect on the organisations of the NHS as such. Neither the provider organisations (the hospital trusts, in this case) nor the purchaser organisations perceived any necessary consequences for themselves arising from this professional guidance, as shown by their lack of any organisationally-driven response.

In my analyses, the impact of the professional guidance came through professionals themselves finding out about it and coming to a decision to take it forward, and then using their initiative to try to bring about change within and through their organisations, with varying degrees of success. Because the initiative that they took depended on the meaning of the guidance as perceived by different professionals, the role that the guidance played for them is different, such as for the A&E consultant who used it to pursue an aim that pre-dated the guidance itself. National policy in this area seemed not to be set through the NHS's own structures, but rather through professional networks and their specialist bodies. When these did not agree, as in the case of the colposcopy nurse described in Chapter Six (see section on "Specific departmental responsibility to act"), this appears to be resolved through collective discussions and interpretation between professionals, not through any formal NHS mechanism.

Interviewees in my study described a process of change that was bottom-up, with individuals and departments seeking to bring about changes and having to work to shift the organisation and the system to implement them, rather than the system itself driving improvements. Again, returning to the HIV consultant at site 1:

> *"There's no-one telling me what to do, there's me thinking to myself, well, what am I going to do next? How shall I do it, you know, and deciding, well, I'll do this or I'll do that." (Site 1\1-1-C HIV consultant: 87)*

Or returning to the A&E consultant who described this bottom-up process in relation to the organisation, as discussed in Chapter Seven:

> *Well, the trust doesn't… there is no sort of trust, really. The trust as an entity doesn't exist. The trust is just a group of people, you know,*

> *we've got the chief executive, obviously, and the chief executive has those things which he has to mandatorily implement, but for the vast majority of things the trust are the clinicians on the shop floor who are making, who are writing the guidelines and so, we are as engaged as we want to be with that process. (Site 1\1-3-C A&E consultant: 22)*

It may be that some other innovations are led through the formal policies of the NHS, such as waiting times in A&E or prophylaxis for deep vein thrombosis. Other case studies would be required to explore any differences with implementation mechanisms for such innovations.

8.2.4 Information

Audit came across from my interviews as a key mechanism in driving change in general. However, how audits were implemented and their impact on action were less clear. For this innovation, the site HIV consultant described an external actor (BHIVA) as carrying out an audit (see quote at the start of this section). The awareness of this external assessment seemed limited to the HIV specialists themselves, though. Even when audit data related to this innovation was provided internally (such as by the HIV departments to the other departments within their respective hospitals), it did not seem to have a great impact. I suggest that this is related to the perceived relevance and scope of practice as described in Chapter Six, with this audit data not being recognised as being sufficiently relevant to their scope of practice and organisational responsibility for professionals in other departments.

Moreover, the process of carrying out audits appeared to be problematic. The overall description from my interviewees was of audits that were not carried out as often as they should be, in part due to the burdens of time and administration that they

required, or which were left to junior doctors who then moved on to another post before the audits were completed.

I suggest that this illustrates information systems that are better adapted to providing information that is relevant for management and control and financial processes, rather than learning and improvement. In this case, while there were good information systems for reporting other aspects of HIV care (eg: undetectability of viral load, which was linked to contractual requirements), the information systems to monitor the performance of individuals relating to implementation of this innovation were inadequate and unsystematic. Data about routine HIV testing was not collected systematically for the trusts serving populations covered by the guidance, with monitoring instead depending on audits which were neither systematic nor comprehensive, and which mostly did not provide individual-level data that would enable effective feedback to individual clinicians to change their practice.

8.3 Conclusion

As set out in Chapter One, my research combines two issues. First, aiming to better understand psychological theories that are relevant for implementation and change, and to link those to wider implementation research. Second, to assess what this means for health policy.

When I began this research, from my perspective as a policymaker, my expectation was that I might find useful insights from psychology that could enable existing policy mechanisms to be fine-tuned in order to more effectively support implementation and change in practice. As my findings emerged, though, I found that they suggested a

need for a more fundamental shift in perspective. Rather than enabling some adaptations to existing tools, my analysis of the detail of innovation and change through this case study fundamentally challenged my previous ideas about how health systems function and the role of policy in relation to them. My key finding for the policy and systems level of my research is that the typical policy viewpoint of how health systems and health policy works is misconceived, and is based on a perspective of the health system as a complicated system that can be controlled, using policy approaches such as those described at the start of this chapter. However, this in turn leads to policy mechanisms that do not effectively support innovation and improvement within the health system. I argue that shifting from a 'complicated' perspective to a 'complex systems' perspective is a vital starting point in order to understand how policy relates to the process of innovation implementation. This also suggests that it may be useful to rethink policy approaches; I discuss some implications for policy in Chapter Ten.

Chapter 9. Synthesis of findings and limitations

The three previous chapters have set out my findings at the individual level, the organisational level and the system level respectively. In this chapter, I bring these findings together. In the first section, I return to my proposed theoretical framework, and assess how my empirical findings support the overall approach of that proposed framework, and help to identify the most relevant psychological theories within it. I then return to the four strands of existing use of psychology in implementation that I identified in my literature review, and examine how my findings add value in comparison to those approaches, before turning to the limitations of my research.

9.1 Evaluating my proposed theoretical framework in the light of my empirical findings

In Chapter Four, I set out my proposed theoretical framework; using the individual stages of adoption described by Rogers' diffusion of innovation framework to identify and situate relevant psychological theories. In that chapter, I set out potentially relevant theories for each of the stages of adoption. In this section, I evaluate that proposed theoretical framework in the light of my empirical findings.

The first question is about the basic approach that I proposed of using the stages of adoption from the diffusion of innovations mode as an approach to focus and group psychological theories, and how far this was an effective means of structuring and differentiating my analysis. In evaluating this, I have considered the process of analysis and how my findings have emerged in relation to this overall framework. For example, did

different psychological issues emerge at different stages? If there were multiple stages with the same psychological issues, this would suggest that those stages did not provide a useful means of distinguishing psychological processes. Or did the stages obscure the application of seemingly relevant theories? If there were psychological theories that appeared to be relevant but which did not fit with this framework of stages, this would also call into question my overall proposed approach.

From my findings, though, I found that this framework did provide a useful approach to my analysis. The different stages had distinctive psychological characters, as described in the previous chapters and which I bring together for each section later in this chapter. The most closely related were the persuasion and decision stages, but even for those two, the stages provided a helpful means of analytically separating out the different psychological processes involved. Moreover, the different stages proved valuable in identifying and distinguishing different psychological processes at work during adoption, and focusing on how different theories were relevant during different parts of the process of adoption. On this basis, I concluded that my findings supported the basic validity of this proposed approach of using the stages of adoption from the diffusion of innovations model as a framework for identifying relevant psychological theories at each stage and integrating those into the wider diffusion of innovations model.

The second question concerns which of the potentially relevant theories that I identified in Chapter Four on the basis of my literature review were the most relevant from my empirical findings. My initial proposed framework described in Chapter Four included a wide range of relevant theories, which I identified using my wide ranging search strategy described in Chapter Three. This was intentionally broad, with the aim of redressing the relatively

narrow base of psychological theories identified in existing literature. My second aim for my empirical research was to identify which of those potentially relevant theories emerged as being the most relevant in this case study, with the aim of providing a first narrowing down of the potential range of complexity.

In Table 9-1 below, I summarise the psychological theories that I identified in my initial theoretical framework, and compare those with which theories I found to be the most relevant through my empirical findings. In the following sections, I go on to summarise the theories that I found to be the most relevant in more detail, highlighting ways in which my empirical findings have changed or focused the range of potentially relevant theories that I initially identified. I also draw out how my detailed findings at different levels (individual, organisational and system, as set out in the preceding findings chapters) relate to each other.

Table 9-1: Proposed theoretical framework, potentially relevant theories and summary of empirically relevant theories

Theoretical framework	Theories and issues initially identified as potentially relevant on the basis of literature review	Theories identified as relevant on the basis of empirical findings
Prior conditions	Attributes of individual adopters (personality traits, intelligence, dispositions, motivations, coping styles, demographics) Previous practice and experience	[Attributes of individual adopters – not assessed] Previous practice and experience. Individual motivation.
Knowledge	Confirmation bias Health care professionals drawing on their social networks for knowledge	Developed a new theory of a filtering strategy, combining satisficing and selective exposure to information across wide variety of channels (in particular professional networks within and beyond their department and organisation) and wider interaction of multiple systems within the health system overall).
Persuasion	Theory of planned behaviour Social norms and influences Mechanisms of social influence Social cognition (groupthink, group psychological safety) Identity (personal, role, social) and sensemaking.	Identified central relevance of role identity (at departmental/speciality level) and link to bounded rationality in establishing relevance. Relative advantage also assessed in relation to this role identity (impact on patients within their scope of practice) as well as on the clinician, their department and its economic cost-benefit. Other attributes similarly; example of the consequence of having results communicated through other people reducing observability of the innovation and thus relevance for the testing clinician. Communication and influence actively engaged in externally (by leading professional organisation) and internally led by consultants. Importance of

	Motivation (including empowerment, public service motivation, cognitive dissonance)	peer-to-peer interpersonal engagement between departments at consultant level, followed by ongoing interpersonal engagement with other departmental staff. 'Felt needs' not a predetermined prior condition, rather something being actively constructed and communicated within the adoption process, including being shaped by the wider organisation and system.
Decision	Judgement and decision-making processes (dual system processes) Social schemas, mindlines, sensemaking Organisational processes: feedback supporting development of accurate judgement, involvement in decision-making Group cognition and behavioural reasoning theory	Identified key area of the social character decision-making (though not for HIV specialists – or their 'group' may be outside their own hospital); combined then with individual decision-making within that social context. Both persuasion and decision an interactive social process (and thus conceptually linked). Refined construct of 'Norms of social system' as being not a 'prior condition' to innovation adoption, but being constructed as part of it; processes of change being driven bottom-up by individuals and departments, rather than top-down through the system and organisation. Social/organisational dimension of decision-making limits potential to trial innovations. Different decision-making criteria at departmental and organisational levels (with organisational level more focused on resource implications).
Implementation	Implementation intentions Prioritisation and bounded rationality Organisational support for	Identified key issue as limited cognitive and memory capacity. Strategies of prioritisation used (again linked to role identity), routinisation and external cues. Lack of resources to support implementation and change (enabling reinvention, but also depending on local initiative). Overall, monitoring and feedback systems were collective and seemed focused

	learning and change	on management and control, rather than learning and development; these systems did not provide the individual-level feedback that would support individual learning and development. More broadly, different training and support structures for doctors and nurses (with those for nurses aligning better with psychological theory). Effort of communication/engagement for seeking informed consent a barrier (compatibility of values leading to complexity of seeking informed consent); link to remaining perceptions of HIV as exceptionally sensitive, given that guidance states no special consent is required?
Confirmation	Motivation Routinisation Organisational support	Local evidence (versus more general, external evidence at earlier stage of persuasion and decision-making); link to observability of the innovation. Making new processes routine; particular negative impact of transience of junior doctors on routinisation of new tasks.

9.1.1 Prior conditions

Of the potentially relevant issues identified in my proposed theoretical framework, two areas stood out from my empirical findings as particularly relevant. The first was previous practice and experience. This was pertinent both at the level of attitudes towards the innovation as a whole (such as the lymphoma consultant in site 1b, whose positive attitude towards routine HIV testing was based on her previous experience whilst training in Spain; see section 6.2, Persuasion) and in terms of the implementation in practice, where several interviewees referred to the difficulty of changing their previous practice (see section 6.4, Implementation). The second was individual motivation. This seemed particularly relevant to the knowledge stage of adoption, as described by the A&E consultant at site 1 (1-3-C) and discussed in section 6.1, Knowledge.

In my initial framework, I also identified other attributes of individual adopters as potentially relevant, in particular personality traits. However, as discussed in Chapter Five, the methodological approach of a qualitative case study is not well suited to evaluating individual differences in psychological profile such as personality traits, and indeed these did not emerge as a major area in my interviews. I do not consider this to be a major limitation, though, at this stage of an exploratory study. Quite apart from the difficulties of using individual personality differences as a basis for intervention discussed in Chapter Four, what did emerge from my findings was the importance of the social dimension of shared group cognition and decision-making, which I discuss further below. So rather than individual differences of personality being a key area for focus, I suggest that it would be more useful in further research to

look at the dynamics of the workplace group as a whole, and the individual within that context.

9.1.2 Knowledge

On the basis of my findings, in section 6.1, Knowledge, I proposed a combination of psychological mechanisms which build upon but go beyond the theories that I initially identified. The filtering mechanism that I suggest is being used illustrates the importance of seeing psychological processes in their social and organisational context. It is not that the processes that I initially identified are not relevant. Rather, the situation that I identified of information overload, multiple sources of information and a workplace context of information through an immediate group of colleagues as well as wider professional networks allowed me to extend those theories (in particular by including bounded rationality as another relevant theory). I then applied them more specifically in that context, allowing a clearer understanding of the mechanisms at work. I suggest that understanding how knowledge on an innovation comes to and is sought by healthcare professionals requires understanding of their professional networks, which appear from my interviewees to be complex, specific to the individual, and to cross organisational boundaries. As discussed in Structure and roles, section 8.2.1, the boundaries of the health system were far from clear, with other entities (such as professional organisations, and specialist and general media) also playing a role. Indeed, rather than being a single 'health system', there seemed rather to be multiple, overlapping systems with porous boundaries, which individuals were positioned within in different ways.

9.1.3 Persuasion

The primary focus of the theories that I identified in my proposed model is on why to adopt an innovation. However, as I describe in section 6.2, Persuasion, my empirical findings suggest that these should be seen through the lens of the individual's role identity within the organisation – meaning not just why adoption should be done, in principle, but why they in particular should be the ones to do it. Similarly, the perception of the attributes of the innovation by potential adopters should also be seen through the lens of this role identity, as described in section 7.2, Attributes of the innovation. This again underlines the importance of situating these psychological processes within the individual's wider context. As discussed in the preceding section, this role identity did not appear to simply be defined within the organisation; my interviewees described links to wider identities (eg: professional, specialist) which also helped to form their idea of their role.

My empirical findings also suggested that some of the theories that I initially identified were less relevant than I had expected, at least in this case study. In particular, I did not find much evidence of the mechanisms of social influence being relevant in practice, for example (with the exception of the authority of senior staff). The main mechanism of influence within the organisation was peer-to-peer engagement between consultants (led by the HIV consultants in this case), with then ongoing engagement required with the rest of departmental staff – the organisational level was noticeably absent from these communication and influence processes.

Moreover, though 'felt needs' are identified as a prior condition by Rogers in this individual adoption process (see Figure 4-1), this did not appear to be the case for my

interviewees, none of whom described being aware of a lack of routine HIV testing or related issues before the arrival of the guidance. Rather, part of the process of persuasion to adopt the innovation appeared to be also creating awareness of the problem that it was intended to address; for example, through processes of audit (see Feedback and monitoring, section 7.4.3). Rogers acknowledges this, suggesting that in some instances a perception of a need may come before a problem (Rogers, 2003, pp. 171-172). For example, for a condition that can be diagnosed but has no treatment, the perception of a need is likely to be clear. In other cases, it may only be awareness of the potential of an innovation that itself creates the perception of a gap between the current situation and what the innovation offers, and thus the perception of a need. Rogers takes the example of consumer electronics (in modern terms, did people have a perception of a need for smartphones before they were created?). In my case study, the perception of need appeared to come from the evidence underpinning the guideline itself around the benefits of routine HIV screening in comparison to the existing practice of risk-based screening. Part of the approach taken by the organisations developing the guideline (ie: BHIVA) and the HIV consultants within the hospitals at my interview sites was to actively create awareness of this gap between current practice and outcomes from routine HIV screening. For this reason, I suggest that 'felt needs' is best considered as part of the adoption process, something that is being actively constructed and communicated, rather than as a pre-existing factor.

The question of what is 'needed' was also being influenced from beyond the immediate department by the wider organisation and system. As discussed in section 8.2.2, Resources, some activities had specific incentives or requirements attached to

them through the health system, such as financial penalties. These can be seen as a form of 'felt need' created by the system (and an implicit lack of a 'felt need' for other areas, so far as the wider system is perceived).

9.1.4 Decision

For this stage too, the key refinement that I identified on the basis of my empirical findings was a shift in perspective; in this instance from seeing decision-making as an individual process to a social one, with individual decisions being taken within the social context of the department. As described in section 6.3, Decision, I found that the key level for decision-making was the department, though individuals did then take their own decisions for their practice in relation to their patients and their situation (and the HIV consultants took their decisions on adoption of the innovation quite individually, although their social context may have been the wider professional community of HIV specialists).

However, there were several aspects of these processes of social cognition and how they related to individual decisions that remained unclear. My methodology of single interviews with individuals provided direct accounts from individuals at one point in time, it did not provide data about how thinking and discussion had changed over time for individuals or include observation of the dynamics of the group, and so I was not able to analyse the detailed processes of social cognition and construction of their positions. The informal and collective nature of decisions also made it difficult to distinguish between the stages of persuasion and decision-making. Indeed, it seemed that in some departments the processes of persuasion and decision were ongoing, not least with the new intake of junior doctors every four months (see section 7.4.1,

Leadership and transience), though less so in others (such as the lymphoma department at site 1b).

My findings also illustrated a conceptual issue with the social dimension of established psychological theories such as the theory of planned behaviour. The individual perspective that is the focus of these theories sees social norms as an external factor in decision-making, which is why I included them under the 'Persuasion' stage of the adoption process. But the social nature of decision-making means that social norms are not an external factor that comes before decision making. Rather, part of the process of decision-making is the process of reconstructing social norms and expectations within the group. Thus the social processes of interaction and consideration of issues and change are a process of persuasion and decision within the group, which was complex, interactive and ongoing. For this reason and similarly to 'felt needs' (above), I also suggest that social norms (which Rogers also lists as a prior condition to the individual adoption process) should be considered to be part of this decision-making process.

In some instances there was a clear means through which this process crystallised into a clear decision (such as the establishment of agreed standard blood tests in the lymphoma unit at site 1b, as discussed in section 7.4.4, Localisation and sense-making within each department). But in other instances there did not appear to be a crystallised outcome from the decision process in this way. One could argue that the decision to implement routine testing in a department is itself a crystallisation of the decision-making process, and at one level this may be the case. But at the same time, even having a formal decision in place for the department was clearly not sufficient to

mean that this was interpreted as a requirement for all the members of staff (as discussed in section 6.3, Decision). I suggest that this can also be interpreted as meaning that the decision-making process is still ongoing. There are aspects of this innovation that make it particularly susceptible to this fluid nature of decision-making. For an innovation which is a specific object, there is likely to be a clearer decision point; a decision to purchase an item of technology, for example. But for an innovation which is a change in behaviour, this can be seen as a constant series of decisions every time the behaviour is or is not carried out.

This social and collective nature of decision-making also has an impact on the perception of attributes of the innovation; specifically, its trialability. As discussed under Attributes of the innovation, section 7.2, individual clinicians have limited scope to try out innovations in care without having wider support from their department or organisation. Though there was some scope with this innovation for individual clinicians to try out different ways of implementing the decision in practice (in particular, how to seek informed consent), in general trialling new approaches was not something that could be easily done by individual clinicians.

My findings suggest that the factors affecting decision-making are different at different levels. As described above, a key factor for individual clinicians was how relevant this innovation was to their specific role. Relevance seemed also to be applicable at the departmental level, where departments had taken on testing not only because they were convinced of its utility in principle, but also because of their perceived organisational opportunity (such as for the A&E departments on both sites, as discussed in section 6.2, Persuasion). However, as discussed in Chapter Eight, I argue

that it is important to distinguish the departmental and organisational levels. For the organisation as a whole, the key issue seemed rather to be the impact of changes on resources and revenue for the organisation (see 'Receptive context for change', Chapter Seven). This also relates to the bottom-up nature of change, as discussed in section 8.2.3, Policy, with individuals and departments seeking to bring about change and then having to persuade the higher levels of the organisation and system, not the other way around. Given that I did not collect primary data about decision-making at the organisational level, these can only be tentative findings, but they suggest that it would be worth exploring how different issues are relevant to the process of making decisions within the organisation as a whole.

9.1.5 Implementation

For implementation, the psychological theories I identified in my proposed model were also identified as relevant in my empirical findings, as discussed in section 6.4, Implementation. These theories already reflect ideas of limited cognitive capacity and the need for strategies to support turning goals into action, and these were key themes in my empirical findings.

However, my findings did shed additional light on the links between individual adoption and the wider organisational context. One general observation was the lack of resources to support implementation and change, as discussed in section 8.2.2, Resources, with each site having to come up with their own resources and strategies to take forward the guidance in practice. The guidance itself did not include detailed advice about implementation in practice; while on the one hand this could be seen as allowing much local adaptation and reinvention (as discussed in section 7.2, Attributes

of the innovation), it did also leave local actors without support when putting the guidance into practice.

As discussed in section 7.4.3, Feedback and monitoring, there was a mismatch between the monitoring and feedback systems that were in place (which were focused on collective performance) and the individual-level feedback that psychological evidence suggests would support individual learning and performance improvement. In principle, senior staff could bridge this gap by providing individual-level feedback, but my findings suggested that this was not generally happening, at least for this innovation. More broadly, the systems for training and support seemed quite different for doctors and nurses, as described in the 'Training and support' section of Chapter Seven, with the systems for nurses appearing to align better with the psychological theories relating to expertise and expert performance. These systems for monitoring and feedback also linked to wider information systems, as discussed under section 8.2.4, Information, which did not appear to be systematic or supportive of learning and improvement.

There was also an interaction between wider social norms and implementation around attitudes towards HIV, though this was not straightforward. As described in the 'implementation' section of Chapter Six, implementation was seen as the key stage where the innovation process had problems. Specifically, in section 7.2, Attributes of the innovation, the process of seeking informed consent for HIV testing was seen as a key barrier to implementation. Yet this contradicts the guidance at issue, which specifically states that consent is only required in the same way as for any other investigation, as discussed in section 5.6.1, What is the innovation that I am studying?

It appeared to me that the perceived 'exceptional' character and sensitivity of HIV has become so embedded in professional culture within healthcare that this perception of exceptionalism overrides what the guidance actually says.

In my view, this sensitivity around HIV also raised a question about why the process of informed consent was perceived to be so difficult by so many of the clinicians. Was it because of the difficulty of remembering it and the time and effort involved, as indicated by their accounts during the interviews? Or was it also related to this perceived sensitivity around HIV, and thus clinicians who are not HIV specialists being uncomfortable in dealing with what they feel to be a particularly sensitive area? On the face of it, my interviews mostly suggested that sensitivity around HIV was no longer a problem, but the insistence on specific procedures for informed consent suggests otherwise. Further research could shed light on this by looking at other innovations requiring an explicit discussion of consent, and how far this discussion of consent was an obstacle to implementation, in order to compare with the issues encountered in this case study.

9.1.6 Confirmation

As discussed in 6.5, Confirmation, it was difficult to draw firm conclusions from the case study about factors affecting confirmation. The principal issue was identified as the role of evidence in supporting continued implementation of the innovation – and specifically, evidence relating to the impact of the innovation in their local setting. This relates to the 'observability' attribute of the innovation, discussed in Chapter Seven; the confirmatory evidence that some of my interviewees talked about can also be understood as a desire to observe the results of the innovation in practice.

In psychological terms, confirmation can also be seen as the process of making something routine, as discussed in Chapter Four; time and practice turning a consciously considered new behaviour into a new automatic routine, and this was identified as a challenge by my interviewees. The organisational context clearly has an impact on supporting this process of making behaviour routine; the key issue that I identified was the transience of junior doctors (see section 7.4.1, Leadership and transience), which appeared to hinder their ability to help implement this innovation.

9.1.7 Conclusion

The overall aim of my proposed theoretical framework was to break down the process of adoption into stages that would allow me to distinguish and focus on the psychological theories that are relevant for each stage, and I identified a wide range of potentially relevant psychological theories for each of those stages from the literature. The aim of my empirical research was twofold; to provide a first empirical test of this overall approach, and to seek to identify the most relevant psychological theories among those that I initially described based on the literature.

My findings support the overall validity of this approach, with the findings at each stage being psychologically distinct, and the stages providing a valuable mechanism for distinguishing and identifying relevant psychological processes. Regarding the most relevant theories, my empirical findings have provided valuable insight into not only prioritising the most relevant theories, but suggesting different and novel ways of combining or applying them to understand the different stages of adoption.

9.2 Added value of my approach in comparison to the existing use of psychology in implementation

In Chapter Three, I identified four strands of the use of psychological research and theories to support implementation research:

- using individual psychological theories as a means of understanding the behaviour of health professionals;
- using multiple psychological theories, chosen according to the specific issues of the individual health professional concerned;
- compiling a wide range of psychological theories and constructs relevant to implementation into a single compendium; and
- integrating psychological constructs into wider frameworks for understanding implementation.

In my assessment of these strands, I considered there to be important flaws with all of them, as outlined in Chapter Three, and thus put forward my own proposed approach in Chapter Four. In this section, I look at what my empirical findings suggest about the value my proposed approach adds in comparison to these strands of the use of psychology in implementation research and my initial assessment of them.

9.2.1 Using individual psychological theories

As described in Chapter Three, the principal individual psychological theory used for implementation research is the theory of planned behaviour, according to which behaviour is based on a combination of the individual's attitude toward the behaviour, the social norms that they perceive from others about the behaviour, and how

effectively they feel able to put the behaviour into practice if they wish to (see Figure 3-4, page 52).

In my literature review, I criticised the use of the theory of planned behaviour (and other individual behaviour change theories) as not taking account of the specifically professional nature of behaviour by clinicians at work, nor their wider social and organisational context. My empirical findings confirm that these dimensions were indeed important in this case, and underline why their omission is problematic.

The theory of planned behaviour and other individual behaviour change theories treat the flow of information related to the behaviour as external and neutral. However, my findings show that this is not the case for my case study, with the flow of knowledge being shaped by organisational and system structures and actively constructed by healthcare professionals themselves through their selective exposure and information seeking strategies. In the theory of planned behaviour, the perceptions of the innovation are discussed without reference to the attributes of the innovation or to the organisational role of the individual concerned, both of which my findings suggest are relevant.

More fundamentally, the theory of planned behaviour views the process of forming a view about an innovation and implementing it as a process of individual cognition, in which the social dimension is simply an external factor. My findings suggest that this misconceives the process for the healthcare professionals in my case study, for whom these processes of persuasion and decision had a fundamentally social character. Thus taking this individual cognition approach misses out on the explanatory power of

relevant theories about how processes of social cognition work, and how the social and organisational context of healthcare professionals affects these processes.

Similarly, my findings suggested a much wider set of relevant factors affecting implementation than simply perceived behavioural control, highlighting ways in which the organisational environment helped or hindered implementation regardless of the intentions of individuals. Moreover, the theory of planned behaviour misses out the confirmation stage entirely, despite other psychological evidence about the distinct nature of consciously implemented new activities from activities sustained for long enough to become automatic, and my findings again illustrated how the wider context could help or hinder those processes.

I conclude that my empirical findings support my initial critique of the approach taken by the theory of planned behaviour and other individual behaviour changes theories used in implementation research.

9.2.2 Using multiple psychological theories

The second approach that I described in Chapter Three was using multiple psychological theories; evaluating the key obstacle to change for an individual clinician, identifying a relevant theory and intervening in a way suggested by that theory.

My findings suggest that this approach faces the same weaknesses as described above for individual theories. Although different theories are proposed, they are all focused on individual processes of change, and neglect the social and organisational context in which the healthcare professional is working. So as discussed in relation to the theory of planned behaviour above, these individually-focused theories neglect the wider

context and how it shapes the flow of information, the collective dimension of decision-making and implementation.

I also suggest that although the process of evaluating obstacles to change individually may allow better adaptation to individual circumstances, the stages of adoption described by Rogers provide a better lens for differentiating the various challenges involved and potentially relevant theories for understanding them. The approach taken by Robertson and colleagues in identifying a specific obstacle for an individual could in principle reflect different challenges at different stages of adoption, and their proposed theories (as set out in Table 3-2, page 56) go some way towards doing that. For example, one of their proposed approaches focuses on the source of guidelines not being perceived as reputable; this could be seen as being part of 'Persuasion' in Rogers' stages of adoption. Another approach focuses on the clinician perceiving a lack of knowledge or ability to implement the guideline, which could be seen as applying to the 'Implementation' stage. However, this also illustrates the narrowness of the approach. Most of the theories relate in one way or another to the "Persuasion" stage, omitting much potentially relevant psychology. Moreover, this approach implies that there is only one key issue for each individual, whereas the wide base of empirical support for the diffusion of innovations framework suggests that individual adoption involves many different issues at different stages of adoption, in addition to the complicating factor of interaction with the organisational context for professional decisions as in my case study. My findings also suggested that there were many different issues at different stages of adoption, and aligned well with the diffusion of innovations framework. This suggests that even with the individual

approach proposed by this approach, simply focusing on one particular theory as being most relevant to an individual at one point in time does not seem likely to effective in improving implementation overall.

9.2.3 Compiling psychological theories related to implementation – the Theoretical Domains Framework

The third strand of research was the Theoretical Domains Framework, which is a compilation of psychological constructs relevant to implementation. As described in Chapter Three, I identified two principal problems with the Theoretical Domains Framework: that detaching constructs from their theoretical frameworks results in lack of clarity and a loss of explanatory power; and that, as with the individual theories discussed above, the framework lacked linkage to the wider organisational and system context that is essential to implementation by professionals.

My empirical findings provide support for these critiques. As with the Theory of Planned Behaviour, the Theoretical Domains Framework incorporates 'social influences' as an external factor, not an interactive process in which the individual participates; the Framework does not include reference to the social or collective processes of persuasion and decision that I found in my case study.

My findings also highlight the risk of confusion relating to the isolated constructs of the Theoretical Domains Framework. The Theoretical Domains Framework refers to 'outcome expectancies', but as my findings illustrate, this could mean the immediate expectations of the outcome of taking a test (eg: notification of any positive HIV status to the patient); the outcomes for the clinician (eg: in relation to their peers or

superiors); or outcomes for their patient group as a whole (eg: in relation to the observability of the results of routine testing). My findings suggest that these constructs are psychologically quite distinct, and that they play different roles in the adoption process. This illustrates the lack of clarity in the Theoretical Domains Framework from incorporating them as isolated constructs.

Some constructs are listed in the Theoretical Domains Framework more than once under multiple headings, such as group identity, which is listed under heading three (social/professional role and identity) and under heading 12 (social influences). My findings suggest, though, that group identity as a reference point for delimiting what a clinician considers to be within their scope of practice has quite a different impact from group identity as a mechanism of social influence, as discussed under the Persuasion section above; this is an example where simply including the construct in isolation from theoretical frameworks leaves it unclear in practice. Other important elements are missing; as discussed in Chapter Three, the construct of feedback has been removed from the Theoretical Domains Framework, despite its relevance to performance improvement and the relevance of considering the precise mechanisms of feedback as discussed above.

9.2.4 Integrating psychological constructs into wider implementation frameworks

The fourth strand of research that I described in Chapter Three was integrating psychological constructs into wider implementation frameworks. As described there, I argued that these approaches faced the same criticism as for the Theoretical Domains Framework, in that the separation of constructs from theory creates ambiguity about

how to understand those constructs and loses the explanatory power of their accompanying theories. For the same reasons as for the Theoretical Domains Framework, therefore, I argue that my findings support this critique.

I also described several attempts to reconstruct theoretical linkages by proposing new models of implementation. Overall, these do come closer to capturing the interactive and multi-level character of innovation adoption that I found through my case study. However, my findings suggest that these relatively simple models are too simple to capture the complex process of innovation adoption. The five-stage model of adoption that I proposed enabled quite different processes and areas of focus to be drawn out, and I suggest that my empirical findings supported the utility of that approach in managing the complexity of the different potentially relevant theories for the different stages.

9.2.5 Conclusion

Overall, I conclude that my empirical findings support the critiques of the use of psychology in implementation research that I outlined in Chapter Three.

In that chapter, I raised three issues that I saw as arising from my literature review; the isolation of psychology from the rest of implementation research; the narrowness of the psychological theories being used; and the challenge of complexity facing implementation science, as represented by the various efforts at producing simpler, integrative models for understanding implementation. My empirical research has been a first test of my approach in attempting to address these issues.

My findings have illustrated the narrowness of individual psychological theories such as the theory of planned behaviour when set against the multiple different psychological theories that appear to be relevant to different stages of adoption. Even when a different specific theory is identified for each individual, my findings show that this is unlikely to reflect the different psychological issues and processes that are relevant along the different stages of innovation adoption. Though the Theoretical Domains Framework is broader, my findings illustrate the conceptual confusion that arises from detaching constructs from their theories. Not only does the compilation of constructs in the Theoretical Domains Framework deprive those constructs of the explanatory power of mechanisms relating constructs to each other, it also leaves them too ambiguous for meaningful application to the many different aspects of implementation. Wider implementation frameworks capture more of the vital social and organisational context to implementation, but suffer from the same weaknesses as the Theoretical Domains Framework. My findings thus illustrate the breadth of psychological theory that is relevant to implementation, and the importance of an approach that allows those theoretical linkages to be kept in view.

By using the stages of adoption from Rogers' diffusion of innovation framework, I have been able to situate psychological theory within a wider framework that has also allowed me to draw on the explanatory power of that wider network. For example, when considering the knowledge stage of adoption, my findings have drawn on both psychological processes of bounded rationality and selective exposure, whilst also drawing on the importance of different channels of communication identified by Rogers. I argue that my findings illustrate the potential to use my proposed approach

to provide a common framework within which psychology can be integrated alongside sociology and other perspectives on implementation, and thus as one way of addressing the existing divide between psychology and wider implementation research.

On the third issue of complexity, my proposed approach is certainly not simple. I have identified a wide range of relevant theories, across different stages, and these are integrated into a wider framework that has even more elements. However, as I argued in Chapter Three, the aim of my approach was not to remove complexity, but rather to find a way of managing the inherent complexity of the psychological dimension of implementation research in a way that was usable in practice for empirical research. My findings suggest that this has indeed been achieved, at least in this case study. My experience of using this approach in this case was that using the different stages of adoption did indeed provide a practical way of focusing in on different psychological issues and thus helping to identify relevant theories. Far from being overwhelming, the combination with the diffusion of innovations framework proved constantly helpful, providing a broader understanding of wider processes that helped to narrow down and situate what was specifically psychological in character within my findings. I suggest therefore that this approach has been shown to strike a useful balance between complexity and practicality, at least for this case.

9.3 Limitations and methodological issues

I described my methodology and how it evolved in Chapter Five. As set out there, I initially planned to take a mixed-methods exploratory approach, but found that the

complexity of the issues I was exploring was too great to complete such an approach within the scope of a doctoral research project. I therefore focused on a qualitative case study, in order to undertake an initial empirical assessment of the basic validity and added-value of my proposed theoretical framework.

My empirical findings come from a single case study of routine HIV testing across two sites. Taking a single case study limits the conclusions that can be drawn from my findings. However, it has enabled me to explore complex inter-relationships, and situate the phenomena that I am exploring within their context, which has proved vital in validating and refining my proposed model. Given the nature of my research in seeking a first empirical exploration of my proposed theoretical model, I consider that this approach of a single case study was appropriate, whilst leaving much scope for further research to assess the validity of the model more broadly.

The data that I gathered for the study does have limitations, though. The strategy of making contact with the lead HIV consultants for the routine HIV testing at each site and then seeking their help in getting further participants risked finding people who the consultants thought were good examples of implementation, and thus getting an overly positive view of implementation. My initial interviews at site 1 made me more aware of this risk, and so at site 2 I actively asked for contacts of people who were seen as critical or problematic alongside other interviewees.

The most challenging part, though, was recruiting participants. In both sites, it proved difficult to find clinicians who were willing to participate, even when supported by explicit requests from consultants. One positive aspect of this was that it confirmed my expectation regarding ethical issues that clinicians might feel pressured to take

part in the study – it was clear that clinicians at all levels felt entirely able to decline to take part. This did present difficulties with recruitment, though. The acute admissions units in both sites were particularly tricky – despite active efforts at both sites, I only succeeded in getting participation from the one AAU consultant at site 2 (though one of the junior doctors in the site 2 A&E department had also previously worked in the AAU department). This may have reflected the particularly transient nature of staff in AAU (with clinicians from wards across the hospital rotating in and out of providing AAU cover), but was nevertheless frustrating as AAU was one of the two key departments for implementation of the guidance alongside A&E.

Within A&E I managed to get better participation, although this took over six months of negotiation at site 2 to achieve, facilitated actively by the HIV department there. The key limitation in participation was the senior nurses, in both process and content. On process, the A&E matron was the key approval required for interviewing the nurses in A&E; and on content, once the interviews were agreed and carried out, it was the nurse in charge on each day who decided who was available to be interviewed, and it did not include themselves. This meant that the only senior nurse that I was able to interview was the nurse colposcopist at site 2.

Nevertheless, overall my interviewees covered both senior and junior doctors and nurses (as well as one technician). Moreover, I was reassured by the consistency in the themes coming through from the interviews, which I considered reflected data saturation (Patton, 2015, pp. 300-301). On the basis that this dataset is for a first exploratory empirical analysis of the basic validity of my proposed theoretical

approach, I think that despite these limitations, this sample does provide a sufficient basis for this initial empirical test of my proposed theoretical approach.

I also identified some potential issues in Chapter Five. One of these was the 'exceptional' character of HIV. As discussed above (in chapters Five and Six, and earlier in this chapter in the 'Implementation' section) the key area where this seemed important in my findings was in relation to seeking informed consent. However, though this illustrates a specific potential issue around HIV, I do not think that this prevented the exploration of my proposed theoretical model more generally. My interview structure addressed both innovations in general and this innovation in particular, and I kept the interviews flexible to enable exploration of other innovations or processes where my interviewees felt that was relevant. The themes from those wider discussions did not suggest any more general divergence between themes for HIV and for adoption of innovations more generally. Moreover, most of the themes that emerged from my analysis appeared to be quite general, as described above, with the specificity of HIV coming across as a key factor only in relation to these issues of informed consent for testing.

The specific character of the innovation that I took as my case study may have affected my findings in other ways. The guidance was not a high priority for the formal health system; rather it had been professionally developed and implementation was professionally led. A different innovation with greater formal support (eg: a political priority such as the four-hour limit on A&E waiting times), or linked to specific official guidance (eg: from NICE) might have illustrated different interactions.

In Chapter Five, I also identified different ways of considering interviews as data, contrasting the cognitive social perspective (which I have generally taken) with a more discursive approach. When analysing my data, there was one interview in particular which brought this contrast to mind; the interview with A&E junior doctor 2-14-D at site 2.

This doctor was a core trainee in acute medicine (what would have been referred to in the past as a senior house officer) who had been in this role and department for six months at the time of interview. I was struck by how she described the process of informed consent and what she saw as the problems with it. On the face of it, the problem was one of forgetting to do the informed consent:

> *"P: I always forget to consent people when I'm taking the bloods and I have to go back. […] I take the vial, I put them all out, I take the vial, but I'm talking through, because once you are talking to someone, especially with cannulation, talking through why you're putting the cannula in, what you're sending the bloods off for regarding their condition, why the cannula stays in, what else I'm going to organise for them, because it's the last bit that you do before you leave the room, seeing the patient, and then I think ah, forgot, I'll have to go back. It is made easier, there are posters around and then people do get given leaflets, but I think that's the problem, I just forget to consent, so I have to go back." (Site 2\2-14-D A&E junior doctor: 64 - 66)*

Over the course of the interview, though, my impression was that this was not simply about 'forgetting', as the explanations given by the doctor did not seem to add up. The interviewee gave a number of different reasons as to why she forgot. One of these was of the process of taking informed consent not being routine behaviour:

> *"I think once it becomes second habit, and I think it will, I think it just needs time for this to become just second nature for every doctor, and I think once it's done on the wards as well, in AAU, more as well, I think it'll be easier. […] Because then it means whatever job you're*

doing, as a junior, you'd be aware that the people are being screened so that when you come into A&E rotations, you've seen it done anyway, so it becomes…" (Site 2\2-14-D A&E junior doctor: 69 - 76)

This seemed puzzling to me, though, as the informed consent should be routine. The departmental policy for A&E (and for AAU, at this site) was to routinely screen for HIV for everyone between 16 and 65, and this doctor had been working on there for six months; why was it not routine?

Later in the interview, the doctor also described organisational steps that could be taken to help the process:

"… it would be better [to have] more posters in each room by the bed, and then you've got that reminder to you and the patient's already read stuff, if a patient got given the leaflet when they were put in the cubicle, if they're within the age group and then you don't, or they've already got the information so the consent process is much easier, I think that would be, give them the leaflet, in a language they can read before you've even seen them, because they get seen by the nursing staff, they get seen in reception, they get seen by the triage nurse, they get seen by a nurse before we see them, if someone just gave them a leaflet before whoever takes the bloods, I think it would be so much easier, someone with the leaflet in the hand you're going to remember to do it, and they've got the information, and then you can consent them..." (Site 2\2-14-D A&E junior doctor: 96)

This again I found puzzling, though, as there were already many posters around the department about routine HIV testing, and there were leaflets about routine HIV screening. Then the doctor continued by raising a different issue:

"…and it's actually informed consent rather than the dodgy thing we do at the moment.

I: Do you think it's dodgy what we do at the moment?

P: No, I don't think it is, I think it's appropriate, but I think, I just think it's really, this whole thing that we are changing the way that we consent people [with] HIV because of there's a presumed knowledge of what HIV is, I don't think it's true, because no one has a conception of how manageable HIV is nowadays, that it's treatable, that you can

have a normal life if you control your viral load, I don't think that is public knowledge. So I think actually we're consenting people and their informed consent is that the disease you're testing for is much worse potentially than it is. And you should consult them because the stigma surrounding them is so, is there and it's real, but from a public health point of view I don't think we should consent. Because the idea that you're not testing someone who is at risk who could then go and infect other people is insane, and the fact that I can test someone for hepatitis without consenting them, but I have to consent for HIV, I don't know – that's all ethics, but I think it's a bit ridiculous.

I: So what would you do?

P: I think there should be a permission statement from the GMC that we should stop consenting. Yes, it has an impact on their life, but has an impact on all those other people's lives that they could potentially infect and I think that's just mad that I can do any blood tests I like someone's bloods, just because they put their arm for the blood test, and yet you're not allowed to test for HIV, it makes no sense to me, but (laughs)." (Site 2\2-14-D A&E junior doctor: 96 - 100)

This extract in particular led me to reconsider what was happening in the interview and how I should analyse it. In their seminal work on discourse and social psychology, Potter and Wetherell argue that language is not simply a neutral vehicle for description but rather an act in itself; that words do not merely describe things, they do things (Potter & Wetherell, 1987). The positions in this interview reminded me of this perspective, and prompted me to consider – what are the words being used by this interviewee doing?

From this perspective, I suggest that this interview could be seen as being of a doctor who is uncomfortable with the informed consent process but who finds it difficult to contest that directly. Rather than contesting it directly, therefore, she puts forward other reasons for not carrying out the process; in particular forgetting, or shifting the responsibility to others (for not providing information to the patient earlier in the process before she sees them). Even the final section where the interviewee does

suggest why consenting should not happen is not on the face of it internally coherent; in paragraph 98 (in the above quote) she describes both reasons why consent should not be required (for public health reasons) but also why it should (the stigma she perceives to still be linked to HIV). Moreover, her proposal (of a formal professional statement that such consent is not required) does not seem consistent with her own description of existing consent as 'dodgy' in the preceding paragraphs; 'dodgy' implies that it is insufficient, so it is hard to see how requiring even less would make the process less 'dodgy'. This could be understood again as expressions of discomfort; the underlying issue could be seen as her discomfort with carrying out the informed consent process, and the interview statements understood as discourse intended to defend that discomfort in different ways.

This analysis of discourse of course reflects not just a different analytical approach, but a fundamentally different epistemological understanding of the nature of language and of interviews as a source of data, as discussed in Chapter Five. I include it here to illustrate that different approaches to analysing my data were possible, and that I considered them during the analytical process. For me, the choice of analytical perspective reflects the research question. A discursive approach would have been more appropriate for research that seeks to account for aspects of implementation or their perceptions and actions in relation to it. However, my research was seeking to make an assessment of a psychological approach building on theories derived from a social cognitive perspective, and thus I have taken an analytical approach which reflects that perspective.

9.4 Conclusion

The aim of my empirical research was to undertake an initial empirical assessment of the basic validity of my proposed theoretical framework, and to identify the most relevant psychological theories in this case. Having evaluated my proposed theoretical framework in the light of my empirical findings, I conclude that my findings support the basic validity of my proposed framework, and helped not only to identify the most relevant psychological theories, but also to suggest novel ways in which they can be combined and applied to understand the adoption process. My findings also support the added value of this approach in comparison to the use of psychological theory in implementation research so far. Although my findings are based on a single case study, I consider that this was appropriate for this first exploratory assessment of my proposed model.

In the final chapter, I will discuss the key messages from this research, and how it could be taken forward.

Chapter 10. Discussion and conclusion

In this chapter, I suggest implications from my research for policy, practice and future research. After summarising my research, I make two broad recommendations: that there is potential to improve the effectiveness of addressing implementation issues by combining psychology with wider implementation research; and to shift to a perspective of the health system as a complex system, and rethink the role of policy from that perspective.

10.1 Summary of aims, methods and findings

In this research, I set out to explore two main issues. First, how psychology can help to understand the choices that clinicians make that differ from evidence-based guidelines; the focus of implementation research, through systematically applying psychological theory to understand the different psychological processes in the stages of adoption described in the diffusion of innovations model and by empirically testing this new, psychologically-enhanced model of guideline adoption. Second, what a better understanding might mean for health policy.

My literature review of how psychology has been used in implementation research found that the use of psychology so far has been limited, and not well integrated into wider implementation research. To address this, I have drawn on the principal framework for understanding knowledge utilization, the diffusion of innovations model developed by Rogers. Specifically, I proposed using the stages of adoption described within the diffusion of innovations model as a framework for identifying and focusing

on relevant psychological processes at each stage of adoption. This approach would enable psychological theories to be integrated within the wider diffusion of innovations model, and thus provide a basis for addressing the gap between psychology and the wider implementation research literature that my literature review found.

Initially, I populated my proposed framework with potentially relevant psychological theories for each stage of adoption based on my literature review. Through my empirical research, I then aimed to undertake a first assessment of the validity and added value of this proposed theoretical framework, and to identify the most relevant theories as a basis for further research. In order to be able to explore these psychological processes within their wider context I took a case study approach. I looked for a case of a clear gap in implementation, for a practice that concerned behaviour that was (as far as possible) within the control of individual clinicians, in order to be able to focus on the psychological dimension. On this basis, I chose a case study of the implementation of guidance on universal offering of HIV testing in hospitals serving populations meeting the criteria for high HIV prevalence in the catchment population, and interviewed 20 clinicians at two sites in London. I transcribed and analysed these interviews taking a principally inductive approach, while using the theories that I initially identified for my theoretical framework as sensitising concepts.

My findings provided an initial validation of my proposed theoretical approach, identifying distinctive psychological issues for each stage, and with the stages proving valuable in identifying and distinguishing different psychological issues throughout the

process of adoption. My proposed theoretical framework thus provides a basis for integrating psychological theory into the diffusion of innovations model, and thereby to provide an integrated model for implementation research.

My findings also provided a first empirical basis for identifying the most relevant theories at each stage. These findings changed and focused the range of potentially relevant theories that I had identified on the basis of the literature, which are summarised in Table 9-1, page 232.

Before proceeding to make recommendations based on these findings, it is important to acknowledge the limited basis that my research provides for making wider recommendations. My empirical research was a detailed study of a single case, with data from two sites in one city, and concerning a guideline dealing with a condition involving particular social sensitivity. I have set out earlier why this case was appropriate for an initial in-depth validation of my proposed approach and theoretical model, but it nevertheless provides only a limited basis for making any wider policy recommendations.

With this caution in mind, I suggest two overall recommendations. First, my research suggests that there is potential to improve the effectiveness of addressing implementation issues by combining psychology with wider implementation research. My proposed theoretical framework has the potential to provide a more effective way of drawing on behavioural science than existing approaches; I recommend that this should be explored further. Second, my findings suggest that viewing the health system as a complicated entity that policy can control and direct is misconceived; I

recommend shifting to a perspective of the health system as a complex system, and rethinking the role of policy from that perspective.

10.2 Better addressing implementation issues by integrating psychology into the diffusion of innovations framework

In chapters One and Three, I described the surprisingly limited of use of psychology in wider implementation research, as also described by Greenhalgh et al. (2005) in their systematic review. I also described the limitations of the psychological approaches that are used, with their lack of consideration for the wider organisational and system context.

I argue that my findings demonstrate the value of bringing these perspectives together into an integrated approach, as set out in Chapter Nine. In this section, I suggest examples from my findings of ways in which this integrated approach could be taken forward.

In looking at the knowledge stage of adoption, I proposed that clinicians faced with an overwhelming volume of information use filtering mechanisms combining selective exposure and bounded rationality, drawing on networks of their peers, selected sources of information and prioritising certain types of information, in particular safety-related information. This filtering mechanism could provide a basis for better understanding effective dissemination strategies; I suggest that this could be explored through further research.

The overall picture of cognitive overload also suggests strategies that could be adopted to support more effective dissemination in terms of the content of the guidance –

specifically, keeping the core information short and ensuring additional information is available when needed. Most of my interviewees could describe the core message of the guidance about routine HIV testing of all their patients, although none of my interviewees (outside the HIV specialists) described having actually read the guidance. This is unsurprising; though that core message is simple, the guidance itself is 31 pages long. The guidance contains much useful information, including information that helps to answer some of the uncertainties that my interviewees described, such as processes of informed consent. However, rather than reading and absorbing this kind of information in advance of implementing an innovation, my interviewees appeared to follow a simpler strategy of remembering the core message of guidance and then checking details as and when needed (such as on the intranet of the hospitals concerned or with colleagues; or a specific app such as the one from NICE described by the junior immunology and infection doctor 1-2-D). This suggests that it may be more effective to provide the core information of the guidance through the channels most used by health professionals, and then provide other mechanisms for accessing additional information when sought, rather than providing the full detailed guidance as a single document. Further research could test such strategies and evaluate their effectiveness.

Moreover, though the guidance provided general information, my findings for the persuasion stage of adoption suggest that information is being evaluated through the perspective of the individual's role within the organisation. Therefore, it may be useful to tailor information about an innovation to the specific organisational roles involved; not just what should be done, but who should be doing it and why. Given the variation

in structures within different health service organisations, it may not be possible to do this in a single, standardised way (or doing so might only be at the cost of making guidance very much longer, which would run counter to the effective dissemination strategies described above).

Indeed, processes of localising guidance were in place in both organisations, though this had not been done for the guidance I was focusing on, as described in section 7.4.4, Localisation and sense-making within each department, and more generally were not described as a priority. One option would be to explore the potential to put more focus on this process, including addressing the lack of resources, generating an assessment that addresses the issue that my findings identified of not just what that department should be doing but also why, and (reflecting the collective approach to decision-making identified in my findings) seeking to engage the department as a whole in the process.

An alternative would be to put in place change agents; experts who can support the adoption process of an innovation, as described by Rogers (see Rogers, 2003, Chapter Nine). Such change agents could help to communicate how the overall message of guidance relates to the specific responsibilities of an individual or a department or the organisation as a whole, taking into account their different roles. Bringing about substantial change seems likely to require engagement of the different parts of the organisation in a differentiated way, as it did in my case study. In my case study, the HIV consultants effectively acted as change agents within their organisations, though informally and without external support. Given that people within an organisation are likely to be well placed to carry out such a role (with their personal networks and

knowledge, for example; see Fitzgerald and McDermott (2017)), relying on local clinicians to act as change agents is another approach that could be further explored.

In that case, though, their effectiveness in that role is likely to be improved with specific training and resources, as would the effectiveness of clinicians in individual departments leading implementation within that department. This could mean financial support, such as resources to buy out time for lead clinicians to support implementation, or providing the kind of support staff that both sites found necessary to support the innovation in my case study. It could also mean providing expertise on processes of change themselves. Clinicians are experts in their own field, but this does not mean that they are experts in change and management; despite that, it was striking how little expert advice and training clinicians received to carry out those roles in my case study, and this type of support could also be provided. At a more systematic level, systems for monitoring and feedback could be adapted to provide the immediate and informative feedback for individual clinicians that would help them to evaluate and improve their performance, as described in 7.4.3, Feedback and monitoring. Ensuring that innovations become routine could be helped by supporting the development of local evidence to show the local impact of implementation – in this case, for example, evidence about how many patients had been identified by the routine HIV screening that the department in question was providing. Again, further research could test different mechanisms of active support to change and evaluate how effective they are in supporting change.

Although my findings identified the process of decision-making itself as being a combination of individual and collective decision-making in the local department, how

best to support these processes is less clear from my research, given the tentative nature of my findings on the group level of decision-making. My findings did suggest ways in which the process itself could be supported, such as by ensuring that there is adequate time for consideration of possible innovations, and that consideration of possible adoptions involves and engages a broad base of those working in that department. At the individual level, the transience of junior doctors in particular did not seem to help adoption and confirmation of innovations, though changing this would raise much wider questions about workforce training. More detailed recommendations would require further research, however. In particular, longitudinal study of the stages of adoption of a particular innovation over time within a particular group of health professionals would help to shed light on the different stages and the interactions at the individual and group levels, in order to better understand these combined individual and social decision-making processes.

10.3 More effective improvement in health systems; the challenges of a systems perspective

My second overall recommendation concerns a more fundamental shift in perspective for policy regarding innovation in health systems as a whole. When I began this research, from my perspective as a policymaker, my expectation was that I might find useful insights from psychology that could enable existing policy mechanisms to be fine-tuned in order to more effectively support implementation and change in practice. As my findings emerged, though, I found that they suggested a more fundamental shift in perspective. Rather than enabling some adaptations to existing tools, my analysis of the detail of innovation and change through this case study

fundamentally challenged my previous ideas about how health systems function and the role of policy in relation to them.

I suggest that this is not about adaptation of specific policy mechanisms, though I have made some specific suggestions above. Rather, my central finding is that the typical policy viewpoint of health systems as a complicated entity that can be controlled by health policy is misconceived, and that this in turn leads to policy interventions that are not optimal in supporting innovation and improvement within the health system. I argue that shifting from the 'complicated machine' perspective to a 'complex systems' perspective is a vital starting point in order to understand how policy relates to the process of innovation implementation, and that this leads to a rethinking of effective policy mechanisms, where the psychological mechanisms that I have identified can contribute one part of understanding how to support the effective development of the system as a whole.

I am not the first person to suggest such a changed perspective (Seddon, 2008). Indeed, at various points the NHS has had initiatives and agencies intended to provide support along these lines (Fitzgerald & McDermott, 2017). So why was it that in the case study that I observed this approach seemed stubbornly absent? I suggest that the real challenge to taking this perspective of supporting learning and development at the individual and departmental level is about power and control – and specifically, about the loss of power and control for policymakers that it implies.

Taking the perspective that I propose means recasting the role of the political level for the health system in a much more supportive role, and accepting that policy has only a limited ability to control the health system directly, and should instead work to change

and improve practice indirectly through supporting learning and development. Yet this runs directly counter to the history of reforms of the NHS. Since the introduction of general management in the NHS following the Griffiths Report of 1983, the direction of health policy can be characterised as being directed toward asserting control over the health system in a bid to improve performance and cost-effectiveness (Ham, 2009). Different strategies have been tried to achieve this, such as appointing and strengthening the powers of managers in relation to clinicians, the introduction of market mechanisms, and incentives and targets. Shifting perspective towards innovation led by local clinicians means also accepting that the underlying policy aim of controlling the health system is unachievable; I suggest that this is one reason why policy has proved so resistant to this approach.

Accepting a more limited role for policy does raise legitimate questions about accountability. One way in which this has been explored is in relation to Lipsky's work on street-level bureaucracy (Gilson, 2015; Lipsky, 1980/2010), which identified the tension between a uniform commitment of public services to citizens on the hand against the need to adapt to the specific case on the other. Accepting that part of the discretion of the individual clinician relates also to their individual learning and development broadens the scope of variation from adapting to the needs of the patient to also adapting to the variations between professionals, which may raise additional questions from policymakers and from the public.

For professionals, I anticipate resistance of a different kind, and this brings me to my second area of reflexive analysis. One dimension of reflexivity about how those who are studied perceive me as an inquirer, and the research that I am doing (Patton, 2015,

p. 604). Throughout my research, I have been struck by some negative reactions of healthcare professionals to my research, in particular the use of psychology to better understand their professional behaviour. These negative perceptions have focused on three main areas:

- perceiving psychology as akin to psychiatry and thus focused on mental ill-health;
- perceiving psychology to be unscientific and thus an insufficient base for understanding medical practice;
- and perceiving the use of psychology as equating to external manipulation and control.

These negative perceptions relate to wider issues with how psychology is understood (Lilienfeld, 2011). There are frequent misunderstandings by members of the public about the similarities and differences between the 'psych' fields of psychiatry, psychoanalysis (both of which do focus on mental ill-health) and psychology (the scientific study of mind and behaviour; see Chapter One). Even for health professionals, their primary exposure to psychology is normally through the applied area of clinical psychology, which again does focus on mental ill-health (in the broad sense); this may be why some of the health professionals to whom I have talked during my research seem to have taken my psychological perspective as in some way an accusation of some mental dysfunction on their part. Perhaps related to these frequent confusions about what psychology is, there are also widespread doubts about the 'scientific' character of psychology, and how reliable its findings are. These queries reflect debate within psychology about what methods are appropriate, and what kinds

of findings psychology can or should seek to generate, as I discussed in Chapter Two. For healthcare professionals, most of whose training is rooted in a natural science paradigm and with ideas of evidence and proof derived from that perspective, the approaches used in much of psychology (including my research, which takes a social psychology perspective) do not seem to meet the standards of scientific investigation that they are familiar with. Both of these can in principle be addressed by providing better information.

The third topic is less straightforward. This area has been neatly illustrated over the course of my research by controversy over the Behavioural Insights Team of the UK Government, known colloquially as the Nudge Unit (Leggett, 2014) – a topic which has frequently come up in discussion of my research. The 'Nudge Unit' is conceptually based on an approach called 'libertarian paternalism' proposed by Thaler and Sunstein (2009). Although neither Thaler nor Sunstein are psychologists, the approach they proposed drew heavily on social psychology; their preferred use of the term 'behavioural economics' rather than 'applied social psychology' is interesting in itself, and seems to reflect the issues discussed in the previous paragraph. On the face of it, this approach should be uncontroversial; at least, that was my initial perception. The interventions proposed by Thaler and Sunnstein are quite limited; they propose interventions that alter the way in which choices are constructed and presented in a way that does not exclude any previous options or significantly change the economic incentives concerned (see Thaler & Sunstein, 2009, p. 6). A frequently-quoted example concerns changing pension enrolment processes such that the default option (what happens if a new employee does nothing) shifts from the employee not being

enrolled in a pension to the employee being automatically enrolled in a pension. Before and after, the choices available to the person concerned are the same; nothing has changed about the pensions on offer or their cost, just the default outcome in the event that the person concerned makes no active choice.

Despite the limited nature of these proposed interventions, they proved widely controversial. As Leggett (2014) describes, libertarians saw in it an attempt by the state to manipulate people; that the approach draws on ideas of bounded rationality to steer people towards desired outcomes was seen as particularly problematic, seeming to undermine the agency and autonomy of individual citizens. Those from a more state-oriented perspective were also critical, but in the opposite way, seeing the use of 'nudges' as being an abandonment of public intervention in favour of the market and the expansion of neo-liberalism through a more sophisticated understanding of how people make decisions. Perhaps most fundamentally, 'nudging' has been seen as undermining the nature of the individual as an empowered, engaged and responsible actor, and hostile to the potential of people to make conscious decisions through individual reflection, collective debate and deliberate action.

As Leggett argues, this situates the use of behaviour change interventions as a political battleground; not merely a discussion about evidence and its use, but a focus for much wider debates about human nature, and our relationship to society and the state. I suggest that this is likely to be just as sensitive for the use of psychological theory with regard to behaviour by the health professions. A central part of professional identity is autonomy, as discussed in Chapter One; given the concerns over autonomy around the use of social psychology through the 'nudge' approach described above, similar or

greater concerns seem likely among health professionals. This is especially likely to be the case given the contested nature of the implementation gap, as discussed in Chapter Two. If 'nudging' is already controversial for cases of relatively clear benefit, such as the pensions example, how much more controversial would it be in the much less clear case of the implementation gap, where there is much greater scope for and need for individual professional judgement?

In considering the feedback that I have received from health professionals during this research, I have concluded that this issue of autonomy and agency is the fundamental issue underlying the discomfort that I have encountered from healthcare professionals with my use of psychology, and it is not a minor point. It would be tempting as a psychologist to also treat this as a case of needing more information, of explaining the benefits of implementation support that is better adapted to the needs and processes of health professionals, and indeed that is how I approached these questions in the early stages of my research. However, as the research and discussion around it has continued, I have come to the view that this concern over the use of psychology in ways that are perceived to undermine the autonomy and empowerment of the individual reflects the much wider concerns discussed above, and cannot simply be addressed by better information. Indeed, I suggest that it is linked to the wider issue of policymakers seeking to assert power and control over the health system and the behaviour of health professionals within it.

In taking my recommendations forward, therefore, I suggest that the way in which this is done is just as important as the content of specific initiatives. Rather than taking the approach of the 'nudge unit' of individual initiatives decided centrally, I suggest that

part of the solution is to ensure that initiatives in this area are explicitly discussed with health professionals and other stakeholders, and their active engagement is sought with the processes of better using psychological insights in order to improve the quality of healthcare that is being provided. Without this, there is a risk that use of psychological theory to support improvement in healthcare runs into the same controversy as the 'Nudge Unit'. There have been suggestions about how to address such aims effectively (Grist, 2010); indeed, Chris Ham has set out an overall strategy for reforming the NHS based on a similar approach (Ham, 2014).

This care over engagement is also essential for the shift in perspective from the health system as a complicated machine towards a complex system, and the challenges for policymakers and patients as well as health professionals. If this shift in perspective is to be successful, it will depend on active engagement of policymakers, professionals and the wider public to bring about a different perspective on how to improve our health system. How best to do this is itself a researchable question, and there is much existing research on policy processes and public engagement, for example. This could be taken forward with a specific focus on participatory research around a changed perspective on improving healthcare innovation, and developing methods for broad engagement and partnership.

10.4 Conclusion

I began this research with what seemed to be a simple question – how to better understand why skilled healthcare professionals make choices that differ from evidence-based guidelines, drawing on psychological theory in particular as well as my

own background in policy. My research has provided a way of better understanding that phenomenon, but has also thrown up much wider issues including the relationship between psychology and wider social science in this area, and the relationship between policy and practice in the health system as a whole.

I proposed a theoretical framework for integrating psychology into wider research on implementation through the diffusion of innovations framework, and my findings provided an initial validation of that approach. The separation of psychology from wider implementation research has persisted for many years; I hope that my proposed approach will help to begin to narrow that gap.

More broadly, my research has led me to a fundamentally different perspective on these issues, as I discuss above. From having seen the health system as a complicated machine and seeking better tools to control it, my research has led me to see the health system much more as a complex machine. This in turn has changed my perspective about how policy can support change within the health system, and indeed the relationship between policymakers and the health system itself.

Despite the breadth of issues raised, this still only feels like the beginning. I hope to be able to build on this research and my combined backgrounds of academia and policy, of psychology and wider social science to help both to generate further research in this area and to actively engage with other stakeholders to support its use in practice.

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