Acceptability of healthcare interventions

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Declaration

The following work was carried out at the Centre for Health Services Research, School of Health Sciences at City, University of London under the supervision of Professor Jill Francis and Dr. Martin Cartwright. Chapter 2 with amendments has been published (Sekhon, Cartwright & Francis 2017). The results from Chapter 2 have also been presented at the UK Society of Behavioural Medine Conference (2014) and the Division of Health Psychology Conference (2015). The results from Chapter 4 have been presented at The European Health Psychology Society Conference (2016). An abstract of the results from Chapter 3 has been submitted to the UK Society for Behavioural Medicine (2017).

Study 4 reported in this thesis was conducted in collaboration with the AFFINTIE Research team, specifically Dr Natalie Gould and Dr Fabiana Lorencatto, who both provided guidance on the trial context of the study, and interviewed healthcare staff for the semi-structured interview study.

Study 3 and 5 in this thesis was conducted in collaboration with the Blepharospasm and Hemifacial Spasm Research team at Moorfields hospital. Dr Hayley McBain and Dr Sadie Wickwar provided guidance on the trial context, and interview topic guides.

This thesis is my own work and contains nothing which is the outcome of work done in collaboration with others, except as specified above. Any auxiliary support is noted in the acknowledgements. Correspondence concerning this thesis should be addressed to Mandy Sekhon, mandysekhon@hotmail.com

Signed …….....

Date…….

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List of Abbreviations

AFFINITIE- Development & Evaluation of **A**udit and **F**eedback **In**terventions to **I**ncrease evidence-based **T**ransfusion pract**I**c**E**

A& F – Audit and Feedback

BEB - Benign Essential Blepharospasm

CASP- Critical Appraisal Skills Programme

CDSR- Cochrane Database of Systematic Reviews

CONSORT- Consolidated Standards of Reporting Trials

CSM- Common Sense Model

DCV- Discriminant Content Validity

EHPP – Effective Public Health Practice Project quality assessment tool

GA- General Acceptability question

HCP- Healthcare Professional

HFS- Hemifacial Spasm

IPQR- Illness Perceptions Questionnaire- Revised

NCA- National Comparative Audit

NHS- National Health Service

NHSBT – National Health Service Blood and Transplant

NIHR- National Institute of Health Research

MRC- Medical Research Council

R & D – Research and Development

RCT- Randomised Controlled Trial

PEs- Process Evaluations

PICs- Patient Initiated Clinics

PRISMA- Preferred Reporting Items for Systematic Reviews and Meta-Analyses

PRO- Patient Reported Outcome

TDF- Theoretical Domains Framework

TFA- Theoretical Framework of Acceptability

TPB- Theory of Planned Behaviour

UKRC- United Kingdom Clinical Research Collaboration

Abstract

Background: Problems with acceptability of healthcare interventions can undermine the validity of randomised evaluation studies. Hence, assessing acceptability is an important methodological issue. However, the research literature provides little guidance on how to define and assess acceptability. Acceptability of a healthcare intervention could be different, depending on the perspective taken: patients and healthcare professionals may have different views. Perceptions of acceptability may also change according to when acceptability is assessed, in relation to a person's engagement with the intervention. A person can have perceptions about prospective acceptability (i.e. prior to taking part in the intervention); concurrent acceptability (i.e. whilst taking part in the intervention) and retrospective acceptability (after participating in the intervention).

Objectives: The overall aim of this programme of research was to define acceptability in the context of healthcare interventions and to develop a Theoretical Framework of Acceptability (TFA) that can be applied to assess acceptability from two stakeholder perspectives: healthcare professionals and patients. The specific objectives were to: 1) Identify, from the published literature, how the acceptability of healthcare interventions has been defined, operationalised and theorised; 2) Theorise the concept of acceptability and develop a theoretical framework of acceptability (TFA) to guide assessment and develop preliminary assessment tools; 3) Use the tools to apply the TFA to assess intervention acceptability qualitatively, and 4) Apply pre-validation methods to develop preliminary versions of two TFA-based questionnaires

Methods: Six studies were conducted:

1. A systematic overview of reviews of published studies to investigate how the acceptability of healthcare interventions has been defined, theorised and assessed. The results of this study formed the basis for study 2.

2. Inductive and deductive methods of reasoning were applied to theorise acceptability and to develop the Theoretical Framework of Acceptability (TFA).

3. Semi-structured interviews with eligible participants who declined to participate in a Randomised Controlled Trial (RCT) comparing a new patient-led model of care with standard care, for managing blepharospasm and hemifacial spasm. The TFA was applied to identify whether participants' reasons for refusal were associated with prospective acceptability of the intervention or with other factors.

4. Application of the TFA to analyse semi-structured interviews to assess healthcare professionals' retrospective acceptability of two feedback interventions delivered in a research programme aimed at developing and evaluating audit and feedback interventions to increase evidence-based transfusion practice.

5. An extension of Study 3: semi-structured interviews with patients who agreed to participate in the RCT, at three-month follow-up, to assess patients' concurrent acceptability of the standard model of care and the patient led model of care for managing blepharospasm and hemifacial spasm.

6. Pre-validation methods were applied to develop two TFA-based questionnaires applicable to the RCTs described in Studies 3, 4 and 5.

Results: Study 1: acceptability had not been theorised and there was no standard definition used in the literature. Operational definitions of acceptability were often reported and often reflected measures of observed behaviour.

Study 2: proposed definition:

> *Acceptability is a multi-faceted construct that reflects the extent to which people delivering or receiving a healthcare intervention consider it to be appropriate, based on anticipated or experienced cognitive and emotional responses to the intervention.*

The TFA was proposed as a multi-component framework that can be applied to assess intervention acceptability across three temporal perspectives: prospective, concurrent and retrospective. The TFA consists of seven component constructs: Affective attitude, Burden, Ethicality, Intervention Coherence, Opportunity Costs, Perceived Effectiveness and Self-efficacy.

Studies 3-5: It was feasible to apply the TFA in these empirical studies.

Study 6: Two acceptability questionnaires were developed; the TFA informed the development of items reflecting the seven component constructs of the TFA.

Conclusion: Despite frequent claims that the acceptability of healthcare interventions has been assessed, acceptability research could be more robust. Investigating acceptability as a multi-component construct resulted in richer information about the acceptability of each intervention, and suggestions for enhancing intervention acceptability across three temporal perspectives. The TFA offers the research community a systematic and theoretical approach to advance the science and practice of acceptability assessment for healthcare interventions.

1 Introduction

Acceptability has become a key consideration in the design, evaluation and implementation of healthcare interventions. Patients receiving interventions have legitimate views about the content, context and quality of care received; however, interventions are often developed without an understanding of how the target population will engage with intervention activities (Haynes 1999).

Intervention developers are faced with the challenge of designing effective healthcare interventions to attain the best clinical outcomes achievable with the resources available (Say &Thomson 2003; Torgerson et al., 1995). Successful implementation depends on the acceptability of the intervention by both intervention deliverers (e.g. researchers or healthcare professionals) and recipients (e.g. patients) (Diepeveen, Ling, Suhrcke, Roland & Marteau, 2013; Stok et al., 2016). The perception of acceptability by both patients and healthcare professionals has been shown to impact on trial implementation, uptake and adherence, intended outcomes and overall effectiveness of interventions (Haynes, 1999; Say & Thomas 2003; Sidani & Braden, 2011; Moore et al., 2015).

1.1 MRC Guidance on assessing acceptability of healthcare Interventions

Most healthcare interventions are complex in nature; for example, they can consist of several interacting components and can be delivered at different levels within a healthcare organisation (MRC, 2000). In the United Kingdom, the Medical Research Council (MRC) has published three guidance documents for researchers and research funders that recommend specific methods for developing and evaluating complex interventions (MRC 2000; Craig et al., 2008; Moore et al., 2015). The number of references given to the topic of

acceptability has increased with each guidance publication, indicating the growing importance of assessing acceptability (Figure 1).

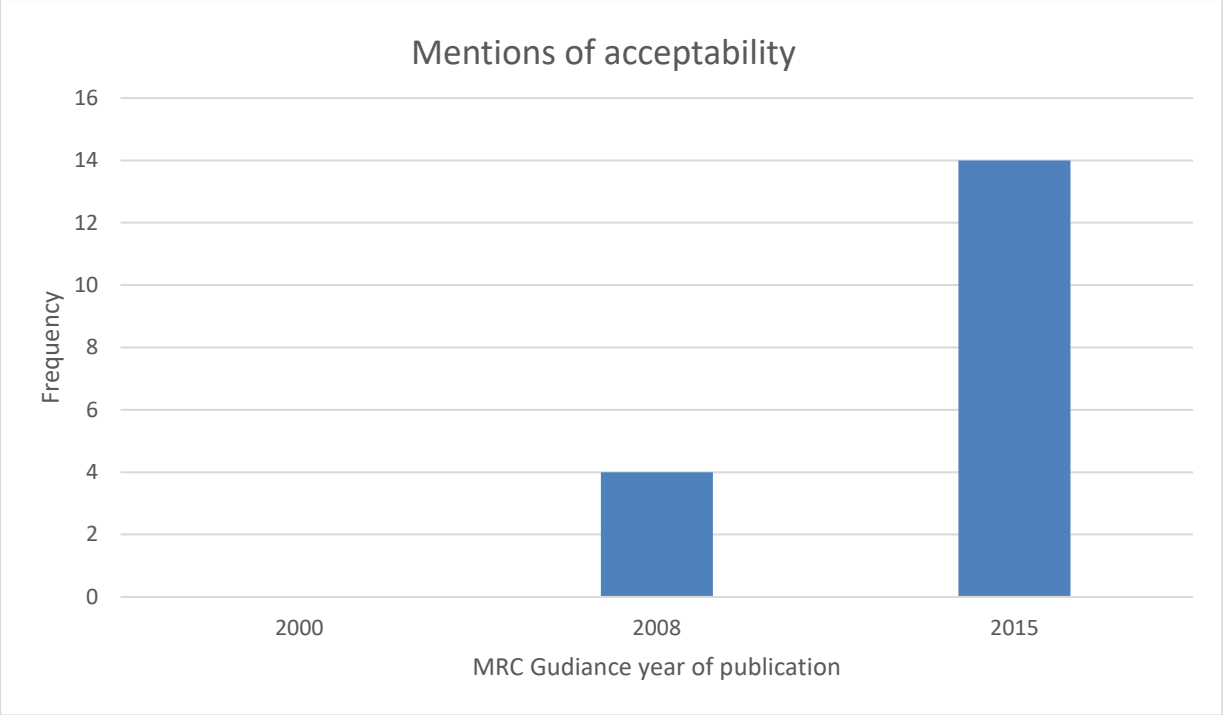

Figure 1: Frequencies of mentions of acceptability in MRC complex intervention guidance documents

The first guidance document proposed that the sequence of phases involved in the development of complex interventions should be similar to the phases involved in drug development trials (MRC 2000) (Figure 2). Within this guidance, there is no reference to assessing acceptability.

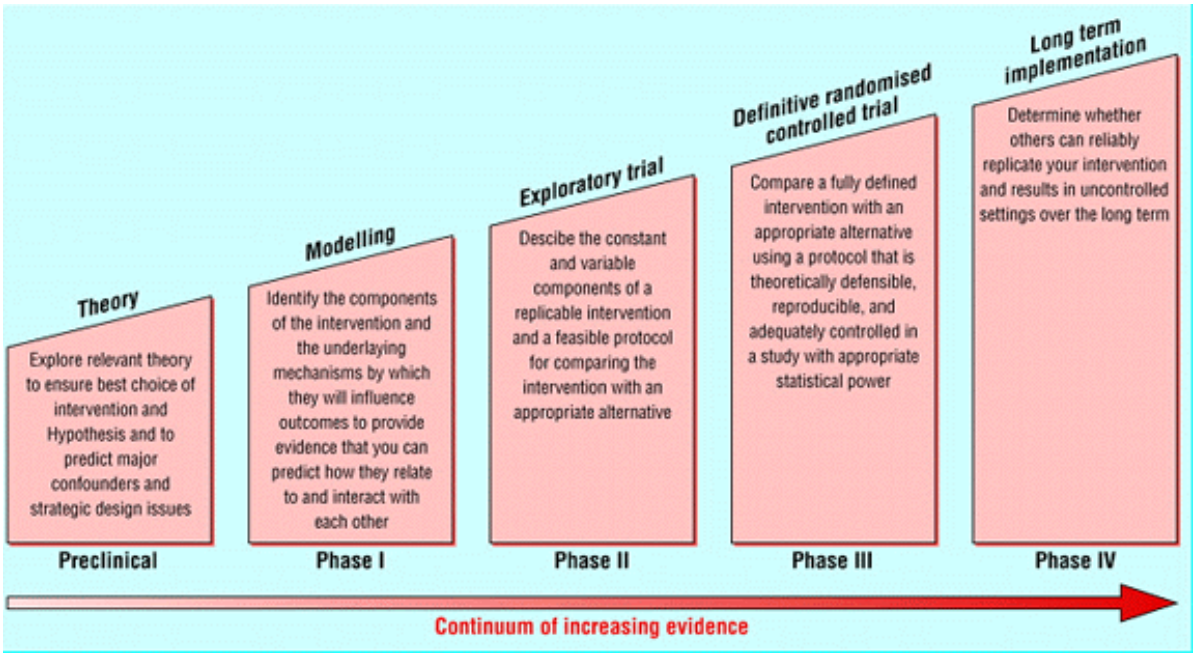

Figure 2: MRC Framework of trials for complex interventions. (MRC 2000) (Used with permission)

However, an accompanying article to the guidance by Campbell et al (2000) argues that to achieve an optimum intervention and study design, the feasibility of delivering the intervention, and the acceptability of the intervention to providers and patients, must be tested. Yet, no specific guidance is provided with regards to how researchers should assess acceptability.

The 2000 guidance was subsequently revised and updated in 2008. This MRC guidance proposes that the different phases outlined in the 2000 guidance do not need to occur linearly or cyclically (Craig et al., 2008). Figure 3 demonstrates the key components in the development of complex interventions as outlined by the MRC 2008 guidance. Best practice of applying the MRC guidance in designing and evaluating complex interventions includes the following structure:

- **Development:** Use the best available evidence and appropriate theory to build a rationale for complex interventions to understand the process of change
- **Feasibility and piloting**: Focus on conducting a feasibility study and/ or a pilot study, in order to gain an understanding of key uncertainties (e.g. recruitment and sample size)
- **Evaluation:** Move on to an exploratory and then definitive evaluation to assess effectiveness (including cost-effectiveness) and evaluate the intervention to understand the change process
- **Implementation:** Focus on long-term follow-up, surveillance and disseminating the findings of the complex intervention as widely as possible.

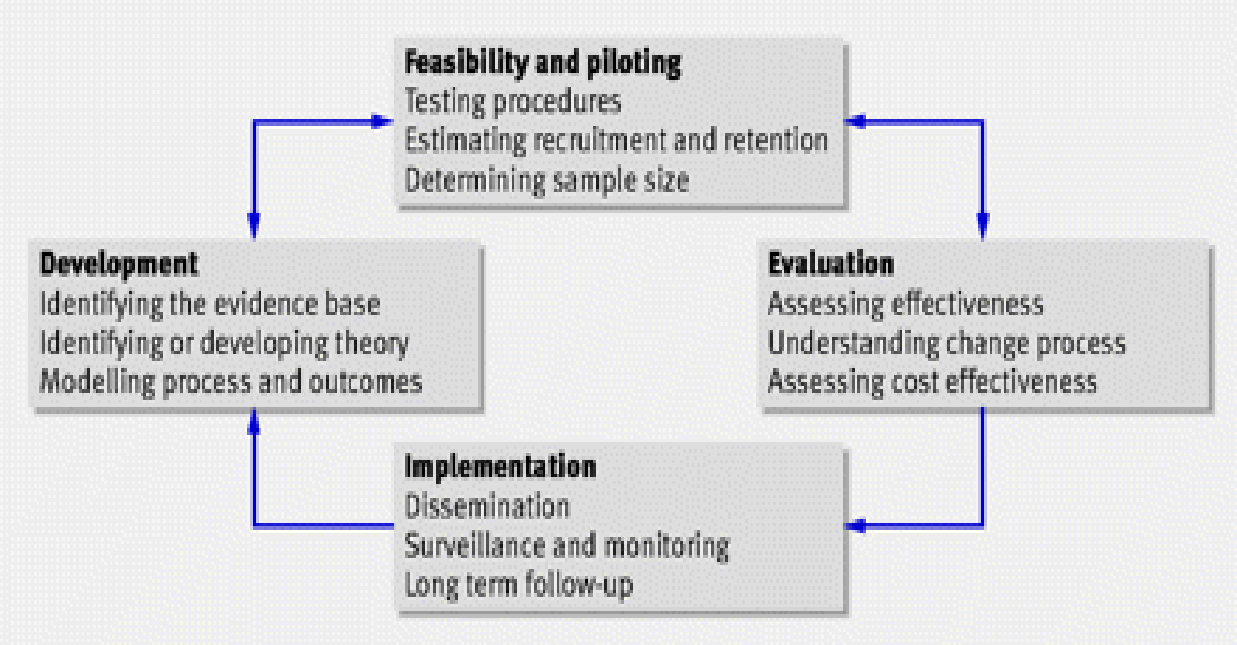

Figure 3: Key elements of the revised Medical Research Council framework for developing and evaluating complex interventions (Craig et al., 2008) (Used with permission)

According to this guidance, the acceptability of an intervention should be considered in the early stages of intervention development, as problems with acceptability can undermine the validity of randomised evaluation studies and can impact on the effectiveness of interventions (Craig et al., 2008). Poor acceptability can impact both internal and external validity of randomised evaluation studies. There can be an increase in self-selection bias as well as differential self-selection bias between the trial arms which in turn undermines internal validity. General self-selection bias into the trial undermines external validity.

Feasibility trials are conducted to provide evidence whether it is realistic to evaluate intervention effectiveness in a full trial context (Arain, Campbell, Cooper & Lancaster 2010; Bowen et al., 2009; Lancaster 2015). However, the same treatment in the 'real world' may not have the same effect, because of differences in target population, adherence, compliance and other associated factors (Berger, Mamdani, Atkins & Johnson 2009; Haynes 1999). These differences may be a consequence of poor acceptability with aspects of the trial resulting in different levels of engagement with or without adherence to the intervention.

Acceptability can also affect intervention effectiveness, especially if there are differing views of acceptability between healthcare professionals and patients. From the patient's perspective, the content, context and quality of care received may all have implications for acceptability. If an intervention is considered acceptable, patients are more likely to adhere to treatment recommendations and to benefit from improved clinical outcomes (Fisher, McCarney, Hasford & Vickers 2006; Hommel et al., 2013). From a healthcare professional's perspective, perceived acceptability of an intervention can significantly affect the implementation and the on-going delivery of an intervention. If a newly developed intervention is considered to have low acceptability, the intervention may not be delivered as intended (by intervention designers), which may have an impact on the overall effectiveness of the intervention (Borrelli et al., 2005; Proctor et al., 2009).

Whilst the 2008 MRC guidance has highlighted the importance of assessing acceptability within the feasibility and piloting stage, the guidance does not provide a definition of acceptability or methods for assessing acceptability. This raises important considerations for understanding how acceptability research is relevant for intervention development, evaluation and implementation. In particular, when assessing acceptability, is it possible to identify key aspects of an intervention that can be modified to improve the feasibility and fidelity of an intervention? Another consideration is whether acceptability changes during the life of a trial? If so, acceptability should also be assessed in later stage pilot RCTs, definitive RCTs and at multiple time periods during these trials (pre, during, post) to gain insight into attrition rates and effectiveness. Assessing acceptability in all cycles of intervention development, evaluation and implementation could assist to further improve the acceptability of the intervention outside the rarefied context of both feasibility and effectiveness trials.

The MRC guidance document published in 2015 differs from the previous documents as the focus is on conducting process evaluations (PEs) of complex interventions (Figure 3, Moore et al., 2015). The increase in references to acceptability within this document may reflect the relevance of assessing acceptability within PEs. Moore and colleagues define a process evaluation as "a study which aims to understand the functioning of an intervention, by examining implementation, mechanisms of impact, and contextual factors. Process evaluation is complementary to, but not a substitute for, high quality outcomes evaluation" (p. 8 Moore et al., 2015).

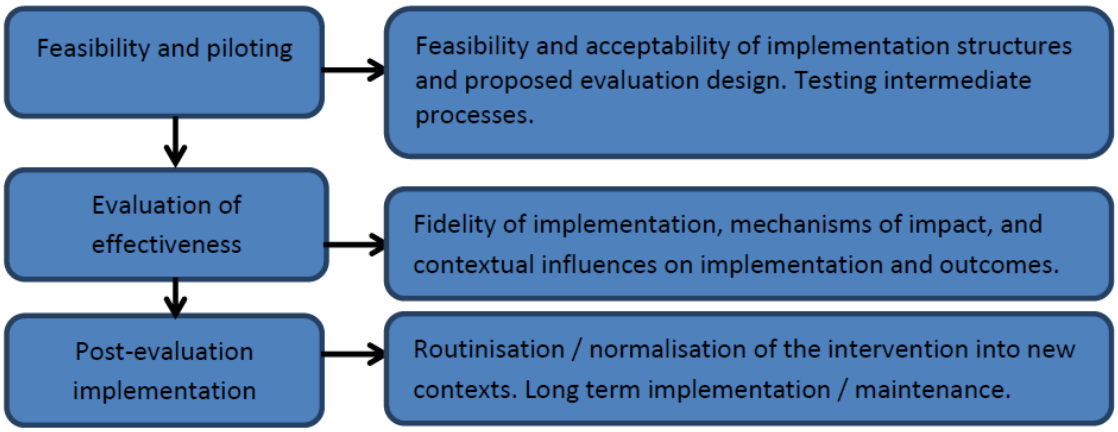

Figure 4: Functions of process evaluation at different stages of the intervention development cycle (Moore et al., 2015) (Used with permission).

The process evaluation document echoes the MRC 2008 complex intervention guidance, emphasising that within the feasibility and piloting stage, process evaluations should assess the feasibility and acceptability of implementation structures and the proposed evaluation design. Moore et al (2015) provided examples of complex interventions in which potentially effective interventions are often met with initial resistance from participants. In order to overcome resistance, "process evaluation may involve strategies to counter resistance and improve acceptability" (p. 26 Moore et al, 2015). The 2015 guidance document also offers examples of how acceptability to patients may be assessed quantitatively, by administering measures of acceptability or satisfaction, and qualitatively, by asking probing questions focused on understanding how patients are interacting with the intervention (Moore et al., 2015).

Although the 2015 MRC document provides guidance on the general approaches that evaluators may take to assess acceptability, it does not offer a definition of acceptability or specific materials for operationalising it. This raises the crucial question of how current measures can be applied to assess acceptability when there appears to be no shared understanding of what acceptability is to those receiving and delivering healthcare

interventions, or to researchers who are assessing it. Without a shared understanding of what acceptability refers to it is unclear how intervention developers should assess acceptability for those receiving and delivering healthcare interventions.

1.2 Definitions of acceptability

Definitions of acceptability within the healthcare literature vary considerably, highlighting the ambiguity of the concept. Examples of terms that have been applied to define acceptability in the context of healthcare interventions include 'treatment acceptability' (Becker, Daurius & Schaumberg 2007; Sidani et al, 2009; Tarrier, Liversidge & Gregg 2006), 'social acceptability' (Doll, 1974; Dillip et al., 2012; Staniszewska et al., 2010) and 'public acceptability' (Cohn 2016; Diepeveen et al., 2013).

1.2.1 Treatment acceptability

Sidani and colleagues propose that treatment acceptability is dependent on a patient's attitude towards treatment options and their judgement of perceived acceptability prior to participating in an intervention. Factors that influence patients' perceived acceptability include the intervention's "appropriateness in addressing the clinical problem, suitability to individual lifestyle, convenience and effectiveness in managing the clinical problem" (p. 421 Sidani et al., 2009). Whilst this conceptualisation of treatment acceptability can account for patients' decisions in terms of wishing to complete treatments and willingness to participate in an intervention, it implies a static evaluation of acceptability as it does not address the question of why some patients cease treatment, and why some patients who complete a treatment still consider the intervention to have been unacceptable. Furthermore, a missing component of this definition of treatment acceptability is that perceptions of acceptability may change with actual experience of the intervention (Andrykowski and Mayne, 2006). For example, the process of participating in an intervention, the content of the intervention, and even the actual effectiveness of the intervention are likely factors to influence patients' perceptions of acceptability.

1.2.2 Social acceptability

The term social acceptability has also been applied to define acceptability in the context of healthcare more broadly. According to Doll (1974) healthcare can be evaluated according to three measurable criteria: clinical effectiveness, economic efficiency and social acceptability. However Stainszewska et al (2010) reason that although there have been clear advances in conceptualising and measuring clinical effectiveness and economic efficiency, the concept social acceptability has been neglected and failed to be conceptualised, impacting its use methodologically. Stainszewska and colleagues argue that Doll (1974) failed to provide a definition of acceptability and propose that social acceptability could be considered as the "patients' assessment of the acceptability, suitability, adequacy or effectiveness of care and treatment" (p. 312 Stainszewska et al 2010). Yet, this definition is partly circular as it states that social acceptability entails acceptability. It also fails to provide any guidance on how to measure patients' assessment of care and treatment.

1.2.3 Public acceptability

The definitions of treatment acceptability and social acceptability have defined the concept of acceptability in relation to intervention recipients. However, acceptability to other stakeholders has also been explored. For example, Diepeveen et al (2013) propose that 'public acceptability' (i.e. perspectives of members of the public who are not participating or receiving an intervention) is an attitudinal construct:

> "A further consideration for governments in deciding how to change the attitude of the public towards such [behaviour change and policy] interventions and the extent to which interventions are likely to be acceptable" (p. 2 Diepeveen et al., 2013).

However, this definition does not explicitly state that public acceptability is an attitudinal construct, it is implied. Furthermore, it can be argued that people's perception of public acceptability of an intervention is different, to their perception of acceptability for an intervention that they may receive. In this thesis, the focus is on defining and theorising the

concept of acceptability from the perspective of people who receive the intervention (because the level of acceptability may influence factors such as uptake, reach and engagement) and to those who deliver the intervention (because the level of acceptability may influence implementation and fidelity).

1.2.4 Consequences of varied definitions of acceptability

Both the terms 'treatment acceptability' and 'social acceptability' applied to define acceptability in the context of healthcare, indicate that that acceptability can be considered from an individual perspective but may also reflect a more collectively shared judgement about the nature of an intervention. The definitions discussed above also suggest that researchers may take different approaches to assessing the acceptability of a healthcare intervention. Table 1 summarises the definitions of acceptability discussed above. From these definitions, it is evident that acceptability may be assessed by exploring participant attitudes, perceptions of perceived effectiveness of the intervention, and evaluations of experiencing the intervention. The complexity of defining acceptability indicates that it is difficult to operationalise the concept for measurement (Bollen 1989; El-den, O'Reilly & Chen 2015).

Table 1: Summary of definitions of acceptability within the health and behavioural sciences literature

Discipline	Label applied to describe acceptability	Definition	Key points from definition
Healthcare	Social acceptability	"Patients' assessment of the acceptability, suitability, adequacy or effectiveness of care and treatment" (p.312 Stainszewska et al 2010).	Assessments based on acceptability, adequacy and effectiveness of care/treatment
Healthcare Interventions	Treatment acceptability	Treatment acceptability is dependent on a patient's attitude towards treatment options and his/her judgement of perceived acceptability prior to participating in an intervention (Sidani et al., 2009) Factors that influence a patient's perceived acceptability include the intervention's "appropriateness in addressing the clinical problem, suitability to individual life style, convenience and effectiveness in managing the clinical problem" (p.421 Sidani et al., 2009).	Patients attitude towards treatment options and perceived acceptability of treatment Appropriateness and suitability of treatment to individual life style convenience and effectiveness of treatment in managing the clinical problem
Public health and behaviour change policy	Public acceptability	"A further consideration for governments in deciding how to change the attitude of the public towards such [behaviour change and policy] interventions and the extent to which interventions are likely to be acceptable" (p.2 Diepeveen et al 2013).	Acceptability is implied as an attitudinal construct Discipline is focused on the acceptability of members of the pubic who are not participating or receiving a healthcare intervention

1.3 Importance of theory in defining concepts

A range of key texts in the health and behavioural sciences recommend the use of theory in defining and operationalising concepts prior to instrument development (Bollen, 1989; Devellis, 2012; Eagly & Chaiken, 2007; Hox 1997; McDowell 2006; Streiner & Norman, 2008). Within the fields of health psychology, health services research and implementation science the application of theory is recognised as enhancing the development, evaluation and implementation of complex interventions (Campbell et al., 2014; Craig et al., 2008; Davidoff, Dixon-Woods, Leviton & Michie 2015; Michie & Prestwich, 2010; MRC 2000; Sniehotta et al., 2015). More specific advantages of applying theory include the clarification of methodological approaches; development of robust, theoretically-informed assessment materials and the interpretation of results (Brazil et al., 2005; Grol et al., 2007).

The term 'theory' has been defined in multiple ways across the health and behavioural sciences (Glanz & Rimmer, 2005; Jaccard & Jacoby, 2010; Kaplan, 1964; Swanson & Chermack, 2013; Weick, 1996). A useful definition that incorporates the different characteristics of theory is clearly conveyed by Glanz and Rimmer (2005), who explain:

> "a theory presents a systematic way of understanding events or situations. It is a set of concepts, definitions, and propositions that explain or predict these events or situations by illustrating the relationship between variables" (p.4).

1.3.1 Theorising the concept of acceptability

In this thesis I argue that theorising the concept of acceptability will lead to a better understanding of (1) what acceptability is (or is proposed to be) (specifically whether acceptability is a unitary or multi-component construct); (2) if acceptability is a multi-component construct, what its components are (or are proposed to be); (3) how acceptability

as a construct is proposed to relate to other factors, such as intervention engagement or adherence; and (4) how it can be measured.

1.4 Aims and Objectives of the Current Thesis

The overall aim of the thesis was to define acceptability in the context of healthcare interventions and to develop a Theoretical Framework of Acceptability (TFA) that can be applied to assess acceptability from two stakeholder perspectives: healthcare professionals and patients. The TFA was developed to assess the acceptability of healthcare interventions both qualitatively and quantitatively from three temporal perspectives (prospective, concurrent or retrospective) depending on the timing of assessment in relation to engagement with the intervention, within all phases of the MRC intervention development and evaluation cycle.

In order to achieve the overall aim, the specific objectives of this thesis were:

1) To establish the current evidence base on how acceptability of healthcare interventions has been defined, theorised and assessed.
2) To theorise the concept of acceptability and develop a theoretical framework of acceptability and assessment tools of acceptability
3) To apply the assessment tools to assess qualitatively prospective, concurrent and retrospective intervention acceptability
4) To apply pre-validation methods (Prior et al., 211) to develop preliminary versions of two TFA questionnaires

Figure 5 presents the research studies included in this thesis to address the above objectives. These are described briefly on page 34 onwards. Appendix A includes a figure presenting the timeline and tasks involved for each of the empirical studies reported in this thesis. For ease of clarity the studies in this thesis have not been reported in a chronological order, as

most studies were conducted concurrently. Specifically the development of the TFA was an iterative process.

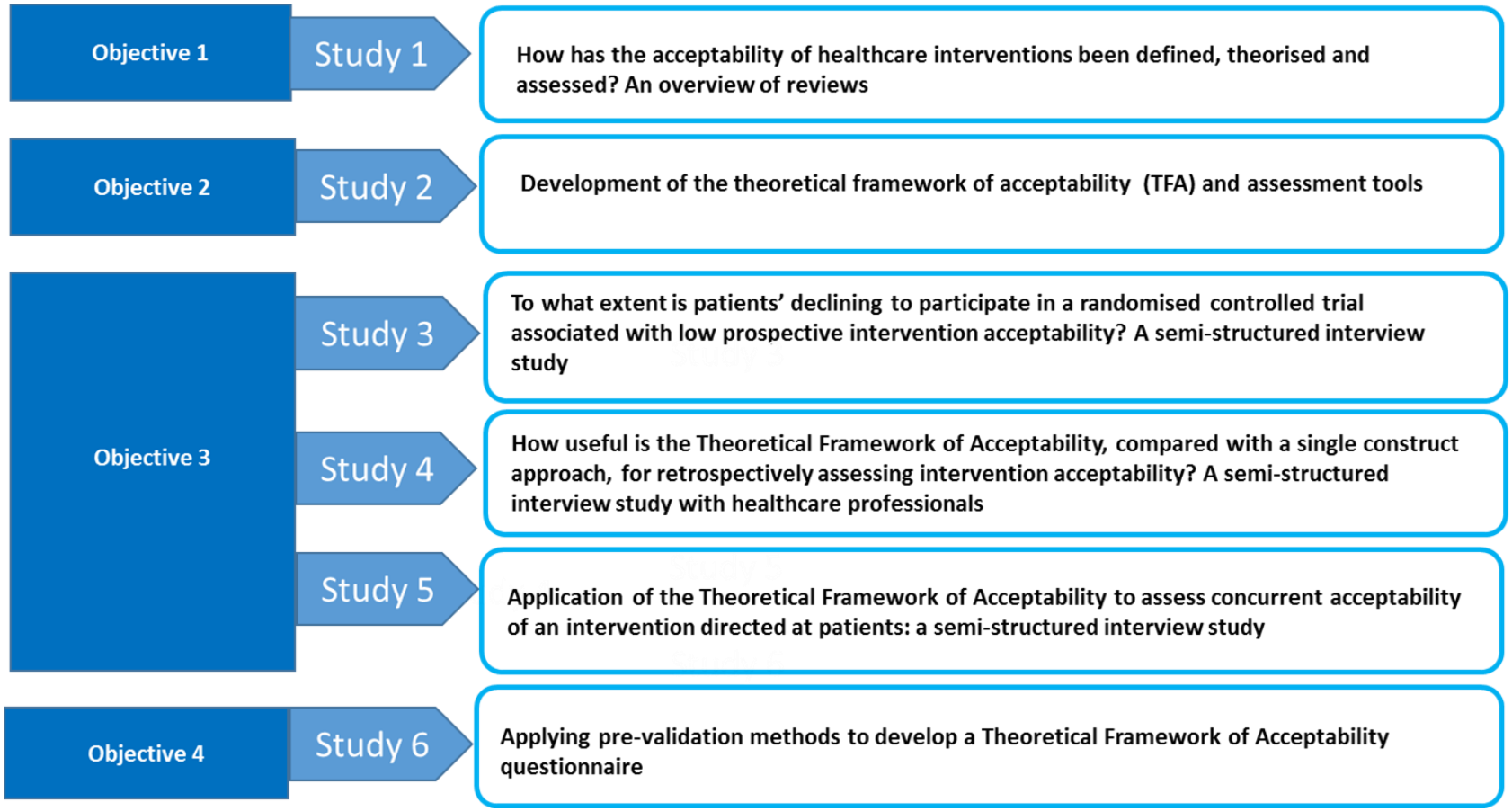

Figure 5: Thesis studies and chapter titles

1.4.1 Study 1: How has the acceptability of healthcare interventions been defined, assessed and theorised? An overview of reviews

The first study described in chapter 2 reports the results of an overview of systematic reviews that have claimed to assess the acceptability of a healthcare intervention. The overview of reviews addresses three key questions:

1) How has the acceptability of healthcare interventions been defined?

2) How has the acceptability of healthcare interventions been operationalised?

3) How has theory been applied to defining or assessing acceptability?

1.4.2 Study 2: Development of a Theoretical Framework of Acceptability

The results of the overview of reviews formed the basis of the second study, also reported in Chapter 2. This study describes the iterative inductive and deductive methods of reasoning that were applied to theorise the concept of acceptability and to develop the Theoretical Framework of Acceptability (TFA). Steps included (1) defining acceptability; (2) describing its properties and scope and (3) identifying component constructs and empirical indicators.

1.4.3 Study 3: What reasons do participants report for declining to participate in a randomised controlled trial? A semi-structured interview study

The third study, presented in Chapter 3, was embedded in a Randomised Controlled Trial (RCT), comparing a new service model with standard care, for managing Benign Essential Blepharospasm (BEB) and Hemifacial Spasm (HFS) (Wickwar et al., 2016). Both BEB and HFS are debilitating eye conditions which can cause functional blindness, poor quality of life and a range of appearance-related concerns (Wickwar et al., 2016). The standard model of patient care consists of routine fixed interval scheduled treatment cycles, in which patients receive the botulinum toxin injections every 3 to 4 months. The patient-led model of care in this intervention consists of patients booking their own treatment appointments when they feel it is necessary. In this study, the TFA was applied to analyse interview data to

understand why eligible patients refused to participate in the RCT, with a particular focus on whether the reasons given were associated with the perceived (prospective) acceptability of the intervention or other factors.

1.4.4 Study 4: How useful is the Theoretical Framework of Acceptability, compared with a single-construct approach, for assessing intervention acceptability? A semi-structured interview study with healthcare professionals

The fourth study (Chapter 4) compared the usefulness of the TFA (v1) (eight questions) and a general acceptability question (one question) to assess healthcare professional (HCP) acceptability of two feedback interventions delivered within the feasibility phase of the AFFINITIE Research Programme (*Development & Evaluation of **A**udit and **F**eedback **In**terventions to **I**ncrease evidence-based **T**ransfusion pract**I**c**E**)* (Gould et al, 2014). Audit and feedback (A&F) is defined as "a summary of clinical performance of health care over a specified period of time aimed at providing information to health professionals to allow them to assess and adjust their performance " (p. 5 Ivers et al., 2012) The first feedback intervention concerned the format/content of feedback reports; and the second intervention consisted of a toolkit developed to support HCPs in responding to feedback from an audit using, for example, action planning and problem solving tools. In this study, retrospective assessments of acceptability are explored.

1.4.5 Study 5: Application of the Theoretical Framework of Acceptability to assess acceptability of an intervention directed at patients: a semi-structured interview study

The fifth study presented in Chapter 5 applied the TFA to assess concurrent acceptability of both the standard model of care and the patient- initiated model of care in the BEB and HFS trial (Wickwar et al., 2016). Similar to study 4, the focus of this study was also to determine how useful the TFA (seven questions) was in comparison to the general acceptability

question in generating information about intervention acceptability for both the standard and patient-initiated models of care.

1.4.6 Study 6: Applying pre-validation methods to develop a Theoretical Framework of Acceptability questionnaire

Lastly, the sixth study, presented in Chapter 6, describes the pre-validation methods applied to develop two TFA questionnaires to assess intervention acceptability in the AFFINITIE and BEB and HFS trials. The methods applied in this study adapted principles of the Patient Reported Outcome (PRO) methods outlined by Prior et al., (2011) to develop an item pool, and the Discriminant Content Validity (DCV) method (Johnston et al., 2014) to test the content validity and discriminant validity of the items against the TFA.

1.4.7 General discussion

Chapter 7 summarises the findings reported in the empirical studies (chapters 2-6). The utility of the TFA to assess intervention acceptability across the three temporal perspectives (prospective, concurrent and retrospective) are discussed. The strengths and limitations of the programme of research are also reported. Implications and recommendations for applying the TFA in future research are discussed. The chapter concludes with a description of the dissemination of the findings from this programme of work to date.

2 How has the acceptability of healthcare interventions been defined, assessed and theorised? An overview of reviews and development of a theoretical framework of acceptability

2.1 Chapter overview

This chapter presents the methods and results of two sequential studies. The first consisted of an overview of reviews that explored how the acceptability of healthcare interventions has been defined, assessed and theorised. The second study describes the inductive (empirical) and deductive (theoretical) methods applied to develop a multi-construct theoretical framework of acceptability. Both studies reported in this chapter have been published in:

> Sekhon, M., Cartwright, M. and Francis, J.J. (2017) Acceptability of healthcare interventions: an overview of reviews and development of a theoretical framework. *BMC health services research*, *17*(1), p.88.

2.2 Aims and objectives

The aim of this chapter is to describe the inductive (empirical) and deductive (theoretical) methods applied to develop a comprehensive theoretical framework of acceptability. This is presented in two sequential studies. The objective of the first study was to review current practice and complete an overview of systematic reviews identifying how the acceptability of healthcare interventions has been defined, operationalised and theorised. The objective of the second study was to supplement evidence from study 1 with a deductive approach to propose component constructs in the theoretical framework of acceptability.

2.3 Methods:

2.3.1 Study 1: Overview of Reviews

Preliminary scoping searches identified no existing systematic review focused solely on the acceptability of healthcare interventions. However, systematic reviews were identified which

considered the acceptability of healthcare and non-healthcare interventions alongside other factors such as effectiveness (Berlim, McGirll, Van den Eynde, Fleck & Giacobbe 2014) efficacy (Cipriani et al., 2009) and tolerability (Kedge 2009). We therefore decided to conduct an overview of systematic reviews of healthcare interventions that have included a focus on acceptability, alongside other factors (e.g. effectiveness, feasibility).

2.3.1.1 Search strategy

Systematic Reviews published from May 2000 (the 2000 MRC guidance was published in April 2000) to February 2016 were retrieved through a single systematic literature search conducted in two phases (i.e. the initial phase 1 search was conducted in February 2014 and this was updated in phase 2 February 2016). There were two search strategies applied to both phase 1 and phase 2 searches. The first strategy was applied to the Cochrane Database of Systematic Reviews (CDSR), based on the appearance of the truncated term "acceptab*" in article titles. The second search involved applying the relevant systematic review filter (Appendix B) to the search engines OVID (Medline, Embase) and EBSCO Host (PsycINFO), and combining the review filter with the appearance of the term "acceptab*" in article titles. By searching for "acceptab*" within the article title only (rather than within the abstract or text), we also ensured that only reviews focused on acceptability as a key variable would be identified. Only reviews published in English were included as the research question specifically considered the word "acceptability"; this word may have different shades of meaning when translated into other languages, which may in turn affect the definition and measurement issues under investigation.

2.3.1.2 Screening of citations

Duplicates were removed in Endnote. All abstracts were reviewed by a single researcher (MS) against the inclusion and exclusion criteria (Table 2). To assess reliability of the screening process, another researcher (MC) independently reviewed 10% of the abstracts. There was 100% agreement on the abstracts included for full text review.

Table 2: Inclusion and exclusion criteria for the overview of reviews

Inclusion criteria	Exclusion criteria
All systematic reviews of a healthcare intervention A systematic review was defined as "a review of a clearly formulated question that uses systematic and explicit methods to identify, select and critically appraise relevant research and to collect and analyse data from the studies that are included in the review" (Moher et al., 2009, p.1) Participant samples included all recipients and deliverers of healthcare interventions	Non-English systematic reviews Systematic reviews which only made reference to cost-effectiveness acceptability curves

2.3.1.1 Full text review and data extraction

One researcher (MS) retrieved all full text papers that met the inclusion criteria and extracted data using an extraction form. Two additional researchers (JF and MC) independently reviewed 10% of the included systematic reviews. The researchers extracted information on how acceptability had been defined, whether acceptability had been theorised, and when and how acceptability had been assessed. There were no disagreements in data extraction.

2.3.1.2 Assessment of quality

No quality assessment tool was applied as it is possible that poor quality systematic reviews would include information relevant to addressing the study aims and objectives.

2.3.1.3 Definitions of acceptability: Consensus group exercises

To identify how acceptability has been defined one researcher (MS) extracted definitions from each of the systematic reviews (Appendix C). Where definitions of acceptability were unclear, a reasonable level of inference was used in order to identify an implicit definition where review authors imply their understanding of acceptability whilst not directly proposing a definition of acceptability (see results section 2.4.1.5 page 51 for example of inferences).

To check reliability of the coding of extracted text reflecting implicit or explicit definitions seven research psychologists (including the three authors) were asked to classify the extracted text into the following categories: (1) Conceptual Definition (i.e. an abstract statement of what acceptability is); (2) Operational Definition (i.e. a concrete statement of how acceptability is measured); (3) Uncertain; and (4) No Definition. The consensus group was allowed to select one or more options that they considered applicable to each definition. All definitions from the included systematic review papers were extracted, tabulated and presented to the group, together with definitions of "conceptual" and "operational". Explanations of these categories are presented in Table 3. One researcher (MS) facilitated a short discussion at the beginning of the task to ensure participants understood the "conceptual" and "operational" definitions. The review authors subsequently repeated the same exercise for extracted definitions from the updated phase 2 search.

Table 3: Definitions of key terms applied in theory development

Key Term	Definition
Conceptual Definition	Defines a construct in abstract or theoretical terms
Operational Definition	Defines a construct by specifying the procedures used to measure that construct
Concept	Mental representation of a kind or category of items or ideas (American Psychological Association, 2017)
Construct	The building block for theorising (Glanz et al., 2008)
Conceptualisation	Involves concept formation, which establishes the meaning of a construct by elaborating the nomological network and defining important subdomains of its meaning (p. 4 Hox 1997)
Operationalization	Involves the translation of a theoretical construct into observable variables by specifying empirical indicators for the concept and its subdomains (p. 4 Hox 1997)

2.3.1.4 Synthesis

No quantitative synthesis was conducted. All extracted data were analysed descriptively by collating and summarising the results of the included primary studies. The main groupings included: characteristics of included studies; assessment of quality, assessment of acceptability (e.g. measures of observed behaviour, self- report measures), time point at which acceptability was assessed relative to the delivery of the intervention and whether review authors reported the use of theory.

2.3.2 Study 2: Development of a theoretical framework of acceptability

The methods applied to develop theory are not always described systematically in the healthcare and psychology literature (Carpino & Daley, 2006) Broadly, the most common approaches are data driven (bottom up/ inductive) and theory driven (top down/ deductive) processes (Epstein, 1998; Hox, 1997; Locke 2015). The data driven process focuses on observations from empirical data to form theory, whereas the theory driven process works on the premise of applying existing theory in an effort to understand data. The process of theorising is enhanced when inductive and deductive processes are combined (Thompson 1956; Weick 1996).To theorise the concept of acceptability, we applied both inductive and deductive processes by taking a similar approach described by Hox (1997).

Hox proposed that, in order to theorise, researchers must (1) decide on the concept for measurement; (2) define the concept; (3) describe the properties and scope of the concept (and how it differs from other concepts); and (4) identify the empirical indicators and subdomains (i.e. constructs) of the concept. We describe below how steps 1-4 were applied in developing a theoretical framework of acceptability.

2.3.2.1 Step 1: Concept for measurement

We first agreed on the limits of the construct to be theorised: acceptability of healthcare interventions.

2.3.2.2 Step 2: Defining the concept

To define the concept of acceptability we reviewed the results of the overview of reviews, specifically the conceptual and operational definitions identified by both consensus group exercises and the variables reported in the behavioural and self-report measures (identified from the included systematic reviews). Qualitatively synthesising these definitions, we proposed the following conceptual definition of acceptability:

> A multi-faceted construct that reflects the extent to which people delivering or receiving a healthcare intervention consider it to be appropriate, based on anticipated or experienced cognitive and emotional responses to the intervention.

This definition incorporates the component constructs of acceptability (cognitive and emotional responses) and also provides a hypothesis (cognitive and emotional responses are likely to influence behavioural engagement with the intervention). This working definition of acceptability can be operationalised for the purpose of measurement.

2.3.2.3 Step 3: Describing the properties and scope of the concept

Based on the conceptual definition we identified the properties and scope of the construct of acceptability using inductive and deductive methods to determine which constructs best represented the core empirical indicators of acceptability.

2.3.2.3.1 Inductive methods

The application of inductive methods involved reviewing the empirical data that emerged from the overview of reviews. First, variables identified in the consensus group task to define acceptability, and the variables reported in the observed behavioural measures and self-report measures of acceptability, were grouped together according to similarity. Next, we considered what construct label best described each of the variable groupings. For example, the variables of "attitudinal measures", and "attitudes towards the intervention (how patients felt about the intervention)" was assigned the construct label "affective attitude". Figure 6 presents our conceptual definition and component constructs of acceptability, offering examples of the variables they incorporate. This forms our preliminary theoretical framework of acceptability, TFA (v1).

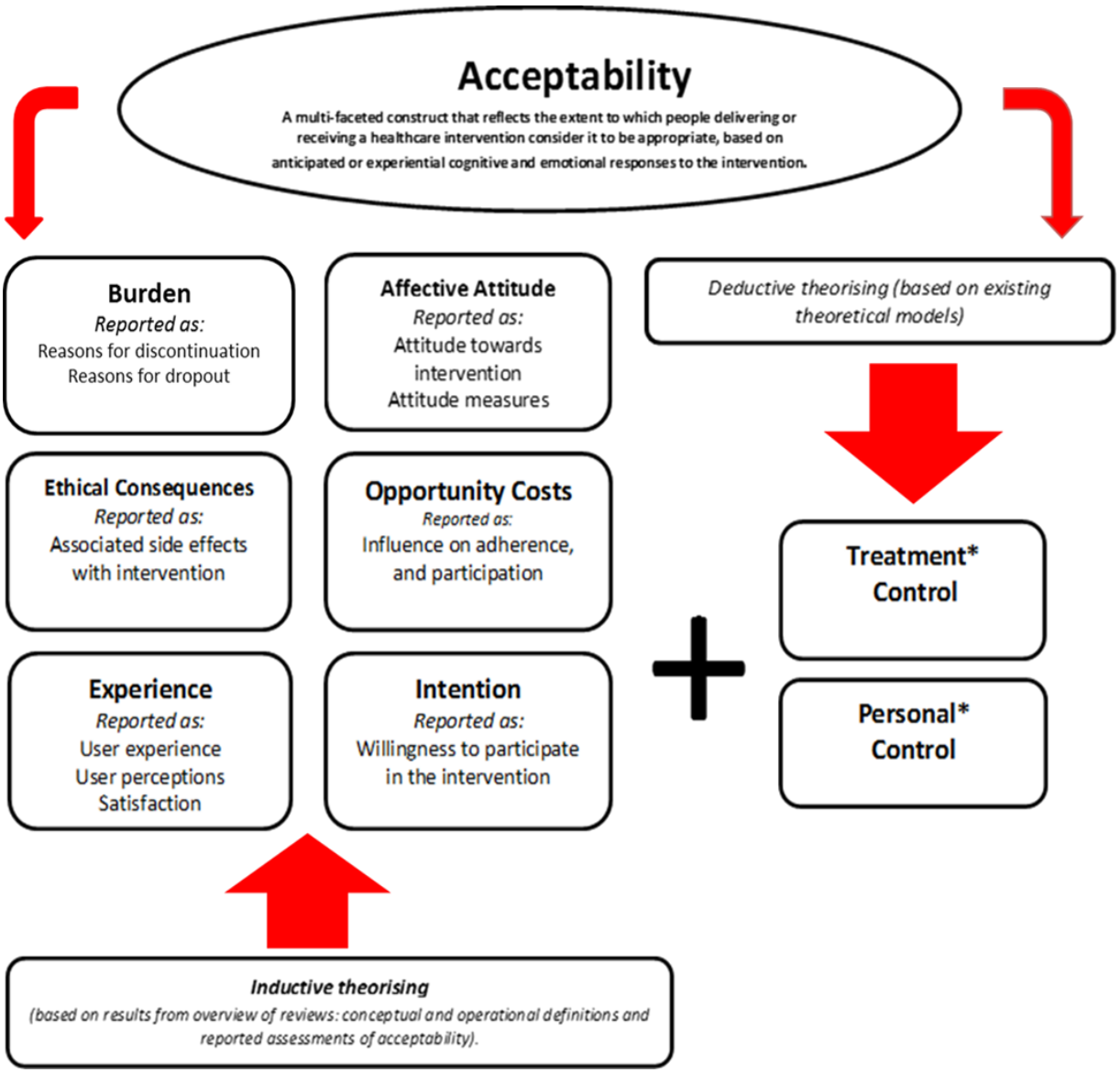

Figure 6: The theoretical framework of acceptability (v1)

Note: In bold font are the labels we assigned to represent the examples of the variables applied to operationalise and assess acceptability based on the results from the overview (italic font).

Note* Addition of the two control constructs emerging deductively from existing theoretical models.

2.3.2.3.2 Deductive methods

The deductive process was conducted iteratively using the following three steps:

(1) We considered whether the coverage of the preliminary TFA (v1) could usefully be extended by reviewing the identified component constructs of acceptability against our conceptual definition of acceptability and the results of the overview of reviews.

(2) We considered a range of theories and frameworks from the health psychology and behaviour change literatures that have been applied to predict, explain or change health related behaviour.

(3) We reviewed the constructs from these theories and frameworks for their applicability to the TFA. Examples of theories and frameworks discussed include the Theory of Planned Behaviour (TPB) (Ajzen, 1991) (e.g. the construct of Perceived Behavioural Control) and the Theoretical Domains Framework (TDF) (Michie et al., 2005) (e.g. the constructs within the Beliefs About Capabilities domain). We discussed whether including additional constructs would add value to the framework in assessing acceptability, specifically if the additional constructs could be measured as cognitive and / or emotional responses to the intervention. The TPB and the TDF focus on beliefs about performing a behaviour whereas the TFA reflects a broader set of beliefs about the value of a healthcare intervention. We concluded that there was a more relevant theory that provides better fit with the TFA, the Common Sense Model (CSM) of self-regulation of health and illness (Leventhal, Brissette & Leventhal 2003). The CSM focuses on beliefs about a health threat and coping procedures that might control the threat. This approach is thus consistent with the focus of the TFA on acceptability of healthcare interventions. The CSM proposes that, in response to a perceived health threat, individuals spontaneously generate five kinds of cognitive representation of the illness based around identity (i.e. associated symptoms), timeline, cause, control/cure, and consequences. Moss-Morris et al., (2002) distinguished between personal control (i.e. the extent to which an individual perceives one is able to control one's symptoms or cure the

disease) and treatment control (i.e. the extent to which the individual believes the treatment will be effective in curing the illness). The third step in the deductive process resulted in the inclusion of both treatment control and personal control as additional constructs within the TFA (v1) (figure 6). With these additions the framework appeared to include a parsimonious set of constructs that provided good coverage of acceptability as defined.

2.3.2.4 Step 4: Identifying the empirical indicators for the concept's constructs

Having identified the component constructs of acceptability, we identified or wrote formal operational definitions for each of the constructs within the TFA (v1). This was done to check that the constructs were conceptually distinctive. We first searched the psychological literature for definitions. If a clear definition for a construct was not available in the psychological literature, standard English language dictionaries and other relevant disciplines (e.g. health economic literature for a definition of "opportunity costs") were searched. For each construct, a minimum of two definitions were identified. Extracted definitions for the component constructs were required to be adaptable to refer directly to "the intervention" (see results section 2.4.2 page 52 for examples). This process resulted in revisions to the TFA (v1) and the development of the revised TFA (v2).

2.4 Results:

2.4.1 Study 1: Overview of Reviews

2.4.1.1 Characteristics of included reviews

The databases searches identified 1,930 references, with 1,637 remaining after de-duplication. After screening titles and abstracts, 53 full texts were retrieved for further examination. Of these, ten articles were excluded for the following reasons: seven articles focused on children's and adolescents' acceptability of the intervention, one could not be obtained in English, one article focused on social validity of treatment measures in education

psychology, and one article focused on the psychometric properties of exercise tests. Thus, a total of 43 publications were included in this overview (Appendix D). The breakdown of the search process for phase 1 and phase 2 is represented in figure 7.

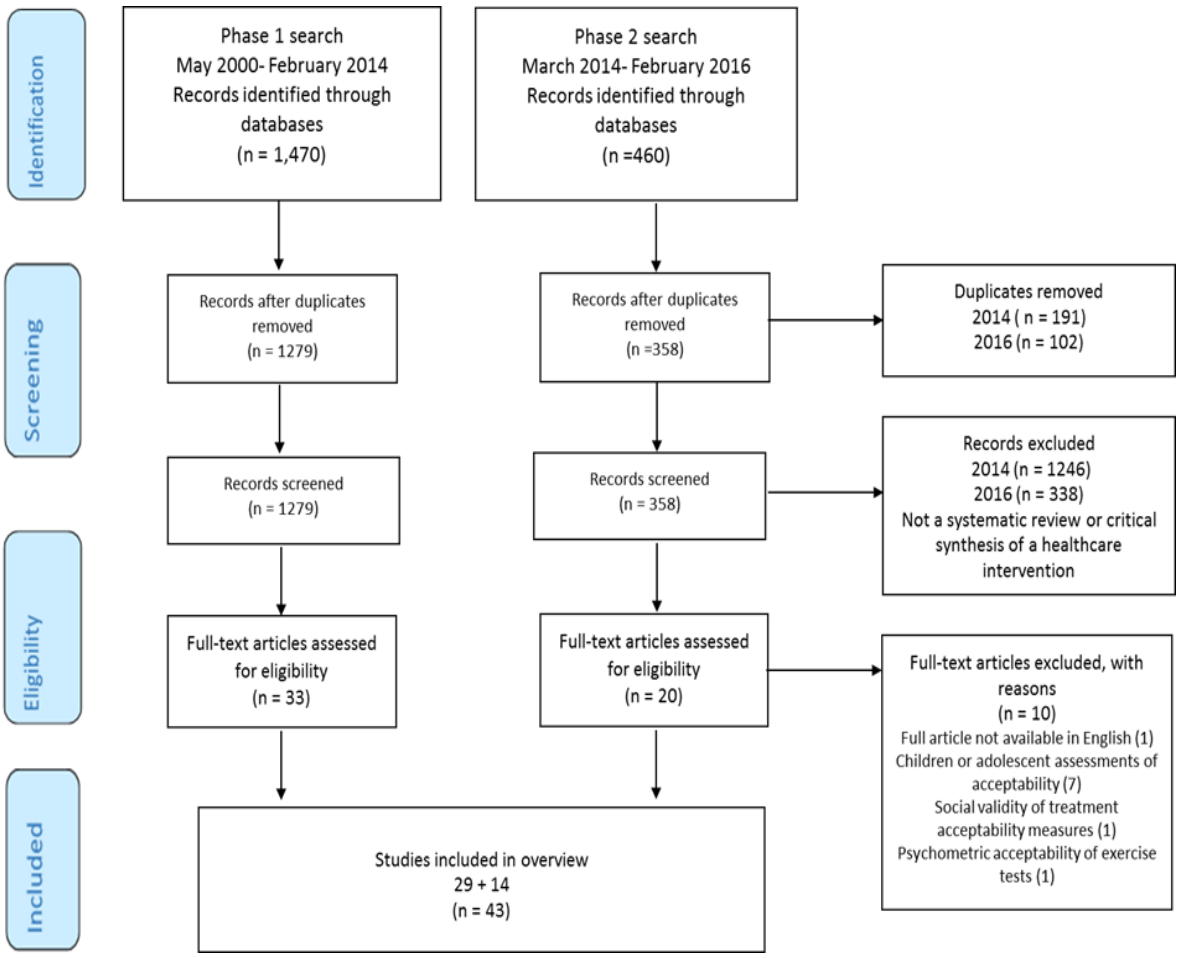

Figure 7: PRISMA diagram of included papers for searches completed in February 2014 and 2016

2.4.1.2 Assessment of quality

The methodological quality of individual studies was assessed in 29 (67%) of the 43 reviews. The Cochrane Tool of Quality Assessment was applied most frequently (Higgins, 2008) (18 reviews: 62%). Other assessments tools applied included the Jadad Scale (Jadad et al., 1996) (three reviews: 10%), the Critical Appraisal Skills Programme (CASP) guidelines (CASP, 2017) (three reviews: 10%), CONSORT guidelines (Moher et al., 2001) (two reviews: 6%); Grade scale (Atkins et al., 2004) (one review: 3%), Effective Public Health Practice Project (EPHPP) quality assessment tool (Armijo- Olivo et al., 2012) (one review: 3%) and United States Preventive Services Task Force grading system (Harris et al., 2001) (one review: 3%).

2.4.1.3 Assessment of acceptability

Twenty-three (53%) reviews assessed acceptability using various objective measures of behaviour as indicators of acceptability: dropout rates, all-cause discontinuation, reason for discontinuation and withdrawal rates (Table 4).

Table 4: Behavioural assessments of acceptability

Measures of observed behaviour	n
Drop –out rates	10
All cause discontinuation rates	4
Willingness to participate/ take test in future	2
Treatment discontinuation	2
Discontinuation and removal rate	1
Discontinuation, attrition, adherence, non-compliance	1
Rates of uptake, adherence and completion of exercise	1
Withdrawal rates	1
Uptake	1
Total	23

Twelve (28%) of the reviews reported that they assessed acceptability using self-report measures, which included responses to hypothetical scenarios, satisfaction measures, attitudinal measures, reports of individuals on their perceptions of, and experiences with, the intervention, and opened-ended interview questions (Table 5). None of the reviews

specified a threshold criterion, i.e., the number of participants that needed to withdraw /discontinue treatment, for the intervention to be considered unacceptable.

Table 5: Self -report assessments of acceptability

Self-report assessment	n
Satisfaction measures	6
Attitudes	1
Interviews on users perceptions, experiences and attitudes towards intervention	1
Surveys (hypothetical scenarios)	1
Open ended questions	1
Interviews (barriers and facilitators of access to intervention and support activities)	1
Side effects	1
Total	12

Eight (19%) reviews assessed acceptability using both objective measures of behaviour and self-reported measures. These included two reviews measuring adherence and satisfaction (Andrews, Cuijpers, Craske, McEvoy & Titov 2010; Blenkinsopp & Hassey 2005) three reviews focusing on dropout rates, take-up rates, reasons for discontinuation and a satisfaction measure (Kulier, Helmerhorst, Maitra & Gülmezoglu 2004; Kaltenthaler, Sutcliffe, Parry, Rees & Ferriter 2015) one review combining the time taken for wound healing alongside a measure of satisfaction and comfort (Kedge, 2009), and two reviews using semi-structured interviews to explore participant experience of the intervention alongside intervention take-up rates (Muftin & Thompson 2013; El-Den et al., 2015).

We also extracted data on the time at which studies in each of the reviews assessed acceptability relative to the delivery of the intervention (Table 6). Two of the reviews (5%) assessed acceptability pre-intervention, which involved participants agreeing to take part in screening for a brief alcohol intervention (Littlejohn, 2006) and willingness to participate in HIV self–testing (Figueroa, Johnson, Vester & Baggaley, 2015). Seven (16%) of the reviews assessed acceptability during the intervention delivery period, while 17 (40%) assessed acceptability post-intervention. Fourteen reviews (33%) did not report when acceptability was measured, and in three (7%) of the reviews it was unclear when acceptability was

measured. Within these three reviews, it was unclear whether interpretations of intervention acceptability were based on anticipated (i.e. prospective) acceptability or experienced (i.e. concurrent or retrospective) acceptability.

Table 6: When acceptability was assessed (relative to start of intervention) reported in systematic reviews.

Assessment of acceptability (relative to start of intervention)	n
Pre intervention	2
During intervention	7
Post Intervention	17
Unclear	3
Not reported	14
Total	43

2.4.1.4 Use of theory

There was no mention of theory in relation to acceptability in any of these 43 reviews. None of the review authors proposed any link between their definitions (when present) and assessments of acceptability and existing theory or theoretical models (i.e. scientific and citable theories/models). Moreover, none of the reviews proposed any link between implicit theories and their definitions and assessments of acceptability, or theory emerging during the studies reported in the systematic reviews. No links were proposed because, by definition, an implicit theory is not articulated.

2.4.1.5 Definitions of acceptability: consensus group exercise

Extracted definitions of acceptability required a minimum of four of seven judges to endorse it as representing either an operational or conceptual definition. From the 25 extracts of text (phase 1 search results), the expert group identified 17 of the extracts as being operational definitions. Operational definitions included measureable factors such as dropout rates, all cause discontinuation, treatment discontinuation and measures of satisfaction. Some reviews indicated that acceptability was measured according to a number of indicators, such as effectiveness and side effects. The remaining eight extracted definitions were not reliably classified as either operational or conceptual and were disregarded. For the 14 extracted definitions based on the phase 2 search results, two endorsements (from three judges) was

required for a definition to be considered as operational or conceptual. Seven definitions were considered operational definitions of acceptability, three definitions were identified as conceptual and four extracts were not reliably classified as either. Conceptual definitions included: "acceptability, or how the recipients of (or those delivering the intervention) perceive and react to it" (p, 2 Brooke-Summer et al., 2015) "…patients reported being more willing to be involved" (p. 2535 Botella, Serrano, Banos & Garcia-Palacios 2015) and "women were asked if they were well satisfied, unsatisfied or indifferent or had no response" with the intervention (p. 504 Rodriguez & Gordon-Maclean 2014).

2.4.2 Study 2: Theoretical Framework of Acceptability

The process of identifying or writing explicit definitions for each of the proposed constructs in the theoretical framework of acceptability resulted in revisions to the TFA (v1) and the development of the revised TFA (v2) as we came to recognise inherent redundancy and overlap. Figure 8 presents the TFA (v2) comprising seven component constructs.

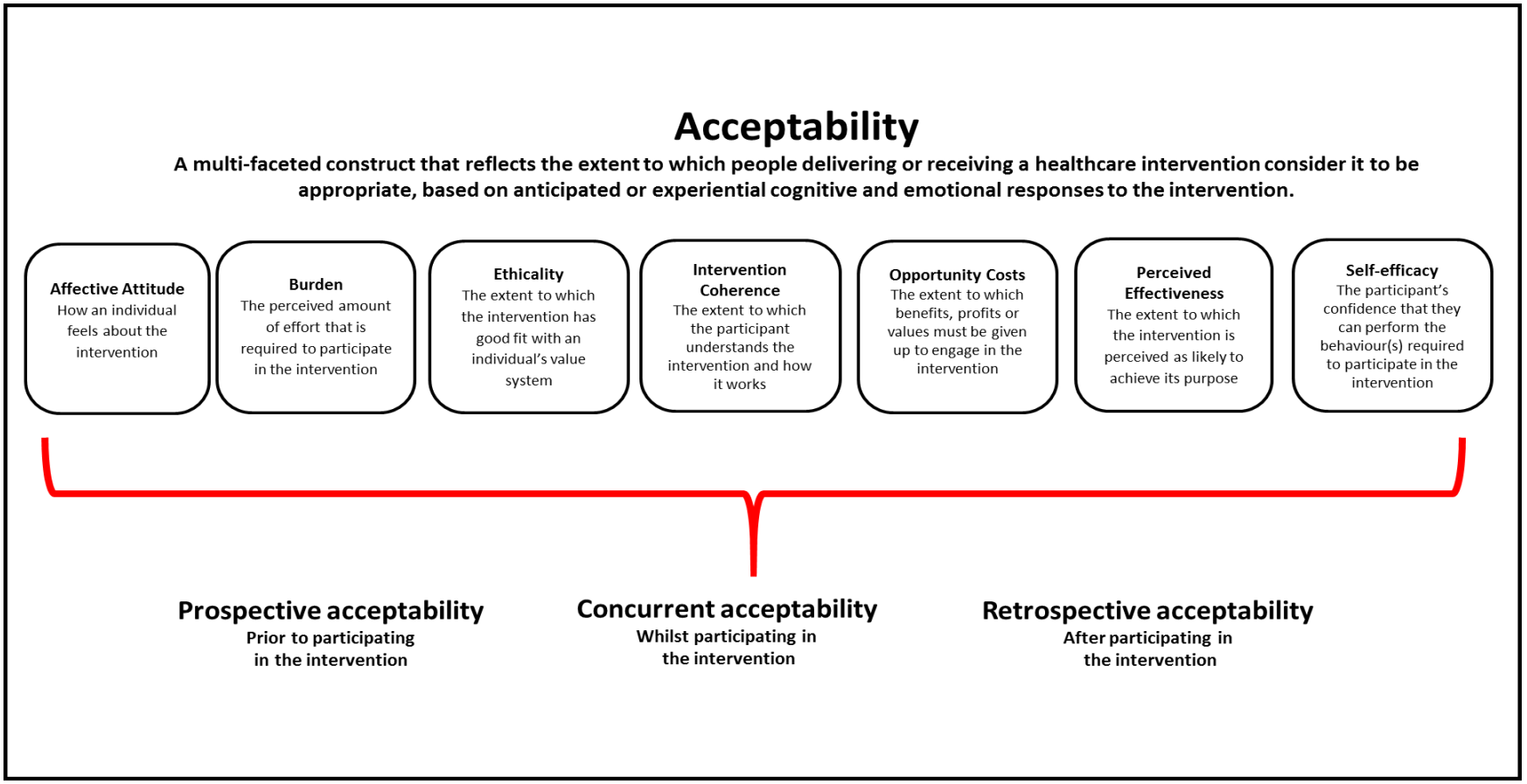

Figure 8: The theoretical framework of acceptability (v2) comprising seven component constructs.

Note: The seven component constructs are presented alphabetically with their anticipated definitions. The extent to which they may cluster or influence each of the temporal assessments of acceptability is an empirical question.

The inclusion of affective attitude as a construct in the TFA (v2) is in line with the findings of the overview of reviews, in which measures of attitude have been used to assess acceptability of healthcare interventions. Affective attitude is defined as "how an individual feels about taking part in an intervention". The definition for burden was influenced by the Oxford dictionary definition, which defines burden as a "heavy load". We define burden as "the perceived amount of effort that is required to participate in the intervention". The TFA construct of burden focuses on the burden associated with participating in the intervention (e.g. participation requires too much time or expense, or too much cognitive effort, indicating the burden is too great) rather than the individual's confidence in engaging in the intervention (see definition of self–efficacy below).

Opportunity costs are defined as "the extent to which benefits, profits, or values must be given up to engage in an intervention", taken from the health economics literature. We changed the construct label of "ethical consequences" to "ethicality", based on the Oxford dictionary definition of ethical, defined as "morally good or correct". In the TFA (v2) ethicality is defined as "the extent to which the intervention has good fit with an individual's value system".

On reviewing the control items within the Illness Perception Questionnaire –Revised (IPQ-R), we realised all items focus on an individual's perceived control of the illness for example, "there is a lot I can do to control my symptoms" (p. 5 Moss-Morris et al., 2002). These items did not reflect the construct of personal control as we intended. We therefore considered how the relationship between confidence and personal control has been defined. Within the psychology literature the construct of self-efficacy has been defined in relation to confidence. Numerous authors have proposed that self-efficacy reflects confidence in the ability to exert control over one's own motivation, behaviour, and social environment (Bandura 1977). We therefore considered a body of literature that groups control constructs

together (Michie et al., 2005) Self-efficacy is often operationalised as an individual's confidence in his or her capability of performing a behaviour (Lee & Bobko 1994; Clement 1987) In TFA (v2) we define the construct as "the participant's confidence that they can perform the behaviour(s) required to participate in the intervention".

The construct "intention" was removed from TFA (v2). This decision was taken upon a review of the extracted definitions of intention against our conceptual definition of acceptability. The Theory of Planned Behaviour (Ajzen 1991) definition of intention states, "Intentions are assumed to capture the motivational factors that influence a behaviour; they are indications of how hard people are willing to try, of how much of an effort they are planning to exert, in order to perform the behaviour" (p.181). We propose that all other constructs within the TFA (v2) could be predictors of intention (e.g. willingness to participate in an intervention). If acceptability (assessed by measuring the component constructs in the TFA) is proposed to be a predictor of intention (to engage in the intervention), to avoid circularity it is important to retain a distinction between acceptability and intention.

We reviewed the definitions of the component constructs in TFA (v2) against our conceptual definition of acceptability to consider whether we were overlooking any important constructs that could further enhance the framework of acceptability. Drawing on our knowledge of health psychology theory we discussed how perceptions of acceptability may be influenced by participants' and healthcare professionals' understanding of a healthcare intervention and how it works in relation to the problem it targets. As a result, we propose an additional construct that we labelled "intervention coherence". Our definition for this construct was informed by reviewing the illness perceptions literature. Moss-Morris et al., (2002) defined "illness coherence" as "the extent to which a patient's illness representation provided a coherent understanding of the illness" (p. 2). Applying this definition within the TFA (v2), the construct of intervention coherence reflects an individual's understanding of the perceived level of 'fit' between the components of the intervention and the intended aim

of the intervention. We define intervention coherence as "the extent to which the participant understands the intervention, and how the intervention works". Intervention coherence thus represents the face validity of the intervention to the recipient or deliverer.

Next we considered the applicability and relevance of the construct label "experience" for inclusion in the TFA (v2). Four of the constructs (affective attitude, burden, opportunity costs and perceived effectiveness) could include a definition that referred to acceptability of the intervention as experienced (Table 7 (e.g. opportunity costs- the benefits, profits, or values that were given up to engage in the intervention) as well as a definition that referred to the intervention as anticipated (as defined above). In TFA (v1) 'experience' was being used to distinguish between components of acceptability measured pre- or post-exposure to the intervention. In this sense experience is best understood as a characteristic of the assessment context rather than a distinct construct in its own right. We therefore did not include 'experience' as a separate construct in the TFA (v2). However, the distinction between anticipated and experienced acceptability is a key feature of the TFA (v2). We propose that acceptability can be assessed from two temporal perspectives (i.e. prospective/ forward-looking; retrospective / backward-looking) and at three different time points in relation to the intervention delivery period. The time points are (1) pre-intervention delivery (i.e. prior to any exposure to the intervention), (2) during intervention delivery (i.e. concurrent assessment of acceptability; when there has been some degree of exposure to the intervention and further exposure is planned), and (3) post-intervention delivery (i.e. following completion of the intervention or at the end of the intervention delivery period when no further exposure is planned). This feature of the TFA is in line with the findings of the overview of reviews in which review authors had described the time at which acceptability was assessed as pre–intervention, during the intervention and post-intervention.

Table 7: Definitions of the component constructs in the Theoretical framework of acceptability

Theoretical Framework of acceptability (TFA)	Definition
Affective Attitude	Anticipated Affective Attitude: How an individual feels about the intervention, prior to taking part Experienced Affective Attitude: How an individual feels about the intervention, after taking part
Burden	Anticipated burden: The perceived amount of effort that is required to participate in the intervention Experienced burden: the amount of effort that was required to participate in the intervention
Ethicality	The extent to which the intervention has good fit with an individual's value system
Intervention Coherence	The extent to which the participant understands the intervention and how it works
Opportunity Costs	Anticipated opportunity cost : The extent to which benefits, profits, or values must be given up to engage in the intervention Experienced opportunity cost: the benefits, profits or values that were given up to engage in the intervention
Perceived effectiveness	Anticipated effectiveness: the extent to which the intervention is perceived to be likely to achieve its purpose Experienced effectiveness: the extent to which the intervention is perceived to have achieved its intended purpose
Self-efficacy	The participant's confidence that they can perform the behaviour(s) required to participate in the intervention

2.5 Discussion

We have presented the development of a theoretical framework of acceptability that can be used to guide the assessment of acceptability from the perspectives of intervention deliverers and recipients, prospectively and retrospectively. We propose that acceptability is a multi-faceted construct, represented by seven component constructs: affective attitude, burden, perceived effectiveness, ethicality, intervention coherence, opportunity costs, and self-efficacy.

2.5.1 Overview of reviews

To our knowledge, this overview represents the first systematic approach to identifying how the acceptability of healthcare interventions has been defined, theorised and assessed. Most definitions offered within the systematic reviews focused on operational definitions of acceptability. For instance, number of dropouts, treatment discontinuation and other measurable variables such as side effects, satisfaction and uptake rates were used to infer the review authors' definitions of acceptability. Measures applied in the reviews were mainly measures of observed behaviour. Whilst the use of measures of observed behaviour does give an indication of how many participants initially agree to participate in a trial versus how many actually complete the intervention, often reasons for discontinuation or withdrawal are not reported. There are several reasons why patients withdraw their participation that may or may not be associated with acceptability of the intervention. For example, a participant may believe the intervention itself is acceptable, however they may disengage with the intervention if they believe that the treatment has sufficiently ameliorated or cured their condition and is no longer required.

In the overview, only eight of 43 reviews combined observed behavioural and self-report measures in their assessments of acceptability. A combination of self–report measures and observed behaviour measures applied together may provide a clearer evaluation of intervention acceptability.

The overview shows that acceptability has sometimes been confounded with the construct of satisfaction. This is evident from the reviews that claim to have assessed acceptability using measures of satisfaction. However, while satisfaction with a treatment or intervention can only be assessed retrospectively, acceptability of a treatment or intervention can be assessed either prospectively or retrospectively. We therefore propose that acceptability is different to satisfaction as individuals can report (anticipated) acceptability prior to engaging in an intervention. We argue that acceptability can be and should be assessed prior to engaging in an intervention.

There is evidence that acceptability can be assessed prior to engaging in an intervention (Sidani et al., 2009). Sidani and colleagues propose that there are several factors that can influence participants' perceptions of the acceptability of the intervention prior to participating in the intervention, which they refer to as treatment acceptability. Factors such as participants' attitudes towards the intervention, appropriateness, suitability, convenience and perceived effectiveness of the intervention have been considered as indicators of treatment acceptability.

2.5.2 Theoretical framework of acceptability

The overview of reviews revealed no evidence of the development or application of theory as the basis for either operational or conceptual definitions of acceptability. This is surprising given that acceptability is not simply an attribute of an intervention but is rather a subjective evaluation made by individuals who experience (or expect to experience) or deliver (or expect to deliver) an intervention. The results of the overview highlight the need for a clear, consensual definition of acceptability. We therefore sought to theorise the concept of acceptability in order to understand what acceptability is (or is proposed to be) and what its components are (or are proposed to be).

The distinction between prospective and retrospective acceptability is a key feature of the TFA, and reflective of the overview of review results, which showed that acceptability has been assessed, before, during and after intervention delivery. We contend that prior to

experiencing an intervention both patients and healthcare professionals can form judgements about whether they expect the intervention to be acceptable or unacceptable. These judgements may be based on the information provided about the intervention, or other factors outlined by Sidani et al., (2009) in their conceptualisation of treatment acceptability. Assessment of anticipated acceptability prior to participation can highlight which aspects of the intervention could be modified to increase acceptability, and thus participation.

Researchers need to be clear about the purpose of acceptability assessments at different time points (i.e. pre-, during or post-intervention) and the stated purpose should be aligned to the temporal perspective adopted (i.e. prospective or retrospective acceptability). For example, when evaluating acceptability during the intervention delivery period (i.e. concurrent assessment) researchers have the option of assessing the experienced acceptability up to this point in time or assessing the anticipated acceptability in the future. Different temporal perspectives change the purpose of the acceptability assessment and may change the evaluation, e.g. when assessed during the intervention delivery period an intervention that is initially difficult to adjust to may have low experienced acceptability but high anticipated acceptability. Similarly post-intervention assessments of acceptability may focus on experienced acceptability based on participants' experience of the intervention from initiation through to completion, or on anticipated acceptability based on participants' views of what it would be like to continue with the intervention on an on-going basis .(e.g. as part of routine care). These issues are outside the scope of this paper but we will elaborate further in a separate publication presenting our measures of the TFA (v2) constructs.

2.5.3 Limitations

Although we have aimed to be systematic throughout the process, certain limitations should be acknowledged. The overview of reviews included systematic review papers that claimed to assess the acceptability of an intervention. It is possible that some papers were not identified by the search strategy as some restrictions were put in place to make the overview feasible. Nonetheless, the overview does provide a useful synthesis of how acceptability of

healthcare interventions has been defined, assessed and theorised in systematic reviews of the effectiveness of healthcare interventions. In particular, the review highlights a distinct need to advance acceptability research.

A key objective of this paper was to describe the procedures by which the TFA were developed. Often methods applied to theorising are not clearly articulated or reported within literature (Carpiano & Dayley 2006). We have been transparent in reporting the methods we applied to develop the TFA. Our work in theorising the concept of acceptability follows the process outlined by Hox (1997). However, the theorising process was also iterative as we continuously reviewed the results from the overview of reviews when making revisions from TFA (v1) to TFA (v2). We carefully considered the constructs in both TFA (v1) and TFA (v2) and how they represented our conceptual definition of acceptability. We also relied on and applied our own knowledge of health psychology theories in order to define the constructs. Given the large number of theories and models that contain an even larger number of constructs that are potentially relevant to acceptability this deductive process should be viewed as inevitably selective and therefore open to bias.

2.5.4 Implications: The use of the TFA

We propose the TFA will be helpful in assessing the acceptability of healthcare interventions within the development, piloting and feasibility, outcome and process evaluation and implementation phases described by the MRC guidance on complex interventions (Craig et al., 2008; Moore et al., 2015). Table 8 outlines how the TFA can be applied qualitatively and quantitatively to assess acceptability in the different stages of the MRC intervention development and evaluation cycle.

Table 8: Proposed TFA methods applicable to the full complex intervention development and evaluation cycle

Development Phase	**Pilot and feasibility Phase *(before going to full scale trial)***	**Evaluation Phase *(trial context)***	**Implementation Phase *(scalability)***
Qualitative E.g. Semi-structured interviews or focus groups based on the TFA constructs with stakeholders to help guide decisions about the form, content and delivery mode of the proposed intervention components.	Qualitative E.g. Semi-structured interviews or focus groups based on the TFA constructs with potential intervention recipients and deliverers. These should focus on the anticipated acceptability of content and mode of delivery of the intervention. Analysis may reveal aspects of intervention to modify.	Qualitative E.g. Semi-structured interviews or focus groups on the TFA constructs with intervention recipients and deliverers about anticipated and/ or experienced acceptability. For a longitudinal analysis acceptability semi-structured interviews or focus groups should be conducted pre-intervention, during the intervention delivery period (concurrent) and post- intervention. E.g. Reflective diary entries, applying the TFA construct labels for experienced acceptability to guide participant diary entries.	Qualitative E.g. Semi-structured interviews or focus groups based on the TFA constructs to assess experienced acceptability of the intervention/ service for recipients and deliverers. E.g. Reflective diary entries, applying the TFA construct labels for experienced acceptability to guide participant diary entries
Quantitative E.g. Questionnaires or visual analogue rating scales based on the TFA constructs to assess anticipated acceptability amongst potential intervention deliverers or recipients.	Quantitative E.g. Questionnaires or visual analogue rating scales based on the TFA constructs to assess anticipated acceptability amongst potential intervention deliverers or recipients. These measures should focus on the anticipated acceptability of content and mode of delivery of the intervention. Analysis may reveal aspects of intervention to modify.	Quantitative E.g. Questionnaires or visual analogue rating scales based on the TFA constructs to assess experienced and/ or anticipated acceptability for intervention recipients and deliverers. For a longitudinal analysis acceptability measures should be administered pre-intervention, during the intervention delivery period (concurrent) and post-intervention.	Quantitative E.g. Questionnaires or visual analogue rating scales on the TFA constructs to assess the experienced acceptability of the intervention/ service for recipients and deliverers.

The development phase of an intervention requires researchers to identify or develop a theory of change (e.g. what changes are expected and how they will be achieved) and to model processes and outcomes (e.g. using analogue studies and other evidence to identify the specific outcomes and appropriate measures) (Craig et al., 2008). Explicit consideration of the acceptability of the intervention, facilitated by the TFA, at this stage would help intervention designers make informed decisions about the form, content and delivery mode of the proposed intervention components.

The MRC framework suggests that acceptability should be assessed in the feasibility phase (Craig et al., 2008). The TFA will help intervention designers to operationalise this construct and guide the methods used to evaluate it, e.g. by adapting a generic TFA questionnaire or an interview schedule that we have developed (to be published separately). A pilot study often represents the first attempt to deliver the intervention and the TFA can be used at this stage to determine whether anticipated acceptability, for deliverers and recipients of the intervention, corresponds to their experienced acceptability. Necessary changes to aspects of the intervention (e.g. if recruitment was lower or attrition higher than expected) could be considered in light of experienced acceptability.

In the context of a definitive randomised controlled trial the TFA can be applied within a process evaluation to assess anticipated and experienced acceptability of the intervention to people receiving and/or delivering the healthcare intervention at different stages of intervention delivery. Findings may provide insights into reasons for low participant retention and implications for the fidelity of both delivery and receipt of the intervention (Rixon et al., 2016). High rates of participant dropout in trials may be associated with the burden of participating in research (e.g. filling out long follow–up questionnaires) and do not always reflect problems with acceptability of the intervention under investigation (Eborall, Stewart, Cunningham-Burley, Price & Fowkes 2011; Sanders et al., 2012). Insights about acceptability from process evaluations may inform the interpretation of trial findings (e.g. where the primary outcomes were not as expected, a TFA assessment may indicate whether

this is attributable to low acceptability leading to low engagement, or an ineffective intervention).

The TFA can also be applied to assess acceptability in the implementation phase when an intervention is scaled-up for wider rollout in 'real world' healthcare settings (e.g. patient engagement with a new service being offered as part of routine care).

2.6 Conclusion

The acceptability of healthcare interventions to intervention deliverers and recipients is an important issue to consider in the development, evaluation and implementation phases of healthcare interventions. The theoretical framework of acceptability is innovative and provides conceptually distinct constructs that are proposed to capture key dimensions of acceptability. We have used the framework to develop quantitative (questionnaire items) and qualitative (topic guide) instruments for assessing the acceptability of complex interventions (Wickwar et al., 2016) (to be published separately). We offer the proposed multi-construct Theoretical Framework of Acceptability to healthcare researchers, to advance the science and practice of acceptability assessment for healthcare interventions.

3 What reasons do participants report for declining to participate in a randomised controlled trial? A semi-structured interview study

3.1 Chapter overview

This chapter describes results from a short semi-structured interview study which was embedded within a single–masked randomised controlled trial (RCT) comparing a patient-initiated treatment service for Benign Essential Blepharospasm (BEB) and Hemifacial Spasm (HFS) to standard care (Wickwar et al., 2016). The aim of the current study was to gain an understanding of the reasons eligible participants refused to participate in the BEB and HFS RCT, specifically to identify whether refusal was associated with the acceptability of the intervention or other factors. The data was analysed by applying principles from the content analysis method, with the Theoretical Framework of Acceptability (TFA) as the deductive coding framework.

3.1.1 Introduction

Randomised controlled trials (RCTs) are considered to be the gold standard for providing evidence regarding the effectiveness of healthcare interventions (MRC, 2000; Craig et al., 2008). The success of an RCT is influenced by the recruitment and retention of participants (Bower et al., 2014; Craig et al., 2008; Eborall et al., 2011; Hunninghake, Darby & Probstfield 1987). However, between 45% and 80% of RCTs fail to meet their initial recruitment target (Sully, Julious & Nicholl 2013).

There are a number of consequences for a RCT as a result of poor recruitment. First, the statistical power required to indicate a difference between trial arms will be impacted, posing threats to both the internal and external validity of findings (Halpern, Karlawish & Berlin 2002; Prescot et al., 1999). As a result, a trial's findings may not be representative or generalisable to the wider population (Abraham, Young & Solomon, 2006; Blanch et al., 2009; Rupp et al., 2002; Simon 2001; Wright et al., 2006; Vist et al., 2005). Second, poor

recruitment may result in delays in completion and prolonged recruitment which can lead to increased study costs (Sully et al., 2013). Third, poor recruitment can also impact participants already enrolled in the study, by continuing interventions that are ineffective or harmful to patients (Drueke, Descamps-Latcha & Locatelli, 2013; Gul & Ali, 2013; Halpern et al., 2002).

The United Kingdom Clinical Research Collaboration (UKCRC) has identified a key priority in advancing methodological research in trials; the consideration of "methods to boost recruitment in trials" (p.4 Smith, Hickey, Clarke, Blazeby & Williamson 2014). Evidently, researchers and trialists need to understand the causes of poor recruitment and how these may be addressed in order to develop possible solutions to enhance recruitment.

3.1.2 Guidance on Recruitment in RCTs

The importance of achieving desired recruitment rates are highlighted in a number of guidelines (Craig et al., 2008; Moher et al., 2010). The Medical Research Council (MRC) provides guidance on designing, piloting, evaluating and implementing complex interventions (MRC 2000; Craig et al., 2008; Moore et al., 2015) (see section 1 1.1 page 19 for details). The 2008 MRC guidance document emphasises a key focus within the pilot and feasibility phase, to include "testing procedures for their acceptability, estimating the likely rates of recruitment and retention of subjects, and the calculation of appropriate sample sizes" (p.10 Craig et al., 2008).

The importance of recruitment is also highlighted within the Consolidated Standards of Reporting Trials (CONSORT) guidelines, which encourage clear and transparent reporting of published trials (Moher et al., 2001; 2010). CONSORT specify a checklist of 25 items and a flow diagram representing the information that should be included in published reports of RCTs. Acceptability is considered in item 13 which refers to participation flow and it is recommended that researchers present a flow diagram of participant progress through a trial, including number of participants assessed for "enrollment, intervention allocation, follow-up and data analysis" (p.2 Moher et al., 2010). When reporting numbers enrolled, the

CONSORT guidance recommends researchers report the number of participants assessed for eligibility, including a breakdown of participants that did not meet the eligibility criteria, declined to participate and excluded for other reasons. Moher and colleagues (2010) emphasise "the proportion of eligible participants who refuse to enter the trial is relevant for the generalisability of the trial, as it may indicate preferences for or acceptability of an intervention" (p.21). The rationale for documenting the flow of participation through each stage of a RCT is to ensure accurate interpretation of the results (for generalisability, or external validity) and assessments of internal validity. Whilst studies may report the number of participants who refuse to participate, the specific reasons for refusal are not always reported (Barnes et al., 2012; Eborall et al., 2011; Gul & Ali, 2013).

Findings from the overview of reviews reported in chapter 2 (see section 2.4.1.3 page 49) revealed that 23 of the included systematic reviews used various indicators of observed behaviour to assess acceptability. These included the total trial dropout rate, all cause-discontinuation (with reasons), and trial withdrawal rates (i.e. Arrowsmith et al., 2013; Berlin et al., 2014; Cipriani et al., 2009). Review authors made the assumption that low intervention acceptability, explained low participation rates and high dropout rates in these trials. However, review authors failed to indicate how many (or what percentage of) participants would need to drop out or discontinue treatment in order for the intervention to be judged unacceptable.

Furthermore, as the overview of reviews found, reasons for discontinuation or withdrawal are often not reported. There may be a number of reasons why a participant may refuse to participate in an intervention or withdraw their participation other than acceptability of the intervention. For example, a participant may feel the intervention itself is acceptable in treating their condition, however participating in the trial itself is unacceptable as it is too burdensome (e.g. completing long questionnaires).

3.1.3 Previous research on exploring participants' reasons for refusal to participate in RCTs

Identified barriers associated with reasons for refusal to participate in RCTs have included general concerns with the research process and trial setting, concerns about randomisation, and preference for or against a particular treatment (Eborall et al., 2011; Prescott et al., 1999; Sanders et al., 2012).

Qualitative studies have been considered key in addressing the problems of poor participation within RCTs (Whybrow, Pickard, Hrisos & Rapley 2017; Fletcher, Gheorghe, Moore, Wilson & Damery 2012). Examples of published qualitative studies that have specifically considered the reasons why eligible participants have declined to participate in a trial are described below (Barnes et al., 2016; Brintnall –Karabelas et al.,2011; Locock & Smith 2011; Sanders et al., 2011).

Brintnall-Karabelas et al., (2011) conducted telephone interviews with 965 patients who were eligible, but declined to participate, in a range of studies with the National Institute of Mental Health program. Reasons for declining were categorised into five groups: protocol issues (36%) (e.g. length of studies, concerns about symptoms getting worse); inconvenience and lifestyle issues (33%) (e.g. inability to participate during work hours, burden of travelling to clinical centre); other reasons (26%) (e.g. seeking standard treatment instead, concerns with patient confidentiality); financial reasons (3%) and lastly, decision to participate in other trial (2%). Findings from Brintnall-Karabelas et al., (2011) indicate that a range of reasons for non–participation were associated with both the research process and the interventions themselves, suggesting that the treatments offered within the interventions may not have been perceived as acceptable.

Barnes et al., (2012) also explored the reasons why a sample of 25 eligible participants declined to participate in mental health trials in England and Scotland. Analysis of the interview data categorised reasons for non-participation into four main themes: "previous

counselling experiences, negative feelings about the therapeutic encounter, perceived ineligibility, and misunderstandings about the research" (p. 370). Barnes et al., (2012) concluded that the themes identified indicate that reasons for refusal were associated with the acceptability of the treatment interventions and factors relating to the research process.

In a study by Locock and Smith (2011), trials covered a range of healthcare conditions (e.g. cancers, long-term conditions, mental health) and types of interventions (e.g. surgery, prevention, screening). Reasons for not taking part were summarised into two broad categories: personal dis-benefit and other reasons. The personal dis-benefit category included reasons relating to the desire for a potentially effective drug; concern about placebo-controlled trials, concerns about the side-effects, preference of the standard treatment intervention, the intervention was considered too stressful, personal inconvenience of participation (e.g. extra appointments, burden of the intervention) and unhappy that the treatment could be withdrawn after the trial. Other reasons included the trial information being perceived as off-putting or too complex, participants having inadequate information to make a decision, scepticism about the value of the intervention being tested, and suspicion of trial source funding. The findings reported by Locock and Smith (2011) are similar to those reported by Barnes et al., (2016) and Brintnall –Karabelas et al., (2011), indicating that refusal to participate is due to both the intervention and trial context.

Sanders and colleagues (2012) completed a qualitative study nested within a larger RCT to explore the barriers to participation and adoption of telehealth and telecare from participants who declined to participate in the Whole System Demonstrator (WSD) project. Barriers associated with non-participation were grouped into the following themes: requirements for technical competence and operation of equipment; threats to identity, independence and self-care; and expectations and experiences of disruption to services. The themes identified indicate that barriers for non-participation were associated with the intervention itself.

3.1.4 Applying the Theoretical Framework of Acceptability to understand participant reasons for refusal

Although the above studies have considered the reasons for refusal and non-participation in the context of RCTs only Barnes et al., (2012) framed their findings in terms of problems with acceptability. Brintnall-Karabelas et al., (2011), Locock and Smith (2011) and Sanders et al., (2012) did not consider whether refusal was associated with intervention acceptability. Sekhon, Cartwright and Francis (2017) defined acceptability as:

> *" a multi-faceted construct that reflects the extent to which people delivering or receiving a healthcare intervention consider it to be appropriate, based on anticipated or experienced cognitive and emotional responses to the intervention" (p.1)*

However, against the definition of acceptability proposed by Sekhon et al., (2017) the findings from all four studies discussed above (Barnes et al., 2016; Brintnall –Karabelas et al., 2011; Locock & Smith 2011; Sanders et al., 2012) suggest that acceptability was one of the reasons for refusal to participate.

Understanding if reasons for refusal are associated with intervention acceptability or other factors (such as the trial context or the research process) can help researchers and trialists to concentrate their efforts to design more acceptable interventions and, in turn, attract eligible participants to consent and be retained in future studies (Briel et al., 2016; Eldridge et al., 2016; Hubbard et al., 2016; Hughes-Morley et al., 2016).

As described in chapter 2 (see section 2.4.2 page 52) the Theoretical Framework of Acceptability (TFA) consists of seven component constructs: Affective attitude, Burden, Perceived effectiveness, Ethicality, Intervention coherence, Opportunity costs and Self-efficacy. Several of the constructs proposed in the TFA are consistent with the reasons for refusal reported in the studies described above. Table 9 displays a summary of the main findings from the studies discussed in section 3.1.3 and where the reported reasons for

refusal may be associated with acceptability, based on one of the seven TFA constructs or other factors.

Table 9: Study findings associated with acceptability of the intervention or other factors

Study	Reasons for refusal	Associated with intervention acceptability or other factors
Brintnall-Karabelas et al., (2011)	- protocol issues	Other
	- inconvenience and lifestyle issues	Acceptability (Burden)
	- other reasons (e.g. seeking standard treatment instead	Acceptability (Perceived effectiveness)
	- financial reasons	Other
	- decision to participate in other trial	Other
Barnes et al., (2012)	- Previous counselling experiences	Other
	- Negative feelings about the therapeutic encounter	Acceptability (Affective attitude)
	- perceived ineligibility,	Other
	- misunderstandings about the research	Other
Sanders et al., (2012)	- Requirements for technical competence and operation of equipment	Acceptability (Self-efficacy /intervention coherence)
	- Threats to identity, independence and self-care	Other
	- ***Expectations and experiences of disruption to services***	Acceptability (Perceived effectiveness)
Locock and Smith (2011)	- Desire for a potentially effective drug	Acceptability (perceived effectiveness)
	- Concern about placebo-controlled trials	Other
	- ***Concerns about the side-effects***	Acceptability (Ethicality)
	- ***Preference of the standard treatment intervention***	Acceptability (Affective attitude)
	- ***Intervention was considered too stressful***	Acceptability (Perceived effectiveness)
	- ***Personal inconvenience of participation (e.g. extra appointments, burden of the intervention)***	Acceptability (Burden)
	- Unhappy that the treatment could be withdrawn after the trial	Other
	- Trial information off-putting or too complex	Other
	- Participants having inadequate information to make a decision,	Other
	- ***Scepticism about the value of the intervention being tested***	Acceptability (Perceived effectiveness)
	- Suspicion of trial source funding.	Other

Note: Reasons presented in bold font are consistent with constructs from the TFA.

The TFA has been theorised to assess acceptability from the perspectives of intervention recipients and intervention deliverers across three temporal perspectives: prospective, concurrent or retrospective depending on the timing of assessment in relation to engagement with the intervention.

In this study, it is proposed that the application of the TFA may offer an informative approach to investigate reasons for non-participation more systematically. The TFA was applied to explore the reasons given by eligible patients for declining to participate in a RCT comparing a new service model with standard care, for managing Benign Essential Blepharospasm (BEB) and Hemifacial Spasm (HFS) (Wickwar et al., 2016). Thus, in this study the TFA offered a prospective assessment of acceptability prior to participants' engagement with the intervention.

3.1.5 Aim and objectives

The aim of this study was to identify the reasons eligible participants reported for declining to participate in the BEB and HFS RCT (Wickwar et al., 2016).

To address this aim, the specific objectives of this study were to:

1. Assess the recorded reasons given by all eligible patients for declining to participate in the BEB and HFS RCT when approached for consent
2. Explore qualitatively, in a short interview, the reasons given for declining to participate in the BEB and HFS RCT in a sub-set of eligible patients
3. Collate findings from both approaches to determine if reasons for declining to participate in the BEB and HFS trial were associated with anticipated acceptability of the intervention or other factors.

3.2 Methods

3.2.1 Setting: A randomised controlled trial of a patient–initiated treatment service for Benign Essential Blepharospasm (BEB) and Hemifacial Spasm (HFS).

This study explored participants reasons for refusal to participate in a RCT comparing a patient–initiated treatment service for (BEB) and (HFS) to standard care (Wickwar et al., 2016). Both BEB and HFS are debilitating eye conditions which can cause functional blindness, poor quality of life and a range of appearance related concerns (Wickwar et al., 2016). Treatment to alleviate spasms for both BEB and HFS involves cyclical treatment with botulinum toxin injections (Jinnah et al., 2013). The standard model of patient care consists of routine fixed-interval scheduled treatment cycles, in which patients receive the botulinum toxin injections every 3 to 4 months (National Health Service 2017). Although the botulinum toxin injections offer temporary relief, the effect of the treatment cycle is variable and has been shown to have negative consequences for some patients, with some patients having unnecessary treatment injections and others experiencing distress for longer, as symptoms often return before the scheduled treatment appointment (Wickwar et al., 2016).

The intervention evaluated in the BEB and HFS RCT consisted of a patient-led model of care in which patients have the opportunity to take control of their treatment schedule, by booking their treatment appointments when they feel it is necessary. The patient-led model of care "has the potential to reduce morbidity and disability in patients with a short-term response to botulinum toxin" (p. 2 Wickwar et al., 2016).

3.2.2 Study design

This qualitative study utilised semi-structured interviews to explore the reasons eligible participants reported for declining to participate in the BEB and HFS trial.

3.2.3 Ethical approval

The interview study, embedded within the BEB and HFS RCT, received full ethical approval from Moorfields Eye Hospital NHS Trust (Ref: 15/LO/0439).

3.2.4 Sampling and Recruitment

All eligible participants (see Table 10 for participant eligibility criteria) aged 18 years or over attending the out-patient botulinum toxin clinic at Moorfields Eye Hospital NHS Foundation Trust received a letter of invitation and patient information sheet describing the BEB and HFS RCT (Appendix E).

Table 10: BEB and HFS Trial participant eligibility criteria

Inclusion criteria	Exclusion criteria
Patient: - aged 18 or over - receives a stable does of botulinum toxin treatment (receiving treatment over two previous cycles free of side effects) - has capacity to give informed consent	Patient: - has significant comorbidities - unable to communicate fluently in written or spoken English

3.2.4.1 Recorded reasons for declining to participate

Participants were initially approached about participating in the BEB and HFS RCT at their botulinum treatment appointment between September 2015 and June 2017. All participants that refused to participate were asked to give a reason to explain why they declined to participate.

3.2.4.2 Semi-structured interview study

From the participants that declined, a sub-set of participants were approached between September 2015 and February 2016 to take part in a short interview to explore their reasons for refusal. The study aimed to recruit a minimum of 10 participants. The recruitment of participants were opportunistically sampled and depended on the availability of the participants approached.

3.2.5 Materials

1.1.1.1 Recorded reasons for declining to participate

The Research Fellow (SW) and Researcher (MS) asked the same question to all eligible patients who met the inclusion criteria but decided not to participate in the trial:

> "Would you mind telling me why you decided not to participate in this study?"

1.1.1.2 Semi-structured interview study

The topic guide was developed by the primary researcher in collaboration with the supervisory team (JF and MC) and two research fellows (SW and HMB) working on the BEB and HFS trial. The topic guide included six questions to explore participant reasons for not taking part in the trial. The first question asked participants why they decided not to participate in the study. The remaining questions focused on participants' thoughts on the patient information provided that described the study, participant's thoughts on patients being able to book their own appointment, participant's thoughts on standard care, and whether participants would consider participating in other research studies. The last question asked participants how acceptable they felt the standard care service was. The questions were kept broad in scope to best explore in a short interview the reason why patients did not want to take part in the trial (Figure 1).

1. Would you mind telling me why you decided not to participate in the study?
2. Having read the information sheet, what did you like or dislike about the study?
3. What do you think about patients being able to book their own appointments?
4. What do you think about healthcare professionals deciding when a patient should have their treatment?
5. Do you think you would participate in other studies if they suited your needs better?
6. Overall, how acceptable do you think the current system is?

Figure 9: Topic guide Reasons for refusal to participate

3.2.6 Procedure

All eligible participants were approached on the day of their routine clinic appointment by either the Research Fellow (SW) or Researcher (MS) to participate in the BEB and HFS

trial. If participants declined to participate they were asked to provide a reason which was recorded on a local site log and updated on the recruitment spreadsheet.

A sub-set of participants were approached to take part in a short interview study exploring the reasons why patients declined to participate. Participants were informed that the interview would last no longer than 15 minutes and that the purpose of the interview was to gain an understanding of the reasons why eligible participants declined to participate in the trial. If participants were willing to take part, written consent was obtained before the interview was undertaken (Appendix F)**.** All interviews were conducted by the researcher and were digitally recorded and transcribed by a professional transcribing company. Transcripts were checked by the researcher for accuracy and any identifiable data were removed.

3.2.7 Analysis

3.2.7.1 Recorded reasons for declining to participate

Recorded responses for reasons given for refusal to participate were analysed descriptively, by collating and grouping the responses according to similarity. The groupings were then assigned labels to reflect majority of the responses.

3.2.7.2 Semi –structured interview study

All interview transcripts were analysed by applying principles of the qualitative content analysis method (Elo & Kyngas, 2008; Hsieh & Shannon, 2005; Weber 1990). The rationale for the chosen method of analysis is described in detail in Appendix G.

Content analysis as a method has been defined as "a systematic coding and categorizing approach used for exploring large amounts of textual information unobtrusively to determine trends and patterns of words used, their frequency, [and] their relationships" (p. 400 Vaismoradi, Turunen & Bondas 2013). Qualitative content analysis has been described as a

systematic and flexible method for describing qualitative data (Joffe & Yardley 2004; Schreier 2014).

Hsieh and Shannon (2005) propose three types of qualitative content analysis: conventional content analysis, summative content analysis and directed (deductive) content analysis. These approaches differ in the coding scheme applied to analyse data, origin of the code and the trustworthiness of the coding. Within the conventional content analysis method the coding categories are generated from the data. In contrast, in the summative content analysis method there are two key stages involved in analysing the data. The first stage, labelled manifest analysis, the key observable words of interest in a text are counted and compared. In the second stage, a latent analysis is applied to interpret and infer the implicit underlying context of the key words identified in stage one. The directed content analysis approach is applied when the goal of the study is to validate an existing theory or theoretical framework (Burns & Grove, 2005; Hsieh & Shannon, 2005). This approach has also been referred to as deductive content analysis (Joffe & Yardley 2004; Schrier 2014). In a deductive content analysis, operational definitions of the constructs in a theory or framework are applied as the initial coding categories (Hsieh & Shannon, 2005; Potter & Levine- Donnerstein, 1999). For example, when a section of a transcript (e.g. key words, sentences or phases) matches a particular definition of a construct, the data is coded into that category of the coding framework.

Schreier (2014) suggests that the coding framework can be presented as the main result in the form of a table (e.g. the rows would represent the participants, the columns would represent the construct and the cells would consist of the data in the form of quotations). The table would be accompanied with text describing the interpretation of the quotes. Findings can also incorporate quantitative findings, in the form of frequency counts a particular code across all participant transcripts (Joffe & Yardley 2004; Schreier 2014). Frequency counts

thus provide a way to explore similarities and differences between participants and the relationship between the different categories (Gibbs, 2008).

In this study principles of the deductive content analysis approach were adopted for the analysis of the interview transcripts in which the TFA was applied as the coding framework. The main purpose of applying this approach was to determine whether constructs reflecting the perceived acceptability of the intervention were reported as reasons for declining to participate. The analysis in this study included two key steps:

1. *Deductive Coding:* All transcripts were analysed deductively against the seven TFA construct definitions and an additional "other" category, to allow key text from the transcript (e.g. words, sentences and phrases) that could not be coded into the TFA constructs to still be considered (Table 11). The researcher initially analysed all transcripts and two additional researchers (JF and MC) independently coded two randomly selected transcripts each for the assessment of inter-rater reliability.

Table 11: Definitions of the component constructs in the Theoretical Framework of Acceptability and 'other' category

Theoretical Framework of Acceptability (TFA)	Definition
Affective Attitude	Anticipated Affective Attitude: How an individual feels about the intervention, prior to taking part Experienced Affective Attitude: How an individual feels about the intervention, after taking part
Burden	Anticipated burden: The perceived amount of effort that is required to participate in the intervention Experienced burden: the amount of effort that was required to participate in the intervention
Ethicality	The extent to which the intervention has good fit with an individual's value system
Intervention Coherence	The extent to which the participant understands the intervention and how it works
Opportunity Costs	Anticipated opportunity cost: The extent to which benefits, profits, or values must be given up to engage in the intervention Experienced opportunity cost: the benefits, profits or values that were given up to engage in the intervention
Perceived effectiveness	Anticipated effectiveness: the extent to which the intervention is perceived to be likely to achieve its purpose Experienced effectiveness: the extent to which the intervention is perceived to have achieved its intended purpose
Self-efficacy	The participant's confidence that they can perform the behaviour(s) required to participate in the intervention
'Other' category	Utterances that answer the research question but do not necessarily reflect the TFA constructs (e.g. burden associated with trail documentation)

2. *Generation of belief statements:* After all data had been coded against the TFA constructs and 'other' category, an inductive content analysis approach (Francis et al., 2009) was applied in which belief statements within each of the TFA constructs and 'other' category were identified. In the context of a different theoretical framework, a belief statement has been defined as a concise summary statement that incorporates "a collection of responses with a similar underlying belief that suggests a problem and/or influence of beliefs on the target implementation problem" (p.12 Atkins et al., 2017).

   In this study's context the belief statements were generated to reflect the underlying meaning of the text that was coded into TFA construct. For example, text coded into Perceived Effectiveness was examined and belief statements were generated. Where multiple textual extracts seemed to have a similar underlying meaning a single belief statement was worded to cover all similar examples. In other cases, beliefs statements were generated that reflected the underlying meaning of only a single textual extract. Initially this process was performed for each participant (i.e. transcript), retaining wording used by the participants whenever possible.

   In the next step, the researcher reviewed the belief statements generated per construct across all participant transcripts, grouping similar statements together and generating overarching summary belief statement labels for each construct. Two additional researchers also generated belief statements within each of the TFA constructs and the 'other' category for each of the two transcripts they had double coded in step 2, for the assessment of inter-rater reliability. All belief statements generated across transcripts within each TFA construct and the 'other' category were discussed with the research team. Differences in the belief statements generated were discussed until agreement was reached and all belief statements were

then reworded to convey meaning that represented the majority of participant responses.

3.2.7.2.1 Inter-rater reliability

To assess the reliability of the researcher's coding (MS) two additional researchers (JF and MC) completed double coding on two transcripts each. Agreement in coding was registered if on each transcript the same part of the transcript was coded into the same construct. Instances where one of the researchers identified text from the transcript and coded it into a TFA construct, and the other researcher did not code it at all or did not code in into the same TFA construct, disagreement was registered. Percentage agreement rather than Cohen's Kappa was used to assess reliability because the items (i.e. sentences in transcripts) may have been coded into more than one TFA construct (Cohen, 1968). Any disagreements in coding were discussed and changes were agreed that would be applied to subsequent coding of the remaining transcripts.

Inter-rater reliability was also assessed for the generation of belief statements (inductive content analysis) within each of the four transcripts. The researcher and two additional researchers (JF, MC) produced belief statements for each of the two transcripts they coded in step 1.

3.3 Results:

3.3.1 Sample characteristics

A total of 87 eligible participants declined to participate in the trial. Of these 20 participants (23%) were approached to take part in the study. From this sub- set 15 (75%; 7 men and 8 women) agreed to take part and completed the interview study. No further demographic variables were recorded.

3.3.2 Recorded reasons for declining to participate

Table 12 displays reasons patients provided for declining to participate in the trial. The table also indicates whether the reason provided was associated with the intervention (and relevant TFA construct) or if the reason provided was associated with other factors.

Table 12: Reasons patients declined to participate in the study

Reasons given by patients for declining to take part	Number (%)	Reason associated with the intervention or other factors?	TFA Construct / Other category belief statement
Happy with current scheduled appointments - wouldn't want to change the system	41 (49)	Intervention	Affective Attitude
Not practical to book own appointments e.g. needs to book transport or leave from work well in advance	7 (8)	Intervention	Perceived Burden of participating in intervention
Patient is thinking about stopping treatment in near future	1 (1.1)	Intervention	Perceived Effectiveness
Demands of multiple healthcare appointments for self and/or family members would make taking part burdensome	8 (9.2)	Other factors	Trial participation considered burdensome
Patient does not have time to fill in long questionnaires	5 (5.7)	Other factors	Burden of completing trial documentation
Elderly & frail - physically unable to fill in long questionnaires	3 (3.4)	Other factors	N/A
Patient doesn't want to take part in research	21 (24)	N/A	N/A
No reason given	1 (1.1)	N/A	N/A
Total no. of patients refused	83 (100)		

The most common reason reported for declining to participate indicated that patients were happy with the current scheduled appointments and did not want to change the system (41 participants, 49%). This indicates that the reason was associated with the intervention itself. Other reasons given for refusal to participate associated with the intervention included participants stating that it was not practical to book their own appointments (e.g. needing to book transport) (7 participants, 8%) and one participant thinking about stopping treatment in the near future. The second most common reason for refusing to participate was not wanting to take part in research (21 participants, 24%). Reasons for declining to participate associated with other factors included demands of multiple healthcare appointments, and participants expressing they did not have time to fill in long questionnaires. These reasons indicate trial participation was considered burdensome.

3.3.3 Semi structured interview study: TFA Analysis

3.3.3.1 Inter-rater reliability

Stemler (2004) suggests that when using percentage agreements to assess inter-rater reliability, values from 75-90% indicate an acceptable level of agreement. The Inter-rater reliability for the deductive coding between MS and JF on two transcripts was high (87%). The inter-rater reliability for the deductive coding between MS and MC on two transcripts was also high (80%).

There was 100% agreement inter for the generation of belief statements between MS and JF on two transcripts, and 85% agreement between MS and MC on the generation of belief statements in an additional two transcripts.

3.3.3.2 Theoretical Framework of Acceptability- deductive and inductive content analysis

Table 13 presents the example quotes for the deductive content analysis of the reasons provided by participants for declining to participate in the BEB and HFS trial, analysed into the relevant TFA constructs. Participants' utterances could be coded into five out of the seven TFA constructs. The table also displays the inductive belief statements generated within each construct and the frequency of the number of participants that reflected each unique belief statement.

Table 13: Reasons for refusal coded into the relevant TFA constructs including belief statements per construct and frequencies per belief statement:

Construct	Example quote	Belief statement*	Total Frequency per belief statements (out of 10)†
Affective attitude	I like to have three months which is what I was told I should have. I like it to be booked for the next one, when I come here, it's in the diary and I know where I am (Participant 2)	I like the current model **(+)**	3
	I'm quite happy with the way it is…I'd like to stay as I am (Participant 6)	I'm happy with the current system**(+)**	4
	I am very happy. In my mind 10 weeks' time I will come in. I like knowing when my appointments are (Participant 9)	I like knowing when my appointment is booked **(+)**	2
Burden	I know when I've got your appointment, so I can work round it, if I don't know when this appointment is, it'd make it more difficult to book other appointments (Participant 7)	**High anticipated burden associated with the new service:** It would be more difficult to fit other appointments around my eye appointment **(-)**	2
	It would be more stressful having to call up to make an appointment, but when I know that I'm coming in, it's in the diary on the day I'm going. Is it easier for me to manage? (Participant 9)	It would be more stressful to make my own appointment **(-)**	2
	I liked the flexibility that you're offering, that people can come along as soon as they feel the need of further treatment (Participant 3)	**Low anticipated burden associated with the new service:** The new service has better flexibility (low perceived burden) **(+)**	2
	It's very difficult to make another appointment or to change something (Participant 5)	**Burden associated with standard care:** it's very difficult to change a booked appointment **(-)**	2
	it' a long way to travel to my appointments ... because of the walk to the bus stop or ...And go on the bus and then the train and then the bus and it's a difficult journey (Participant 4)	It's a long way to travel to attend my appointments **(-)**	2
Intervention coherence	It means you turn up and it doesn't give the staff the opportunity to prepare it will be extra work for the staff and this is the other point when I say plan. If I just call on the telephone you can't see me so how can you…how will they…know I need or do not need an appointment? (Participant 13)	**Lack of understanding of patient initiated service:** How will they know I need or do not need an appointment on the phone? **(-)**	1

	I don't understand that bit about patients booking their own appointments, doesn't really make sense to me (Participant 14)	It doesn't make sense to me patients booking their own appointments **(-)**	2
	The patient booking service will be good for some as people can come along as soon as they feel the need for further treatment, instead of having to wait until their scheduled appointment. (Participant 3)	**Understanding of patient initiated service:** Patients can book their treatment when they need it **(+)**	1
Perceived effectiveness	I mean some people might feel they ought to come in more often, others might leave it to long, and that's why I think it's best to stick to the health professional being then to say, you know " we need to see you in…you know whatever time" (Participant 2)	**Uncertainties about the effectiveness of the patient initiated service:** Timing of the booking system may not be effective for everyone **(-)**	2
	I don't think it will work because I come in every roughly 10 weeks and sometimes even with 10 weeks you can't get in (Participant 4)	It won't work as it's difficult to get an appointment in the current system (-)	1
	I think that's good as long as when you ring to book there are places (Participant 3)	It's a good idea, as long as there are availability of appointments (+/-)	2
	I am very happy because I'm working and in terms of the symptoms they more or less get it right. (Participant 13)	**Perceived effectiveness of standard care:** The current system works for me (+)	5
	When I used to go round there it'd be like every three months, every four months, sometimes nearly five months. It was really bad like. Since I've been coming round here I was coming the same again and then I see this young lady and she's done it totally different, and she's been telling me to come every two months to see how it works out. It's been working out perfect, y'know, so I don't really want to change anything, rock the boat like. I don't want to change anything, its two months and it works out perfect for me. (Participant 12)	I don't want to change anything it works out perfect for me **(-)**	2
Self-efficacy	I will not like to change my appointments as I am the worrying type, and will worry if I would book in good time (Participant 9)	Lack of confidence with engaging in the new service **(-)**	1
	I have other appointments made with other problems that I've got and I can fit them around it instead of having to worry all the time and whether I get them in to the right dates and things (Participant 7)	I would worry about booking my appointment around booking other appointment **(-)**	1

Notes: * Belief statements with **(+)** indicate a positive reflection of the TFA construct (e.g. for the construct of Affective attitude- *I'm happy with the current system*). Belief statements in **(-)** indicate a negative reflection of the TFA construct (e.g. for the construct of Burden – *it's very difficult to change a booked appointment*).). Belief statements in (+/-) indicate a neutral reflection of the TFA construct (e.g. for the construct o Perceived effectiveness – *It's a good idea, as long as there are availability of appointments).* † Total number of belief statements refers to the number of participants who reported a view that reflects each belief statement in the table. A participant may have reported more than one quote in line with the belief statement but each participant is counted only once per belief statement.

3.3.3.3 Affective attitude

The majority of participants (n=9) expressed a positive attitude towards the current booking system and liked that the appointments are pre-booked indicating that the standard care was perceived as acceptable. Participants expressed that they liked knowing when their appointments were scheduled:

> *"I like to have three months which is what I was told I should have. I like it to be booked for the next one, when I come here, it's in the diary and I know where I am." (Participant 2)*

3.3.3.4 Burden

Two belief statements reflecting perceptions of high anticipated burden associated with the patient initiated service indicated that the patient-initiated service was unacceptable. Participant 7, expresses:

> *"I know when I've got your appointment, so I can work round it, if I don't know when this appointment is, it'd make it more difficult to book other appointments (Participant 7)*

However, two participants also believed that the patient-initiated service has greater flexibility in offering patients the opportunity to schedule their treatment as and when they needed it:

> *"I liked the flexibility that you're offering, that people can come along as soon as they feel the need of further treatment." (Participant 3)*

Participants also expressed that the current system was burdensome with regards to travelling to their appointments, and that it's difficult to change a scheduled appointment. This suggests that there are aspects of the standard service which may be considered unacceptable:

"It's a long way to travel to my appointments ... because of the walk to the bus stop or ...and go on the bus and then the train and then the bus and it's a difficult journey." (Participant 4)

"It's very difficult to make another appointment or to change something." (Participant 5)

3.3.3.5 Intervention Coherence

Three participant's responses indicated that the patient-initiated service was unacceptable based on their lack of understanding of the patient-initiated service:

"It means you turn up and it doesn't give the staff the opportunity to prepare it will be extra work for the staff and this is the other point when I say plan. If I just call on the telephone you can't see me so how can you…how will they…know I need or do not need an appointment?" (Participant 13)

"I don't understand that bit about patients booking their own appointments, doesn't really make sense to me." (Participant 14)

3.3.3.6 Perceived effectiveness of patient initiated booking system

Participant responses represented three belief statements that suggest participants have uncertainties about the effectiveness of the patient-initiated service (Table 13). Participant 2's responses indicates that the timings of the appointments in the patient-initiated service may not suit everyone, and thus believes standard care is more effective:

"I mean some people might feel they ought to come in more often, others might leave it to long, and that's why I think it's best to stick to the health professional being then to say, you know " we need to see you in…you know whatever time" (Participant 2)

Participant responses also reflected the experienced effectiveness of the current system:

"For the last 3 to 4 years I've been coming for my appointments and they have been booked for me. I think this system works well not sure how it would work if patients start booking their own appointments…. I think this system is and works better. I think it's better for the doctor to decide they know about the condition."
(Participant 14)

These findings are similar to those discussed in Section 1.3.1.1 (Table 3). The majority of the participants expressed that they are happy with the current booking system as it is working for them.

3.3.3.7 Self-efficacy

Two participants' responses also reflected the construct of self-efficacy, which focuses on the participants' confidence that they can perform the behaviours required to participate in the intervention. Participant 9's response indicates a lack of confidence with engaging with the patient initiated service:

"I will not like to change my appointments as I am the worrying type, and will worry if I would book in good time" (Participant 9).

3.3.3.8 Other factors associated with reasons for declining to participate

Participant responses for declining to participate in the BEB and HFS RCT also reflected three other (non-acceptability) factors: burden of completing trial documentation, trial participation considered a low priority and not wanting to take part in research. Example quotes representing the three factors are displayed in Table 14.

Table 14: Reasons for refusal coded into "other factors" including belief statements per construct and frequencies per belief statement

	Example quote	Belief statement	Total Frequency per belief statements (out of 10)†
Other Factors	It was having a commitment to you know, have to sort of record things (Participant 2)	Burden of completing trial documentation	1
	I've got other health issues just at the moment and I'm going to be going to the hospital backwards and forwards (Participant 2) It's because I've got family problems and would not be doing what you want me to do (Participant 8)	Trial participation considered a low priority	2
	I just don't want to take part (Participant 1)	I don't want to take part in research	2

Notes: † Total number of belief statements refers to the number of participants who reported a view that reflects each belief statement in the table. A participant may have reported more than one quote in line with the belief statement but each participant is counted only once per belief statement.

3.4 Discussion

This study is the first to have applied the Theoretical Framework of Acceptability to examine the reasons given by eligible patients for refusing to participate in RCT of a patient-initiated treatment service for Benign Essential Blepharospasm (BEB) and Hemifacial Spasm (HFS). The TFA was applied to determine if the reasons for refusal were associated with anticipated acceptability of the intervention or other factors. The findings from this study suggest reasons for refusal to participate in RCTs can be differentiated between (a) reasons directly associated with the acceptability of the intervention (s), and (b) reasons associated with the trial implementation.

3.4.1 Summary of findings

The four most commonly reported acceptability-related reasons for refusing to participate in the RCT were: preference for standard care, anticipated burden associated with the new service, lack of confidence in engaging with the new service, and uncertainties about the effectiveness of the new service. The findings in this study are similar to those reported by Sanders et al., (2012) in which one of the barriers associated with declining to participate in

a RCT focusing on the adoption of telehealth and telecare included expectations and experiences of disruption to services. Similarly, Locock and Smith (2011) reported reasons for not taking part across a range of healthcare interventions included preference of standard care and personal inconvenience of participation, such as burden of attending extra appointments.

The recorded reasons given by all eligible participants who refused to participate in the BEB and HFS study also reflected the belief statements that emerged from the interview analysis. The most common reason given by patients was that they were happy with the current scheduled appointments and did not want to change the system.

Two themes reflected other (non-acceptability) factors: trial participation considered a low priority; and burden of completing trial documentation. These themes are similar to the theme of procedural aspects of the trial reported by Brintnall- Karabelas et al., (2011), in which protocol issues were identified as the main reason for participants declining to participate in studies within the National Institute of Mental Health program.

3.4.2 Suggestions for enhancing recruitment

The use of the TFA has identified key areas that researchers working on the BEB and HFS RCT could address to enhance intervention acceptability to increase recruitment rates. Researchers could consider strategies to minimise the burden associated with patients booking their own appointments, and how to enhance participants' confidence in engaging with the new service. Researchers may consider reviewing their recruitment materials to clarify how participants will be able to book their own appointments. Furthermore, the findings from the interviews also suggest that participants had poor intervention coherence and did not understand the purpose of the patient–initiated service and expressed concerns with regards to the perceived effectiveness of the patient–initiated service. Thus, it may be worthwhile for clinical staff to explain the potential benefits of the patient–initiated service when recruiting potential participants and to reassure patients that those within the intervention arm of the trial booking their own appointments, will be given an appointment

in the agreed one week timeframe. With regards to the burden associated with the trial implementation process researchers could consider reducing the amount of follow-up documentation patients are required to complete.

3.4.3 Strengths and Limitations

This study adds to the limited body of literature that has explored why eligible participants decline to participate in RCTS. Specifically, this is the first study to have explored reasons for refusal by applying a multi-construct theoretical framework to determine if reasons for refusal are associated with intervention acceptability.

A strength of this study is that it was nested within a larger RCT which is considered by CONSORT and the MRC as an effective method in understanding recruitment related issues (Craig et al., 2008; Moher et al., 2010). Further, as recommended by the CONSORT guidelines (2010), the BEB and HFS RCT kept a record of the number of participants who refused to participate and the associated reasons.

However, the study also has its limitations. Interviews were completed with an opportunistic sample, which represented only 17% of the all the participants that declined to participate. Thus, the findings may be limited in terms of transferability and generalisability to those who were not interviewed. However the belief statements that emerged from the interviews are similar to the reasons given by the full sample of participants that declined to participate.

Furthermore, whilst the analysis of the interview data was informed by the TFA, the topic guide was not. This was a decision made by the trials team in order to keep the length of the interviews to a minimum and not to burden participants once they had declined to participate in the RCT. Given the results from this study, this appears to have been a good decision, as the burden of participating in the interview study was kept to a minimum.

3.4.4 Implications

This study provides preliminary evidence that the reasons eligible participants refuse to participate in a RCT may be due to perceptions about intervention acceptability and the trial implementation process. Future trials may consider applying the TFA to construct topic guides and/or questionnaires to explore in more detail the reasons eligible participants refuse to participate within the pilot and feasibility phase of the intervention development cycle. Assessing reasons for refusal within the pilot and feasibility phase of an intervention would provide evidence on how the intervention content or materials could be modified to enhance acceptability, which, in turn, may increase the numbers who consent to participate in the main RCT.

3.4.5 Conclusion

This study has presented participants' accounts of their reasons for declining to participate in an RCT comparing a patient–initiated treatment service for benign essential blepharospasm and hemifacial spasm to standard care. Two types of reasons can be differentiated: those associated with intervention acceptability, and those associated with trial implementation.

4 How useful is the Theoretical Framework of Acceptability, compared with a single-construct approach, for assessing intervention acceptability? A semi-structured interview study with healthcare professionals

4.1 Chapter overview

The present chapter describes the results of a qualitative study that explored the acceptability to healthcare professionals of two audit and feedback interventions that were evaluated in workstream 1 (intervention development and piloting) of the AFFINITIE programme (*development & evaluation of **A**udit and **F**eedback **In**terventions to **I**ncrease evidence-based **T**ransfusion practI**c**E*) (Gould et al. 2014; Hartley et al., 2017). The healthcare professionals in this study were the recipients of both interventions. The first intervention consisted of feedback documents (results and recommendations from a completed audit) and the second intervention consisted of a toolkit to support response to the recommendations within the feedback report. The topic guide used to complete the semi-structured interviews was based on the preliminary version of the Theoretical Framework of Acceptability (TFA). The data was analysed applying the content analysis method and the TFA as the deductive framework.

4.2 Introduction

The results of the overview of reviews described in chapter 2 found that out of 43 systematic reviews 54% assessed acceptability using only behavioural indicators, such as trial dropout rate, all cause-discontinuation, reasons for discontinuation and trial withdrawal rates (e.g. Arrowsmith et al., 2013; Berlin et al., 2014; Cipriani et al., 2009).

The review found that when acceptability has been assessed through participant self-reports, it is often treated as a simple construct in which participants are asked a general question about whether an intervention is acceptable or not (e.g., “do you find the intervention

acceptable?" (p.22 Robinson et al., 2007). This approach to assessing acceptability provides little capacity to distinguish between different levels of intervention acceptability, to determine which components of an intervention are considered acceptable or unacceptable, or how to refine an intervention to improve acceptability.

Review findings also revealed that 17 (40%) of reviews assessed acceptability post-intervention delivery (Sekhon et al., 2017). The Medical Research Council (MRC) guidance on developing and evaluating complex interventions (Craig et al., 2008) suggests assessing acceptability within the feasibility and piloting phase but none of the review authors indicated that this had happened.

4.2.1 Qualitative assessments of acceptability in feasibility and piloting phases of intervention development

Researchers have recognised the importance of the feasibility and piloting phase in identifying and addressing problems that may undermine the acceptability and delivery of an intervention (Craig et al., 2008; Conn et al., 2001; Hubbard et al., 2016; Lancaster 2015; O'Cathain et al., 2015). According to Conn et al., (2011) "pilot-testing interventions with members of the population may help reveal the extent of intervention burden, as well as other participant suggestions to make the intervention more acceptable" (p. 438).

Qualitative methods are considered valuable in assessing acceptability within the early stages of feasibility and pilot testing (Campbell et al., 2000; O'Cathain, Murphy & Nicholl., 2010; Yardley, Ainsworth, Arden-Close & Muller 2015). Yardley and colleagues (2015) developed the person-based approach and emphasise the value of qualitative research in assisting researchers and intervention developers to enhance the acceptability of an intervention. The person-based approach utilises semi-structured interviews, with open ended questions to explore in-depth the perspectives of the people who will use the intervention. For example questions may focus on establishing participants' thoughts on which components of an intervention are considered useful and relevant. The aim of the analysis is to produce guiding principles that can be applied to determine how " the

intervention can be made more attractive, persuasive and feasible to implement" (p. 1 Yardley et al., 2015).

4.2.2 Application of the TFA to assess acceptability in feasibility and piloting phase of the intervention development cycle

As described in chapter 2 the Theoretical Framework of Acceptability (TFA) has been developed to assess acceptability both quantitatively and qualitatively during the different phases of the MRC intervention development and evaluation cycle and across three temporal perspectives (Sekhon et al., 2017). The three temporal perspectives include prospective acceptability (prior to intervention engagement); concurrent acceptability (whilst engaging with the intervention) and retrospective acceptability (after engagement with the intervention has finished).

Within the feasibility and piloting phase, the TFA has been designed to provide researchers and intervention developers with the information required to make necessary changes to enhance intervention acceptability. This chapter describes the application of the TFA to assess the acceptability of two audit and feedback interventions that were evaluated in the intervention development and piloting phase of the AFFINITIE programme (Gould et al. 2014).

4.2.3 Study context: AFFINITIE Research programme

In the field of implementation science, interventions focus on improving clinical practice. Healthcare professionals are thus the intervention recipients (Colquhoun. Squires, Kolehmainen, Fraser & Grimshaw 2017; Dyson, Lawton, Jackson & Cheater 2013; Eccles et al., 2009; Ivers et al., 2012).

A widely applied quality improvement intervention is audit and feedback (A&F), defined as "a summary of clinical performance of health care over a specified period of time aimed at providing information to health professionals to allow them to assess and adjust their performance " (p.5 Ivers et al., 2012). In the UK, the National Health Service Blood and Transplant (NHSBT) National Comparative Audit (NCA) programme conducts national

audits across clinical specialities to determine the extent to which different blood components are being administered safely and appropriately, according to the clinical evidence base (Gould et al., 2014). A consistent finding from these audits is that 20% of transfusions of all blood components fall outside national guideline recommendations, i.e. are unnecessary (Murphy, Waters, Wood & Yazer 2013).

Briefly, the NCA's method of A&F involves a writing group consisting of an audit lead (e.g. consultant haematologist), clinical staff representatives and a statistician. The writing group determine and agree which audit standards in clinical practice will be compared, what data will be collected, and what findings and recommendations will be included in in feedback reports (Lorencatto et al., 2016). The feedback reports are then uploaded via a site-specific NCA audit webpage so that each hospital transfusion team (i.e. transfusion practitioner, consultant haematologist, transfusion laboratory manager) has access to the reports. It is proposed that in each hospital the transfusion team is responsible and expected to disseminate the feedback reports, highlighting any inconsistencies between current practice and the national standards and initiate a planning process to encourage current practice change (Lorencatto et al., 2016). However, there are no formal support processes provided by the NCA to facilitate the planning process, thus the effectiveness of current A&F strategies to disseminate recommendations are not known in the context of blood transfusion practice.

In an attempt to reduce unnecessary transfusions the UK's National Institute of Health Research (NIHR) has funded the AFFINITIE Research Programme (*development & evaluation of **A**udit and* **F***eedback **In**terventions to **I**ncrease evidence-based **T**ransfusion practI**c**E*) (Gould et al., 2014).

Part of the intervention design process included an investigation of the acceptability of the two draft interventions to the healthcare staff who would receive them. The intervention materials within this phase were designed to provide feedback on the Medical use of blood

2014 audit. Gould et al., (2014) refer to intervention 1 as 'enhanced content' which focuses on the content and format of theoretically enhanced (using behavioural science) feedback reports delivered to hospitals. The feedback reports include feedback on current practice in relation to recommended standards for clinical practice and recommendations for change. Intervention 2 refers to 'enhanced follow-on', which consists of a toolkit that can be used by the hospital transfusion team to plan response to, and disseminate, the recommendations within the feedback reports. For ease of clarity within this chapter intervention 1, refers to the feedback reports and intervention 2 refers to the toolkit. Table 15 displays a summary of the different intervention materials received within both interventions.

Table 15: Summary of Intervention 1 and intervention 2 materials

Intervention 1: Feedback reports				**Intervention 2: Toolkit**
Level 1- Summary findings	**Level 2- Main findings report**	**Level 3- Supplementary report**	**PowerPoint – results from region**	Introduction to the toolkit and theory behind the tools, how it can be applied, and examples of completed tools. Tools consisted of: 1. Dissemination cascade 2. Two fishbone analysis tools 3. Two goal setting/action plan templates 4. Quick audit 5. Information on identifying overall goal **6.** Guidance on what makes an effective poster
Report consisting of a page per audit standard including recommendations, and an action planning template	Feedback report related to audit standards including recommendations and an action plan template	Additional feedback on clinical context, information about methods used to collect and collate findings and information on feedback not related to audit standards	Slideshow showing results from region, comparison of each site to others within the same region	

4.2.4 Aims and objectives

The aim of this study was to compare the use of a multi-construct theoretical framework with a single global question to investigate intervention acceptability. The specific objectives of this study were to:

1. Identify participants' views about acceptability using a single interview question (general question; GA)
2. Assess acceptability using the TFA (v1) (eight interview questions, plus prompts)
3. Use similar methods to analyse data and to determine the differences in the content of participant responses for both approaches
4. Determine which of the two approaches generates evidence to inform potential strategies for enhancing intervention acceptability.

4.3 Methods

4.3.1 Design

This qualitative study utilised semi-structured interviews nested within the AFFINITIE Research Programme.

4.3.2 Ethical approval

The study was approved by the Ethic Committee in the School of Health Sciences at City, University of London, in October 2013 (Ref: Staff/13-14/09), and the Research and Development offices at each of the participating NHS Trusts.

4.3.3 Sampling of sites and participants

A purposive sampling strategy was applied to select four sites that had previously participated in the NHSBT national comparative audits of blood transfusion, specifically the Medical Use of Blood 2012 audit. Sites were initially approached by a member of the AFFINITIE research team via their Trust Research and Development office (R&D) and were selected to account for the different types of infrastructure and type of site (e.g., at least one of the sites was a teaching hospital and another site district hospital) (Gould et al., 2014).

A purposive sampling strategy was also used to identify healthcare professionals within the four sites to ensure diversity. The healthcare professionals invited to participate reflected the range of individuals involved in or with influence over transfusion decisions, or who are responsible for following practice recommendations (e.g. blood transfusion practitioner, clinical leads, senior clinicians, haematologists, hospital transfusion committee members, junior doctors, regional transfusion professionals). Healthcare professionals were recruited via e-mail, with an accompanying participant information sheet (Appendix H) and consent form, to request their participation in an interview (Appendix I). After informed consent was obtained, an interview was scheduled.

4.3.4 Sample Size

Qualitative research focuses on the richness of the data and sample size calculations are not conducted in the same way as quantitative research (Kuzel, 1992). In this study, all the participants that received the intervention completed the semi-structured interviews.

4.3.5 Materials

The topic guide was developed in collaboration with the supervisory team (MC, JF) two research fellows and clinicians working on the AFFINITIE programme. As the study was nested within the AFFINITIE Research Programme, the acceptability topic guide was integrated with other interview questions as this was part of a larger feasibility study.

The acceptability topic guide was developed during the iterative phase of refining the TFA (see Chapter 2 section 2.3.2 page 45 for details) and the questions reflected the constructs in the preliminary version of the TFA (v1). The topic guide was split into two sections, first to assess the acceptability of Intervention 1- feedback reports, and second to assess the acceptability of Intervention 2- toolkit. Questions within the topic guide framed acceptability as 1) a simple construct (i.e. one ‘general’ question about acceptability (GA)); 2) a multi-component construct (8 questions about acceptability, including prompts reflecting the constructs proposed in the preliminary version of the TFA).

The GA question was included at the beginning of each section to ensure that participants' responses concerning acceptability were not influenced by the TFA construct questions, and to determine participants' initial understanding and interpretation of acceptability as a concept. The GA question was repeated at the end of the interview to examine whether assessing the seven TFA constructs influenced participants' global perceptions of intervention acceptability. Table 16 displays the preliminary TFA construct questions for intervention 1 and 2, and the developed TFA construct definitions that were applied in the deductive content analysis.

Table 16: Preliminary TFA (v1) Topic guide mapped to TFA (v2) applied to analyse the data

TFA (v1) Construct	Intervention 1: Feedback report Interview Question	Intervention 2: Toolkit Interview Question	TFA (V2) Construct and definition (framework analysis)
Global acceptability	To what extent did you find the revised format of the Medical use of blood 2014 audit and feedback documents acceptable? We are interested in what acceptable might mean to you, so any initials thoughts you might have?	So can I again begin by asking to what extent did you find the toolkit acceptable?	N/A
Affective Attitude	Was there anything in particular that you liked about the medical use of blood 2014 feedback reports? Are there any parts that stand out? Was there anything in particular that you disliked?	Was there anything in particular that you liked about the toolkit? Did any parts or tools stand out in particular? Was there anything you disliked about the toolkit?	Affective Attitude *How an individual feels about the intervention, prior to taking part*
Burden	How much, if any, of the medical use of blood 2014 feedback reports did you read? How much time did this take? Was this more or less time than you would usually spend reading a normal feedback report? In your opinion how easy or difficult was it to comprehend these feedback reports? What in particular was easy/difficult?	In your opinion was the toolkit easy or difficult to comprehend? What in particular was easy/difficult? -How much, if any, of the toolkit did you read? -If yes, How much time did this take?	Burden *The perceived amount of effort that is required to participate in the intervention*
Ethicality	To what extent do you think reading or not reading the medical use of blood 2014 feedback reports has ethical implications for patient care? Prompt- i.e. positive or negative consequences	To what extent do you think using the toolkit to disseminate and respond to feedback has ethical implications for patient care?	Ethicality *The extent to which the intervention has good fit with an individual's value system*
Treatment effectiveness	In your opinion to what extent do you think the revised medical use of blood 2014 feedback reports hold the potential to make a difference to clinical practice?	Are there any aspects of the toolkit that you think may be effective in making a difference to clinical practice?	Perceived effectiveness *The extent to which the intervention is perceived to be likely to achieve its purpose*
Opportunity Costs	What do you think are the advantages of the revised format feedback reports? - Are there any disadvantages?	Can you think of any advantages to using the toolkit to disseminate and respond to feedback? -Can you think of any disadvantages?	Opportunity Costs *The extent to which benefits, profits, or values must be given up to engage in the intervention*
Intention	To what extent are you likely to read future feedback reports if they are presented in this revised format?	How likely would you be to use the toolkit in future audit cycles?	*No longer in TFA (v2)*
Personal control	Can you think of anything you can do to encourage key members of staff to read these feedback reports? - Can you think of anything that you can do to help implement these recommendations in practice?	What do you think you or your colleagues could do to help implement the use of the toolkit?	Self-efficacy *The participant's confidence that they can perform the behaviour(s) required to participate in the intervention*

	No question	No question	Intervention coherence *The extent to which the participant understands the intervention and how it works*
Experience	Can you talk me through your overall impressions of the revised format medical use of blood 2014 feedback reports? Were these revised feedback reports different in any way from those you typically receive from the National Comparative Audit?	Can you talk me through your overall experience of having received the toolkit?	*No longer in TFA (v2)*
Global question (end of interview)	Having gone through the questions regarding the Medical use of Blood 2014 audit and feedback reports, do you still feel the revised format of reports are/ are not acceptable with regards to disseminating the recommendations?	And having gone through the questions regarding the toolkits do you still feel the toolkit is acceptable?	N/A

Note: There was no question for the construct of Intervention coherence, as it was not present in TFA v1, but through iterations was included in TFA v2

4.3.6 Procedure

Semi-structured interviews were conducted between February and March 2015 at each participant's workplace, four to five months after the delivery of the enhanced feedback reports (intervention 1) and toolkit (intervention 2). Interviews were completed by two research fellows working on the AFFINITIE programme (NG and FL) and lasted between 40 and 60 minutes in total; the acceptability section of the interview was between 30 to 50 minutes long. Five of the interviews were conducted one –on –one, and three interviews were conducted with two participants at a time. All interviews were audio-recorded (with explicit consent) and transcribed verbatim. Transcripts were checked for accuracy and anonymised to ensure that no individuals could be identified.

4.3.7 Analysis

Transcripts were analysed by applying principles from content analysis method as described in detail in chapter 3 (section 3.2.7.2 page 77). To recap a two-step process was completed:

1. *Deductive Coding:* A deductive approach was applied in which responses to the general acceptability (GA) question (asked at the beginning of the interview and end of the interviews) and eight TFA questions (including prompts) were analysed against the seven TFA construct definitions (Sekhon et al., 2017).

2. *Inductive Content analysis*: Once the deductive analysis had been completed, an inductive content analysis was applied (Francis et al., 2009). In this step, the primary researcher (MS) identified a summary belief statement within each of the TFA constructs for both the GA responses and TFA responses by grouping together emerging belief statements. A second researcher (MC) independently generated emerging belief statements for one of the participant transcripts as a reliability check (see section 4.3.7 page 105 for details). Next, this process was applied to all remaining transcripts.

In an analysis meeting, the research team discussed all identified summary belief statements within each construct and reworded these to convey meaning that represented the majority of participant responses.

Frequency counts were generated to reflect the number of participants who reported each unique belief statement within each of the TFA constructs. A participant may have reported more than one quote in line with the belief statement but each participant is counted only once per belief statement. (See results section 4.4.3 page 107 for example). The frequency count of the total number of unique belief statements per construct formed the criteria for assessing the differences in the range and content of responses with regards to intervention acceptability and for determining whether the TFA approach or the GA approach generated more potential suggestions for enhancing intervention acceptability.

4.3.7.1 Inter-rater reliability

The primary researcher completed coding on all transcripts. An additional researcher (MC) independently coded one transcript to assess inter-rater reliability. Agreement was registered if both researchers identified part of the transcript that was coded into the same TFA construct. In instances in which one of the researchers coded a part of the transcript into a TFA construct, and the other researcher did not or coded the same part into a different TFA construct, disagreement was registered. Percentage agreement rather than Cohen's Kappa was used to assess reliability because the items (i.e. sentences in transcripts) may be coded into more than one TFA construct (Cohen, 1968).

4.4 Results

4.4.1 Sample Characteristics

Eleven participants were interviewed. Table 17 displays the participant demographics, including job role and working years at current hospital.

Table 17: Sample participant characteristics

Participant	Job role	Decisions regarding blood transfusion
1	Transfusion Specialist	All the time
2	Consultant Haematologist	Every day
3	Clinical Audit Effectiveness Manager	No
4	Consultant (responsibility for blood bank)	Never
5*	Transfusion Practitioner	Daily
6*	Transfusion Practitioner	Not independently but as part of a team
7*	Transfusion Practitioner	Regular basis
8*	Transfusion Practitioner	Daily
9*	Laboratory Manager for blood transfusion	Daily
10*	Transfusion Practitioner	Weekly
11	Laboratory Manager for Transfusion	No

** Interviews conducted with two participants at a time*

4.4.2 Inter-rater reliability

Inter-rater coding reliability for the deductive content analysis of the transcript was high (80%). All disagreements were resolved through discussion. Inter-rater coding reliability for the generation of belief statements for the transcript was also high (81%).

4.4.3 General acceptability responses

4.4.3.1 Intervention 1: Feedback reports

In response to the general acceptability question asked at the start of the interview, it appeared that all participants considered the feedback reports to be acceptable. Participants described the feedback reports as "very acceptable", "good", "fine" and "useful" (Appendix J). Seven participants also provided specific examples of what they liked about the feedback documents, (e.g. the shorter length, concise content of the enhanced reports in comparison to the feedback reports usually received in standard practice, and the ease of reading the shorter documents). In response to the GA question asked at the end of the interview, all 11 participants responses did not differ to the GA question asked at the beginning of the interview.

Responses to the general acceptability question asked at the start of the interviews were coded into two of the TFA constructs: Burden and Perceived effectiveness. Table 18 displays example quotes, belief statements and the frequency of participants reporting each belief coded to TFA constructs.

4.4.3.2 Intervention 2: Toolkit

Responses to the GA question asked at the start of the interview indicated mixed views about the acceptability of the toolkit. Positive words used to describe the toolkit included, "good", "fine" and "nice" (Appendix K). Specific examples focused on preferences of some tools over others (e.g. preference of the action plan and poster vs. fishbone analysis). Negative views included some participants having had previous exposure to the tools (i.e., "this is not different"), participants reporting that using the toolkit would result in more paperwork and that it would require time to use. Only eight participants answered the GA question asked at the end of interview. Seven participants did not change their opinion and considered the toolkit to be acceptable. One participant however considered the toolkit to be acceptable but felt the content could be trimmed down.

Similar to intervention 1, the responses to the GA question asked at the start of the interviews were coded into three of the TFA constructs: Burden, Perceived effectiveness and Intervention coherence (Table 18).

Table 18: General acceptability (GA) responses coded into TFA constructs for intervention 1 and intervention 2

TFA (v2) Construct	Feedback reports Example quotes	Belief statements*	Total frequency (out of 11) †	Toolkit Example quotes	Belief statements*	Total frequency (out of 11)†
Perceived effectiveness	"it is useful for people like me who implement policy and who write policy to make sure that we have all the information" (Participant 1)	The feedback reports are useful for people who implement and write policy **(+)**	2	"It's nice to have it, I suppose, a template, but there's nothing that I don't think you're reinventing the wheel"(Participant 11)	It's nice to have the toolkit but we know how to take the required actions **(+/-)**	4
	"level 1…this brief audit report is exactly what we need to be able to feed back to the clinical staff who don't have the time or actually, I hate to say it, the interest in blood transfusion to sit and read through pages and pages and pages …… so by just producing a one or two page document I think it will keep their attention for longer and they will be more responsive to it" (Participant 8)	Level 1 reports are exactly what we need to feed back to clinical staff as they will be more responsive **(+)**	1	"In a sense I think that they kind of don't add very much to the sort of mechanisms that we are supposed to have for audit feedback already….we're already supposed to do" (Participant 4)	The tools do not add to the mechanisms of delivering feedback as we're already supposed to do that **(-)**	1
				"I don't think the toolkit in itself without the motivation and the drive and the enthusiasm of the people delivering it will make any difference" (Participant 2)	The toolkit itself won't make a difference as this depends on the enthusiasm of people delivering it **(-)**	1
				"it's using familiar tools and I think that's going to work if you introduce something I think people are so overloaded with information and they need it to sit in a familiar pattern" (Participant 1)	Using familiar tools will be effective **(+)**	1
Burden	"It's completely succinct to the point and pulls out all the key information immediately. There's no trailing through a 150 page document" (Participant 5)	The documents were easy to read and to the point **(+)**	3	"I do wonder whether it's a bit too much information" (Participant 3)	There may be too much information in the tools **(-)**	1

	"Level 1, for me, was very simple. So that's what, with...in clinical audit you automatically look for what's the standard? What are the outcomes? And that's exactly what you've got here" (Participant 3)	Level 1 was very simple to understand as you can determine what your standards and outcomes are **(+)**	1			
	"it's about keeping things as concise as possible so I think if we'd got something that's simple and visual then that's easy to pass on to other folk" (Participant 1)	It's easy to pass on a concise report that's simple and visual **(+)**	1			
Intervention coherence				"it gave us ideas on how to cascade, how to feedback" (Participant 5)	the toolkit gives ideas on how to feedback **(+)**	2
Affective Attitude						
Ethicality						
Self-efficacy						
Opportunity costs						

Notes: * Belief statements with **(+)** indicate a positive reflection of the TFA construct (e.g. for the construct of Burden- *the documents were easy to read and to the point*). Belief statements in **(-)** indicate a negative reflection of the TFA construct (e.g. for the construct of Perceived effectiveness – *The toolkit itself won't make a difference as this depends on the enthusiasm of people delivering it*). Belief statements in (+/-) indicate a neutral reflection of the TFA construct (e.g. for the construct o Perceived effectiveness – *It's nice to have the toolkit but we know how to take the required actions*. † Total number of belief statements refers to the number of participants who reported a view that reflects each belief statement in the table. A participant may have reported more than one quote in line with the belief statement but each participant is counted only once per belief statement.

4.4.4 TFA-based assessment of acceptability: Intervention 1 Feedback reports

For Intervention 1 the TFA questions generated responses that could be analysed deductively into six of the TFA constructs (Affective attitude, Burden, Perceived effectiveness, Intervention coherence, Opportunity costs and Self- efficacy). Table 19 displays example quotes, unique belief statements and the frequency of the number of participants reflecting the each unique belief statement identified within the TFA constructs. The identified suggestions for improvement are presented in italics (discussed in the section 4.4.6 page 122). The belief statements within each construct are summarised on page 116.

Table 19: Responses to TFA questions coded into the TFA constructs for Intervention 1: Feedback reports

Construct	Feedback reports example quote	Belief statement*	Total frequency (out of 11)†
Affective attitude	"I like having direct evidence for our hospital in comparison to national figures because it gives us a sense of reality of what we can achieve" (Participant 1)	I like having direct evidence for our hospital in comparison to the national figures **(+)**	3
Burden	"The shorter (feedback reports) are easy (to navigate) because they're short, but with the longer ones…navigation can be a problem" (Participant 1)	It's easier to navigate around the shorter reports **(+)**	2
	The full audit reports are usually too detailed but the brief audit report is by far the best way that I've seen national comparative information produced. They probably need less encouragement now they're user-friendly (Participant 6)	The brief report is far more user-friendly in the way that information is presented **(+)**	2
	They're clearer, they point you to what you think we need to know and you can read -- you don't have to read the whole report to get the gist of it" (Participant 2)	The reports are clearer and we do not need to read to the whole report to get the gist of the results **(+)**	3
	"I think that it's still quite long. I'd quite like more of a summary, you know, 'in summary you did this', I think there is obviously a tendency just to read the summary" (Participant 2)	*The reports are still quite long, a summary of each hospitals performance may be more effective **(-)***	1

Perceived Effectiveness	"I think the brief report is great because that's going to be far more useful…I think again to say about them being concise I think that's essential" (Participant 1)	The brief report is far more useful as it is concise and simple **(+)**	5
	"I think if people didn't have a level of understanding, some of *(the reports)* might just be too much. They might just get bogged down in all the other details and not be able to pick out the main points" (Participant 8)	*Clinicians not familiar with content may find it difficult to engage with the reports **(-)***	2
	I don't think it's so much the format of the report (*that will make a difference)*. I think it's how well disseminated the report is by the people -- you know, there will be a cohort of people who read the initial report but then how that changes practice will be how those people disseminate that report outside of the immediate core transfusion people (Participant 2)	*Effectiveness is not just about the reports but how to disseminate to those outside of the immediate core transfusion team **(-)***	2
	"This would be perfect for the feedback to the transfusion committee because at the moment with a 150 page document you can't feed that back and wade through it. Everybody could have had a good look at it before they arrive and would have got all the information and you've fed back very easily in a reasonable timeframe" (Participant 5)	The shorter reports would be ideal to take to the transfusion committee to discuss feedback in a reasonable timeframe **(+)**	3
	"If you're just sending them for information, some people will read it, some people won't but if you're sending them for information plus, "By the way you've got to fill in the action plan" that will make them read it because you can't fill in the action plan if you don't know what the results say. (Participant 3)	It will be more effective to send the reports and ask clinicians to fill in the action plan, as then they'd have to read the report **(+)**	1
	Is it going to change practice? I doubt it 'cos we've got audits coming out of our ears for every department (Participant 11)	The enhanced reports are unlikely to change practice as we have too many audits to complete **(-)**	1

Intervention coherence	"You can actually look at your recommendations and you could fill it in and actually be able to almost sign things off if you knew you were already there. So it even saves you the job of having to go off and make an action plan" (Participant 5)	The recommendations can be disseminated instantly in an action plan format **(+)**	2
	This (*new feedback report)* you could actually pretty much download it, read it, print it off and then go straight to an area and be able to do a quick five minutes in a handover sessions without ever having to rewrite, reword or lose anything. So it would actually make your feedback mechanism quicker on account of the fact that you're not having to rewrite it and regurgitate it or put it into some sort of PowerPoint that you could then go and deliver" (Participant 6)	Can apply the new format of the feedback report straight away in a handover session without having to rewriting or losing any information **(+)**	2
Self- efficacy	"I can think of lots of things that I could do to do this (disseminate the recommendations) (Participant 4)	I can disseminate the recommendations **(+)**	1
	(can extract information) Very easily….. you're quite often wanting to take things from this to put into your own audit presentation (Participant 5)	It's easier to see the information and extract key information from the new layout of the full audit **(+)**	3
Opportunity costs	"My role is a bit different to other people because transfusion is sort of my job in the hospital. For the other people in the hospital you have to make a balance between this and other priorities in patient care and it may be somebody else, they have more important priorities" (Participant 4)	Priority of acting on recommendations differs according to job **(-)**	1
Ethicality			

Notes: * Belief statements with **(+)** indicate a positive reflection of the TFA construct (e.g. for the construct of Burden- *It's easier to navigate around the shorter reports*). Belief statements in **(-)** indicate a negative reflection of the TFA construct (e.g. for the construct of Perceived effectiveness – *The toolkit itself won't make a difference as this depends on the enthusiasm of people delivering it*). Belief statements in (+/-) indicate a neutral reflection of the TFA construct (e.g. for the construct o Perceived effectiveness – *The enhanced reports are unlikely to change practice as we have too many audits to complete)* Belief statements in *italics* indicate a potential suggestion for enhancing intervention acceptability. † Total number of belief statements refers to the number of participants who reported a view that reflects each belief statement in the table. A participant may have reported more than one quote in line with the belief statement but each participant is counted only once per belief statement.

4.4.4.1 Affective attitude

Participants expressed liking that the enhanced reports provide direct evidence for each individual hospital in comparison to the national figures, and that the enhanced reports are clearer to read than the standard reports.

4.4.4.2 Burden

Participants felt that there was less burden associated with extracting key information from the shorter enhanced reports and that the shorter reports were clearer and to the point.

4.4.4.3 Perceived effectiveness

Responses coded into the construct of perceived effectiveness indicate that the majority of participants felt that the brief audit report was more effective as the content was concise and simple.

Two of the belief statements also reflected responses as to how the enhanced reports could be applied to disseminate the feedback. Two participants felt that the short report would be ideal to use within transfusion committees to discuss the feedback.

One participant felt that the reports would be more effective if clinicians were asked to fill in the accompanying action plan, as this would ensure that the reports were read. Only one participant felt that the enhanced reports were unlikely to change practice as there are a number of audits to complete across different departments.

4.4.4.4 Intervention coherence

Some participants understood that the enhanced feedback reports could be applied in current practice without having to rewrite any of the information.

4.4.4.5 Self- efficacy

Three participants expressed that it was easier to see the information and extract information from the layout of the enhanced reports in comparison to the reports received in standard

practice. One participant also felt that he had the confidence to act on the recommendations of the feedback reports.

4.4.4.6 Opportunity costs

One participant expressed that the opportunity costs associated with reading the feedback reports and acting on recommended feedback depended on each clinician's job role and other clinical priorities in patient care.

4.4.5 TFA-based assessment of acceptability: Intervention 2 Toolkit

For intervention 2 the TFA questions generated could be analysed deductively into all seven TFA constructs (Affective attitude, Burden, Ethicality, Intervention coherence, Opportunity costs, Perceived effectiveness and Self- efficacy). Table 20 displays example quotes, belief statements and the frequency of the number of participants reflecting the belief statement identified within the TFA constructs for the toolkit intervention. The identified suggestions for improvement are presented in italics (discussed in the section 4.5.2). The key belief statements within each construct are summarised below (page 121).

Table 20: Responses to TFA questions coded into the TFA constructs for Intervention 2: Toolkit

Construct	Toolkit example quote	Belief statement	Frequency (out of 11) †
Affective attitude	"I really like the poster idea and I really thought when I was looking through actually that is quite interesting that you could be able to get buy-in from staff by putting their area on or where you could actually display it" (Participant 9)	I like specific tools to get attention from **(+)**	2
	"What I disliked about it is we get a lot of this sort of stuff and in some way, sometimes I think these sort of tools about thinking about how you're going to overcome problems, you know, sometimes just feel a bit insulting" (Participant 4)	Some of the tools to apply to overcome problems of feeding back felt a bit insulting **(-)**	2
Burden	"It was easy to comprehend. It was easy because it was laid out in a clear way. It was easy because the explanations were very clear, good examples, clear examples of the things that you think might work so you give -- so you talked about the fishbone analysis, you give a filled one to show as an example and an empty one you could then use as part of your toolkit" (Participant 2)	The toolkit was easy to comprehend due to layout, clarity and familiarly of the tools **(+)**	4
Perceived Effectiveness	"this would be an improvement on what we're doing at the moment….Certainly for dissemination of information if it's anything more than two pages people are going to switch off straight away" (Participant 10)	The toolkit is more effective than current practice **(+)**	5
	I think this is a useful tool to come up with the recommendations but what aids the feedback of the recommendations is the action plan and the recommendation within the actual report itself. (Participant 3)	The tools are useful but what aids feedback is the action plan and the recommendations within the actual report itself **(+/-)**	2
			3

	I think the only problems that we're fighting with is just how to make sure that people actually do read them so getting the information to them is the problem. Actually getting them to look at it is a problem…if you can actually get them in there to actually look at it and engage with it (Participant 1)	*The toolkit is great but the problem is getting staff to read and engage with it* ***(-)***	
Intervention coherence	It's logical and sensible and it gives you good tools to -- like here having all the different standards and the actions within that and that's all very much what we're trying to encourage people to think of in how they practice… it sort of fits so you can apply that in some really nice ways. (Participant 1)	The toolkit is logical and clear in how to disseminate the recommendations and can be applied in some really nice ways **(+)**	5
	the toolkit doesn't just work for the national comparative audits, the toolkit works for any feedback on anything so actually you could feed it into your audit department, you could feed it into all sorts of departments just as a toolkit that is available for use to aid people with the feedback" (Participant 5)	The toolkit is generalisable and can be applied to any audit. **(+)**	2
Ethicality	"I don't think the toolkit has ethical implications. I think the whole feeding back and making sure we improve the care of patients around transfusion has ethical implications. I think how you do it as long as you don't do anything unethical doesn't really have major implications" (Participant 2)	The toolkit does not have ethical implications but the whole feedback process has ethical implications	2
	I think not using it (the toolkit) has no ethical implication if you're doing your feedback. So I think if your feedback is successful and you haven't used this then that's fine, you've actually got the information back, you are caring for your patients. But if you're not getting the information back and then you're not using tools that could help you that's different (Participant 5)	Not using the toolkit has no ethical implication as long as you're doing the feedback.	2

Self-efficacy	"I mean it's very easy to sit down and write down your corrective solutions but whether you can actually do them in practice is not so easy" (Participant 4)	Planning solutions is easy but it may not be feasible to deliver these solutions in practice **(-)**	1
Opportunity costs	"you might spend a lot of time because you have to fill in these, responding to a feedback recommendation which is not actually a major clinical priority but because you're meant to fill in the tool kit you feel that you've got to do it and then you divert resources to something that is not actually a priority" (Participant 4)	Responding to feedback recommendations could divert resources away from more important clinical priorities **(-)**	1

Notes: * Belief statements with **(+)** indicate a positive reflection of the TFA construct (e.g. for the construct of Affective attitude- *I like specific tools to get attention from*). Belief statements in **(-)** indicate a negative reflection of the TFA construct (e.g. for the construct of Perceived effectiveness – *The toolkit itself won't make a difference as this depends on the enthusiasm of people delivering it*). Belief statements in (+/-) indicate a neutral reflection of the TFA construct (e.g. for the construct of Perceived effectiveness– *The tools are useful but what aids feedback is the action plan and the recommendations within the actual report itself)* Belief statements in *italics* indicate a potential suggestion for enhancing intervention acceptability. † Total number of belief statements refers to the number of participants who reported a view that reflects each belief statement in the table. A participant may have reported more than one quote in line with the belief statement but each participant is counted only once per belief statement.

4.4.5.1 Affective attitude

Participants expressed liking specific tools to gain attention from staff and having a permanent record of dissemination. However, one participant also expressed a dislike of the tone of the toolkit.

4.4.5.2 Burden

Four of the participants felt that there was low burden associated with the toolkit, as it was easy to comprehend because of the layout and the clarity and familiarity of some of the tools

4.4.5.3 Perceived effectiveness

The majority of participants (n=5) felt that the toolkit was more effective than current practice in disseminating the recommendations of the audit reports, with the provided action plans being considered the most effective tool.

Participants also expressed that whilst the toolkit was useful, what aids feedback is the specific action plan and recommendations in the feedback report itself.

4.4.5.4 Ethicality

Responses indicated that participants did not consider the use of the toolkit to have direct implications for patient care, as long as the recommendations from the feedback reports were still acted upon. Two participants also expressed that there were no ethical implications on patient care of not using the toolkit, as long as the recommendations were still acted upon.

4.4.5.5 Intervention coherence

Participants indicated that they understood the purpose of the toolkit, describing it as a clear and logical method to disseminate the feedback from the reports. One participant also expressed how the toolkit could be applied to other departmental audits.

4.4.5.6 Self- efficacy

For the construct of Self-efficacy one participant expressed that it is easy to sit down and plan how to disseminate the recommendations, but whether the actions can be implemented in practice is not so easy

4.4.5.7 Opportunity costs

Only one participant expressed that engaging with the toolkit, could have an impact on other clinical priorities as a result.

4.4.6 Differences in the content of responses to the general acceptability and TFA-based questions

The TFA-based analysis for both interventions generated a greater range of belief statements about intervention acceptability. Specifically the TFA responses generated belief statements across six of the seven TFA constructs for the feedback report intervention (no responses coded into Ethicality), and across all of the seven TFA constructs for the toolkit intervention. The TFA approach also led to potential suggestions for enhancing intervention acceptability for both interventions, whereas the general question led to no potential suggestions for enhancing intervention acceptability for either the feedback or toolkit intervention. The differences in the content of participant responses to both the GA approach and TFA approach for each intervention are discussed below.

4.4.6.1 Intervention 1: feedback reports

For intervention 1 there were a total of two belief statements generated from the responses to the GA question reflective of two of the TFA constructs, Burden and Perceived effectiveness. In comparison responses to the TFA questions were coded into all of the TFA constructs, except for ethicality and generated a combined total of 17 belief statements.

For the construct of Burden, the information elicited from the responses to the GA question was similar to the responses to the TFA question for burden. However, the responses to the TFA question provided more specific information with regards to the ease of using the shorter reports in comparison to the reports received in standard practice. Majority of participants felt that the feedback reports received in the intervention were more user friendly. The TFA analysis also generated a suggestion for improvement. Participant 2 felt that the level 2 feedback report (main findings report) was still quite long and a summary of each hospital's performance may be better.

For the construct of Perceived effectiveness, the GA question generated two belief statements. Participants felt the feedback reports were useful for the clinicians who implement and write policy, and specifically that the level 1 reports (summary findings report) are likely to be more effective as staff will be more responsive. In comparison, responses to the TFA question about the perceived effectiveness of intervention 1 generated a total of six belief statements, including two suggestions for improvement. From the TFA analysis it emerged that the majority of participants felt that the brief report is far more useful because it is concise and simple. The shorter reports would also be ideal to take along to the transfusion committee meetings to discuss feedback in a reasonable timeframe. Participants also indicated that the action plan provided in the level 2 feedback report (main findings report) will be effective in engaging clinicians to read the report so that they could complete the action plan. The two suggestions for improvement include considering how to engage clinicians not familiar with the content of the reports, and to consider how the findings of the audit are disseminated to those outside the core transfusion team.

4.4.6.2 Intervention 2: toolkit

For intervention 2, there were a total of six belief statements generated from the responses to the general acceptability question reflective of three of the TFA constructs, Burden, Perceived effectiveness and Intervention coherence. In comparison responses to the TFA questions were coded into all seven TFA constructs and generated a combined total of 12 belief statements.

For the construct of Burden, the information elicited from the responses to the GA question indicated that one participant felt that there may be too much information in the toolkit. However responses to the TFA question about Burden indicated that the majority of participants felt that the toolkit was easy to comprehend due to the layout, clarity and familiarity of the tools. There were also differences in the responses for the construct of Intervention coherence. The responses to the GA question indicated that participants understood that the toolkit provided ideas on how to feed back. In response to the TFA

question about Intervention coherence participants provided richer and more elaborated information. Participants understood the purpose of the toolkit was to disseminate the recommendations in a number of different ways, and that the toolkit could also be applied to other audits.

For the construct of Perceived effectiveness, the GA question generated four belief statements, with one belief statement indicating high perceived effectiveness, specifically referencing the use of familiar tools. However, the remaining three belief statements generated from the GA responses indicate participants perceived the effectiveness of the toolkit to be low. Participants stated that the tools did not add to the mechanism of delivering feedback (as disseminating feedback is part of the clinicians' job role) and that the toolkit will not make a difference in disseminating the feedback without the enthusiasm of the people delivering it. In comparison, responses to the TFA question about the Perceived effectiveness of intervention 2 generated a total of three belief statements, including one suggestion for improvement. From the TFA analysis it emerged that the majority of participants felt that the toolkit is more effective than current practice. However, participants also indicated that whilst the tools are useful, what aids feedback is the action plan and recommendations within the actual report itself. The suggestion for improvement included overcoming the problem of getting staff to read and engage with the toolkit.

4.5 Discussion

This study applied both a general question and a set of questions based on the multiple constructs in the TFA to examine the acceptability of two feedback interventions delivered to healthcare professionals within the feasibility and piloting phase of the of the AFFINITIE programme (Gould et al., 2014). The findings suggest that the application of the TFA provided richer insights about the acceptability of both interventions compared to a single general acceptability question.

4.5.1 Summary of findings

The responses to the general acceptability question asked at the start of each of the interviews did provide some insights into intervention acceptability. Notably, all participants considered the enhanced reports to be acceptable and more effective in comparison to standard practice. For the toolkit intervention, responses to the global acceptability question indicated a mixed evaluation of the acceptability of the toolkit, in which participants felt certain components of the intervention were acceptable whilst others were not (i.e. preference of the action plan and poster vs. fishbone analysis).

The analysis of the GA responses also provides support that acceptability is a multi-component construct. This is evident from the spontaneous emergence of some of the TFA constructs in responses to the GA question: Perceived effectiveness, Intervention coherence and Burden. This suggests that the component constructs of acceptability included in the TFA are representative of what the sample of participants in this study associated with the concept of acceptability.

The TFA analysis across both interventions provided more elaborate evidence with regards to which components of both interventions are considered acceptable. Whilst this is not surprising given that there are more questions, the responses elicited from the TFA questions provide insights into the acceptability of specific components in each intervention, that were

not evident in the responses to the global acceptability question. For example, for intervention 1 participants indicated they liked having direct evidence for their hospital in comparison to the national figures (Affective attitude). The TFA approach also provided information on participants' confidence in disseminating the recommendations and ease of extracting the key information in the new layout (Self-efficacy).

For intervention 2, the TFA-based analysis revealed that participants liked the familiarity of some of the tools included in the toolkit (Affective attitude). Participants also reported that there were no direct ethical consequences of not using the toolkit as the ethical implications on patient care are associated with not engaging with the audit report (Ethicality).

4.5.2 Suggestions for enhancing intervention acceptability

Table 21 displays the belief statements generated within the TFA deductive content analysis that could be targeted to enhance intervention acceptability. The TFA questions and analysis generated more actionable suggestions for enhancing the acceptability of both interventions. For intervention 1, within the construct of Perceived effectiveness, participants expressed that the effectiveness of the reports did not solely depend on report structure and content but also disseminating the reports to the relevant people within blood transfusion practice. A similar belief statement emerged for the toolkit intervention, in which participants felt that the toolkit was a good idea but there is a problem with getting staff to engage with it. As the interviews were conducted during the intervention piloting phase, intervention developers could explore options on how to ensure the reports are disseminated to key staff and focus efforts on encouraging engagement with the toolkit. Within the construct of Perceived effectiveness it also emerged that participants thought clinicians not familiar with the content of the reports may have difficulty in engaging with the reports. Thus, intervention developers could consider providing a brief summary of the purpose of the reports and explanation of the content of the reports.

Responses to the general acceptability question did not generate any insights into potential strategies to enhance intervention acceptability for the feedback and the toolkit interventions.

Table 21: Suggestions for enhancing intervention acceptability based on the responses to the TFA questions

	Feedback reports	Toolkit
Burden	The reports are still quite long a summary of each hospital's performance may be better *Suggested enhancement* *Intervention developers could provide a summary page at the beginning of each feedback report*	
Perceived effectiveness	Effectiveness in making a change to clinical practice not just about the reports but how to disseminate to those outside of the immediate core transfusion team *Suggested enhancement* *explore options on how to ensure the reports are disseminated to key staff* Clinicians not familiar with the content may find it difficult to engage with the reports *Suggested enhancement* *Provide a brief summary of the purpose of the reports and explanation of the content of the reports.*	The toolkit is great but the problem is getting staff to read and engage with it *Suggested enhancement* *Focus efforts to encourage engagement with the toolkit.*

4.5.3 Limitations

The study findings should be considered in light of its limitations, including the small number of participants and the purposive sample, which limit the generalisability of the findings to the wider population of HCPs and to interventions other than feedback interventions.

Whilst it is acknowledged that the use of responses from a single question (for general acceptability) versus eight questions (for the constructs in the TFA (v1)) did not allow for more meaningful comparisons to be made in the form of inferential statistics, the content analysis did detect a difference in the range of responses and content of responses for the TFA compared with the GA approach.

To avoid potential interviewer bias, the topic guide was developed alongside research fellows and clinical collaborators working on the AFFINITIE programme and several iterations were completed before the topic guide was finalised.

It is also important to note that at the stage of developing questions for the topic guide, the constructs in the preliminary TFA (v1) had not been formally defined, thus the questions may not have been worded in the best possible way. Furthermore, the development of the acceptability topic guide was an iterative process, which coincided with iterations from the TFA (v1) and the development of the TFA (v2) (Sekhon et al., 2017). Thus, for this study, there were no questions within the topic guide for the constructs of Intervention coherence, and Self-efficacy. Despite this, the TFA analysis in this study does provide some independent support for the inclusion of these as responses were still code-able to each of the three constructs.

The interviews for both interventions were completed consecutively in the same session. Thus it is possible that participants' response to the general acceptability question at the beginning of the interview for intervention 2, may have been influenced by the TFA construct questions they had answered in the interview for intervention 1. However, the use of the second GA question asked at the end of both interviews was applied to detect if there were any differences in responses.

4.5.4 Strengths of the TFA approach

Nonetheless, this study provides preliminary evidence to support the use of the TFA to explore the acceptability of healthcare interventions qualitatively. Specifically, the use of the

TFA provided richer information in understanding specific characteristics and components of the intervention which were perceived as acceptable or unacceptable.

Researchers have recognised the value of applying qualitative research to improve the acceptability of an intervention (Yardley et al., 2015). A qualitative approach that has been applied to assess and enhance the acceptability and feasibility of an intervention during the early stages of development includes the person-based approach (Yardley et al., 2015).

Yardley and colleagues (2015) emphasise the importance of asking open-ended questions to elicit an in-depth understanding of the perspectives of intervention users as well as the implementation context. Similarly, the TFA has applied open-ended questions and complements the person-centred approach, providing researchers with a theoretical framework to apply when developing interview topic guides, which can generate evidence to inform potential strategies for enhancing intervention acceptability.

4.5.5 Conclusion

The Theoretical Framework of Acceptability (Sekhon et al., 2017) proposes seven component constructs of acceptability. From a methodological perspective, this study has shown that the application of the TFA to assess (retrospective) intervention acceptability within the feasibility and pilot phase of an intervention cycle is informative. The use of the TFA resulted in greater depth of insights into the acceptability of both interventions and evidence for potential strategies to enhance intervention acceptability in comparison to a single general question.

5 Application of the Theoretical Framework of Acceptability to assess acceptability of an intervention directed at patients: a semi-structured interview study

5.1 Chapter overview

The present chapter describes the results of a qualitative semi-structured interview study, which was embedded in a Randomised Controlled Trial (RCT) of a patient –initiated treatment service for Benign Essential Blepharospasm (BEB) and Hemifacial Spasm (HFS) compared to standard care (Wickwar et al., 2016). In this study the Theoretical Framework of Acceptability (TFA) was applied to assess concurrent (experiential) acceptability during an RCT comparing two interventions; the standard care appointment booking service (control group) and the patient-initiated appointment booking service (intervention group). Interview transcripts were analysed by applying the content-analysis method, using the TFA as a deductive coding framework, to identify similarities and differences in intervention acceptability. On the basis of the findings, actionable suggestions to enhance the acceptability of both interventions are proposed.

5.2 Introduction

There has a been drive in the National Health Service (NHS) to reduce the number of unnecessary follow-up and outpatient appointments (National Health Service Institute for Innovation and Improvement, 2009). To achieve this, the focus has shifted from developing a patient-centred NHS to providing services which are 'patient-led' (Department of Health, 2005; Fitzpatrick, 2005).

The Department of Health has described the concept of patient-led care as such, "patients are supported to make choice about, and take control of, their health and health care, and services evolve to provide personalised care by listening and responding to patients" (p. 5 Department of Health 2005).

As a result, patient initiated clinics (PICs) have been introduced across primary and secondary care (Fitzpatrick, 2005; Whear 2013; Wickwar et al., 2016). Specifically, for the management of some long-term conditions, PICs have been designed with the aim of empowering patients to schedule consultations and treatment appointments according to their symptoms needs (Whear et al., 2013; Wickwar et al., 2016).

5.2.1 Acceptability of patient-initiated clinics

In a systematic review investigating the acceptability of PICS in comparison to standard care, Whear and colleagues (2013) synthesised evidence from nine studies across three long terms conditions: irritable bowel syndrome (IBS) (n = 4), breast cancer (n = 2) and rheumatoid arthritis (n = 4). The acceptability of the PICs was not reported in the breast cancer studies (Brown, Payne & Royle 2002; Sheppard et al., 2009). In the rheumatoid arthritis studies, patients in the intervention group reported greater levels of confidence in the PICs and satisfaction with the PICs for manging their symptoms in comparison to patients in the control group (Kirwan et al., 2003; Hewlett et al., 2000; 2005). To determine patient preference and satisfaction with the PIC services, these studies measured satisfaction and pain across follow-up intervals.

Patients in the IBS studies, were more likely to report the PICs to be a preferred and acceptable follow-up system in manging their IBS compared to patients receiving standard care (Robinson et al., 2001; William et al., 2000). Robinson and colleagues conducted an RCT to assess the effectiveness of an IBS patient-initiated service (intervention group) in comparison to the standard hospital follow-up system (control group). Acceptability was explored as a secondary outcome, and was assessed via participant opinions of the PIC service at the end of the trial. Complete data at the end of the trial was available for 174 patients, 86 in the intervention group and 86 in the control group. Participant opinions at the end of trial indicated that 82% of patients in the intervention group were more likely to report preferring the PIC in managing their IBS. Only two patients reported preferring the standard hospital follow-up service and 13 indicated no preference. In the control group,

95% of patients indicated that they would prefer using the PIC service to manage their IBS in future.

In a pragmatic RCT William et al. (2000) evaluated a patient-initiated service in comparison to routine, fixed follow-up appointments for IBS. Acceptability was explored by a postal questionnaire, which focused on participant preferences and views of the follow-up services. Results indicated that 85% (69/81) of the patients in the intervention group had stronger preference for the patient-initiated follow-up service, with 41% (34/83) in the control group also expressing that they would have preferred the patient-intimated service. Reasons given for this preference included that the appropriateness of attending appointments when required, specifically when patients felt ill; whilst reasons for preferring the routine fixed appointments were reported as reassurance that appointments were confirmed. Participants in the intervention group also reported difficulty in arranging follow-up appointments in the patient-initiated service.

Based on these studies, it is evident that a greater understanding of the acceptability of patient-initiated services is required. Whilst Whear et al., (2013) report that most of the included papers in their systematic review considered the acceptability of the PICs, the rheumatoid arthritis studies (Kirwan et al., 2003; Hewlett et al., 2000; 2005) did not refer to the construct of acceptability when reporting their patient satisfaction and patient preference data. Whereas in the IBS studies acceptability was assessed via participant opinions of the PIC service at the end of the trial (Robinson et al. 2011) and via a postal questionnaire focusing on participant preferences and views of the follow-up services (William et al., 2000).

Despite the potential advantages of conducting qualitative studies alongside RCTs to understand and interpret trial findings (Craig et al., 2008; O'Cathain et al., 2015; Moore et al., 2015), none of the studies reported in Whear et al's (2013) systematic review adopted qualitative methods to explore the acceptability of the PICs.

Lewin, Glention and Oxman (2009) advocate the use of qualitative research before, during or after a trial as means "to explore deliverers' and recipients' responses to the intervention" (p. 2).

5.2.2 Applying the Theoretical Framework of Acceptability

The TFA has been developed to assess acceptability during the different phases of the MRC intervention development and evaluation cycle across three temporal perspectives: anticipated (before participation), concurrent (during participation) and retrospective (after participation) (Sekhon et al., 2017).

Sekhon and colleagues suggest that there are advantages to assessing participants' experiential acceptability of an intervention during the period when participants are still receiving and engaging with the intervention. For example, analysis of qualitative interviews completed during intervention participation and/or delivery may provide information about why there are low or high retention rates, and fidelity of delivery and receipt of the intervention (Rixon et al., 2016). Moreover, O'Cathain, Thomas, Drabble, Rudolph and Hewison (2013) also emphasise the value of conducting qualitative research alongside RCTs to assess the acceptability of the intervention and to aid clarification of trial findings.

5.2.3 Aims and objectives

In Chapter 3 the rationale for adopting a patient-led model of care for the management of BEB and HFS was described. The RCT (see section 3.2.1 page 74 for details) is the first study to evaluate the effectiveness of the patient-initiated services for BEB and HFS. To date, there is no evidence for the acceptability of patient-initiated services in the management of blepharospasm and hemifacial spasm.

The aim of this study was to investigate concurrent acceptability of an intervention by comparing the use of a series of questions that reflect a multi-construct theoretical framework of acceptability (the TFA) with the use of a single general acceptability (GA) question. This semi-structured interview study was embedded within an RCT investigating the effectiveness of patient-initiated services for BEB and HFS (Wickwar et al., 2016).

The specific objectives of this study were to:

1. Assess patients' concurrent acceptability of the appointment booking systems in each trial arm (standard care vs patient-initiated), by asking a single general question

2. Assess patients' concurrent acceptability of the appointment booking systems in each trial arm, by using a series of seven questions (plus prompts) reflecting the constructs of the TFA

3. Compare participants' responses to the single general acceptability question asked at the beginning and end of the interview (after they have answered questions based on the TFA) to assess whether participants changed their general evaluation of service acceptability after responding to the seven TFA questions

5.3 Methods

5.3.1 Design

This study utilised semi-structured interviews embedded within the BEB and HFS RCT (Wickwar et al., 2016).

5.3.2 Ethical approval

The study received full ethical approval from Moorfields Eye Hospital NHS Trust (Ref: 15/LO/0439)

5.3.3 Sampling of participants

All participants who took part in the RCT were eligible for participation in the interview study. Participants were asked for their consent to be approached by the primary researcher (MS) or the research fellow (employed on the RCT for day to day responsibility of the study) to take part in the interview study when they consented to participate in the RCT. A proportion of participants that agreed to take part in the interview study were contacted by telephone to ask if they would be willing to take part in a qualitative interview study exploring participants' acceptability of each of the booking services at their next clinic

appointment. Control group participants were contacted to complete the interview to coincide with their next appointment, roughly three –month post randomisation.

Participants in the intervention group were contacted to complete the interview to coincide with their next treatment appointment, however after they had experienced using the patient-initiated service in booking a minimum of one of their treatment appointments. Unlike the control group the interviews were not always completed at three-month follow –up. This was because participants differed in the intervals in booking their own appointments ranging from six weeks to four months. Additional written consent was obtained from all participants before the interview undertaken (Appendix L).

5.3.4 Sample Size

The sample size of participants included in this study was determined by the availability of participants in both the standard care group, and patient –initiated group agreeing to participate in the study, during the period of data collection January 2016 and September 2016. To get a sense of the data, the researcher listened to each of the completed interviews in order of recruitment. At the end of recruitment, no new themes were emerging in relation to all the questions asked within the topic guides.

5.3.5 Materials

5.3.5.1 Development of the topic guides

Two separate interview topic guides focusing on the acceptability of the appointment booking services (standard care and patient initiated service respectively) were developed with the supervisory team and two research fellows working on the BEB and HFS trial. Each topic guide compromised a similar line of questions focusing on the acceptability of the appointment booking services. The topic guides consisted of five sections: (1) background information on the participant's diagnosis and history of receiving botulinum injection treatments at Moorfields Eye Hospital (2) a single-item general acceptability question asked at the start of the interview (3) seven questions with prompts reflecting the seven component

constructs of acceptability in the TFA (v2) (4) a single general acceptability question asked at the end of the interview.

The general acceptability question was presented at the beginning of each interview to ensure that participants' responses concerning acceptability were not influenced by responding to the series of TFA questions and to determine participants' understanding and interpretation of acceptability as a concept. The general acceptability question asked at the end of the interview was included to determine whether responding to the series of TFA questions changed participants' overall assessment of intervention acceptability when measured using a single-item general acceptability question, i.e. did participants' responses change after having answered all the TFA questions. The seven component construct definitions of the TFA (v2) guided the researcher to develop open- ended questions that could be applied to assess the acceptability of both trial arms.

There were several iterations from the first to the final (v5) version of the interview topic guide. Modifications from version 1 to version 4 included re-ordering of the questions. Specifically, the background sections for both topic guides included additional questions asking participations their thoughts on the current booking system (standard care service) and on any information they may have received about booking their own appointments (patient-initiated service) (see appendix E for patient information sheet). This change was applied to enhance the logical flow of the interview. Both topic guides then included the general acceptability question, followed by questions focusing on the TFA component constructs. Here the research fellows conducting the trial, advised the researcher that some of the constructs would need several prompts to ensure that the complexity of the intervention was covered and that participants understood the questions. For example, the construct of self-efficacy is defined by the TFA (v2) as "the participant's confidence that they can perform the behaviours required to participate in the intervention", the behaviours for both trial arms differed. For participants in the intervention arm (patient-initiated appointment booking service), the assessment of confidence relates to participants being

able to judge their own symptoms in order to book their own appointments (the behaviour). For participants receiving standard care, the behaviour differs, as it is about the participant's confidence in attending their booked appointments. Similarly, the focus for the questions to reflect intervention coherence, defined as "the extent to which the individual understands the intervention and how it works" also differed between both topic guides. Thus the interview topic guides covered the exact same subject areas but the form of the questions were tailored to reflect each intervention.

5.3.5.2 Piloting of the topic guides

Version 4 of the patient-initiated and standard care topic guide were piloted on two patient representatives on the BEB and HFS RCT study committee, to check for the flow of the interview schedule, and participants' understanding and interpretation of the questions.

Both patient representatives understood the BEB and HFS RCT and had experience of having their treatment appointments booked for them by their healthcare professionals. One of the patient representatives completed a pilot interview for the current service, and the other patient representative completed a pilot interview for the patient initiated service (imagining that she had experience of booking her own appointments). The pilot interviews resulted in small changes to two of the questions for the construct of perceived effectiveness in which both patient representatives noticed that two of the prompts were very similar to one another. Thus one of the prompt questions was removed. Table 19 displays version 5 of both topic guides.

Table 22: Intervention and control group interview topic guides

Construct/ question purpose	**Intervention Group** Patient initiating their own appointment	**Control Group** Standard Care- appointment booked by healthcare professionals
Background info	**How often do you have treatment at the moment?** **When was your last/ most recent appointment?**	**How often do you have treatment at the moment?** **When was your last/ most recent appointment?**
	I'll begin by asking you a few questions about the new booking system. Can you tell me about any information you received about booking your own appointments? What are your thoughts on the information provided? How well do you think the information explained the process of booking your own appointments? *(Additional prompts- based on participant's response)*	**I'll ask you questions about your thoughts on the appointment booking system. Can you tell me how your appointments are booked?** How is it decided when the time is right for your next appointment? Does your healthcare professional discuss when you should have your next treatment appointment? Have there been times when you've attended a booked appointment but not had your treatment? Can you tell me more? Do you remember why this was?
	How do you decide when the time is right to book your appointment? What then, are your steps in booking your appointment? *How confident are you in booking your own appointment? (Self-Efficacy)* Did you refer to the patient information leaflet provided? Have you had any problems in booking your own appointments? Can you tell me more? How was the problem resolved?	
Global acceptability	**How acceptable do you think the new service is?** Just in general what are your thoughts on the new service? *(Reflective listening, ask suitable follow up questions if applicable e.g. do you think this system is more convenient?)*	**How acceptable do you think the service is?** Just in general what are your thoughts on the new service? (*Reflective listening, ask suitable follow up questions if applicable e.g. so you think this system is more convenient?)*
Intervention coherence	**What do you think your doctor is trying to achieve in asking you to book your own appointment?** *(Follow up based on patient's response)*	**Okay, so to begin with can you briefly tell me how attending your booked appointments works in managing your eye condition?** *(Follow up based on participant's response)*
Affective Attitude	**Is there anything in particular you like about being able to book your own appointments?** Is there anything that you particularly dislike?	**Is there anything in particular you like about your healthcare professional booking your appointments?** Is there anything that you particularly dislike?
(Instrumental Attitude)	**I can imagine there may be some advantages and disadvantages in being able to your own treatment appointments. Can you tell me about any advantages?** And do you think are there any advantages disadvantages?	**I can imagine there may be some advantages and disadvantages in your healthcare professional booking your appointments. Can you tell me about any advantages?** And do you think are there any advantages disadvantages?
Self-efficacy (Burden)	**Can you tell me about how confident you feel in knowing your symptoms, in order to know when to book your next appointment?** Can you tell me more? Is this easier or harder than you initially thought it would be?	**Can you tell me about how confident you feel about attending your appointments for treatment?** - Can you tell me more?
Burden	**How much effort does it take you to book your own appointments?** Was this more or less effort than you initially thought?	**How easy or difficult it is to attend your scheduled appointments?** Have you ever not come to an appointment without cancelling? Can you tell me if this was related to your symptoms?

	Has this taken more or less time than you initially thought?	**How often have you had to reschedule your appointment?** Were any of these times related to your symptoms? In your opinion how easy or difficult it is to reschedule a booked appointment?
Opportunity costs	**Do you think booking your own appointments has interfered with your other priorities?** If so, can you give me an example? For example, have you ever had to cancel or postpone another important activity because you needed to book an appointment?	**Does having to attend your appointment interfere with your other priorities?** *If so* how has it interfered with your other priorities, can you give me an example? For example, have you ever had to cancel or postpone another important activity because you needed to reschedule a booked appointment?
Ethicality	**How fair (to all patients) is a system where patients book their own appointments?** Do you think patients should be able to decide when they should have their appointments?	**How fair (to all patients) do you think the current booking system is?**
Effectiveness	**Do you feel there are any health benefits of the self-booking system in the management of your Blepharospasm?** Can you tell me more/ what the benefits are? How effective do you think it is to be able to book your own treatment appointments, Can you tell me more? Why do you think it is effective/ ineffective?	**What do you feel might be the health benefits of the current booking system for managing your Blepharospasm?** Can you tell me more/ what the benefits are? How effective do you think the booking system is? Why do you think it is effective/ ineffective?
Global acceptability	**Having gone through the questions, can you tell me again how acceptable the self-booking system is?**	**Having gone through the questions, can you tell me again how acceptable you think the current system is?**

5.3.6 Procedure

Semi-structured interviews were conducted between January 2016 and September 2016 in a seminar room in the research department at Moorfield's Eye Hospital. Each of the Interviews were completed by the primary researcher (MS) and were digitally recorded with the participant's permission and transcribed verbatim, with any identifiable data removed.

5.3.7 Analysis

The data generated was analysed by applying principles from content analysis method as described in detail in chapter 3 (see section 3.2.7. 2 page 77 for details). Prior to applying *step 1: deductive coding* and *step 2: generation of belief statements* a coding manual was developed and training was arranged for the second coder.

In chapters 3 and 4 a coding manual was not developed, as data from the interview transcripts was coded deductively against TFA construct definitions. The primary researcher and the two additional researchers (JF and MC) were familiar with the TFA construct definitions and had extensive understanding of the TFA as a whole. In this study, double coding was completed on four participant transcripts by a research fellow employed on the BEB and HFS RCT.

In order to ensure that the double coder understood the TFA and its application in analysing qualitative data a coding manual was developed (Appendix M). The manual included three main sections. The first section included key information taken from the BEB and HFS RCT trial protocol (Wickwar et al., 2016). The information described the two trial arms and how patients in the patient-initiated service, and those in the standard-care service would book their treatment appointments. The second section included a definition of acceptability as proposed by Sekhon et al (2017) and the seven TFA constructs. The third section included a table per construct, with example quotes taken from a control group (standard care) and intervention group (patient-initiated) coded by the primary researcher, that reflected the TFA construct. In the training session the primary researcher described the context of the TFA and its application in the current study. The researcher also explained when coding each

transcript to always remember the intervention that the participant received. For some constructs the behaviours differed according to the intervention received. For example, for the construct of self-efficacy participants in the control group were asked about their confidence in booking their own appointment. Whereas participants in the intervention group were asked about their confidence in attending their scheduled appointments. The researcher went through each of the TFA constructs and example quotes with the research fellow, explaining how the quotes reflected each of the TFA constructs. The researcher also discussed examples from the coded transcripts where text was not code-able, as the text did not reflect any of TFA constructs. This was key in highlighting to the double coder where data in the transcripts may not be relevant or not applicable to code into the TFA constructs. After the training session, the double coder initially coding two transcripts for inter-rater reliability assessment.

Next, the following processes as described in Chapter 4 was applied:

1) *Deductive Coding:* Responses to the general acceptability question (asked at the beginning of the interview and end of the interviews) and seven TFA questions (including prompts) were analysed against the seven TFA construct definitions (Sekhon et al., 2017).

2) *Inductive Content analysis*: Once the deductive analysis had been completed, an inductive content analysis was applied (Francis et al., 2009). The primary researcher (MS) identified summary belief statements within each of the TFA constructs and for both the single acceptability questions and the TFA question responses by grouping together emerging belief statements. The second coder independently generated emerging belief statements for four participant transcripts as a reliability check.

In the next stage an analysis meeting was held with the researcher and additional two researchers (JF and MC). In the meeting all identified summary belief statements within each construct were discussed and reworded to convey meaning that represented the majority of participant responses. As described in chapter 4 (see section 4.3.7 page 105 for details) the same approach of frequency counts were also applied to generate a count for the number of participant that reflected each unique belief statement within each of the TFA constructs. Thus the frequency count of the total number of unique belief statements per construct formed the criterion for determining which approach (the TFA approach or the single acceptability question) generated more information about acceptability.

5.3.8 Inter-rater reliability

To test the reliability of the researcher's (MS) coding a member of the BEB and HFS trial (SW) completed two phases of double coding. In the first phases both MS and SW coded two randomly selected transcripts (from 18 available) into the TFA. Both researchers met to discuss their coding and inter-rater reliability was calculated. Agreement was registered if both if both researchers identified part of the transcript that was coded into the same TFA construct. Instances where one of the researchers identified text in the transcript and coded it into a TFA construct, and the other researcher did not code it at all or did not code in into the same TFA construct, disagreement was registered. Percentage agreement rather than Cohen's Kappa was used to assess reliability because the items (i.e. sentences in transcripts) may be coded into more than one TFA construct (Cohen, 1968). Any disagreements in coding were discussed and changes were agreed and the coding manual was revised.

The next phase involved both researchers coding an additional two transcripts, applying the revised coding manual. Both MS and SW then met to discuss their coding for transcripts 3 and 4 and inter-rater reliability was calculated. Inter-rater reliability was also assessed for the generation of belief statements (inductive content analysis) within and across all four

transcripts. Both MS and SW produced belief statements for each of the four transcripts, and inter-rater reliability was calculated.

5.4 Results

128 participants (64 in the intervention group and 64 in the control group) agreed to be approached to take part in a qualitative interview during their participation in the trial. A total of 18 semi-structured interviews were conducted. Of these 10 (56%) participants were in the intervention trial arm (patient- initiated service) and eight participants (44%) were in the control arm (standard service). The interviews lasted between 19 and 53 minutes. Table 22 displays participant characteristics including trial arm, gender, diagnosis and length of average treatment cycle

Table 23: Characteristics of participants that took part in the semi-structured interviews

Participant	Trial arm	Gender	Diagnosis	Treatment cycle
1	Standard care	Female	Blepharospasm.	3 months
2	Standard care	Female	Hemifacial Spasm	3 months
3	Standard care	Female	Blepharospasm	3 months
4	Standard care	Female	Blepharospasm	3 months
5	Standard care	Female	Blepharospasm	3 months
6	Standard care	Female	Blepharospasm	10 weeks
7	Standard care	Male	Blepharospasm	10-12 weeks
8	Standard care	Male	Blepharospasm	12 weeks
9	Patient-Initiated	Female	Blepharospasm	6-8 weeks
10	Patient Initiated	Male	Blepharospasm	6 weeks
11	Patient Initiated	female	Blepharospasm	2-3months
12	Patient Initiated	Female	Blepharospasm	3 months
13	Patient Initiated	Female	Hemifacial spasm	3-4months
14	Patient Initiated	Female	Blepharospasm	9 weeks
15	Patient-Initiated	Female	Blepharospasm	6-12 weeks
16	Patient Initiated	Female	Blepharospasm	8-10 weeks
17	Patient Initiated	Female	Hemifacial spasm	3 months
18	Patient Initiated	Male	Blepharospasm	3 months

5.4.1 Inter-rater reliability results

Stemler (2004) suggests that percentage agreement between 75-90% is acceptable. Inter-rater reliability for the deductive content analysis of the first two transcript was under the

recommend level, transcript 1 55%; Transcript 2 60%. The researcher and the double coded discussed all disagreements in detail, going through each of the data extractions. As a result changes were made to the coding manual, in which more details were provided alongside the definition of each of the TFA constructs. Inter-rater reliability for the deductive content analysis of third and fourth transcript was high transcript 3 80%; Transcript 4 82%. Inter-rater reliability for the generation of belief statements across all four transcripts was also high (81%).

5.4.2 General acceptability responses

Figure 10 displays the number of unique belief statements generated from the responses to the single acceptability questions for both the standard service and patient-initiated service. For the control group utterances could be coded into the TFA constructs of: Burden, Perceived Effectiveness and Intervention Coherence. For the intervention group responses could be coded into Burden and Perceived Effectiveness.

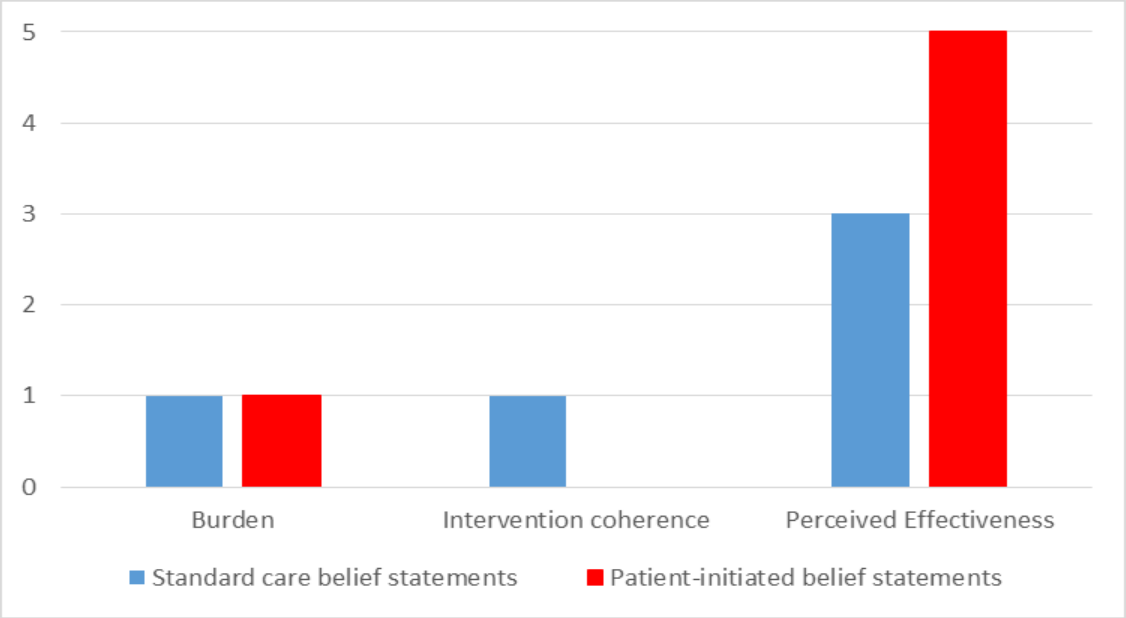

Figure 10 Number of unique belief statements generated from the responses to the single acceptability questions that could be coded into some of the TFA constructs

5.4.2.1 Control group – standard service

In response to the general acceptability question asked at the start of the interview, it appeared that all participants considered the standard booking service to be acceptable. Participants described the standard service as "okay", "very acceptable" "extremely straightforward" and that "it works" (Appendix N). Table 24 displays the responses to the general acceptability question asked at the beginning and end the of the interview that could be coded into the TFA constructs. The table also displays the inductive belief statements generated within each of the TFA constructs.

Control group responses to the single acceptability question asked at the beginning of the interview, could be coded into two of the TFA constructs: Perceived effectiveness and Intervention coherence.

There were three belief statements generated within the construct of Perceived effectiveness. Participant 1 expressed that the system was okay, but it was not always possible to get the appointment time that she wanted. Three participants stated that the standard service and treatment cycle was working for them. An example is provided from participant 4 in Table 22:

> *"I think for me it does work. I have been offered the opportunity to book my own appointments but I'm a little bit wary of that knowing that when I have tried to change you're so, so busy. At least if I have an appointment in the books, I know that it's there" (Participant 4)*

When responding to the GA question, participant 4 made a comparison of the standard service to the patient-initiated service. Specifically this participant did not think the patient-initiated service would work in providing an appointment when she would need it and therefore the standard service was acceptable as she would have a scheduled appointment (Table 24).

Lastly another belief statement that was generated reflected the construct of Intervention coherence. Participant 6 expressed that within the standard service patients have the opportunity to discuss their treatment cycles with their health care professional at each appointment, and the next appointment is booked accordingly.

A majority of the participants did not change their opinion on the acceptability of the standard service, indicating that the seven questions and prompts used to assess the TFA constructs did not influence responses to the single question asked at the end of the interview. However participant 4 did elaborate in response to the GA question asked at the end of the interview indicating that the standard service was burdensome with regards to rescheduling a booked appointment. The participant felt greater flexibility was required in the system:

> *"I would like it to be a bit more flexible, if there is a need for you to change an appointment. I take into account the fact that there are so many people coming through, I can see it's very difficult for any bookings ... so it isn't easy. I would like a bit more flexibility but that isn't always a possibility". (Participant 4)*

In this example the TFA construct of Burden may have influence participant assessments of acceptability when the general question was asked at the end of the interview.

5.4.2.2 Intervention group- patient initiated service

The responses to the GA question asked at the start of the interview including generic descriptions of the intervention included "fine", "it's acceptable", "very good" and "okay" (Appendix O). Four of the 10 participant responses to the single acceptability question asked at the start of the interviews were coded into the construct of Perceived effectiveness (Table 24) and indicated mixed experiences with regards to the effectiveness of the patient initiated service. Participant 13 indicated that the intervention had worked for her and she hopes that it continues:

> *"I think it's brilliant. It works very well for me in our own personal situation. Yeah, I think it's excellent and long may it continue" (Participant 13)*

Participant 12 reported that the current system had not worked for her yet, and participant 14 stated she had mixed feelings towards the patient-initiated service as it is not as responsive as it should be in giving patients the confidence that they'll get an appointment (Table 24).

The fourth belief statement indicated that whilst the participant felt the system was a good idea in principle in terms of letting people book their own appointments, they felt that the system would be more effective if it was available on more days:

> *"I think it's a good idea for people that are really suffering with their eyes. At least then you can pick up the phone and say, "Okay, I could have it on the Monday or the Friday". The only thing that I think they should have done is had the system that you could have it done on any day, not just on Monday or Friday, so really…you ring up and they squeeze you in where before there had to make an appointment, so that's the good thing, but I think they should have more days". (Participant 18)*

There was little difference in participant responses to the general acceptability question asked at the end of the interview, indicating the TFA questions did not influence their response. However two participant's response to the single acceptability question asked at the end of the interview included utterances that reflected the TFA constructs of Burden and Perceived effectiveness.

Participant 1 response suggests that there is low burden associated with the patient-initiated service as it has made it easier to attend treatment appointments:

> "*I mean, yeah, it does make it so much easier (to attend treatment appointments)" (Participant 16)*

Two participant responses to the GA question asked at the end of the interview reflected the TFA construct of Perceived effectiveness. An example is provided in Table 23 and demonstrates that participant 12 felt that the patient-initiated service was acceptable only if patients get their appointments in the agreed time frame.

In these examples the TFA construct of Burden and Perceived Effectiveness may have influence participant assessments of acceptability when the general question was asked at the end of the interview.

Table 24: Responses to the single acceptability question asked at the beginning and end of the interview coded into TFA construct

Construct	Control group: GA Quote	Control group belief statement*	Total Frequency per belief statements (out of 8)†	Intervention Group: GA Quote	Intervention group belief statement*	Total Frequency per belief statements (out of 8)†
Burden	***Response to single question at end of interview*** I would like it to be a bit more flexible, if there is a need for you to change an appointment. I take into account the fact that there are so many people coming through, I can see it's very difficult for any bookings ... so it isn't easy. I would like a bit more flexibility but that isn't always a possibility. (Participant 4)	I would like a bit more flexibility to change an appointment **(-)**	1	***Response to single question at end of interview*** I mean, yeah, it does make it so much easier (Participant 16)	The PI system makes it easier to book an appointment **(+)**	1
Perceived effectiveness	***Response to single question at beginning of interview*** "I think for me it does work. I have been offered the opportunity to book my own appointments but I'm a little bit wary of that knowing that when I have tried to change you're so, so busy. At least if I have an appointment in the books, I know that it's there" (Participant 4) ***Response to single question at beginning of interview*** It's okay. You can't always get the time that you want. Because I live quite a way away. I like an early appointment so that I can	The appointment booking system works for me as it's guaranteed I'll be seen. **(+)** The current service is okay but you can't always get the	3 1	***Response to single question at beginning of interview*** "Well if it works, it works well, I should imagine. But I've never had that yet." (Participant 12. 96) ***Response to single question at beginning of interview*** "I think it's brilliant. It works very well for me in our own personal situation. Yeah, I think it's excellent and long may it continue." (Participant 13) ***Response to single question at beginning of interview*** "I think I have got mixed feelings about it	The PI system has not worked for me yet **(-)** The system is brilliant it's worked for me, I hope it continues **(+)**	1 1 1

	get home before the rush hour but that's not always possible. sometimes I've had 3pm, 3.30pm appointments which is a bit late for me (Participant 1) ***Response to single question at beginning of interview*** "The current service is okay. I was told they wanted to change the system that I could work earlier if I needed treatment, but my fear is, like, I needed treatment earlier but there might not be any appointments. So, if I don't have appointment for today and my eye is spasm is really worse and I delay the treatments, that's my only fear. And if I needed treatment and I call, say, tomorrow, and they said, "Come the next day," then that'd be fine. But I don't think that's going to be possible. If it's possible then it's fine". (Participant 2)	time that you want **(-)** I don't know how the PI system would work as I may not be able to get an appointment when I need it **(-)**	1	now because I think that it maybe it is not as responsive as it should be to really give people the confidence when they leave here, after treatment, that they'll be able to get their treatment next time" (Participant 14) ***Response to single question at beginning of interview*** I think it's a good idea for people that are really suffering with their eyes. At least then you can pick up the phone and say, "Okay, I could have it on the Monday or the Friday". The only thing that I think they should have done is had the system that you could have it done on any day, not just one Monday or Friday, so really…you ring up and they squeeze you in where before there had to make an appointment, so that's the good thing, but I think they should have more days. (Participant 18 92-97) ***Response to single question at end of interview*** "I think the self-booking system is acceptable if it works within the parameters that were set out at the beginning. But if it is not going to be able to work in that way, that is to say, that patients aren't going to be able to get their appointment, for any reason, within one to two weeks then I don't think it would be acceptable" (Participant 12)	I have mixed feelings about the system as it isn't as responsive as it should be give patients the confidence that they'll get an appointment **(+/-)** I think it's a good idea to let people book their own appointment, but the system should be available on more days **(+)** I think the system works if patients can get their appointments in the agreed time frame, but if they can't I don't think it would be acceptable **(+/-)**	1 1
Intervention coherence	***Response to single question at beginning of interview*** "You can discuss it always, either with the specialist nurse or the	You can always discuss your appointment cycle with the HCP and	1			

	doctor, and if you say, "Well, look, it's not working after six weeks now," they might say, "Well, I think six weeks is too much. Let's reduce it to eight weeks. How's that with you?" You have an opportunity to discuss it through and say, "Well, no, I can't manage at that time. Really do need six weeks"…I go to the desk and make my appointment. I thus know exactly when I'm coming back" (Participant 6)	then book your appointment accordingly **(+)**				

Notes: * Belief statements with **(+)** indicate a positive reflection of the TFA construct (e.g. for the construct of Perceived effectiveness- The *PI system makes it easier to book an appointment)*. Belief statements in **(-)** indicate a negative reflection of the TFA construct (e.g. for the construct of Burden – *I would like a bit more flexibility to change an appointment*). Belief statements with (+/-) indicate a neutral reflection of the TFA construct (e.g. for the construct of Perceived *effectiveness I have mixed feelings about the system).* † Total number of belief statements refers to the number of participants who reported a view that reflects each belief statement in the table. A participant may have reported more than one quote in line with the belief statement but each participant is counted only once per belief statement.

5.4.3 Theoretical framework of Acceptability assessment of acceptability

Figure 11 displays the number of unique belief statements generated from the TFA analysis to assess intervention acceptability of both the standard service and patient initiated service. Utterances could be coded into all of the seven TFA constructs (Affective attitude, Burden, Ethicality, Perceived effectiveness, Intervention coherence, Opportunity costs and Self-efficacy) for both interventions. The similarities and differences identified in intervention acceptability at the construct level for each intervention are discussed below. Each TFA construct includes a table with examples quote and unique belief statements generated for both trial arms. The frequency of the number of participants' responses that reflect each of the belief statements is also reported.

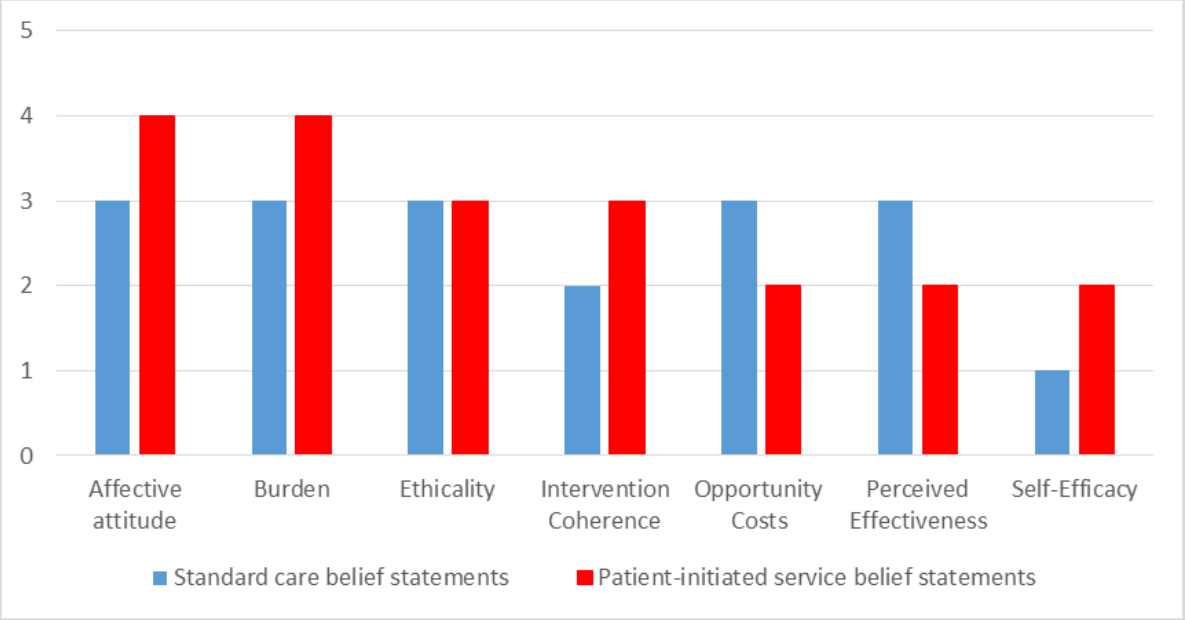

Figure 11 Number of unique belief statements generated for each of the TFA constructs for both interventions: Standard Care and Patient initiated service

5.4.3.1 Affective attitude

Table 25 displays example quotes and belief statements generated for the construct of Affective Attitude for both the control and intervention group based on participant responses.

Table 25 Example quotes for each of the inductive belief statements generated for both the control and intervention groups for the construct of Affective Attitude

Affective Attitude					
Control Group			**Intervention Group**		
Quote	Belief statement*	Total Frequency per belief statements (out of 8)†	Quote	Belief statement*	Total Frequency per belief statements (out of 10)†
It gives me a feeling of security, I know that- that's that done. I haven't got to think about it and it'll be sorted on that particular day (Participant 4)	1) The current system gives me a feeling of security **(+)**	1	I'm happy with booking my own appointment, as I've always managed to get an appointment (Participant 12)	1) I'm happy with booking my own appointment **(+)**	3
			I mean it's nice to be able to say "okay, I feel I'm ready for the next appointment" It's just nice to feel that you have more control. (Participant 16)	2) It's nice to feel you have the flexibility and more control **(+)**	2
I like that it's guaranteed that I'll be seen today. I have my appointment and I knew I would be seen, so I would definitely have my treatment today (Participant 3)	2) I like that it's guaranteed that I'll be seen today **(+)**	1			
			That's an element I was a bit cross about because obviously I was promised that I would never have to wait more than two weeks and I've actually had to wait three… (Participant 14)	3) I'm angry that I had to wait longer for an appointment than promised **(-)**	1
I would say that because there is a date that is comforting to know that the appointment is there (Participant 8)	3) It's comforting to know that the appointment is there **(+)**	1			
			It's that element of uncertainty, will I get an appointment when I ring up? (Participant 14)	4) There's an element of uncertainty if I will get an appointment **(-)**	1

Notes: * Belief statements with **(+)** indicate a positive affective attitude towards the booking system (e.g. *I like the intervention*). Belief statements in **(-)** indicate a negative affective attitude towards the booking system (e.g. *I dislike the intervention*). † Total number of belief statements refers to the number of participants who reported a view that reflects each belief statement in the table. A participant may have reported more than one quote in line with the belief statement but each participant is counted only once per belief statement

Three control group participants (participants 3, 4 and 8) expressed a positive attitude towards the current booking system. None of the eight participants within the control group expressed a negative feeling about having their appointments booked by their healthcare professional, this indicated that participants in the sample did not dislike the standard service.

In comparison, participants in the intervention group had mixed feelings. Three out of ten participants reported views in line with the belief statement "I'm happy with booking my own appointment". Two participants also expressed that they liked the feeling of flexibility and having control in booking their own appointments (belief statement 2, Table 25).

However participant 14, expressed having negative feelings towards the patient initiated service:

> " *That's an element I was a bit cross about because obviously I was promised that I would never have to wait more than two weeks and I've actually had to wait three"* (*Participant 14,)* and *"it's that element of uncertainty, will I get an appointment when I ring up?" (Participant 14)*

5.4.3.2 Burden

Table 26 displays the belief statements generated for both trial arms for the construct of Burden. Control group participants responses were coded into two belief statements which suggest that the current booking system is burdensome:

1) the existing system isn't flexible enough to allow you to change your appointment

2) it's difficult to travel to attend my treatment appointments

Table 26 Example quotes for each of the inductive belief statements generated for both the control and intervention groups for the construct of Burden

Burden					
Control Group			**Intervention Group**		
Quote	Belief statement*	Total Frequency per belief statements (out of 8)†	Quote	Belief statement*	Total Frequency per belief statements (out of 10)†
If I have to change it, I think it would rather difficult. I don't know how flexible it would be anymore. Because I've only had to do it that one time and it was difficult (Participant 6)	1) The existing system isn't flexible enough to allow you to change your appointment **(-)**	3	I didn't think it would be hard, it's just a different way of approaching it. It's no more effort than making any other appointments (Participant 15)	1) it's no more effort than making other appointments **(+)**	6
There are issues (with the timing of the appointments) because it's a long way to come and...I do have to travel (Participant 8)	2) It's difficult to travel to attend my treatment appointments **(-)**	3	At the moment I'm at home because of various reasons, so I've booked an appointment now and it's just coincided with the fact that I need it, so... the next time, I might have to come home and book an appointment to suit my eyes, the flexibility is brilliant (Participant 13)	2) The flexibility and convince of this system is brilliant **(+)**	4
It was easy to reschedule. One time I needed to reschedule because it was into my holiday period, so I quickly realised that I had got a holiday booked so I told the receptionist, and then they give me a date a week later. (Participant 3)	3) It's easy to reschedule an appointment if you need to **(+)**	3	I don't like the fact that you have to ring, you know because it has been part of a research project. I've had to ring number leave a message, wait for someone to come back to me or to chase them up (Participant 17)	3) I don't like the fact you have chase up to know when your appointment has been booked **(-)**	2
			You might have things going on in your home, private life that you want to work round and that actually you tend to think about all those things. So quite often you are working out in advance, when am I going to ring for my appointment,. (Participant 14)	4) I often have to consider treatment timings to fit around my personal life (interferes with my outside life) **(-)**	1

Notes: * Belief statements with **(+)** indicates low burden associated with the booking system (e.g. *it's no more effort than making other appointments*). Belief statements with **(-)** indicate low burden associated with the booking system (e.g. *I often have to consider treatment timings to fit around my personal life)*). † Total number of belief statements refers to the number of participants who reported a view that reflects each belief statement in the table. A participant may have reported more than one quote in line with the belief statement but each participant is counted only once per belief statement

It is important to note, whilst control group participants reported that it was burdensome to travel to their booked appointments, this burden is not directly related to the nature of the booking system. Participants did however indicate that having the appointments scheduled at a more convenient time would make it easier to travel to their appointments.

Three participant responses also suggested that it was easy to reschedule a booked appointment (belief statement 3, Table 26). The differences in responses indicate that there are mixed experiences of the amount of burden associated with the standard appointment booking service.

The majority of participants' responses in the intervention group were grouped under the belief statement 1) it's no more effort than making other appointments (Table 24) Most participants also stated that the "flexibility and convenience of the patient –initiated service is brilliant" (belief statement 2, Table 26). However, two of the participant responses also indicated that it was a burden to have to chase the clinic for confirmation of their booked appointment (belief statement 3 table 26). Participant 17 stated:

> *"I don't like the fact that you have to ring, you know because it has been part of a research project. I've had to ring number leave a message, wait for someone to come back to me or to chase them up" (Participant 17)*

Participant 14 within the intervention indicated that there was some burden associated in booking her own appointment, as she had to consciously consider the treatment timings to fit around her personal life:

> *" …quite often you are working out in advance, when am I going to ring for my appointment" (Participant 14).*

5.4.3.3 Ethicality

Table 27 displays the belief statements generated for both trial arms for the construct of Ethicality. The belief statements generated within the construct of ethicality indicate that participants consider there to be potential ethical issues associated with both appointment systems. Whilst majority of the participants within both the control group and the intervention group felt that each appointment booking system was fair, participants in the control group also stated that the fairness of each system depends on individual lifestyle (participant 5, table 27). Similarly, participants in the intervention group reported that the fairness of the patient-initiated service depended on patient preference and the clinic's capacity to see patients who require an appointment.

Participants in both groups also reported that they "don't know" if the appointment booking systems are fair. Participant 1 states:

"I don't know because I have nothing to compare it to" (Participant 1, 131).

Similarly participant 15 indicates that she does not know if the system is fair as she does not know how other people feel:

"I really don't know because I don't know, you know, how other people deal with that, feel about the length of time between their appointments" (Participant 15, 167)

Table 27: Example quotes for each of the inductive belief statements generated for both the control and intervention groups for the construct of Ethicality

Ethicality					
Control Group			**Intervention Group**		
Quote	Belief statement*	Total Frequency per belief statements (out of 8)†	Quote	Belief statement*	Total Frequency per belief statements (out of 10)†
I think it's fair. There's other people that need appointments as well. (Participant 3)	2) I think it's fair, there are other people that need appointments **(+)**	4	I think it's fair because we all come at different times rather than I suppose every six weeks (Participant 11)	1) I think it's fair (+)	4
I think it's fair, but I'm sure it depends on other individuals lifestyles, if they you know can get time off from work or like if they need to rely on transport to get here so..it's hard to say if its fair for all, as it depends on each person (Participant 5)	2) The fairness of the appointment system depends on individual life style **(+/-)**	1	I think that there is a fairness issue because I don't think all patients would feel as happy or as confident to do it as somebody like me might. I think perhaps that some people ought to still have the option of being able to book their next appointment when they come along, if that's what makes them feel better. So, I don't think it would be fair to force one system on other people (Participant 14)	2) The fairness of the system depends on patient preference **(+/-)**	3
I don't know because I have nothing to compare it to. (Participant 1)	3) I don't know if it's fair because I have nothing to compare it to **(-)**	1			
			Well, it's fair. If you can get the appointment. But if there's lots of people got the same thing at the same thing, I don't know how well it will work (Participant 16) (+/-)	3) Fairness of the system depends on the clinics capacity if you can get appointment **(+/-)**	2
			I really don't know because I don't know, you know, how other people deal with that, feel about the length of time between their appointments (Participant 15)	4) I don't know because I don't know how other people feel **(-)**	2

Notes: * Belief statements with **(+)** indicate that participants' considered the booking system to be ethical (e.g. *I think it's fair)*. Belief statements with **(-)** indicate uncertainty towards the ethicality of the booking system (e.g. *I don't know because I don't know how other people feel*). Belief statements with **(+/-)** indicate a neutral perception towards the ethicality of the booking system (e.g. *the fairness of the appointment system depends on individual life style).* † Total number of belief statements refers to the number of participants who reported a view that reflects each belief statement in the table. A participant may have reported more than one quote in line with the belief statement but each participant is counted only once per belief statement.

5.4.3.4 Intervention coherence

Table 28 displays the inductive belief statements generated for both the control and intervention group participant responses for the construct of Intervention coherence, with example quotes. Whilst for participants in the control group it is standard practice to have their appointments scheduled by the healthcare professionals, two participants indicated that they understood the purpose of the appointments and that it was the treatment available at the moment to treat their symptoms (Table 28).

Table 28 Example quotes for each of the inductive belief statements generated for both the control and intervention groups for the construct of Intervention coherence

Intervention Coherence					
Control Group			**Intervention Group**		
Quote	Belief statement*	Total Frequency per belief statements (out of 8)†	Quote	Belief statement*	Total Frequency per belief statements (out of 10)†
we're still going through the process of working out the right levels of the Botox, so that that's hopefully working towards an end when it will manage it a lot better, if that makes sense. (Participant 3)	1) That's the treatment option available to me at the moment **(+)**	1	..the patient is in control, you're more aware of what's happening, you know, you're kind of looking out for symptoms getting worse and so on so you're just becoming more aware of the condition (Participant 17)	1) Purpose of booking own treatment appointments is to increase patient control in judging own symptoms **(+)**	5
Well, I suffer from blepharospasm and Merge syndrome, which is lower hemifacial, so purpose of my appointments is to treat my symptoms. . I'm having the injections for my eyes. (Participant 6)	2) The purpose of my appointments are to treat my symptoms (It's for my symptoms)**(+)**	1	I presume it's to get the system that is more responsive to the Symptoms, so that if I could last without the injections for longer than that allows that to happen. (Participant 18)	2) To have a system that is more responsive to symptoms **(+)**	2
			It probably helps the system as well because if I'd been going on routine appointments I would have had probably another two which I may not have needed, you know (Participant 138)	3) To save people from coming in unnecessarily **(+)**	2

Notes: * Belief statements with **(+)** indicate high intervention coherence of the booking system (*e.g. to have a system that is more responsive to symptoms*). † Total number of belief statements refers to the number of participants who reported a view that reflects each belief statement in the table. A participant may have reported more than one quote in line with the belief statement but each participant is counted only once per belief statement.

Half of the participants in the intervention group (n=5) understood that the purpose the patient initiated appointment service was to provide patients the opportunity to take control of their treatment cycle. Participants stated that scheduling their own appointments also enabled them to judge their symptoms better. For example, participant 18 states:

> *"..the patient is in control, you're more aware of what's happening, you know, you're kind of looking out for symptoms getting worse and so on so you're just becoming more aware of the condition" (Participant 20, 192-194).*

Participants in the intervention group also reported that the purpose of the system was to be more responsive to symptoms and to ensure patients were not having unnecessary treatment. None of the participants' responses indicated that they did not understand the purpose of the patient initiated appointment booking service or how it works in addressing their condition.

5.4.3.5 Opportunity costs

Some of the participant responses to the opportunity costs question asked in both the control group and the intervention group interviews could be coded into the same belief statement: "attending my appointments is my main priority" (Table 29). This belief statement indicates that the importance of receiving the treatment outweighs any potential opportunity costs that may be associated with both appointment booking systems for both groups.

Table 29: Example quotes for each of the inductive belief statements generated for both the control and intervention groups for the construct of Opportunity Costs

Opportunity Costs					
Control Group			**Intervention Group**		
Quote	Belief statement*	Total Frequency per belief statements (out of 8)†	Quote	Belief statement*	Total Frequency per belief statements (out of 10)†
I've been under a lot of stress this past three months, I'm moving house. And so I could of done with the treatment being about two or three weeks ago really (Participant 1)	1) Attending my appointments interferes with my other priorities **(-)**	3	These appointments are my priority, I need to attend so that I can function for the rest of the weeks (Participant 15)	1)) Attending my appointments is my most important priority **(+)**	2
Mostly the appointments interfered with my work situation and my working days. But now it's not so much of an issue because I've retired. (Participant 8)	2) I had difficult arranging my appointments around work **(-)**	2	It means we can plan our lives better if we go away or anything like that, you know, we can fit them around ourselves rather than fitting our lives around the appointment (Participant 13)	2) I can now fit the appointments around my life, rather than fitting life around my appointments **(+)**	3
No, this (attending my appointments) is my top priority , without it I would be in constant suffering (participant 2)	3) Attending my appointments is my main priority **(+)**	2			

Notes: * Belief statements with **(+)** indicate low opportunity costs associated with the booking systems (e.g. *Attending my appointments is my most important priority*). Belief statements in **(-)** indicate high opportunity costs associated with the booking systems (e.g. *I had difficult arranging my appointments around work intervention*). † Total number of belief statements refers to the number of participants who reported a view that reflects each belief statement in the table. A participant may have reported more than one quote in line with the belief statement but each participant is counted only once per belief statement

However two additional belief statements emerged within the control group that indicated that participants felt that there were opportunity costs associated with attending their scheduled appointments. Participants indicated that the appointments interfered with their

other priorities (belief statement 2, Table 27) and that it was difficult to arrange appointments around work (belief statement 3, Table 29).

In contrast, participants in the intervention group felt that the patient initiated service enabled participants' to fit their appointments into their lives rather than having to plan their lives around the appointment:

> *"It means we can plan our lives better if we go away or anything like that, you know, we can fit them around ourselves rather than fitting our lives around the appointment" (Participant 13)*

Thus for these participants there were no opportunity costs but benefits associated with booking their own appointments.

5.4.3.6 Perceived effectiveness

Table 30 displays the inductive belief statements generated for both the control group and intervention group for the construct of perceived effectiveness. For both groups participants reported different degrees of perceived effectiveness for both standard care and for patient-initiated booking.

Table 30: Example quotes for each of the inductive themes generated for both the control and intervention groups for the construct of Perceived effectiveness

Perceived Effectiveness					
Control Group			**Intervention Group**		
Quote	Belief statement*	Total Frequency per belief statements (out of 8)†	Quote	Belief statement*	Total Frequency per belief statements (out of 10)†
I think really having regular appointments … unless there is a real emergency, I think the system works best like this that we have a regular pattern of consultations. (participant 7)	1) I think the system works best like this- that we have a regular pattern of consultations **(+)**	2	You can make an appointment, you know, within a week or two, which is much better in manging my symptoms (Participant 15)	1) The patient initiated appointment service has been effective for me (+)	4
Maybe the three months is a bit too long for me to wait, maybe if they can make it maybe ten weeks, maybe that'd be better for me. (Participant 2)	2)The timing of the appointment cycle could be better **(-)**	2	You've got to feel 100% confident that you can get your appointment when you really need it. And I think that is the element that is still uncertain, I do think staffing the clinic could be a problem. Will patients be able to get the appointments when they need them? (Participant 16)	2) I expect there to be problems when you try and book your own appointments **(-)**	4
I think an advantage would be if I could book when I think I need the Botox injection, because this wore off about three/four weeks ago, so I've had four weeks of waiting, and it's been getting worse and worse and worse in the meantime. So booking when and… when it's necessary would possibly be better (Participant 3)	3) Booking an appointment when it's necessary would be better **(-)**	2			

Notes: * Belief statements with **(+)** indicate high perceived effectiveness associated with the booking system (*e.g. the patient initiated appointment service has been effective for me*). Belief statements in **(-)** indicate low perceived effectiveness associated with the booking system (e.g. *I expect there to be problems when you try and book your own appointment).* † Total number of belief statements refers to the number of participants who reported a view that reflects each belief statement in the table. A participant may have reported more than one quote in line with the belief statement but each participant is counted only once per belief statement

Within the control group two participants felt that the standard care booking system was effective in receiving timely treatment for their symptoms. An example quote from participant 7 states:

> *"I think really having regular appointments … unless there is a real emergency, I think the system works best like this that we have a regular pattern of consultations"*

Another two belief statements generated from participant responses in the control group indicate that participants do not consider the appointment timings in the standard service to be effective in receiving treatment to alleviate their symptoms. The belief statements indicate how the current service could be improved:

2) The timing of the appointment cycle could be better and theme

3) Booking an appointment when it's necessary would be better.

Out of the 10 participants in the patient initiated- service, four participants felt that booking their own treatment appointments has been effective for them. For example, Participant 15 states:

> *"You can make an appointment, you know, within a week or two, which is much better in managing my symptoms" (Participant 15)*

Four of the participants felt that the patient initiated service was effective but that they expected there to be problems from the clinic's end when patients try to book their own appointments:

> *"You've got to feel 100% confident that you can get your appointment when you really need it. And I think that is the element that is still uncertain, I do think staffing the clinic could be a problem. Will patients be able to get the appointments when they need them?"(Participant 16)*

5.4.3.7 Self-efficacy

As described in section 5.5.5.1 the construct of self-efficacy differed in both intervention contexts with regards to the assessment of acceptability. In the control group, the construct was applied to assess participants' confidence in attending their treatment appointments. Table 31 indicates that half of the participants in the control group (n = 4) stated that they felt confident in attending their booked appointments.

Table 31 Example quotes for each of the inductive themes generated for both the control and intervention groups for the construct of Self-efficacy

Self-efficacy					
Control Group			**Intervention Group**		
Quote	Belief statement*	Total Frequency per belief statements (out of 8)†	Quote	Belief statement*	Total Frequency per belief statements (out of 10)†
Oh, 100%. If I booked any appointment, I wouldn't not turn up. Too many other people could have been taking that appointment .(Participant 4)	1) I feel confident to attend my booked appointments **(+)**	4	I do, I know my symptoms very well so I know when to book my appointment. (Participant 17) I've been thinking about that a lot because I'm not sure that I do feel confident. I don't think I do and I think that, you know, I've just recently had a couple of weeks that I've been pretty convinced that I was on the downward trajectory and then I've had a period of, like, three or four days over the weekend, where my symptoms seem to have been alleviated (Participant 14)	1) I know when my symptoms require treatment **(+)** 2) I find it difficult to judge when my symptoms require treatment **(-)**	7 2

Notes: * Belief statements with **(+)** indicate high self –efficacy towards the booking system (e.g. *I know when my symptoms require treatment*). Belief statements with **(-)** indicate low self –efficacy towards the booking system (e.g. *I find it difficult to judge when my symptoms require treatment).* † Total number of belief statements refers to the number of participants who reported a view that reflects each belief statement in the table. A participant may have reported more than one quote in line with the belief statement but each participant is counted only once per belief statement

For the intervention group seven out of the ten participants expressed that they felt confident in knowing their symptoms and judging when they require treatment. An example quote from participant 17 is provided in Table 31.

In the intervention group, the construct of self-efficacy was applied to assess participant's confidence in booking their own treatment appointments. Two participants in the within the intervention group indicated that they found it difficult to judge when their symptoms require treatment. The quote from participant 14 in Table 31 indicates the symptoms experienced can vary considerably over a short period of time, thus making it difficult to judge when to book an appointment.

5.5 Discussion

This study is the first qualitative interview study to apply both a single-item question and multi-component theoretical framework to the assessment of intervention acceptability. In this study concurrent acceptability was assessed of a patient –initiated treatment service for Benign Essential Blepharospasm (BEB) and Hemifacial Spasm (HFS) compared to standard care (Wickwar et al., 2016). The findings suggest that applying a multi-item topic guide based on the TFA, and the use of the TFA as a framework for analysis, provided more specific information about the acceptability of both the standard appointment booking service and the patient initiated booking service, in comparison to the responses to a single-item acceptability question.

5.5.1 Summary of findings

5.5.1.1 Comparison of single acceptability question asked at the beginning and end of interviews

Analysis of the responses to the single acceptability question asked at the start of each of the interviews provided some insight as to why the interventions were considered acceptable or unacceptable. The standard care service was generally considered acceptable by the majority of the participants. In contrast, participant responses to the single acceptability question for the patient-initiated service indicated mixed evaluations of acceptability depending on their experience of having been able to get an appointment. For some participants, the system had worked as intended without any problems, whilst others felt the system was not as effective as anticipated as they had experienced problems in booking their own appointment.

For both appointment services, some of the participant responses to the general acceptability question could also be coded into some of the TFA constructs, specifically Perceived effectiveness, Burden and Intervention coherence. This suggests that these three component constructs of acceptability included in the TFA (v2) are reflective of what the sample of participants in this study associated with the concept of acceptability, and that acceptability is considered as a multi-component construct.

The single acceptability question was also asked at the end of the interview, to determine whether responding to the TFA questions influenced participants' general perception of acceptability. None of the participants in either the control and intervention group participants changed the direction of their overall evaluation of acceptable (i.e. from acceptable to unacceptable, or vice versa). However three participants (one in the control group, and two in the intervention group) did elaborate in their response to the acceptability

question asked at the end of the interview, which reflected the TFA constructs of Burden and Perceived effectiveness. For these participants the TFA questions may have influenced

Or prompted their elaborated response to the single acceptability question asked at the end of the interview. This suggests that for these participants, considerations of burden and perceived effectiveness are used when making overall evaluations of the acceptability of health interventions.

5.5.1.2 Multi-component approach to assessing acceptability

For both the control group and the intervention group there was a greater total number of belief statements generated across all seven TFA constructs (control group n =18; intervention group n = 20) in comparison to the single acceptability question (control group n=5; intervention group n =6). The TFA belief statements provide insights for intervention developers and service providers on what aspects of the standard service and patient – initiated service are working well, and what aspects of both services were not considered acceptable across all seven component constructs.

5.5.1.2.1 Acceptability of the standard care service

Belief statements generated from the control group responses indicating a positive assessment of acceptability included the standard care service provided a feeling of security, and participants liked the guarantee that they would be seen on the day of their scheduled appointment (Affective attitude). This is similar to the finding reported by William et al., (2000) in which patients in the control group expressed having reassurance that the appointment was confirmed for the preference of receiving routine fixed appointments for the management of their IBS.

Some participants also felt it was easy to rearrange a booked appointment (low Burden) and participants also understood the purpose of the standard appointment service in treating their symptoms (Intervention coherence). Majority of the participants also felt that standard

appointment service worked best when there was a regular pattern of appointments (Perceived effectiveness). Participants also acknowledged that other patients required treatment for their symptoms (Ethicality) and expressed that attending the appointments was a main priority for them (Low opportunity costs). Participants also felt confident in attending their booked appointments (Self-efficacy).

5.5.1.2.2 Acceptability of the patient-initiated service

Aspects of the patient-Initiated service that were considered to be positive included patients being able to book their own appointments thus having greater control in their own treatment cycle (positive affective attitude). Majority of the participants also liked the flexibility the patient initiated service provided in arranging their own appointments (lack of Burden). The majority of the intervention participants also felt that the patient-initiated service was fair (Ethicality) and all participants understood the purpose of booking their own appointments (Intervention coherence). Participants indicated that booking the appointments was their main priority, and that the patient- initiated service made it easier to plan their treatment appointments around their lives as opposed to planning their lives around their appointments (Opportunity costs). Participants also felt that the patient initiated service was effective in helping them manage their condition (Perceived effectiveness). A majority of patients also felt confident in judging their own symptoms in order to know when to schedule an appointment (Self-efficacy). These findings are similar to those reported by William et al., (2000) in which patients with IBS reported preference for booking their treatment appointments when treatment was required.

5.5.2 Suggested strategies to enhance intervention acceptability

Based on the negative belief statements generated across the TFA constructs for responses to the single acceptability question and the TFA approach, intervention developers have some indications as to what components of both interventions could be explored further to enhance intervention acceptability. These are displayed in table 32.

The negative belief statements generated from both the single acceptability question and the TFA approach about the acceptability of the standard service, could potentially be addressed by providing participants with greater flexibility in the standard service to change booked appointments.

The belief statements generated for the patient –initiated service for both the single acceptability question and the TFA approach indicate the acceptability of the service could be enhanced by ensuring the clinics have the capacity to provide patients with an appointment within the agreed timeframe. This suggestion is reflective of the belief statements within the constructs of Affective attitude, Ethicality and Perceived effectiveness (Table 32).

The belief statement within the construct of Burden indicated participants did not like having to chase the clinic for confirmation of their booked appointment. To overcome this, service providers could also implement a system in which patients are notified of their booked appointments, such as a text service or sending written confirmation via postage.

The constructs of Self –efficacy and Opportunity costs revealed participants had difficulties in judging their symptoms in order to know when to book an appointment and often found that judging their own symptoms interfered with other priorities in their lives. If this service was to be implemented as standard care, a solution to enhance intervention acceptability would be to provide advice and support to patients in knowing how to judge their symptoms within their clinic consultations.

Participants also indicated that the fairness of the patient initiated service depends on patient preference. Service providers may want to roll out the patient initiated service alongside

standard care to give patients the option of both appointment systems in order for them to access their treatment.

Table 32 Suggested strategies for enhancing intervention acceptability

	Control group Response to single acceptability question belief statement	Control group TFA belief statement	Suggested strategies to enhance intervention acceptability	Intervention group Response to single acceptability question Belief statement	Intervention group TFA belief statement	Suggested strategies to enhance intervention acceptability
Affective Attitude					I'm angry that I had to wait longer for an appointment than promised There's an element of uncertainty if I will get an appointment	Ensure patients receive a booked appointment within agreed timeframe
Burden	I would like a bit more flexibility to change an appointment	The existing system isn't flexible enough to allow you to change your appointment	providing flexibility in the service to rearrange a booked appointment		I don't like the fact you have chase up to know when your appointment has been booked	Implement a system in which patients are notified of their booked appointments i.e. use of text service or written confirmation in post
Perceived effectiveness	The current service is okay but you can't always get the time that you want	The timing of the appointment cycle could be better Booking an appointment when it's necessary would be better	providing greater flexibility in scheduling appointments	I have mixed feelings about the system as it isn't as responsive as it should be give patients the confidence that they'll get an appointment I think it's a good idea to let people book their own appointment, but the system should be available on more days	I expect there to be problems when you try and book your own appointments	Ensure that the system enables patients to receive their appointments in the agreed time frame Ensure clinic has capacity

Ethicality		The fairness of the appointment system depends on individual life style	Give patients an option to have a booked appointment or to schedule their own		The fairness of the system depends on patient preference Fairness of the system depends on the clinics capacity if you can get an appointment	Give patients an option to have a booked appointment or to schedule their own Ensure clinic has capacity
Self-efficacy					I find it difficult to judge when my symptoms require treatment	Provide advice/ support on how to judge symptoms in clinic appointment
Opportunity costs		Attending my appointments interferes with my other priorities I have difficult arranging my appointments around work	providing greater flexibility in scheduling appointments around patients work commitments i.e. patient initiated service		I often have to consider treatment timings to fit around my personal life (interferes with my outside life)	Provide advice/ support on how to judge symptoms in clinic appointment
Intervention coherence						

5.5.3 Strengths and limitations

The study findings should be considered in light of its limitations. Whilst the study recruited a total of 18 participants, there was a small number of participants included in each of the trial arms. This limits the generalisability of the findings to the wider population of patients receiving treatment for blepharospasm and hemifacial spasm at Moorfields Eye Hospital. However the sample of participants for both trial arms was diverse in age, disease duration and length of time receiving treatment at Moorfields Eye Hospital.

Potential for bias in the interviews related to the beliefs and assumptions of the interviewers was mitigated in several ways. The topic guide was developed alongside research fellows and patient representatives on the trial steering group committee and several iterations were completed before the topic guide was finalised.

A strength of this study includes that a training session and coding manual were provided to the double coder in how to apply the TFA to analyse the interview data. The Inter-rater reliability was also completed on two phases of double coding. This process increased the overall reliability of the subsequent coding of the remaining transcripts. Furthermore, the TFA was applied as the deductive framework in the content analysis method, thus there were pre-defined coding categories, and the findings from this study provide preliminary evidence to support the use of the TFA to explore the acceptability of healthcare interventions qualitatively.

5.6 Conclusion

This study applied the TFA to assess intervention acceptability within the evaluation phase of the MRC intervention and development cycle. Specifically the TFA was applied to assess concurrent acceptability of an RCT whilst it was on-going. The study findings support the argument for using qualitative assessments of acceptability during the delivery of an RCT

(Sekhon et al., 2017). Concurrent assessments of acceptability may offer insights and interpretation of the main trial findings if the primary outcome was or was not achieved. If the main BEB and HFS RCT findings indicate that the patient –initiated service is not effective, the acceptability findings from this study may help interpret the reasons why. For example, could this be due to low engagement with the intervention, or that the intervention was not effective in ensuring patients could book an appointment in the agreed timeframe.

6 Applying pre-validation methods to develop a questionnaire based on the Theoretical Framework of Acceptability

6.1 Chapter Overview

This chapter describes the pre-validation methods applied to develop two questionnaires based on the Theoretical Framework of Acceptability (TFA). The first questionnaire was developed to assess acceptability to healthcare professionals of two feedback interventions in the AFFINITIE Research Programme (*Development & Evaluation of **A**udit and **F**eedback **In**terventions to **I**ncrease Evidence –based **T**ransfusion **p**ract**I**c**E***) (Gould et al., 2014; Hartley et al., 2017). The second questionnaire was developed to assess the acceptability to patients of a patient –initiated treatment service for Benign Essential Blepharospasm (BEB) and Hemifacial Spasm (HFS) compared to standard care (Wickwar et al., 2016).

The methods applied in this study adapted principles of the Patient Reported Outcome (PRO) methods described by Prior et al (2011). Whilst the aim of this study was not to construct a PRO measure, the methods described by Prior et al (2011) were relevant and applicable in constructing the two TFA-based questionnaires, for the following reasons. The pre-validation method involves systematic identification of existing items and permits for existing and newly generated items to be tested for content coverage against a relevant pre-existing theoretical framework. The Discriminant Content Validation method (Johnston et al. 2014) was applied to test the content validity and discriminant validity of the items against the TFA.

6.2 Introduction

The empirical studies in this thesis (chapters 3-5) applied the TFA to assess acceptability qualitatively across three different temporal perspectives: prospective acceptability (chapter 3) retrospective acceptability (chapter 4) and concurrent acceptability (chapter 5). Results from the three interview studies suggested that the TFA is a useful framework for assessing

intervention acceptability and for generating evidence for potential strategies for enhancing acceptability.

Whilst semi-structured interviews are useful in assessing intervention acceptability, the method also has its limitation. Firstly, conducting interviews with the target population depends on resources and funding available. Secondly, interviews are time consuming and require skilled researchers, and thirdly, small sample sizes can impact the generalisability of the findings across the target population (i.e. patient group or hospital trust) (Robinson, 2014).

6.2.1 Quantitative Assessments of Acceptability

Sekhon et al., (2017) propose that the TFA can also be applied to assess acceptability of an intervention quantitatively across the three temporal perspectives from the perspective of intervention recipients. In some intervention contexts, a questionnaire approach may offer a time efficient way to identify potential issues related to the acceptability of an intervention, within all four phases of the Medical Research Council (MRC) guidance on complex interventions (Craig et al., 2008; Moore et al., 2015).

As well as being time efficient, questionnaires are often considered a practical and cost-effective method for assessing trial related participant outcomes (e.g., quality of life, emotional health, experienced symptoms). Questionnaires also have the advantage of being administered to a larger sample size, as well as providing opportunities for longitudinal assessments of acceptability, and direct comparison of acceptability between different trial arms or competing interventions (Sekhon et al., 2017). Table 33 outlines how a TFA questionnaire can be applied to assess acceptability in the different stages of the MRC intervention development and evaluation cycle.

Table 33 Proposed application of a TFA questionnaire to assess acceptability applicable to the full complex intervention development and evaluation cycle

Development Phase	**Pilot and feasibility Phase *(before going to full scale trial)***	**Evaluation Phase *(trial context)***	**Implementation Phase *(scalability)***
Questionnaire based on the TFA constructs to assess anticipated acceptability amongst potential intervention deliverers or recipients.	Questionnaire based on the TFA constructs to assess anticipated acceptability amongst potential intervention deliverers or recipients. These measures should focus on the anticipated concurrent and retrospective acceptability of content and mode of delivery of the intervention. Analysis may reveal aspects of intervention to modify.	Questionnaire based on the TFA constructs to assess experienced and/ or anticipated acceptability for intervention recipients and deliverers. For a longitudinal analysis acceptability measures should be administered pre-intervention, during the intervention delivery period (concurrent) and post-intervention.	Questionnaire based on the TFA constructs to assess the experienced acceptability of the intervention/ service for recipients and deliverers.

The results of the overview of reviews presented in chapter 2 (see section 2.4.1.3 page 49 for details) found that 23 (54%) out of the 43 included reviews applied behavioural indicators to assess acceptability. Behavioural indicators included total trial dropout rate, all cause-discontinuation, reasons for discontinuation and trial withdrawal rates (e.g. Arrowsmith et al., 2013; Berlin et al., 2013; Cipriani et al., 2011). However whilst measures of observed behaviour provide an indication of how many participants initially agree to participate in a trial, the approach does not acknowledge that there are a number of reasons participants may discontinue treatment or withdraw from an intervention. The overview of reviews found that often the reasons for discontinuation are not always reported (Sekhon et al., 2017). Furthermore the use of behavioural indicators fails to provide information on which components of an intervention are acceptable or unacceptable. Critically, the review also

found that there was no standardised or validated acceptability questionnaire (Sekhon et al., 2017).

The development and validation of questionnaires is a complex process (Koller, Levenson & Gluck, 2017). Common methods to develop questionnaires include both inductive "bottom up" approaches and deductive "top down" approaches. The bottom up approach focuses on generating items from qualitative methods (e.g. semi -structured interviews, focus groups) to ensure items represent the perspectives of the target population (Prior et al, 2011). The top down approach focuses on reviewing the literature for existing items to generate an item pool for the development of new measures (Prior et al., 2011; Turner et al., 2007) or the generation of items based on pre-existing theory.

6.2.2 Patient Reported Outcomes (PRO) development methodology

To enhance the reporting of top down methods applied to item generation and reduction, Prior et al (2011) established a 5 –step methodology for the pre-validation stages of PRO instrument development. Step 1 involves item generation, in which the relevant literature is reviewed to identify existing items in the research context against eligibility criteria relevant to the study context. Step 2 involves identifying item-duplication, in which items identified in Step 1 are disregarded if they are literal duplicates, reflect the same content themes, and if there is overlap in items between other instruments/questionnaires that may have been administered alongside the new questionnaire (Prior et al., 2011). Step 3 involves item reduction, in which the remaining items identified in Step 2 are removed at the macro level (items associated with content themes not relevant to the new measure) and then at the micro level (applying criteria specific to study context to select items for inclusion). Within Step 4 of the PRO development methodology, all items remaining after Step 3 are assessed for content coverage against a "pre-existing theoretical framework appropriate to the objectives of the instrument and the target population" (p. 2. Prior et al., 2011). Step 4 thus provides an assessment of the content validity of the items in the new instrument (see section 6.2.3 for definition of content validity page 182). Lastly, Step 5 focuses on the completion of

exploratory pilot tests with the target population to gain insights on the new instrument, specifically "on the comprehensibility, acceptability, relevance and answerability" (p. 4. Prior et al. 2011).

6.2.3 Questionnaire Validity

The importance of establishing the validity of a new measure has been encouraged (Benyamini, Johnston & Kardemas, 2017; Johnston et al. 2014; Lissitz & Samuelsen, 2007; McFall 2005). Trochim (2006) proposed the different types of validity can be classified under the broader heading of construct validity, and two sub-categories of translation validity and criterion-related validity (Figure 12).

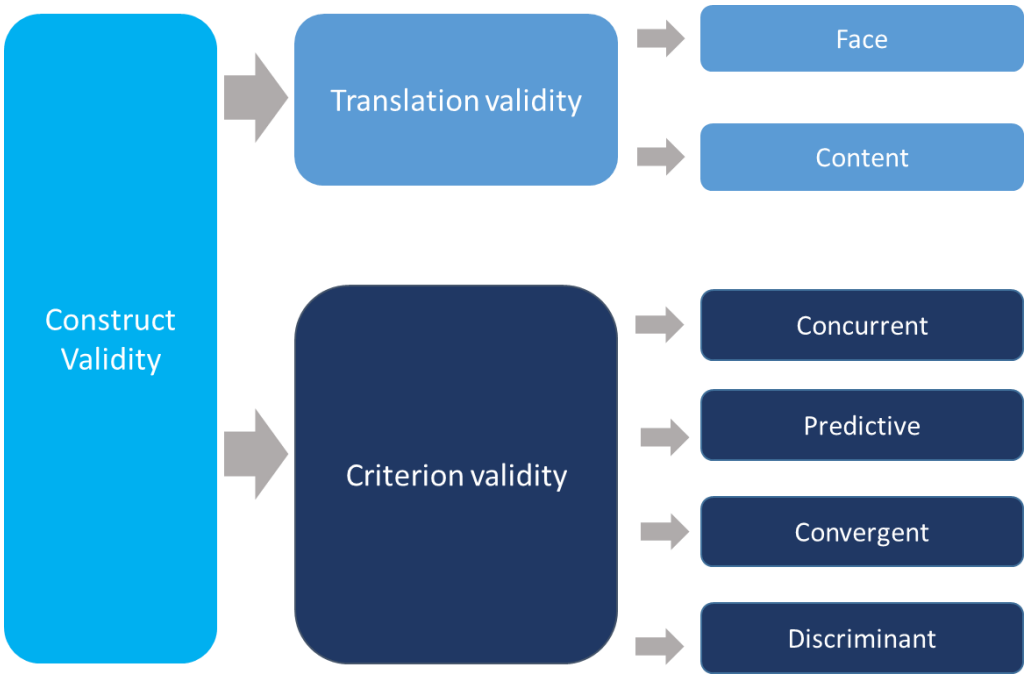

Figure 12 Different types of validity

Construct validity has been defined as "whether the measure of a construct operates as predicted by theory" (p. 241, Johnston et al., 2014) and refers to the degree in which a questionnaire measures the construct that it is intended to measure (Cronbach & Meehl,

1955). Establishing construct validity is an on-going process, often resulting in refinements to a measure and the theory itself (Westen & Rosenthal, 2003).

Translation validity focuses on whether the operationalisation of a construct, is a true representation and reflection of the construct. There are two types of translation validity, face validity and content validity, both often assessed qualitatively (Trochim , 2006). Face validity assesses whether on the surface, the operationalisation of a construct, seems to represent the construct (Trochim, 2006). For example, at a first glance do the proposed items in a TFA questionnaire appear to measure participants' perceptions of acceptability?

Content validity differs from face validity, as the degree to which the items in a questionnaire are representative of the constructs domains or sub-components is tested. It is essential to establish content validity, prior to establishing whether construct validity can be achieved (Benyamini et al., 2017). Before researchers can test whether a questionnaire has construct validity (i.e. does a TFA questionnaire measure participants perceptions of acceptability) the content validity of the items included in the questionnaire must be established.

Content validity is frequently established through judgement tasks, in which experts in the relevant subject area evaluate whether the items in questionnaire do measure the target concept (Johnston et al, 2014). For example, when developing a TFA acceptability questionnaire, researchers may ask whether each of the proposed items reflect the definitions of seven component constructs of the TFA (Affective attitude, Burden, Ethicality, Intervention coherence, opportunity Costs, Perceived effectiveness and Self-efficacy). An item may only reflect one component construct in the TFA (e.g. for Affective attitude the item in the questionnaire may include '*how much will you like participating in the intervention?*'). Whereas for some component constructs more than one item may be needed to fully represent it (e.g. the construct of Ethicality as defined by Sekhon et al., (2017) suggests that the construct is complex and may need more than one item to fully represent

it). Therefore, for a new TFA- based questionnaire to measure, and be representative of the construct of acceptability, all items in the questionnaire would need to *collectively* reflect the construct of acceptability.

Criterion-related validity refers to assessing how the operationalisation of the construct will *perform* based on the theory of the construct, which is established by assessing the construct against a criterion (Trochim, 2006). Criterion-related validity is usually established through statistical analysis (e.g. correlation coefficients and/or factor analysis). There are four proposed types of criterion-related validity: concurrent, predictive, convergent and discriminant. Concurrent validity is established if a questionnaire correlates to a similar measure of a related construct when delivered at the same time. For example when measuring overall well –being, a questionnaire about happiness and positivity would be expected to correlate.

Predictive validity, assesses the ability of the construct's operationalisation to predict a future outcome assessed at a different time point. For example, can a TFA acceptability questionnaire given to participants at baseline (i.e. before participating in an intervention) predict participants' attrition to the intervention?

In convergent validity, a constructs operationalisation is examined, against a theoretically similar construct. Convergent validity of a new measure is achieved if it strongly correlates to an existing 'gold standard' measure (Benyamini et al., 2017; Cronbach & Meehl, 1955; Kimberlin & Wintersten, 2008). For example, if creating a new questionnaire to assess illness perceptions, the new items may be assessed against the revised Illness Perception Questionnaire (IPQ-R) (Moss-Morris et al., 2002). Whereas, discriminant validity examines the degree to which the operationalisation of a theoretical construct is not similar to an-unrelated construct (Westen & Rosenthal, 2003).

6.2.4 The Discriminant Content Validation Method

From the explanations of the different types of validity described above, it is evident that the content validity and construct validity need to be established in the early phases of developing a new questionnaire.

The Discriminant Content Validation (DCV) method has been established to examine "the relationship between individual measurement items and all constructs within a theoretical model, thereby establishing the content validity of a measurement item against all constructs within a given theory" (p. 2 Dixon et al., 2008). Furthermore, the DCV method is also used to establish the extent to which an item discriminates between potentially similar and competing constructs (Johnston et a., 2014).

The DCV method involves six steps. Step 1, involves generating definitions for each of the constructs that the target items need to be discriminated. Step 2, consist of identifying items from existing measures and/or generating new items to develop an item pool for the new measure. In step 3, the number of judges needed for the judgement task is determined. Judges usually consist of experts in the theoretical constructs being assessed, or may include members of population for which the measure has been designed. In step 4, Johnston and colleagues recommend developing "a scale on which each item is judged and rated" (p. 243). In step 5 statistical tests such as single-sample t-tests (or the equivalent nonparametric test i.e. Wilcoxon) are applied to test the content validity of each item to the theoretical constructs. In step 6, the results of the statistical analysis are evaluated to establish which items have established content validity, and which items indicate discriminant content validity. "A pure uncontaminated item will only have content validity for one construct, and will have DCV when compared with competing constructs" (p. 244 Johnston et al., 2014).

In summary, based on the methodological literature, it is evident that developing a questionnaire based on the TFA would benefit from applying principles from the established 5 step PRO methodology (Prior et al., 2011) and DCV methodology (Johnston et al., 2014).

6.2.5 Aims and objectives

The main aim of the current study was to adapt the 5 step PRO development methodology (Prior et al., 2011) to develop two preliminary acceptability questionnaires based on the TFA (one for healthcare professionals and one for patients). The steps described by Prior et al (2011) were used, as the method is systematic in identifying existing items and allows for existing and newly generated items to be tested for content coverage against the TFA. Table 34 presents the original 5 –step Pre-validation PRO methodology and the adapted steps applied in this study to construct items for the two TFA acceptability questionnaires.

The specific objectives of this study were to:

1. Generate an item pool of existing items that have been applied to assess acceptability of healthcare interventions
2. Construct new items to reflect each of the seven TFA constructs (specific to the BEB and HFS trial, and the AFFINITIE trial).
3. Assess the discriminant and content validity of the items against the TFA constructs
4. Explore qualitatively the target population's views of the preliminary TFA questionnaires

Table 34 : 5 Step PRO Methodology applied by Prior et al (2011) and adapted steps applied to develop two TFA questionnaires

Step	5 Step PRO development methodology	Adapted step applied to generate pool of acceptability items
1	**Item generation** a. Systematic identification of existing PRO instruments meeting eligibility criteria b. Selection of additional instruments (e.g. generic instruments) to be administrated alongside the new PRO instrument c. All items from the identified instruments form the initial item pool (to which steps 2-5 are applied)	**Item generation** a. Identifying primary papers from systematic review papers that stated an assessment measure of acceptability was applied b. Extracting items from primary papers based on eligibility criteria c. All items from identified quantitative and qualitative measures from the initial item pool
2	**Item deduplication** Items are deleted if a. They are literal duplications (identically worded items, or duplication of item content) b. Their content differs only by timeframe or attribution to a condition of interest (e.g. do you have difficulty….because of your condition) c. Their content overlaps with generic measures to be administrated alongside new instruments (e.g. SF-36)	**Item Deduplication** Step not applicable as no duplicated items identified
3	**Item Reduction** d. Macro level: Item discarded with content themes (dimensions of health) that are not appropriate for inclusion in the new instrument (e.g. treatment satisfaction) e. Micro level: application of explicit study-relevant criteria to select items for conclusion in draft instrument (actual content area)	**Item Reduction and Item creation** d. Macro level: removal of items that are specific to an intervention or condition and not generalisable (e.g. Score the dressing comfort and its aesthetic acceptance) and if the item cannot be reworded e. Generation of new items to assess the acceptability of two complex interventions. The items focused on the definitions of each of the constructs within the Theoretical Framework of Acceptability (TFA)
4	**Assessment of content coverage against a pre –existing theoretical framework** (revisit 3E if content coverage suboptimal)	**Assessment of content coverage against a pre –existing theoretical framework** Assessed each of the items (extracted and newly generated) against the TFA by applying principles of the DCV method (Dixon et al. 2008; Johnston et al. 2014)
5	**Exploratory pilot work with target population** To assess comprehensibility, acceptability, relevance and answerability in order to inform instrument refinement (item removal &/or re-wording) (e.g. ‘think aloud’ study, focus groups	**Feedback on preliminary version of acceptability questionnaire from stakeholders/ patients** Health care professional questionnaire: Clinician feedback Patient acceptability questionnaire: patient representative feedback

6.3 Methods

6.3.1 Context of TFA questionnaires

6.3.1.1 AFFINITIE Trial

The first questionnaire was developed to assess acceptability to healthcare professionals of two feedback interventions delivered as part of the AFFINITIE Research Programme (Gould et al., 2014; Hartley et al., 2017). The TFA questionnaire items were designed to be included in a larger questionnaire that would be administered in the process evaluation during the first AFFINITIE trial to assess intervention fidelity of two interventions (Gould et al., 2014; Lorencatto et al., 2014). The first trial audited the clinical management and transfusion decision making for elective surgery patients (Lorencatto et al, 2016) and then fed back clinical performance to healthcare staff. Intervention 1 consisted of feedback reports that were "enhanced", compared with usual feedback practice, which were delivered to hospital staff, whilst Intervention 2 consisted of "follow on support" (a web-based toolkit and telephone support) provided to hospital transfusion teams to help them plan their response to the feedback reports (Lorencatto et al., 2016).

6.3.1.2 BEB and HFS Trial

The second questionnaire was developed to assess acceptability to patients of standard care (control condition) and a patient –initiated appointment service (intervention group) for managing Benign Essential Blepharospasm (BEB) and Hemifacial Spasm (HFS) (Wickwar et al., 2016). Participants in the trial experienced the appointment services for nine months. The TFA questionnaire items were designed to assess acceptability longitudinally. Specifically, the items were designed to assess prospective acceptability (after patients had consented to take part in the trial, but prior to randomisation), concurrent acceptability (at three months post-randomisation) and retrospective acceptability (at nine month post-randomisation, end of intervention) of both the patient-initiated appointment service (intervention group) and standard practice (control group).

6.3.2 Item generation

To generate a pool of potentially relevant items, the results of the overview of reviews were considered (Chapter 2). Primary papers from the included systematic reviews that reported using self –report measures to assess acceptability were retrieved, if review authors stated acceptability had been assessed via:

- A measure of satisfaction
- Reasons for discontinuation
- Qualitative open ended interviews
- User perspectives and evaluations of the intervention

Primary papers that reported assessing acceptability, as described above, were assessed for eligibility for extraction of items against the following inclusion criteria:

a) Exact item and response format is described in the text of the paper
b) Exact wording of interview questions applied to assess acceptability reported in the paper
c) Detailed descriptions of reported reasons for discontinuation reflected assessments of acceptability reported in the paper
d) Detailed descriptions of user perspectives and evaluations applied to assess the intervention acceptability reported in the text of the paper

All information relating to the origin of the item, the response format, content and wording of interview questions and descriptions of reasons for dropout, user perspectives and evaluations was retained in a database (the item pool).

6.3.3 Deduplication

All retrieved items were reviewed for the three types of duplication suggested by Prior et al. (2011) (Table 34). There were no duplicate items.

6.3.4 Item Reduction and Item Creation

Step 3 was adapted from the original PRO validation methodology (Prior et al., 2011). Two researchers (MS and MC) independently reviewed items extracted in Step 1 and removed items:

a) If the items were specific to an intervention and non-generalisable;

b) If the reasons for discontinuation and descriptions of user perspectives and evaluations of an intervention could not be reworded as an item.

For the next Step, MS drafted new items based on the definitions of the seven TFA constructs (Table 35) for both the AFFINITIE questionnaire and the BEB and HFS questionnaire. The newly drafted items were specific to each intervention, and the temporal perspective of assessing acceptability was also represented in item wording. For example in the BEB and HFS questionnaire, not all the TFA constructs were relevant for assessing the acceptability of the standard service. Participants in the control group did not perform a behaviour (i.e. book their own appointment) as the next appointment was scheduled by their treating healthcare professional in the clinic. Thus the constructs of Burden and Self-efficacy were not relevant. The response stems of the new items also reflected the TFA constructs.

Table 35 Definitions of the component constructs in the Theoretical framework of acceptability

TFA Construct	Definition
Affective Attitude	Anticipated Affective Attitude: How an individual feels about the intervention, prior to taking part Experienced Affective Attitude: How an individual feels about the intervention, after taking part
Burden	Anticipated burden: The perceived amount of effort that is required to participate in the intervention Experienced burden: The amount of effort that was required to participate in the intervention
Ethicality	The extent to which the intervention has good fit with an individual's value system
Intervention Coherence	The extent to which the participant understands the intervention and how it works
Opportunity Costs	Anticipated opportunity cost : The extent to which benefits, profits, or values must be given up to engage in the intervention Experienced opportunity cost: The benefits, profits or values that were given up to engage in the intervention
Perceived effectiveness	Anticipated effectiveness: the extent to which the intervention is perceived to be likely to achieve its purpose Experienced effectiveness: the extent to which the intervention is perceived to have achieved its intended purpose
Self-efficacy	The participant's confidence that they can perform the behaviour(s) required to participate in the intervention

6.3.5 Assessment of content coverage against a pre-existing theoretical framework

To test the content validity of the items against the seven TFA constructs, the Discriminant Content Validation method (DCV) was applied (Dixon et al. 2008; Johnston et al. 2014). Previous research on the number of judges required for judgement tasks has suggested between 2-20 as adequate (Lynn, 1986; Waltz & Bausell, 1981). All members of the Health Psychology Group within the Centre of Health Services Research at City University London were invited to take part in the study. Eight members of the group agreed to participate. The eight participants included four PhD students, three postdoctoral research fellows, one research assistant and one senior lecturer. Participants were provided with a table of the theoretical construct definitions and an excel table of all the items to be classified. Five

participants received a paper copy of the excel table to complete in the face to face session, and three of the participants received an electronic version of the construct definitions, excel table with items and instructions on how to complete the DCV task (as they could not attend the face to face session).

In the face to face session MS explained the purpose of the DCV and provided instructions. For each of the items, participants were asked to provide a confidence rating for their decision as to whether the item represented the given construct on an 11 point scale ranging from -10 to 10 (-10 indicating confidence that the item does not represent the construct at all, +10 representing confidence that the item definitely represents the construct). MS answered any questions participants had and discussed how the confidence rating scale worked by working through two example items.

6.3.6 Feedback on preliminary version of TFA questionnaires from target population

Prior et al (2011) recommend conducting a think aloud study on a newly developed questionnaire. However due to time constraints of both the AFFINITIE and BEB and HFS trial timelines it was not possible to complete think aloud studies on both the healthcare professional and patient version of the acceptability questionnaire. In order to ensure that feedback was obtained on both preliminary acceptability questionnaires, MS arranged to have feedback from two principle investigators (with clinical backgrounds) working on the AFFINITIE programme, and two patient representatives on the BEB and HFS study steering group.

6.3.6.1 AFFINITIE Trial TFA questionnaire

The acceptability questionnaire for healthcare professionals was e-mailed to the two principle investigators of the AFFINITIE programme, who were asked to read (and comment on each item for comprehensibility, relevance and answerability of the draft AFFINIE questionnaire.

6.3.6.2 BEB and HFS Trial TFA questionnaire

The acceptability questionnaire for patients was also e-mailed to both patient representatives who were asked to also comment on the questionnaire for comprehensibility, relevance and answerability.

6.4 Results

Figure 13 presents an overview of the adapted 5 Step PRO methodology applied to develop the two TFA questionnaires. Results of each of the steps are described in detail below.

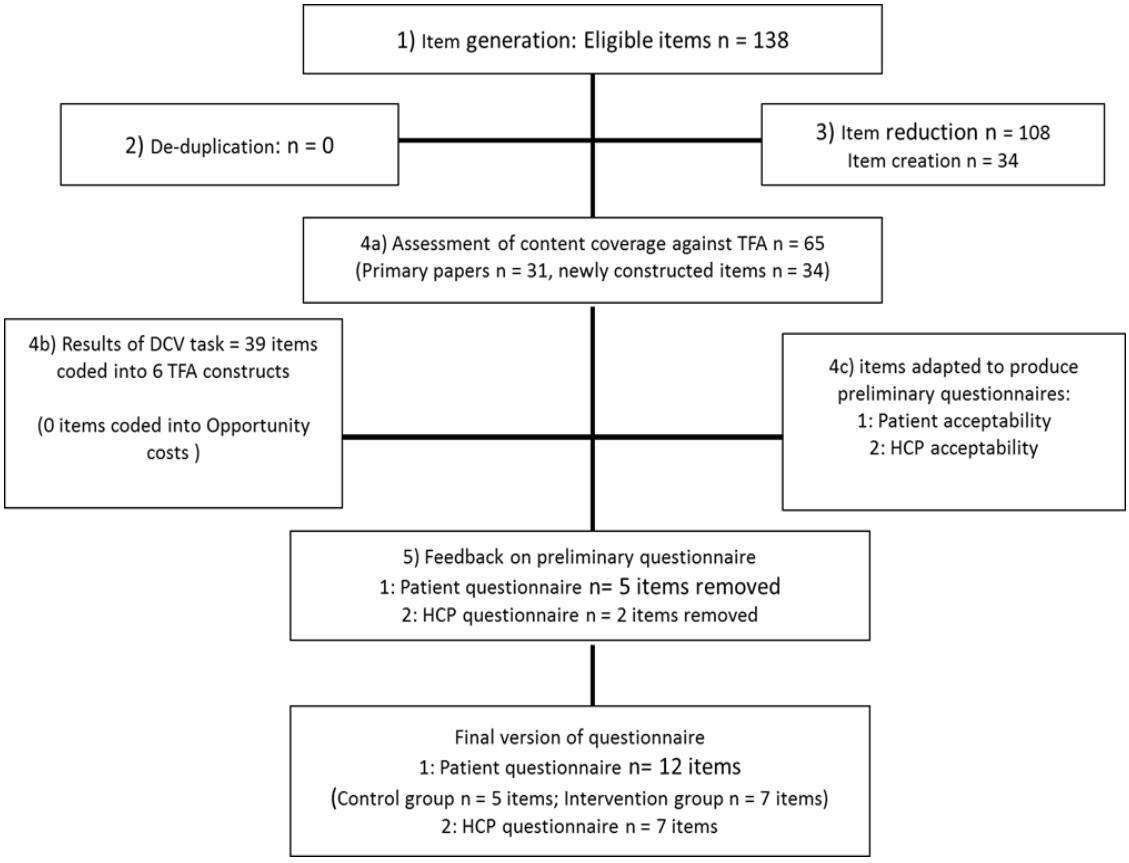

Figure 13: Adapted 5 step PRO methodology Flowchart applied to test content validity of the theoretical framework and to develop the patient and HCP acceptability questionnaire

6.4.1 Item Generation

As identified in the overview of reviews (Chapter 2), 12 systematic reviews identified primary papers that had applied self-report assessment measures to investigate acceptability. These include: three reviews assessing acceptability via measures of satisfaction (Andrews et al. 2010; Blenkinsopp et al. 2005; Kedge et al., 2009); four reviews describing the reasons for discontinuation provided as indicators of acceptability (Harplen et al. 2006; Kaltenthaler et al., 2008; Koesters 2013; Kulier et al., 2004); two reviews using participants perspectives and evaluations as assessments of intervention acceptability (Glenton, Khanna, Morgan & Nilsen 2013; Muftin & Thompson 2013); two review asking qualitative questions to assess acceptability (Robinson et al. 2007; Newman & Logie 2010), and one review assessing acceptability via participants attitudes (Diepeveen et al., 2013).

Three hundred and forty-three primary papers were identified as including potential measures of acceptability. Of these, 325 (95%) papers were retrieved, whilst the remaining 18 were unavailable. Of the 325, 290 articles did not meet the inclusion criteria for extraction of items (see section 6.3.2 page 189). Therefore, items were extracted from 35 papers. The total number of items extracted was 138.

6.4.2 De-duplication

There were no literal duplications of items, or differences in content (e.g. timeframe) or overlap with other generic items that were to be included in the questionnaires. Thus zero items were removed at this stage.

6.4.3 Item reduction and refinement of item wording

MS and MC read each of the 138 items and applied the following inclusion criteria to delete items:

a) If the item did not provide exact wording and response scale
b) If the exact interview question was not reported
c) If reasons for discontinuation listed could not be reworded into a questionnaire item
d) If items were non generalisable and specific to intervention context and content

e) If descriptions of user perspectives and evaluations could not be reworded as an item. This process resulted in the removal of 107 items.

Based on the definitions of the seven TFA constructs, MS constructed 34 new items; 17 items to assess the acceptability of the two feedback and follow-on support interventions delivered within the AFFINITIE trial (Gould et al., 2014; Hartley et al., 2017) and 17 items to assess the acceptability of the standard appointment booking system and the patient initiated appointment system within the BEB and HFS trial (Wickwar et al., 2016).

6.4.4 Assessment of content coverage against a pre-existing theoretical framework

Eight participants completed the DCV task on the 65 items (31 identified from the primary reviews and the 34 newly constructed items). Within DCV tasks content validity is usually tested using single sample t-tests (the item against each construct) (Dixon et al., 2008; Johnston et al., 2014). In the current study this would have required 441 (i.e. 65 (no. of items) x seven (number of construct definitions)) one-sample t-tests based on data from eight judges. The likely number of Type I errors was deemed to be a substantive threat to the reliability of the overall pattern of findings, therefore null hypothesis significance testing was deemed inappropriate.

Instead, the analysis focused on running descriptive statistics (mean, standard deviation and medians) on each of the 65 items against each of the seven constructs. To facilitate interpretability, the confidence rating data were re-coded from scales ranging from -10 to +10 to scales ranging from 0 to 20. A median confidence rating of 15 or greater was taken as an indication that the judges agreed that a particular item closely reflected a particular construct. Items with a median confidence rating below 15 were reviewed but the content validity was too low to be considered for inclusion in the preliminary version of both TFA questionnaires.

A total of 39 out of the 65 items had a median confidence rating of 15 or greater and were coded into six of the TFA component constructs, with no items having a median greater than

15 for the construct of opportunity costs. Six items had a median confidence rating of 15 or greater for more than one construct, thus the item did not achieve discriminant validity. The 33 items that achieved discriminant validity are displayed Table 35.

Johnson and colleagues (2014) propose "If one wished to construct a questionnaire with a restricted set of items, one would choose those with highest values indicating strongest relevance for the construct, while omitting those with high values for competing theoretical constructs to avoid contaminated measures" (p.252). The 33 items that achieved discriminant validity were adapted to produce a preliminary version of the AFFINITIE acceptability questionnaire and Blepharospasm questionnaire.

Table 36 Items that achieved discriminant content validity

Construct items	Response format	Mean Standard Deviation
Affective attitude (n= 8)		
What do you think was the best and worst part of the program	Open text written response	18 8.79
I was happy with the computer program	5 point scale: Agree very strongly- disagree very strongly	16 6.67
What did you particularly like about Beating the blues?	Open text written response	16 6.62
I liked using the computer program	5 point scale: Agree very strongly- disagree very strongly	16 6.67
Did you like reading the feedback reports?	5 point scale: Strongly disagree- Strongly agree	18 1.88
Did you like or dislike the toolkit materials?	5 point scale: Strongly disagree- Strongly agree	18 7.08
How much will you look forward to attending the clinic?	5 point scale: Not at all - A lot	16 8.33
How much would you like having your treating healthcare professional continuing to book your appointment?	5 point scale: Not at all - A lot	16 8.43
Burden (n =5)		
During the past 4 weeks, how often were you bothered by the side effects from your medicines?	a) all of the time, b)most of the time c) some of the time d) a little of the time e) none of the time	15 8.39
During the past 4 weeks, how often did you have problems getting your prescription filled?	a) all of the time, b)most of the time c) some of the time d) a little of the time e) none of the time	15 8.39
How much time did it take to read the audit report?	5 point scale: Not a lot of time - A lot of time#	15 6.7
How much time did it take you to work through and apply the toolkit materials	5 point scale: Not a lot of time - A lot of time	20 7.12
How easy do you think it will be to attend your clinical appointment?	5 point scale: Very easy – very difficult	15 8.56
Ethicality (n= 3)		
For me to disseminate the recommendations of the feedback report is the right thing to do	5 point scale: Strongly disagree- Strongly agree	15 8.22
Using the toolkit to disseminate and respond to feedback has ethical implications for patient care	5 point scale: Strongly disagree- Strongly agree	20 3.66
How fair do you feel this system will be?	5 point scale: Not at all fair- very fair	15 6.35

Perceived effectiveness (n = 7)		
How much do you think you improved with respect to avoidance behaviour?	0 (not at all) to 7 (very much so)	19 2.18
how much has your life changed, in terms of leisure, family, job and social activities	0 (not at all) to 7 (very much so)	15 2.03
If future audit and feedback reports are presented in a similar format, how effective do you think they will be in making a difference to clinical practice?	5 point scale: Not at all effective- very effective	20 7.02
How effective do you think the toolkit would be in making a difference to clinical practice?	5 point scale: Not at all effective- very effective	20 6.99
How effective do you think booking your own botulinum toxin clinic appointment would be?	5 point scale: Not at all effective- very effective	17 6.61
How effective do you think it will be to have your appointments scheduled by your healthcare team?	5 point scale: Not at all effective- very effective	18.5 6.77
How effective do you think it would be for your treating healthcare professional to continue to book your appointment?	5 point scale: Not at all effective- very effective	18.5 6.67
Intervention coherence (n = 4)		
It makes sense to me how the feedback report will result in improvements in patient care	5 point scale: Strongly disagree- Strongly agree	15 3.3
It makes sense to me how using the toolkit will result in improvements in patient care	5 point scale: Strongly disagree- Strongly agree	15 8.1
It is clear to me how booking my own appointments would help me manage my eye condition	5 point scale: Strongly disagree- Strongly agree	18 4.25
it is clear to me how having my appointment booked for me by my treating Healthcare Professional would help me manage my eye condition	5 point scale: Strongly disagree- Strongly agree	18.5 6.86
Self-efficacy (n = 6)		
During the past 4 weeks, how often were you unable to do what was necessary to follow your doctor's treatment plans for your diabetes?	a) all of the time, b)most of the time c) some of the time d) a little of the time e) none of the time	16.5 8.55
in the last week how many days out of 7 were you able to follow your diabetic diet?	0=7 days	15.5 2.56
In the last week how many days out of 7 were you able to follow your exercise program? exercise program?	0-7 days	15 7.66
I feel confident that I can identify the most relevant information for my site from the feedback report	5 point scale: Very unconfident- very confident	15.5 7.73
How confident do you feel in booking your own appointment?	5 point scale: Very unconfident- very confident	15 8.2
How easy do you think it will be to book your own appointment and attend your appointment?	5 point scale: Very difficult- very easy	16.5 8.56
Opportunity costs (n = 0)		

6.4.5 Feedback on preliminary versions of TFA questionnaires from target population

6.4.5.1 AFFINITIE Trial – TFA Questionnaire

Feedback from the two principal investigators of the AFFINITIE programme grant expressed some concerns about the acceptability items. As the acceptability items were to be incorporated into the programme's process evaluation questionnaire (consisting of items to assess fidelity) the principal investigators felt that acceptability items should be adapted to reflect the same 5 point Likert scales used for the fidelity items (strongly agree- strongly disagree) to reduce participant burden and overall length of the questionnaire. In light of this feedback, the TFA acceptability items were modified to reflect the 5 point Likert scale used for the fidelity items within the process evaluation questionnaire. Table 37 displays the original TFA questionnaire (version 1) and the modified TFA questionnaire (version 2) applied in the process evaluation.

Table 37: Version 1 of the TFA informed acceptability questionnaire and version 2 of the TFA informed acceptability questionnaire applied in the process evaluation phase of the AFFINITIE research programme.

<table>
<tr><th></th><th>V1</th><th>V2 applied in AFFINITIE trial</th></tr>
<tr><td>Global acceptability</td><td>To what extend did you find the PBM elective audit materials acceptable?
<table><tr><th>Completely unacceptable</th><th>Unacceptable</th><th>No opinion</th><th>Acceptable</th><th>Completely acceptable</th></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table></td><td>The feedback materials were acceptable:
<table><tr><th>Strongly disagree</th><th>Disagree</th><th>No opinion</th><th>Agree</th><th>Strongly agree</th></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table></td></tr>
<tr><td>Affective attitude</td><td>Did you like reading the feedback materials?
<table><tr><th>Strongly dislike</th><th>Dislike</th><th>No opinion</th><th>Like</th><th>Strongly like</th></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table></td><td>The feedback materials were interesting to read:
<table><tr><th>Strongly disagree</th><th>Disagree</th><th>No opinion</th><th>Agree</th><th>Strongly agree</th></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table></td></tr>
<tr><td>Burden</td><td>How much effort did it take you to read the materials?
<table><tr><th>No effort at all</th><th>A little effort</th><th>Same effort</th><th>A lot of effort</th><th>Huge effort</th></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table></td><td>It required effort for me to read the feedback materials:
<table><tr><th>Strongly disagree</th><th>Disagree</th><th>No opinion</th><th>Agree</th><th>Strongly agree</th></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table></td></tr>
<tr><td>Ethicality</td><td>Are there any other moral or ethical consequences of the materials?
<table><tr><th>Substantial negative consequences</th><th>Negative consequences</th><th>No consequences</th><th>Positive consequences</th><th>Substantial positive consequences</th></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table>Please tell us more about your views</td><td>There are moral or ethical consequences to the feedback materials:
<table><tr><th>Strongly disagree</th><th>Disagree</th><th>No Opinion</th><th>Agree</th><th>Strongly agree</th></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table></td></tr>
<tr><td>Perceived Effectiveness</td><td>How effective were the feedback materials in supporting improvements in patient care?
<table><tr><th>Not at all effective</th><th>Ineffective</th><th>No Opinion</th><th>Effective</th><th>Very effective</th></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table>How likely is it that the feedback materials will eventually result in reductions in health inequities?
<table><tr><th>Very unlikely</th><th>Unlikely</th><th>No opinion</th><th>Likely</th><th>Very likely</th></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table></td><td>The feedback materials are likely to improve patient care:
<table><tr><th>Strongly disagree</th><th>Disagree</th><th>No Opinion</th><th>Agree</th><th>Strongly agree</th></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table></td></tr>
<tr><td>Opportunity costs</td><td>Did reading the feedback materials interfere with your other priorities?</td><td>Reading the feedback materials interfered with my other priorities:</td></tr>
</table>

<table>
<tr>
<td></td>
<td>
<table>
<tr><th>Strongly disagree</th><th>Disagree</th><th>No Opinion</th><th>Agree</th><th>Strongly agree</th></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
</table>
</td>
<td>
<table>
<tr><th>Strongly disagree</th><th>Disagree</th><th>No Opinion</th><th>Agree</th><th>Strongly agree</th></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
</table>
</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>How confident are you that you can identify the most relevant information for your hospital from the feedback materials?
<table>
<tr><th>Very unconfident</th><th>Unconfident</th><th>No opinion</th><th>Confident</th><th>Very confident</th></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
</table>
</td>
<td>I am confident that I can identify the most relevant information for my site from the feedback materials:
<table>
<tr><th>Very unconfident</th><th>Unconfident</th><th>No opinion</th><th>Confident</th><th>Very confident</th></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
</table>
</td>
</tr>
<tr>
<td>Intervention coherence</td>
<td>It makes sense to me how the feedback materials will result in improvements in patient care:
<table>
<tr><th>Strongly disagree</th><th>Disagree</th><th>No opinion</th><th>Agree</th><th>Strongly agree</th></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
</table>
Please tell us more about your views</td>
<td>It makes sense to me how the feedback materials will result in improvements in patient care:
<table>
<tr><th>Strongly disagree</th><th>Disagree</th><th>No opinion</th><th>Agree</th><th>Strongly agree</th></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
</table>
Please tell us more about your views</td>
</tr>
<tr>
<td></td>
<td>If you have any additional thoughts regarding the feedback materials please can you write them here:</td>
<td>If you have any additional thoughts regarding the feedback materials please can you write them here:</td>
</tr>
</table>

6.4.5.2 BEB and HFS Trial TFA questionnaire

Feedback from the two patient representatives on the preliminary version of the Blepharospasm questionnaire resulted in the removal of five items. Three of these were removed due to lack of clarity of the item and response scale, and two were removed as the items were similar to others. The patient representatives also suggested incorporating the option for additional comments for the Intervention coherence items. Table 38 displays the final version of both the control group and intervention group TFA informed acceptability questionnaires applied in the BEB and HFS trial.

Table 38: The final version of both the control group and intervention group TFA informed acceptability questionnaires applied in the BEB and HFS trial

<table>
<tr><th></th><th>Intervention group</th><th>Control group</th></tr>
<tr><td>Global acceptability</td><td>How acceptable would it be to book your own appointments?
<table><tr><td>Completely unacceptable</td><td>Unacceptable</td><td>No opinion</td><td>Acceptable</td><td>Completely acceptable</td></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table></td><td>How acceptable would it be for your treating Healthcare Professional to continue booking your appointments?
<table><tr><td>Completely unacceptable</td><td>Unacceptable</td><td>No opinion</td><td>Acceptable</td><td>Completely acceptable</td></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table></td></tr>
<tr><td>Affective attitude</td><td>How much would you like booking your own appointments?
<table><tr><td>Strongly dislike</td><td>Dislike</td><td>No opinion</td><td>Like</td><td>Strongly like</td></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table></td><td>How much would you like having your appointments booked for you by your Treating Healthcare Professional?
<table><tr><td>Strongly dislike</td><td>Dislike</td><td>No opinion</td><td>Like</td><td>Strongly like</td></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table></td></tr>
<tr><td>Burden</td><td>How much effort do you think it would be to book your own appointments?
<table><tr><td>No effort at all</td><td>A little effort</td><td>No opinion</td><td>A lot of effort</td><td>Huge effort</td></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table></td><td></td></tr>
<tr><td>Perceived Effectiveness</td><td>How likely is that you would attend appointments that you booked yourself?
<table><tr><td>Very unlikely</td><td>Unlikely</td><td>No opinion</td><td>Likely</td><td>Very likely</td></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table></td><td>How likely is it that you would attend the appointments booked for you by your Treating Healthcare Professional?
<table><tr><td>Very unlikely</td><td>Unlikely</td><td>No opinion</td><td>Likely</td><td>Very likely</td></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table></td></tr>
</table>

<table>
<tr>
<td>Ethicality</td>
<td>How fair (to all patients) is a system where patients book their own appointments?
<table>
<tr><td>Very unfair</td><td>Unfair</td><td>No opinion</td><td>Fair</td><td>Very fair</td></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
</table></td>
<td>How fair (to all patients) is the current system where appointments are booked by the Treating Healthcare Professional?
<table>
<tr><td>Very unfair</td><td>Unfair</td><td>No opinion</td><td>Fair</td><td>Very fair</td></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
</table></td>
</tr>
<tr>
<td>Opportunity costs</td>
<td>Booking my own appointments would interfere with my other priorities:
<table>
<tr><td>Strongly disagree</td><td>Disagree</td><td>No opinion</td><td>Agree</td><td>Strongly agree</td></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
</table></td>
<td>
<table>
<tr><td>Very unconfident</td><td>Unconfident</td><td>No opinion</td><td>Confident</td><td>Very confident</td></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
</table></td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>How confident would you feel about booking your own appointments?
<table>
<tr><td>Very unconfident</td><td>Unconfident</td><td>No opinion</td><td>Confident</td><td>Very confident</td></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
</table></td>
<td></td>
</tr>
<tr>
<td>Intervention coherence</td>
<td>It is clear to me how booking my own appointments would help me manage my eye condition
<table>
<tr><td>Strongly disagree</td><td>Disagree</td><td>No opinion</td><td>Agree</td><td>Strongly agree</td></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
</table>
Please tell us more about your views</td>
<td>It is clear to me how having my appointment booked for me by my Treating Healthcare Professional would help me manage my eye condition.
<table>
<tr><td>Strongly disagree</td><td>Disagree</td><td>No opinion</td><td>Agree</td><td>Strongly agree</td></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
</table>
Please tell us more about your views</td>
</tr>
</table>

6.5 Discussion

This study has described the methods applied to develop two preliminary versions of Theoretical Framework of Acceptability questionnaires. The methods were adapted from the 5 step Patient Reported Outcomes (PR0) pre-validation methodology (Prior et al., 2011) to develop an item pool of existing items identified from included papers in an overview of reviews which considered how the acceptability of interventions has been defined, theorised and assessed (Sekhon et al., 2017). The Discriminant Content Validation (DCV method) was also applied to establish the content and discriminant validity of the items.

6.5.1 Strengths and limitations

Prior et al. (2011) recommended that the 5 step PRO methodology is appropriate in developing instruments outside the context of patient-reported outcome measures. This study provides support for this claim. Specifically the PRO methodology provided a systematic approach in which both inductive (existing items from the overview of reviews, Sekhon et al., 2017) and deductive methods (definitions of each of the seven TFA component constructs) were applied to develop two acceptability questionnaires. For both questionnaires, the TFA was crucial in the development of new items to reflect the component construct of Opportunity costs as there were no items reflecting this construct identified in the item generation phase. Further the TFA definitions were key in re-wording existing items for inclusion in the acceptability questionnaires.

Another strength of this study is the application of the DCV method to assess the content validity and discriminant content validity of the identified existing and newly generated items across all of the seven component constructs in the TFA. As recommended by Johnston and colleagues the DCV method was completed in the early phase of developing the TFA informed acceptability questionnaires.

However, despite this it is important to note the limitations of this study with regards to the DCV method. In this study the sample size of eight judges was not adequate in completing

the recommended statistical analysis (single- sample t-tests) for the DCV method (Dixon et al., 2008; Johnston et al., 2014). Thus it can be argued, if sample sizes permitted the results of single sample t-tests may have indicated different results with regards to what items indicated true discriminant content validity. However, the use of descriptive statistics, specifically a median confidence rating of 15 or greater applied in this study generated an adequate number of items that indicated discriminant content validity. Thus the DCV method in this study did still provide a quantitative evaluation of the degree to which an item is appropriate in assessing the intended construct and the degree to which items are discriminable against the other potential component constructs (Johnston et al., 2014)

The PRO methodology recommends completing a think-aloud study with the target population on a newly developed questionnaire (Prior et al, 2011). In this study it was not possible to complete think aloud studies on either the healthcare professional or patient version of the acceptability questionnaires. A think aloud study with participants from both trial contexts may have provided further information with regards to the comprehensibility, relevance and answerability of the draft questionnaires. However effort was still made to gain feedback from the target stakeholders. For the AFFINITIE trial acceptability questionnaire, two principle investigators provided detailed feedback on the draft version of the questionnaire. For the BEB and HFS trial acceptability questionnaire feedback was obtained from two patient representatives who understood the clinical context and both appointment services.

6.5.2 Future work

Whilst systematic methods have been applied to develop the two TFA based questionnaires further work will need to be completed to establish, more fully, the psychometric properties of both questionnaires. However this is applicable to all pre-validation phases in developing new measures (Prior et al., 2014; Johnston et al., 2014).

The AFFINITIE acceptability questionnaire has already been applied in trial 1 and trial 2 of the AFFINITIE research programme. Data for trial 1 has already been collected (not

reported in this thesis) and data collection for trial 2 is currently under-way. The BEB and HFS questionnaire has also been applied in BEB and HFS RCT, and data collection is still on-going. Once all data collection has been completed, both questionnaires will be analysed to determine the validity of the TFA and the role of assessment in process evaluations and longitudinal studies.

6.5.3 Conclusion

This chapter has described the systematic methods applied to develop two TFA informed acceptability questionnaires. The methods included reviewing existing acceptability items and assessing the items for discriminant content validity against the seven component constructs of the TFA. Feedback from the target stakeholders for each questionnaire was also established. The next phase of this study is to establish the psychometric properties of both questionnaires in the relevant trial contexts. The methods described in this chapter can be applied to generate TFA informed questionnaires to assess the acceptability of future complex health care intervention.

7 Discussion

7.1 Chapter overview

This chapter provides a summary of each of the empirical studies in this thesis and how they have addressed the overall aims and objectives. The empirical findings from the three qualitative studies are summarised, and the application of the TFA to assess intervention acceptability across the three temporal perspectives (prospective, concurrent and retrospective) is discussed. The strengths and limitations of the programme of research are also considered. The chapter concludes with a discussion of the implications and recommendations for future research.

7.2 Summary of thesis

The primary aim of this thesis was to define acceptability of healthcare interventions and to develop a Theoretical Framework of Acceptability (TFA) that can be applied to assess intervention acceptability from two stakeholder perspectives: healthcare professionals and patients. The specific objectives were to:

1) Identify and establish the current evidence base on how the acceptability of healthcare interventions has been defined, operationalised and theorised (Study 1),
2) Theorise the concept of acceptability and develop a Theoretical Framework of Acceptability (TFA) (Study 2)
3) Develop a TFA-based interview topic guide and use it for qualitative assessment of prospective (Study 3), concurrent (Study 5) and retrospective intervention acceptability (Study 4)
4) Apply pre-validation methods to develop two TFA-based questionnaires, one for healthcare professionals and one for patients (Study 6)

7.2.1 Study 1: How has the acceptability of healthcare interventions been defined, theorised and assessed? An overview of reviews

The overview of reviews presented in Chapter 2 identified a wide range of systematic reviews that reported assessing the acceptability of a healthcare intervention. The first key finding was that majority of review authors applied operational rather than conceptual definitions of acceptability. These operational definitions were reflected in the various measures of observed behaviour that were used to assess acceptability, for example, all-cause discontinuation (with reasons), and withdrawal rates, dropout rates, treatment discontinuation and rates of uptake. The second key finding of the review was that 17 of the 43 included reviews assessed acceptability post-intervention, with only two reviews assessing acceptability before intervention delivery. The third key finding from the overview of reviews was that none of the reviews had applied existing theory or theoretical models to define or assess acceptability. Finally, the overview identified that majority of investigations of acceptability concluded that the intervention was acceptable, although there were no pre-specified criteria for deciding whether the intervention was acceptable and there was almost no attention to potential levels of acceptability, i.e., acceptability was treated as a dichotomous (yes/no) concept.

7.2.2 Study 2: Development of a Theoretical Framework of Acceptability (TFA)

Study 2 (also reported in Chapter 2) synthesised the findings from the overview of reviews to define the concept of acceptability as:

> *"a multi-faceted construct that reflects the extent to which people delivering or receiving a healthcare intervention consider it to be appropriate, based on anticipated or experienced cognitive and emotional responses to the intervention" (p2. Sekhon, et al., 2017).*

This definition, combined with inductive and deductive methods of theorising, was applied to operationalise the concept of acceptability and to develop the TFA. The TFA is a multi-component framework consisting of seven constructs: Affective attitude, Burden, Ethicality,

Intervention Coherence, Opportunity Costs, Perceived Effectiveness and Self-efficacy. Each of the seven constructs was defined and includes an anticipated and experiential definition reflective of three temporal perspectives of assessment in relation to engagement with the intervention: prospective, concurrent and retrospective acceptability (section 2.4.2 page 52).

7.2.3 Study 3: What reasons do participants report for declining to participate in a randomised controlled trial? A semi-structured interview study

An incidental finding of the overview of reviews was that review authors made the assumption that low intervention acceptability explained low participation rates and high dropout rates in trials. The study reported in Chapter 3 was embedded within a single–masked randomised controlled trial (RCT) comparing a patient–initiated treatment service for Benign Essential Blepharospasm (BEB) and Hemifacial Spasm (HFS) to standard care (Wickwar et al., 2016). In this study, the TFA was applied to assess prospective intervention acceptability, to understand why eligible patients refused to participate in the RCT. Specifically, I explored whether the reasons for declining to participate included low acceptability of the intervention, or other factors. Study 3 provides preliminary evidence that the TFA can be applied prospectively to generate evidence on the problematic aspects of intervention acceptability where intervention designers could concentrate their efforts to improve acceptability. The findings from this study indicate the reasons for refusal to participate in RCTs can be differentiated between (a) reasons directly associated with the acceptability of the intervention(s), and (b) reasons associated with the trial participation more generally (e.g. burden of participation).

7.2.4 Study 4: How useful is the Theoretical Framework of Acceptability, compared with a single-construct approach, for assessing intervention acceptability? A semi-structured interview study with healthcare professionals

The semi-structured interview study in Chapter 4 assessed retrospective acceptability of two feedback interventions delivered within the feasibility and piloting phase of the AFFINITIE Research Programme (*Development & Evaluation of **A**udit and **F**eedback **In**terventions to **I**ncrease evidence-based **T**ransfusion pract**I**c**E**)* (Gould et al, 2014). In this study the topic guide was based on the preliminary TFA (v1) and the analysis was completed against TFA (v2). A key finding from this study is that despite the topic guide being based on TFA (v1) the interviews still generated responses that could be coded into the revised TFA constructs of Intervention coherence, and self-efficacy (two constructs that were not included in the preliminary version of the TFA). The application of the TFA to analyse interview data provided insights about specific components of both the interventions that were perceived as acceptable or unacceptable (Chapter 4 section 4.5.1 page 125), thereby informing efforts to improve acceptability.

7.2.5 Study 5: Application of the Theoretical Framework of Acceptability to assess acceptability of an intervention directed at patients: a semi-structured interview study

Study 5 (reported in Chapter 5) was also embedded in the BEB and HSF RCT (Wickwar et al., 2016). In this study, the TFA was applied to assess concurrent acceptability of the standard care appointment booking service (control group) and the patient initiated appointment service (intervention group). Similar to the findings reported in study 4, the findings suggest that the application of the TFA resulted in greater insights into the acceptability of both interventions and generated more evidence to suggest potential strategies to enhance intervention acceptability in comparison to a single general question. Specifically, the negative belief statements indicated that control group participants felt the current system did not allow any flexibility in re-scheduling booked appointments (high

burden) and participants' did not always get the appointment times they wanted (low perceived effectiveness). Whereas for participants in the intervention group there was an element of uncertainty if patients would get an appointment in the agreed time-frame and patients felt angry at having to wait longer for an appointment (negative affective attitude). Participants also expected their to be problems with the booking their own appointments' (low perceived effectiveness).

7.2.6 Study 6: Applying pre-validation methods to develop a Theoretical Framework of Acceptability questionnaire

Lastly, in the sixth study (Chapter 6) pre-validation methods were applied to develop two TFA-based questionnaires that were used to assess acceptability in the AFFINITIE, BEB and HFS trials. The methods applied in this study adapted pre-validation methods applied to develop Patient Reported Outcome (PRO) measures, proposed by Prior et al., (2011) to develop an item pool, and used the Discriminant Content Validation (DCV) method (Johnston et al. 2014) to test the content validity and discriminant validity of the items against the TFA. The methods provided a systematic approach in which existing items that other authors have used to assess acceptability (identified from the overview of reviews) were evaluated against the TFA construct definitions to determine whether the items could be included in a new measure. Furthermore the TFA construct definitions guided the development of new items that were specific to each intervention context and which reflect the TFA sub-constructs.

7.3 How does this research make novel contributions to the literature?

To the researcher's knowledge this is the first programme of work which has defined and theorised the concept of acceptability of healthcare interventions. Thus the findings from this thesis are novel and support the need for a shared definition of acceptability and related assessment tools. This need is evident from the findings of the overview of reviews, reported in chapter 2.

Secondly, the findings from this programme of work also support the idea that acceptability can be considered a multi-component construct. This is evident from the qualitative studies reported in Chapters 4 and 5. Specifically, in response to the single acceptability questions asked at the beginning of studies 4 and 5, participants' responses included spontaneous references that reflected the TFA constructs of Burden, Intervention Coherence and Perceived effectiveness.

Third, in line with the recommendations of the MRC guidance documents (MRC 2008; 2015), the findings from the qualitative studies provide evidence that the TFA can be applied to assess acceptability qualitatively across the three temporal perspectives within the feasibility and evaluation phases of the MRC development cycle (Sekhon et al., 2017). This is evident from the findings of studies 3-5. For example, in study 3, the TFA was applied in the evaluation phase of the BEB and HFS RCT, and generated evidence that some of the reasons that eligible participants' declined to participate in the trial were associated with prospective acceptability of the patient-initiated service. These included preferences for standard care (Affective attitude); anticipated burden associated with the patient-initiated service (Burden); lack of confidence in engaging with the new service (Self-efficacy), and uncertainties about the effectiveness of the patient-initiated service (Perceived effectiveness).

In this trial, the TFA was also applied to assess concurrent acceptability of the standard care appointment booking service, and the patient-initiated booking service (reported in chapter 5). Findings from this study support the application of the TFA in assessing acceptability whilst a trial is still on-going and provided specific information with regards to the acceptability of both the standard and patient-initiated booking services, in comparison to the responses to the single acceptability question. Furthermore, the TFA analysis also generated negative belief statements about both appointment services that intervention developers could potentially address to enhance acceptability.

In Study 4, the TFA was applied in the feasibility and pilot phase of the AFFINITE research programme (Gould et al., 2014) to assess retrospective acceptability to healthcare professionals of a feedback intervention and a toolkit intervention. In this study, the TFA analysis resulted in more suggestions for enhancing intervention acceptability for both the feedback intervention and the toolkit intervention, in comparison to responses to the single acceptability questions. Participants identified that the shorter feedback reports would be easier to read (Burden) and that the effectiveness of making changes to clinical practice also depended on how the feedback is disseminated to key staff (Perceived effectiveness). For the toolkit intervention, participants identified that the tone of the tools could be improved (Affective attitude) and similar to the feedback intervention, participants indicated that efforts should focus on encouraging staff to engage with the toolkit (Perceived effectiveness).

Lastly, study 6 also makes a novel contribution to the current evidence base with regards to designing quantitative assessments of acceptability. The overview of reviews found that there is no standardised measure for assessing acceptability. The application of the pre-validation methods (Prior et al., 2011) applied in study 6, provide preliminary evidence for the development of two TFA –based questionnaires. The first questionnaire was developed to assess acceptability to healthcare professionals of two feedback interventions in the AFFINITIE Research (Gould et al., 2014; Hartley et al., 2017). The second questionnaire was developed to assess the acceptability to patients of a patient –initiated treatment service (BEB) and Hemifacial Spasm (HFS) compared to standard care (Wickwar et al., 2016). Thus both questionnaires were specific to the context and content of the interventions.

In summary, this programme of work has made a novel contribution to the literature as it is the first to:

(1) Define and theorise the concept of acceptability in the context of healthcare interventions

(2) Establish the need for a multi-component framework of acceptability

(3) Describe the development of a TFA

(4) Describe the application of the TFA in assessing intervention acceptability qualitatively across three temporal perspectives, within the pilot and feasibility phase, and evaluation phase of the MRC intervention development cycle.

(5) Apply pre-validation methods (Prior et al., 2011) to develop two TFA-based acceptability questionnaires

7.4 Strengths and limitations

The main strength of this programme of work is the application of a range of methods to establish the current evidence base, to develop the TFA and to demonstrate the utility of the TFA in developing qualitative and quantitative tools (i.e. interview schedules and standardised questionnaires) to assess intervention acceptability.

First, an overview of reviews was conducted to establish the current evidence base. Overviews are considered advantageous over systemic reviews as they allow for one to compare data on different interventions or conditions, providing a broader summary of the research available, as well as comparing the findings of several reviews to determine the reasons for conflicting reviews (Pieper, Buechter, Jerinic & Eikermann 2012; Smith, Devane, Begley & Clarke 2011).

Both inductive and deductive methods were applied to theorise the concept of acceptability and develop the TFA. Whilst inductive methods built on the evidence from the overview of reviews, it is important to acknowledge that the deductive process of theorising involved an element of creative thinking as well as the researcher's knowledge of existing theoretical models. Thus the methods are not directly replicable.

Another strength includes the application of the deductive content analysis method applied to analyses the interview data in chapters 3-5. Deductive content analysis has been recommended as the method of analysis when the aim of a study is to validate an existing

theory or theoretical framework (Burns & Grove, 2005; Hsieh& Shannon, 2005). The method is also flexible and allows for the incorporation of frequency counts of codes across all participant transcripts, that offer a systematic method for exploring the similarities and differences between different coding categories (e.g. TFA constructs) across participants (Gibbs 2007; Joffe & Yardley 2004; Schreier 2013). Nevertheless the content analysis method does also have its limitations, specifically the method focuses on reducing data, and only coding data into one of the coding categories (Schreier 2013). It can be argued that another method of analysis may have generated greater in-depth evidence to validate the TFA, such as the framework analysis method (Richie & Spencer, 1994).

In both the AFFINITIE trial, and the BEB and HFS RCT it was possible to test the utility of the TFA. The inclusion of the single acceptability question at the start of the interview studies reported in Chapter 4 and Chapter 5, provided the opportunity to assess participants' understanding and interpretation of acceptability as a concept, without the influence of the series of TFA questions (plus prompts). The single acceptability question asked at the end of the interview provided the opportunity to assess whether the TFA construct questions (plus prompts) influenced participants' overall global perception of intervention acceptability.

As well as the methodological strengths, specifically the methodological variability applied in this programme of work, it was also a strength to be able to explore the TFA in the context of two on-going interventions with both patients and HCPs, thus providing evidence for the use of the TFA in real world health interventions. This programme of work has not just focused on theorising acceptability, or completed an analogue study using university students as participants.

In light of the strengths, it is also important to acknowledge the limitations of this programme of work. The studies included in this programme of work were designed opportunistically in the context of on-going trials. Thus within both the AFFINTIE

Research Programme (Gould et al., 2014) and BEB and HFS RCT (Wickwar et al., 2016), the study designs for the assessment of acceptability may not have been optimal for answering the research questions specifically relating to the utility of the TFA, because of the complexity of the interventions.

Another limitation to consider is whether the TFA provides actionable suggestions for enhancing intervention acceptability. Whilst the findings of the qualitative studies described in chapters 3-5 have identified potential areas for improving intervention acceptability, it is important to be aware these have largely been inferred from the researcher's interpretation of the deductive content analysis, rather than directly suggested by the participants. Thus it can be argued a level of research bias may have influenced the outcomes of the analysis. However in an effort to minimise the potential for researcher bias, studies 3-5 included the process of double-coding interview transcripts to assess for inter-rater reliability. Furthermore the belief statements generated by the researcher across all transcripts were reviewed and discussed with the research team.

A further limitation to note of this programme of work is that the TFA has only investigated the acceptability of the healthcare interventions from the perspectives of intervention recipients. Thus whether the framework would be applicable in assessing acceptability to intervention delivers is yet to be explored. With regards to study 6, whilst established pre-validation methods were applied to develop two TFA based acceptability questionnaires, the validity and reliability of the questionnaires is not known. It was outside the scope of this thesis to complete a formal psychometric validation.

7.5 Implications

The findings from this programme of work suggest implications for four main areas; theory building, evaluation of complex interventions, intervention design and interpretation of trial findings. These briefly are discussed below.

7.5.1 Implications for theory building

The findings from this programme of work have implications for further understanding and describing the methods concerned with theorising. As discussed in chapter 2 (section 2.3.2 page 42), methods applied to developing theory are not always systematically described in the psychology and healthcare literature (Carpiano & Daley 2006). In this programme of work, a conscious effort was made to apply systematic and recognisable methods (incorporating both inductive and deductive methods of reasoning) to define and theorise the concept of acceptability in healthcare interventions, as well as recognising that an element of creative thinking was also applied. These methods may be applicable to defining and theorising other health –related concepts.

It is important to note that the TFA has not been developed as a theory of acceptability, but a theoretical *framework*. Thus the TFA does not propose testable relationships between each of the seven component constructs. Instead, the operational definitions of the seven component constructs included in the TFA (i.e. Affective attitude, Burden, Ethicality, Intervention coherence, Opportunity costs, Perceived effectiveness and Self-efficacy) are a means of investigating the participants' anticipated or experienced cognitive and emotional responses to the intervention.

The TFA has the potential to be further refined and developed. This is encouraged to ensure that the TFA remains applicable and up-to date in assessing intervention acceptability in the different phases of intervention development and evaluation.

7.5.2 Implications for evaluations of complex interventions

The findings from this programme of work also have potential implications for randomised trials of complex interventions. For example, complex interventions are reliant on the recruitment of eligible patients to reach the desired sample size to maximize the generalisibility of trial findings, and to determine the effectiveness of an intervention. Findings from study 3 indicate that potential participants declined to participate in the BEB

and HFS RCT (Wickwar et al., 2016) because of reasons associated with prospective acceptability of the patient-initiated appointment booking service (chapter 3 section 3.4.1 page 91). In order to ensure a trial can reach the maximum recruitment rate, the TFA could be applied to ensure recruitment materials describe or explain the intervention according to the seven TFA constructs.

7.5.3 Implications for intervention design

The findings from the qualitative studies in this thesis indicate potential implications for the design of complex interventions, specifically for the advantage of including a qualitative study to assess intervention acceptability within the pilot and feasibility phase, and the evaluation phases of the MRC intervention development cycle (Sekhon et al., 2017).

Similar to the person-centred approach to assessing acceptability (Yardley et al., 2015), the TFA can be applied qualitatively to assess the acceptability of an intervention in the pilot and feasibility phases of intervention development. However the TFA is unique in that it offers researchers a theoretical framework, with specific constructs to target when developing interview topic guides to assess intervention acceptability (and a framework that can be applied to analyse interview data). Further, applying the TFA within the pilot and feasibility phase can offer guidance for intervention developers on what aspects of an intervention to modify or adapt to enhance intervention acceptability. For example, the findings from study 4 indicated mixed perceptions of the acceptability of the toolkit. As the interviews were completed in the pilot and feasibility phase of the AFFINITIE research programme (Gould et al., 2014), the research team were able to adapt the intervention prior to the evaluation phase of the research programme.

7.5.4 Implications for interpreting trial findings

Published guidance and evidence supports the benefit of conducting qualitative studies alongside RCTs to understand and interpret the main trial findings, and understanding how participants respond to an intervention (e.g. Craig et al., 2008; O'Cathain et al., 2010; 2015; Lewin et al., 2009; Moore et al., 2015). The findings from the three qualitative studies

included in this thesis highlight the advantage of applying the TFA to interpret trial findings across the MRC intervention and development cycle. For example, in Chapter 5, the TFA was applied to assess concurrent acceptability of an intervention while the RCT was on-going. The qualitative findings reported in this study offer insights for the BEB and HFS RCT trials team (Wickwar et al, 2016) in interpreting the main trial findings, whether or not the primary outcome provided evidence of intervention effectiveness.

7.6 Recommendations for future research

This programme of work is the first to have developed a mule-component theoretical framework of acceptability. The TFA is offered to the research community as an approach for assessing intervention acceptability. Below, future ideas and recommendations for work directly relating to advancing the utility of the TFA are proposed.

1) To establish an evidence base for the use of the TFA in quantitative assessment of intervention acceptability. In this thesis the methods applied to developing two TFA- based acceptability questionnaires were described. However a validation study should be undertaken to establish the psychometric properties of the questionnaires.

2) To assess the predictive validity of the TFA, can the TFA predict participants' attrition to an intervention?

3) Whilst the studies reported in this thesis provide evidence for the utility of TFA in assessing intervention acceptability qualitatively within the pilot and feasibility phase and evaluation phase of trials of complex interventions, a much larger evidence base is required to critically examine the application of the TFA in assessing intervention acceptability. It is recommended that the TFA is applied in future healthcare interventions to assess acceptability, from the perspective of intervention recipients across a range of healthcare interventions. Similarly, an evidence base is also required for the application of the TFA to assess acceptability

from the perspective of those delivering healthcare interventions. The evidence base will help determine the applicability of each of the seven component constructs in assessing intervention acceptability, and whether the constructs need to be refined.

4) As an evidence base for the utility of the TFA is established, a next step would be to develop a mapping tool that maps constructs to techniques, to facilitate systematic methods for refining interventions to improve acceptability.

5) To establish whether the TFA can be applied within the development phase of an intervention. For example, can interviews with potential stakeholders help intervention designers make decisions about the content and mode of delivery of a proposed intervention?

6) To establish whether the TFA can be applied to assess acceptability within the implementation phase of the MRC intervention and development cycle. For example, can the TFA provide evidence for the acceptability of an intervention after it has been 'scaled up' to be rolled out in real-world healthcare setting as part of routine-care?

7) To date, there is no formal guidance on how to apply the TFA. As an evidence base is established, findings across studies can be collated to develop guidance for researchers on how to apply the TFA to assess intervention acceptability within the different phases of the MRC intervention and development cycle. This guidance would include information on how to overcome potential challenges in applying the TFA to assess intervention acceptability, and details on how to analyse both qualitative and quantitative data.

7.6.1 Dissemination and impact of programme of work to date

This program of research commenced in October 2013, and throughout this time findings have been disseminated in peer-reviewed conference presentations and publications. From this dissemination the research community has shown an interest in the Theoretical Framework of Acceptability as an approach to assessing the acceptability of healthcare interventions. The British Journal of Health Psychology have invited the research team to write an editorial on the subject.

Furthermore, the BMC paper (Sekhon, Cartwright & Francis 2017) has generated requests from researchers across the globe for the qualitative and quantitative tools developed in the thesis. The article has also been cited eight times since its publication, January 2017. The published papers and conference presentations are listed below.

7.6.1.1 Papers

- Sekhon, M., Cartwright, M. and Francis, J. J. (2018), Acceptability of health care interventions: A theoretical framework and proposed research agenda. Br J Health Psychol. doi:10.1111/bjhp.12295

- Sekhon, M., Cartwright, M., & Francis, J. J. (2017). Acceptability of healthcare interventions: an overview of reviews and development of a theoretical framework. *BMC Health Services Research*, *17*(1), 88.

7.6.1.2 Peer-reviewed Oral conference presentations:

- Sekhon, M., Cartwright, M., & Francis, J. J. To what extent is the acceptability of an intervention associated with declining to participate in a Randomised Controlled Trial? A semi-structured interview study. Annual conference of the *UK Society for Behavioural Medicine*, Liverpool, 14th December 2017

- Sekhon, M., Cartwright, M., & Francis, J. J. Application of a theoretical framework to assess intervention acceptability: a semi structured interview study. *European Health Psychological Society and British Psychological Division of Health Psychology* Conference, Aberdeen, 24th August 2016

- Sekhon, M., Cartwright, M., & Francis, J. J. 'Acceptability' of healthcare interventions: Development of a theoretical framework. *Division of Health Psychology Society* Conference, London, 17 September 2015.

- Sekhon, M., Cartwright, M., & Francis, J. J. How has acceptability of healthcare interventions been defined and assessed? An overview of Systematic Reviews. Annual conference of the *UK Society for Behavioural Medicine*, 04 December 2014, Nottingham. 04 December 2014. (Awarded highest scoring abstract)

7.7 Conclusion

The acceptability of healthcare interventions to intervention recipients is an important issue to consider in the development, evaluation and implementation phases of healthcare interventions. The theoretical framework of acceptability (TFA), developed and applied in this programme of research, includes conceptually distinct constructs that are proposed to capture key dimensions of acceptability. A feature of the TFA is its applicability to assess acceptability across three temporal perspectives: prospective (i.e. before engaging with the intervention); concurrent (i.e. whilst participating in the intervention) and retrospective (i.e. after participating in the intervention). Investigating acceptability as a multi-component construct has the advantage of providing greater insights into intervention acceptability across the three temporal perspectives and providing a basis for suggestions for enhancing intervention acceptability. The TFA is offered to the healthcare research community as a systematic approach to advance the science and practice of acceptability assessment of healthcare interventions

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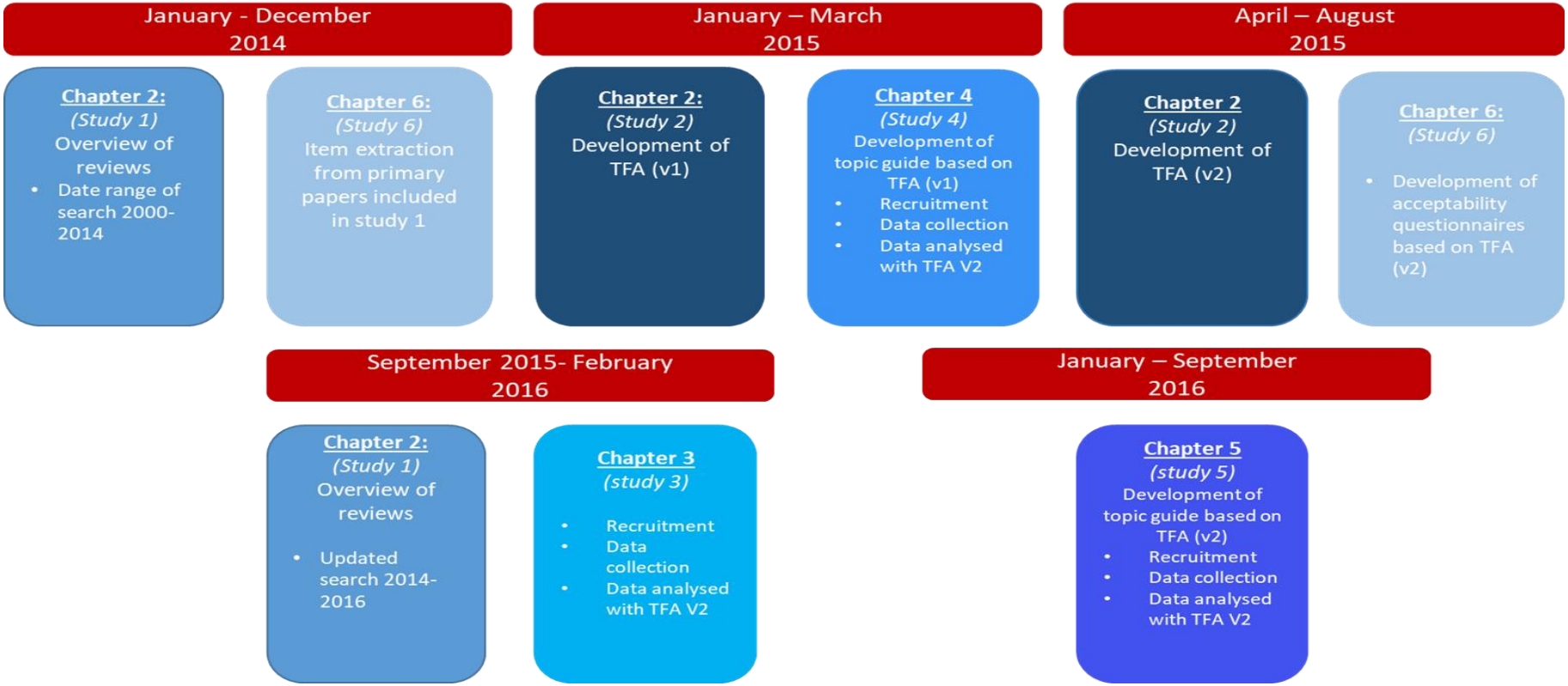
Appendendices

APPENDIX A: Figure presenting the timeline and tasks involved for each of the empirical studies reported in this thesis



APPENDIX B: Systematic review filter

SYSTEMATIC REVIEW FILTERS
(adaptations of the SIGN Search Filters
http://www.sign.ac.uk/methodology/filters.html)

MEDLINE (Ovid)
1. META-ANALYSIS/
2. META-ANALYSIS AS TOPIC/
3. (meta analy* or metaanaly*).tw.
4. REVIEW LITERATURE AS TOPIC/
5. (systematic* adj2 (review* or overview* or search*)).tw.
6. (literature adj2 (review or search*)).tw.
7. (medline or pubmed or cochrane or embase or cinahl or cinahl or lilacs or science citation index or "web of science" or conference proceedings or psyclit or psychlit or psycinfo or psychinfo).ab.
8. (search term* or published articles or search strateg*).ab.
9. (additional adj (papers or articles or sources)) .ab.
10. reference list*.ab.
11. (electronic adj (sources or resources or databases)).ab.
12. (bibliograph* or handsearch* or hand search* or manual* search*).ab.
13. (relevant adj (journals or articles)).ab.
14. or/1-13
15. Review.pt.
16. exp CLINICAL TRIALS AS TOPIC/
17. RANDOMIZED CONTROLLED TRIALS/
18. (data adj2 (extract* or analys*)).ab.
19. (selection criteria or critical appraisal).ab.
20. ((randomi* or controlled or cohort* or observational or retrospective* or nonrandomi* or case*) adj2 (trial* or stud*)).ab.
21. or/16-20
22. 15 and 21
23. 14 or 22
24. COMMENT/ or LETTER/ or EDITORIAL/
25. 23 not 24
26. ANIMALS/ not (ANIMALS/ and HUMANS/)
27. 25 not 26

Embase (Ovid)
1. META ANALYSIS/
2. SYSTEMATIC REVIEW/
3. (meta analy* or metaanaly*).tw.
4. (systematic* adj2 (review* or overview* or search*)).tw.
5. (literature adj2 (review or search*)).tw.
6. (medline or pubmed or cochrane or embase or cinahl or cinahl or lilacs or science citation index or "web of science" or conference proceedings or or psyclit or psychlit or psycinfo or psychinfo).ab.
7. (search term* or published articles or search strateg*).ab.
8. (additional adj (papers or articles or sources)).ab.
9. reference list*.ab.
10. (electronic adj (sources or resources or databases)).ab.
11. (bibliograph* or handsearch* or hand search* or manual* search*).ab.

12. (relevant adj (journals or articles)).ab.
13. or/1-12
14. Review.pt.
15. (data adj2 (extract* or analys*)).ab.
16. (selection criteria or critical appraisal).ab.
17. ((randomi* or controlled or cohort* or observational or retrospective* or nonrandomi* or case*) adj2 (trial* or stud*)).ab.
18. or/15-17
19. 14 and 18
20. 13 or 19
21. (letter or editorial).pt.
22. 20 not 21

PsycINFO (EBSCOhost)
S1 DE META ANALYSIS
S2 MR SYSTEMATIC REVIEW
S3 MR META ANALYSIS
S4 TI ("meta analys*" OR metaanalys* OR "systematic review" OR "systematic overview" OR "systematic search*") OR AB ("meta analys*" OR metaanalys* OR "systematic review" OR "systematic overview" OR "systematic search*")
S5 TI ("literature review" OR "literature search*") OR AB ("literature review" OR "literature search*")
S6 AB (medline or pubmed or cochrane or embase or cinahl or cinahl or lilacs or "science citation index" or "web of science" or conference proceedings or or psyclit or psychlit or psycinfo or psychinfo)
S7. AB (search term* or published articles or search strategy* or reference list*)
S8 AB (additional N1 (papers or articles or sources))
S9 AB (electronic N1 (sources or resources or databases))
S10 AB (bibliograph* or handsearch* or hand search* or manual* search*)
S11 AB (relevant N1 (journals or articles))
S12 S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10 OR S11
S13. MR LITERATURE REVIEW
S14 AB (data N2 (extract* or analys*))
S15 AB (selection criteria or critical appraisal)
S16 TX ((randomi* or controlled or cohort* or observational or retrospective* or nonrandomi* or case*) N2 (trial* or stud*))
S17 S14 OR S15 OR S16
S18 S13 and S17
S19 S12 OR S1

APPENDIX C: Table of definitions of acceptability in included systematic reviews

	Author, year	Extracted definition of acceptability
1	Liddon (2010)	A standardised abstraction form was created to capture information about participant characteristics, study design, question frame, acceptability or intention rates and other important findings
2	Ciprini (2011)	Treatment discontinuation (acceptability) was defined as the number of patients who left the study early for any reason during the first 2 weeks of treatment of the total number of patients randomly assigned to each treatment group
3	Ciprini (2009)	We defined treatment discontinuation (acceptability) as the number of patients who terminated the study early for any reason during the first 8 weeks of treatment (dropouts)
4	Koesters (2013)	For acceptability, we defined the following secondary outcomes (a) Total number of participants who dropped out during the trial as a proportion of the total number of randomised participants: (b) Number of participants who dropped out as a result of inefficacy during the trial as a proportion of the total number of participants (c) Number of participants who dropped out as a result of adverse events during the trial as a proportion of the total number of randomised participants (d) Total number of participants experiencing adverse events.
5	Kulier (2004)	assess acceptability according to the following indicators 1. Effectiveness (pregnancy rates) 2. Discontinuation rates 3. Reasons for discontinuation 4. Cycle control 5. Side-effects
6	Hauser (2011)	Discontinuation rates (the number of patients who terminated the study early for any reason during the study) are considered to be the most consistently reported estimates of treatment acceptability
7	Liu (2013)	we defined treatment discontinuation (acceptability) as the number of patients who terminated the study early for any reason during the treatment (dropouts)
8	Maneeton (2013)	Acceptability was determined by the overall discontinuation rates

9	Skapinakis (2010)	we also measured the total number of dropouts in each arm to assess the acceptability
10	Uthman (2010)	Acceptability was determined from the proportion of participants who withdrew from the RCTs due to treatment emergent adverse events
11	Van Lieshout (2010)	These outcomes included rates of response, remission, all-cause discontinuation (a proxy for the acceptability of treatment to individuals)
12	Tarr (2010)	The number of patients dropping out for any reason prior to study completion was recorded as a measure of treatment acceptability
13	Littlejohn (2006)	participation and non participation rates
14	Marrazzo (2008)	measured the acceptability and acceptance (uptake) of urine-testing for c. Trachomatis among asymptomatic men
15	Arrowsmith (2012)	Additional outcomes intended to be included were continuation of copper IUD, which is measured by discontinuation or removal rate,
16	Berlim (2012)	We have assessed the acceptability of bilateral rTMS by comparing the differential dropout rates between subjects receiving active or sham bilateral Rtms
17	Berlim (2013)	We assessed overall treatment acceptability, based on the differential dropout rates among subjects receiving active or sham rTMS
18	Lewis (2012)	Acceptability was assessed in terms of any formalised measure of satisfaction
19	Mufin (2013)	The review seeks to identify studies that have examined effectiveness and studies that have evaluated patient perspectives on usability and acceptability
20	Berlim (2013)	overall dropout rates of HF-RTMS and ECT groups at study end
21	Kedge (2009)	outcome measures included wound healing time, or other skin integrity measures and some form of patient comfort/ and or acceptability measure
22	Mcclung (2012)	acceptability (side effects) may include flushing and vasovgal episodes during the procedure, spotting or copious vaginal discharge
23	Andrews (2010)	measures: acceptability to participants (percent adherent to full course, percent satisfied) Adherence and patient satisfaction are indicators of acceptability of computerised CBT to patients
24	Kaltenthaler (2008)	Sources of information on acceptability included: recruitment rates, patient-dropout rates, and patient completed questionnaires As many research studies in this field do not measure or report acceptability directly we used proxy indices. The following were as possible sources of information about patient acccceptability: patient dropout rates and reasons for dropouts and questionnaires or or surveys (either alone or as part of a trial) that covered patient acceptability or satisfaction a trial) that covered patient acceptability or satisfaction

25	Maddocks (2009)	We have systematically reviewed the use of exercise in this group, identifying rates of uptake , adherence and completion along with factors of influencing acceptability
26	Blenkinsopp (2005)	It is generally accepted that greater use could be made of community pharmacy-based interventions. Diabetes care has been proposed as an area for enhanced community pharmacy involvement. However there is no published structured review of available evidence of either effectiveness or acceptability. This review aims to identify and assess such evidence and to synthesise findings to inform the design and delivery of future community pharmacy-based interventions in diabetes care. Five studies of pharmacists' attitudes towards involvement in diabetes care were reviewed we Identifed and reviewed four stuides investigating patients perspectives on community pharmacy and diabetes
27	Robinson (2007)	a) do patients and carers find the included intervention acceptable? b) are some interventions viewed as more acceptable than others?
28	Dipeveen (2013)	…further consideration for governments in deciding how to intervene to change behaviour is the attitude of the public towards such
29	Glenton (2013)	and the extent to which any interventions are likely to be acceptable .. Focused on stakeholders' perceptions of the acceptability of the delivery of vaccines and medications through CPAD by LHWS and their experiences and attitudes of this intervention
30	Ostuzzi (2015)	Treatment acceptability, measured as the number of patients who dropped out during the trial by any cause as aproportion of the total number of randomised patients
31	Brooke-Sumner (2015)	acceptability, or how the recipients of (or those delivering the intervention percieve and react to it (reference as part of definition of feasability, paper cited Bowen et al., 2009)
32	Berlim (2014)	acceptability of treatment - overall dropout rates at follow up
33	Botella (2015)	…. in which a study focused on this issue found that 76% of patient reported more willing to be invovled in VR-EBT
34	Davis (2016)	How do these barriers and facilitators affect the acceptability of RMT and the feasbility of adoption?
35	EL-Den (2015)	it is essential to explore the acceptability of perinatal depression screening, as the uptake, clinical relevance and social validity of even the most efffective interventions is greatly compromised if it is not acceptable to those who conduct it and those who receive it
36	Linde (2015)	Acceptability outcomes were discontinuation (dropout) because of adverse effects (primary acceptability outcome) discontinuation for any reason,

		and the number of patients experiencing adverse effects
37	Yang (2015)	assess the comparative effects of GLP-1 RA's on glycemic control, hypolycemic and treatment discontinuation for treating type 2 diabetes
38	Peters (2014)	Intervention studies operationalized acceptability in terms of women who are prepared to use the female condoms, and or who have already used it and who are thus in a position to rate their experiences satisfactory or unsatisfactory.
39	Calderia (2015)	Acceptability was split into drug-related (also associated with the tolerability profile) and patient- related treatment discontinuation Discontinuation due to adverse events were cosnidered to be drug related, and disconintuation due to patients own decisions' (consent withdrawal and treatment discontinuation) were considered to be patient related
40	Gladas (2014)	we aimed to determine whether current SMS interventions are acceptable and accessible to men with LTCs and explore what may act as faciliators and barriers to access of inerventions and support activities
41	Rodriquez (2014)	women were asked if they were weill satisfied, unsatisfied or inderefrent or had no response
42	Gonzalez (2015)	Acceptability measures were not identified for other health worker. At 7 days of follow-up, women were asked if they were well satisfied, unsatisfied or indifferent or had no response
43	Figueroa (2015)	we examined the acceptability of HIVST, defined as the willingness to take a test in the future or as an increased

APPENDIX D: Citation details of all the systematic reviews included in the overview of reviews.

1. Andrews, G., Cuijpers, P., Craske, M. G., McEvoy, P., & Titov, N. (2010). Computer therapy for the anxiety and depressive disorders is effective, acceptable and practical health care: a meta-analysis. *PLoS ONE, 5*(10), e13196.
2. Arrowsmith, M. E., Aicken, C. R., Saxena, S., & Majeed, A. (2012). Strategies for improving the acceptability and acceptance of the copper intrauterine device. *The Cochrane Library*.
3. Berlim, M., Van den Eynde, F., & Daskalakis, Z. J. (2013). A systematic review and meta-analysis on the efficacy and acceptability of bilateral repetitive transcranial magnetic stimulation (rTMS) for treating major depression. *Psychol Med, 43*(11), 2245-2254.
4. Berlim, M. T., Eynde, F., & Daskalakis, Z. J. (2013). EFFICACY AND ACCEPTABILITY OF HIGH FREQUENCY REPETITIVE TRANSCRANIAL MAGNETIC STIMULATION (rTMS) VERSUS ELECTROCONVULSIVE THERAPY (ECT) FOR MAJOR DEPRESSION: A SYSTEMATIC REVIEW AND META-ANALYSIS OF RANDOMIZED TRIALS. *Depression and anxiety, 30*(7), 614-623
5. Berlim, M. T., McGirr, A., Van den Eynde, F., Fleck, M. P. A., & Giacobbe, P. (2014). Effectiveness and acceptability of deep brain stimulation (DBS) of the subgenual cingulate cortex for treatment-resistant depression: A systematic review and exploratory meta-analysis. *Journal of Affective Disorders, 159*, 31-38. doi: 10.1016/j.jad.2014.02.016
6. Berlim, M. T., Van den Eynde, F., & Daskalakis, Z. J. (2013). Clinically meaningful efficacy and acceptability of low-frequency repetitive transcranial magnetic stimulation (rTMS) for treating primary major depression: a meta-analysis of randomized, double-blind and sham-controlled trials. *Neuropsychopharmacology, 38*(4), 543-551.
7. Blenkinsopp, A., & Hassey, A. (2005). Effectiveness and acceptability of community pharmacy-based interventions in type 2 diabetes: a critical review of intervention design, pharmacist and patient perspectives. *International Journal of Pharmacy Practice, 13*(4), 231-240.
8. Botella, C., Serrano, B., Baños, R. M., & Garcia-Palacios, A. (2015). Virtual reality exposure-based therapy for the treatment of post-traumatic stress disorder: A review of its efficacy, the adequacy of the treatment protocol, and its acceptability. *Neuropsychiatric Disease and Treatment, 11*.
9. Brooke-Sumner, C., Petersen, I., Asher, L., Mall, S., Egbe, C. O., & Lund, C. (2015). Systematic review of feasibility and acceptability of psychosocial interventions for schizophrenia in low and middle income countries. *BMC Psychiatry, 15*, 19.
10. Caldeira, D., Goncalves, N., Ferreira, J. J., Pinto, F. J., & Costa, J. (2015). Tolerability and Acceptability of Non-Vitamin K Antagonist Oral Anticoagulants in Atrial Fibrillation: Systematic Review and Meta-Analysis. *American Journal of Cardiovascular Drugs, 15*(4), 259-265.
11. Cipriani, A., Barbui, C., Salanti, G., Rendell, J., Brown, R., Stockton, S., . . . Geddes, J. R. (2011). Comparative efficacy and acceptability of antimanic drugs in acute mania: a multiple-treatments meta-analysis. *The Lancet, 378*(9799), 1306-1315.
12. Cipriani, A., Furukawa, T. A., Salanti, G., Geddes, J. R., Higgins, J. P. T., Churchill, R., . . . Barbui, C. (2009). Comparative efficacy and acceptability of 12 new-generation antidepressants: A multiple-treatments meta-analysis. *The Lancet, 373*, 746-758.

13. Davis, M. M., Freeman, M., Kaye, J., Vuckovic, N., & Buckley, D. I. (2014). A systematic review of clinician and staff views on the acceptability of incorporating remote monitoring technology into primary care. *Telemedicine Journal & E-Health, 20*(5), 428-438.
14. Diepeveen, S., Ling, T., Suhrcke, M., Roland, M., & Marteau, T. M. (2013). Public acceptability of government intervention to change health-related behaviours: a systematic review and narrative synthesis. *BMC Public Health, 13*(1), 756.
15. El-Den, S., O'Reilly, C. L., & Chen, T. F. (2015). A systematic review on the acceptability of perinatal depression screening. *Journal of Affective Disorders, 188*, 284-303.
16. Figueroa, C., Johnson, C., Verster, A., & Baggaley, R. (2015). Attitudes and acceptability on HIV self-testing among key populations: A literature review. *AIDS and Behavior, 19*(11), 1949-1965. doi: 10.1007/s10461-015-1097-8
17. Galdas, P., Darwin, Z., Kidd, L., Blickem, C., McPherson, K., Hunt, K., . . . Richardson, G. (2014). The accessibility and acceptability of self-management support interventions for men with long term conditions: a systematic review and meta-synthesis of qualitative studies. *BMC Public Health, 14*(1), 1.
18. Glenton, C., Khanna, R., Morgan, C., & Nilsen, E. S. (2013). The effects, safety and acceptability of compact, pre-filled, autodisable injection devices when delivered by lay health workers. *Tropical Medicine & International Health, 18*(8), 1002-1016.
19. Gonzalez-Rodriguez, A., Catalan, R., Penades, R., Garcia-Rizo, C., Bioque, M., Parellada, E., & Bernardo, M. (2015). Profile of paliperidone palmitate once-monthly long-acting injectable in the management of schizophrenia: Long-term safety, efficacy, and patient acceptability - A review. *Patient Preference and Adherence, 9*, 695-706.
20. Häuser, W., Petzke, F., Üçeyler, N., & Sommer, C. (2011). Comparative efficacy and acceptability of amitriptyline, duloxetine and milnacipran in fibromyalgia syndrome: a systematic review with meta-analysis. *Rheumatology, 50*(3), 532-543.
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22. Kedge, E. M. (2009). A systematic review to investigate the effectiveness and acceptability of interventions for moist desquamation in radiotherapy patients. *Radiography, 15*, 247-257.
23. Koesters, M., Guaiana, G., Cipriani, A., Becker, T., & Barbui, C. (2013). Agomelatine efficacy and acceptability revisited: systematic review and meta-analysis of published and unpublished randomised trials. *The British Journal of Psychiatry, 203*(3), 179-187.
24. Kulier, R., Helmerhorst, F. M., Maitra, N., & Gülmezoglu, A. M. (2004). Effectiveness and acceptability of progestogens in combined oral contraceptives–a systematic review. *Reproductive health, 1*(1), 1.
25. Lewis, C., Pearce, J., & Bisson, J. I. (2012). Efficacy, cost-effectiveness and acceptability of self-help interventions for anxiety disorders: systematic review. *The British Journal of Psychiatry, 200*(1), 15-21.
26. Liddon, N., Hood, J., Wynn, B. A., & Markowitz, L. E. (2010). Acceptability of human papillomavirus vaccine for males: a review of the literature. *Journal of Adolescent Health, 46*(2), 113-123.
27. Linde, K., Kriston, L., Rucker, G., Jamil, S., Schumann, I., Meissner, K., . . . Schneider, A. (2015). Efficacy and acceptability of pharmacological treatments for depressive disorders in primary care: systematic review and network meta-analysis. *Annals of Family Medicine, 13*(1), 69-79.
28. Littlejohn, C. (2006). Does socio-economic status influence the acceptability of, attendance for, and outcome of, screening and brief interventions for alcohol misuse: A review. *Alcohol and Alcoholism, 41*, 540-545.

29. Liu, J., Dong, J., Wang, L., Su, Y., Yan, P., & Sun, S. (2013). Comparative efficacy and acceptability of antidepressants in Parkinson's disease: a network meta-analysis. *PLoS ONE, 8*(10), e76651.
30. Maddocks, M., Mockett, S., & Wilcock, A. (2009). Is exercise an acceptable and practical therapy for people with or cured of cancer? A systematic review. *Cancer Treatment Reviews, 35*, 383-390.
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APPENDIX E: Patient information sheet for BEB and HFS RCT

Moorfields Eye Hospital NHS
NHS Foundation Trust

Moorfields Eye Hospital

Botulinum Toxin Clinic

City Road

London

EC1V 2PD

Version 1.2

Date: 21.04.15

Project number: 15/LO/0439

Direct Line: 0207 253 3411 ext 2109

Website: www.moorfields.nhs.uk

PARTICIPANT INFORMATION SHEET

Title of project: A randomised controlled trial to explore the effectiveness and cost-effectiveness of a patient-initiated botulinum toxin treatment model for Blepharospasm and Hemifacial spasm compared to treatment as usual

Investigators: Mr Daniel Ezra, Tel. 0207 253 3411 ext 2109

Dr Hayley McBain, Tel. 0207 040 0870

Dr Sadie Wickwar, Tel. 0207 040 0876

Ms Nicola Dunlop, Tel. 07872414984

You are being invited to take part in a research study. Before you decide, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if

there is anything that is not clear or if you would like more information. Please take time to decide whether or not you wish to take part.

Part 1

1. Why is the research taking place?

We are a research team looking at alternatives to the traditional outpatient appointment procedure for patients with blepharospasm or hemifacial spasm having botulinum toxin treatment.

Currently a standard treatment model is used where you attend scheduled follow-up appointments. This may mean that some people are being seen too often and some are left experiencing unpleasant symptoms until their next scheduled appointment.

The aim of this study is to evaluate a new service in which you decide when you need treatment rather than having scheduled appointments made by the staff at Moorfields. You will be able to call in and book an appointment for Botulinum toxin treatment when you feel your symptoms are returning, and we will assess the effects of this in comparison to the service currently run. We hope that this information will enable us to develop a better and more efficient nurse-led botulinum toxin clinic at Moorfields Eye Hospital.

2. Why have I been invited?

You are being invited to participate because you are a patient attending the nurse-led botulinum toxin treatment clinic at Moorfields Eye Hospital. We are seeking a total of 266 people over the age of 18 to take part in this study.

3. Do I have to take part?

No, taking part is voluntary. It is up to you to decide whether or not to take part. Nobody will be upset if you decide not to take part. We are interested in finding out more about what makes people decide not to take part in studies and with your permission we may ask you to give some brief reasons that will be kept confidential.

If you decide to take part but at any point find you are no longer able to participate, you are free to withdraw from the study and without giving a reason. Please be reassured that deciding to withdraw at any time or choosing not to take part at all will not affect the standard of care you receive at any time, either now or in the future.

4. What will happen to me if I take part?

If you decide to take part, please keep this information sheet and you will be asked to sign a consent form. Once you have consented to take part, you will be asked to complete a questionnaire that asks about how you feel about having blepharospasm or hemifacial spasm and your treatment. We do not anticipate that this will take you more than 30 minutes to complete.

To test whether the new service works we need to compare people who are managed in this new way with people are managed in the traditional system. We can do this by putting people into two different groups by chance (randomly). Therefore, if you agree to take part you have a 50% chance of being allocated to Group 1 (usual care) and a 50% of being allocated to Group 2 (the new service).

Group 1. You will continue to receive the same care that you normally receive, according to the plan agreed between yourself and the Nurse Specialist/ Consultant.

Group 2. You will receive a leaflet in which you will be told how to book your follow-up appointments in the new service.

Being part of Group 2 will involve attending the hospital for your botulinum toxin injections when you judge that the treatment is needed rather than waiting for a scheduled appointment. You will continue to see your Consultant/ Nurse Specialist and GP when you see fit. You will of course be able to contact the Nurse Specialist if you are concerned at any time.

If you are randomly allocated to Group 2 (the new service) you may also be asked to take part in an interview at the time of your first clinic appointment in the study. This will be at a place and time convenient for you. During this interview you will be asked about what made you seek treatment. Not every participant is required to take part in an interview, so if you would prefer not to, just let us know when you sign the consent form.

Alternatively, at end of your participation in the study we will ask if you would be prepared to be interviewed about your experiences of the new service. This will be at a place and time convenient for you. Again, not every participant is required to take part in this interview so do indicate on your consent form if you would rather not be interviewed. If you do agree to take part in one of these interviews, we would like to audio record it. This will then be transcribed and the audio recordings will be destroyed.

If you tick the box on the consent form about further participation taking part in an interview and provide your contact details we will contact you to discuss this in more detail. As we only require around 30 participants to take part in either of these interviews, you may not be contacted after we have achieved this number. We assure you that ticking the box at this stage does not mean you must take part in an interview – you are free to change your mind at any time in the future, without influencing the care you receive. You do not have to give a reason for changing your mind.

5. What will I have to do?

For those participants who are randomly allocated to Group 1 you will continue to receive the same care that you normally receive and will be asked to complete a questionnaire booklet at the beginning of the study, then again after three and nine months later. **This will not require you to attend additional clinic visits, we can post the questionnaires to you.** You will be given a freepost envelope to send these back to the research team.

For those participants who are randomly allocated to Group 2, you will be given a leaflet on how to book your next follow-up appointment. You will be asked to complete a questionnaire booklet at the beginning of the study, then again three and nine months later. **This will not require you to attend additional clinic visits, we can post the questionnaires to you**. You will be given a freepost envelope to send these back to the research team. You will also be contacted by the researcher by phone two weeks after receiving treatment to ask about the severity of your condition.

If you would like to also take part in one of the interviews, one of our research team will contact you and this will be arranged at a time and place convenient to you.

6. What are the possible disadvantages and risks of taking part?

We are always required to tell you about any risks to you, should you agree to take part in research. However, in this instance we are not aware of there being any such risks to you. For those people who are randomly put into Group 2 (the new service) you will be given the contact details of the Nurse Specialist involved in the study whom you can contact at any time. Your safety is of utmost concern to the research and clinical team and therefore throughout the intervention period you will be closely monitored and contacted if deemed essential.

Some questionnaires may ask questions about e.g. your income and living arrangements. This information is important for our research and as with all the questionnaires you answer, your responses will be treated confidentially at all times.

7. What are the possible benefits of taking part?

In taking part we expect that the information we get from this study will help us to provide more appropriate care to people with blepharospasm and hemifacial spasm receiving botulinum toxin treatment in the future.

8. What happens when the research stops?

Initially, on completion of the study those in Group 2 will return to the usual care that they received before taking part in the research. However, if the new service is found to be effective then it is likely that this will be put in place for all patients in need of botulinum toxin treatment in the future.

9. What if there is a problem?

Any complaint about the way you have been dealt with during the study or any possible harm you might suffer will be addressed. The detailed information on this is given in Part 2.

10. Will my taking part in this study be kept confidential?

Yes. We will follow ethical and legal practice and all information about you will be handled in confidence. The details are included in Part 2.

This completes part 1.

If the information in Part 1 has interested you and you are considering taking part, please read the additional information in Part 2 before making any decision.

Part 2

1. What will happen if I don't want to carry on with the study?

If you decide at any point during your participation in the study that you wish to withdraw, you can contact the research or clinical team to discuss this. It would be useful for us to use the information you have given us up until that point in the study; however, if you wish for us to destroy this data, this can also be arranged

2. What if there is a problem?

If you have a concern about any aspect of this study, you should speak to the researchers who will do their best to answer your questions. You can do so either at your next appointment or contact Sadie Wickwar on 0207 040 0876 or by email at [redacted]. If you remain unhappy and wish to complain formally, you can do this through the Complaints Manager, Moorfields Eye Hospital NHS Foundation Trust, 162 City Road, London EC1V 2PD, Telephone: 020 7566 2054. Please quote the project number at the top of this information sheet.

3. Will my taking part in this study be kept confidential?

We need permission to access your medical records which relate directly to this study. All the information collected during the study will be held securely in the strictest confidence and will only be used for research purposes.

If you agree, we would like to inform your GP that you are taking part. This is as a matter of courtesy, but rest assured that they will not know what information you have given to us.

The data that we collect will be kept anonymously on password-protected computers and in locked filing cabinets. Only members of the research team will see this anonymous information, and Sadie Wickwar and the Trial Co-ordinator will be the only people who will have access to identifiable data.

If you take part in an interview we will ask your permission to audio-tape it, this will then be transcribed with any identifying information removed from the transcript. The audio-tape will then be destroyed.

4. What will happen to the results of the research study?

The findings of this research will be reported in professional publications and at meetings, but you will not be identified in any report or publication. For those participants who take part in an interview any information which would allow someone to identify you will be removed from the transcribed interviews. The transcripts may also be used for teaching purposes with your permission.

If at any point during the study you lose capacity to take part, the data you have provided up until that point will remain within the study, but only with the permission of your next of kin.

5. Who is organising the research?

This research is being organised by consultants at Moorfields Eye Hospital and researchers at City University London. The research is being funded by Merz Pharma and the Moorfields Eye Hospital Biomedical Research Centre. This study is sponsored by Moorfields Eye Hospital NHS Foundation Trust.

6. Who has reviewed the study?

This study has been reviewed and approved by NRES Committee London - Queen Square.

7. Further Information and contact details

If you want some general information about taking part in research please contact the Patient Advice Liaison Service (PALS) on 020 7566 2324 or 020 7566 2325, or by email on pals@moorfields.nhs.uk

If you feel affected by any issues associated with blepharospasm and hemifacial spasm that might be raised by taking part in the study, you can contact The Dystonia Society who provide specialist confidential advice and support about dystonia. Contact details for the helpline are provided below:

The Dystonia Society on Tel. 020 7793 3650 or email: support@dystonia.org

If you have any questions about this study and what you are being asked to consider, please contact one of the research team.

If you would like any further information about this research or if you have any queries at any time in the future, please contact Sadie Wickwar in Health Services Research, City University London on 0207 040 0876 or via email at [redacted]

Thank you for reading this information sheet.

APPENDIX F: Consent form (reasons for not taking part)

Moorfields Eye Hospital

Botulinum Toxin Clinic

City Road

London

EC1V 2PD

Direct Line: 0207 253 3411 ext 2109

Website: www.moorfields.nhs.uk

Version 1.2

Date: 21.04.15

Project number: 15/LO/0439

Patient Identification Number for this study:

CONSENT FORM (Reasons for not taking part)

Title of Project: A randomised controlled trial to explore the effectiveness and cost-effectiveness of a patient-initiated botulinum toxin treatment model for Blepharospasm and Hemifacial spasm compared to treatment as usual

Name of Principal Investigator: Mr Daniel Ezra, Tel. 0207 253 3411 ext 2109

Please tick the box beside each statement below if you agree

1. 1 I confirm that I have read and understood the information sheet dated 21.04.15 (version 1.2) for the above study and have had the opportunity to ask questions. ☐

2. . I do not wish to take part in the randomised controlled trial but agree to take part in a brief interview about my reasons for not wanting to take part. ☐

3. I understand that this is voluntary and that I am free to withdraw at any time without my medical care or legal rights being affected. ☐

4. I understand all the information I provide will be treated as confidential ☐

5. I give my permission for this short interview to be tape recorded and understand that at the end of the study, the tape recording will be

   destroyed but an anonymous written copy of my interview will be kept for research purposes. ☐

6. I would like to receive feedback about the findings of this study. ☐

Name of patient	Date	Signature

Name of person taking consent (if different from researcher)	Date	Signature

Researcher (to be contacted if there are any problems)	Date	Signature

Please attach a patient sticker to the front of this form

Original copy to be kept in site file

1 form for Patient

1 to be kept as part of the study documentation

APPENDIX G: Rationle for the chosen qualitative method of analysis

Consideration of qualitative analysis approaches

There are a range of methodological approaches that can be applied to analyse qualitative data (Green & Thorogood, 2004). The method chosen to analyse qualitative data is dependent on the research question, and should ensure that the chosen approach addresses the research aims appropriately (Pope & Mays 2006). Two approaches that were considered to analyse the interview studies within this thesis included: 1) Thematic analysis; and 2) content analysis.

Both approaches "enable the researcher to capture the meanings, within the data [and] provide a strategy for organising and interpreting qualitative data to create a narrative understanding that brings together the commonalities and differences in participants' descriptions of their subjective experiences" (p. 616 Crowe, Inder and Porter, 2015). The section below presents the differences between each approach and why it was decided to apply principles of the qualitative content analysis approach.

Thematic analysis

Thematic analysis has been described as a theoretically flexible method that identifies, analyses and reports patterns with data (Braun & Clarke, 2006). The method specifically allows for themes to be identified across a data set (i.e. interview transcripts) and for researchers to organise and interpret their data in relation to the research topic in detail (Boytazis, 1998; Braun & Clarke, 2006). An advantage of thematic analysis includes its application across a range of epistemological and theoretical approaches (Braun & Clarke, 2006; Crowe et al., 2015). The thematic analysis approach consists of six systematic steps (Table 1).

Table 1: Phases of Thematic Analysis (adapted from Braun and Clarke, 2006).

Step	Description
1. Familiarizing yourself with the data	Transcribing data, reading and re-reading data, noting initial ideas
2.Generating initial codes	Systematically coding interesting features of the data across the entire data set
3.Searching for themes	Collating codes into potential themes
4.Reviewing themes	Checking the themes work in relation to the coded extractions and entire data set
5.Defining and naming themes	Ongoing analysis to refine specifics of each theme, including generating clear definitions and labels for each theme
6.Producing the report	Selecting examples to represent answers to the research question

Content analysis

Content analysis as a method has been defined as "a systematic coding and categorizing approach used for exploring large amounts of textual information unobtrusively to determine trends and patterns of words used, their frequency, [and] their relationships" (p. 400 Vaismoradi, Turunen & Bondas 2013). Qualitative content analysis has been described as a systematic and flexible method for describing qualitative data (Joffe & Yardley 2004; Schreier 2014). Unlike thematic analysis, the content analysis approach allows for the researcher to quantify themes in the form of frequency counts that can be tabulated to present the results of the coding, or can be further analysed using standardised statistical techniques (e.g. inferential statistics). (Braun & Clarke, 2006; Pope & Mays 2006; Wilkinson, 2000). The content analysis approach applied in this thesis consisted of principles of the directed content analysis approach (Hsieh & Shannon 2005; Atkins et al., 2017). The directed approach is also known as deductive content analysis, in which operational definitions of constructs in a theory or framework are applied as the initial coding categories (Joffee & Yardley 2004; Schrier 2014).

Differences between thematic analysis and content analysis

Whilst both approaches can be considered to be on a continuum with regards to analysing qualitative data (Figure 1) there are clear differences. Thematic analysis usually is applied as

an inductive approach (i.e. analysing the data to form themes), focusing on uncovering the latent meaning (i.e. understanding and interpreting the meaning behind what participants have said) and does not quantify the number of participants that represent each theme (Crowe, Inder and Porter, 2015; Joffee & Yardley 2004). In contrast content analysis is often associated with a deductive approach (i.e. coding categories are pre-defined based on existing theory or framework) and the analysis focuses on uncovering the manifest meaning (i.e. interpretation is based on what participants have said about the phenomenon of interest, in this case acceptability of an intervention). Content analysis also has the advantage for data (i.e. categories of coding or themes) to be quantified in the form of frequency counts dependent on sample size (Crowe, Inder and Porter, 2015; Joffee & Yardley 2004; Schreier 2014). The use of frequency counts enables researchers to explore similarities and differences between participants and the relationships between different categories (Bauer et al., 2000; Gibbs 2008).

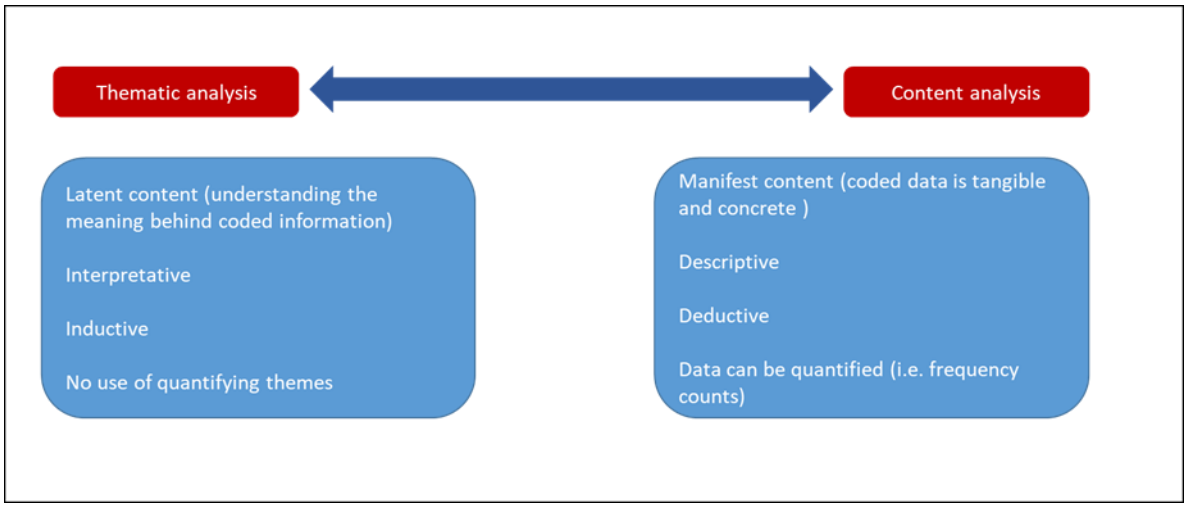

Figure 1: The analysis continuum (adapted from Crowe, Inder and Porter, 2015)

Reasons for applying qualitative content analysis

The qualitative content approach was chosen as the method of analysis in this thesis for a number of reasons. Chapter 3 explored the reasons why eligible participants declined to

participate in the Blepharospasm and Hemi-facial spasm trial. The topic guide in this study was designed to keep the interviews to a maximum of 15 minutes to understand if reasons participants refused to participate were associated with (low) acceptability of the patient-initiated service model. On reviewing the transcripts it was evident that participant responses to the interview questions were very short, and a thematic analysis approach would not be ideal, specifically it was not possible to apply the systematic steps described in Table 1 to the data. Instead, applying principles of the deductive qualitative content analysis approach (see chapter 3 section 3.2.7.2 for details) allowed for data to be coded against the TFA constructs as well as an 'other' category. The data coded varied in length, at times there were very short utterances and in some cases there were more elaborated responses. An advantage of applying the content analysis approach in this study meant that the researcher could quantify the belief statements generated, and to compare these to the recorded reasons all participants reported for refusing to participate in the trial.

The second reason for applying qualitative content analysis to the remaining studies reported in Chapter 4 and Chapter 5 was to keep the data analysis approach consistent across all three qualitative studies reported in the thesis. In Chapter 4 and Chapter 5 qualitative content analysis was applied in which responses to the general acceptability questions, and questions based on the TFA are coded deductively into the TFA constructs, before a second stage of inductive content analysis was applied, to produce summary belief statements. This approach allowed the researcher to determine the differences in the content of participant responses for both the general acceptability question and TFA set of questions (by quantifying the range of belief statements according to the TFA constructs) and to determine which of the two approaches generated evidence to inform potential strategies for enhancing intervention acceptability. Furthermore in these studies, the frequency counts of each of the belief statements provided a signal in the data according to how many participants considered the interventions to be acceptable or unacceptable according to the TFA

constructs. Keeping a consistent approach of analysis across all three interview also indicated that in response to the general acceptability question, responses were reflective of some of the TFA constructs (see Thesis Chapter 7 general discussion for further information).

The third reason for applying the qualitative content analysis method also took into consideration studies that have applied other theoretical frameworks to analyse qualitative interview data with regards to healthcare interventions, specifically the Theoretical Domains Framework (TDF) (Atkins et al., 2017; Cane, Connor & Michie 2012; Michie et al., 2005). In TDF studies Atkins and colleagues advise researchers to apply a directed content analysis, in which data is analysed "deductively, using the TDF to generate the framework for a content analysis and, inductively, generating themes that can be considered in relation to domains" (p 10. Atkins et al., 2017).

The researcher also acknowledges that whilst principles of the directed qualitative content analysis approach have been applied in this thesis, and the use of frequency counts allowed for the comparison of results within each of the studies, there are also some limitations. In this thesis it was not possible to apply a true quantitative content analysis in the form of inferential statistics due to the sample size of participants in each of the studies. Despite this, the use of frequency counts allowed for the researcher to describe the range and number of belief statements generated for each of the TFA constructs and to draw conclusions based on the analysis.

References

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APPENDIX H: AFFINITE Research Programme Participant Information Sheet

The development and evaluation of enhanced audit and feedback interventions to increase the uptake of evidence-based transfusion practice (AFFINITIE Programme, Workstream 1C)

PARTICIPANT INFORMATION SHEET

We are inviting you to take part in a research study. Before you decide whether you would like to take part it is important that you understand why the research is being done and what it would involve for you. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information.

What is the purpose of the study?
The AFFINITIE project is a national 5 year research programme looking at audit and feedback processes in relation to blood transfusion practice. Audit and feedback is a widely used intervention within the healthcare setting aimed at identifying and reducing gaps between research and practice. However, the success of such interventions is varied, and this project aims to investigate ways in which audit and feedback could be improved.

The aim of this stage of the programme is to understand how our proposed interventions for feedback could be delivered, in the context of a National Comparative Audit of blood transfusion. We wish to assess whether such interventions are feasible to deliver and acceptable to staff.

Why have I been invited?
You have been invited to take part in this study because you have been identified as a member of staff responsible for acting on feedback and making, or influencing, transfusion decisions. We are interested in hearing your opinions about our adaptation of the interventions that have usually been delivered to you in the context of the National Comparative Audit.

Do I have to take part?
Participation in this project is voluntary, and you can choose not to participate in part or the entire project.

It is up to you to decide whether or not to take part in this study, and researchers will not disclose any information regarding your decision to anyone else at this hospital or other parts of the NHS. If you do decide to take part you will be asked to give written consent and confirm this verbally before the start of the interview. If you decide to take part you are still free to withdraw at any time and without giving a reason.

What will happen if I take part?

If you consent to taking part in this project you will be asked to participate in a one-to-one semi-structured interview with one of our researchers that will last a maximum of an hour. This will happen at one time only and will take place somewhere convenient on the hospital site. The interview will be audio recorded and transcriptions will be coded by our researchers to identify your views about the content and delivery of the feedback interventions and how these could be improved in terms of relevance, usability and helpfulness. The interview will occur alongside an Audit and Feedback cycle that will be a little different from usual, but still managed by the National Comparative Audit team.

During our visit we may also observe some team meetings or handover processes in your unit or ward, but we will ask for your verbal consent before any observations take place.

What are the possible disadvantages and risks of taking part?
We do not foresee any disadvantages or risks of taking part in this research.

What are the possible benefits of taking part?
Participating in this research will help to inform current audit and feedback protocols. We expect the results to inform the way in which these processes are designed and delivered in transfusion practice and wider healthcare *[please turn over]*

What will happen when the research study stops?
Audio recordings of the interview will be transcribed and then anonymised, removing all personal and identifying information from the transcript. All data will be stored in secure, password protected electronic files, or in a secure, locked filing cabinet on the University premises (i.e., not on NHS premises). Data will be stored for 10 years when it will then be destroyed.

Will my taking part in the study be kept confidential?
All the data you provide will be kept confidential. Only members of the City University London AFFINITIE research team will have access to the records, with all identifiable information removed before analysis. The anonymised transcripts will be viewed by clinical members of the research team for checking whether our interpretation makes clinical sense, and anonymised data may be used beyond this study in the wider AFFINITIE research programme, but all identifying information will be removed before this stage of the analysis.

What will happen to results of the research study?
Results from the study may be presented at national and international conferences, and published in appropriate peer reviewed journals. Data will remain anonymous at all times, with no risk of identification of you as the participant. If you would like a summary of the results, please contact one of the researchers (contact details at the bottom of this information sheet).

What will happen if I don't want to carry on with the study?
You are free to withdraw from the study at any stage, with no explanation or penalty. If you want your data to be removed from the study please let one of the researchers know.

What if there is a problem?

If you would like to complain about any aspect of the study, City University London has established a complaints procedure via the Secretary to the University's Senate Research Ethics Committee. To complain about the study, you need to phone 020 7040 3040. You can then ask to speak to the Secretary to Senate Research Ethics Committee and inform them that the name of the project is:

The development and evaluation of enhanced audit and feedback interventions to increase the uptake of evidence-based transfusion practice (AFFINITIE Programme, Workstream 1, Part 2)

You could also write to the Secretary at:
Anna Ramberg
Secretary to Senate Research Ethics Committee
Research Office, E214
City University London
Northampton Square
London
EC1V 0HB
Email: [redacted]

Who has reviewed the study?
The study is funded by the National Institute of Health Research and so the study proposal was reviewed by a number of clinical and nonclinical reviewers. The study has also been approved by City University London School of Health Sciences Research Ethics Committee.

Further information and contact details
If you have any questions about the study, or would like any further details please contact one of the researchers below (School of Health Sciences, City University)

Prof Jill Francis	Dr Natalie Gould	Dr Fabiana Lorencatto
[redacted]	[redacted]	[redacted]
Tel: 020 7040 4084	Tel: 020 7040 5430	Tel: 020 7040 5013

Thank you for taking the time to read this information sheet.

APPENDIX I: AFFINITIE Research Programme Consent Form

The development and evaluation of enhanced audit and feedback interventions to increase the uptake of evidence-based transfusion practice (AFFINITIE Programme, Workstream 1c)

Please initial each box

1.	I agree to take part in the above City University London research project. I have had the project explained to me, and I have read the participant information sheet, which I may keep for my records.	
	I understand this will involve: • being interviewed by the researcher	
	• allowing the interview to be audiotaped	
2.	This information will be held and processed for the following purpose(s): • study documentation • data analysis for this study • possible analysis of anonymised data for the wider AFFINITIE research project • publication of findings using only anonymised data • informing the design of an intervention to support blood transfusion practice I understand that any information I provide is confidential, and that no information that could lead to the identification of any individual will be disclosed in any reports on the project, or to any other party. No identifiable personal data will be published. The identifiable data will not be shared with any other organisation.	
3.	I understand that my participation is voluntary, that I can choose not to participate in part or all of the project, and that I can withdraw at any stage of the project without being penalized or disadvantaged in any way.	

4.	I agree to City University London recording and processing this information about me. I understand that this information will be used only for the purpose(s) set out in this statement and my consent is conditional on the University complying with its duties and obligations under the Data Protection Act 1998.	
5.	I agree to take part in the above study.	

_____ _____ _____

Name of Participant Signature Date

_____ _____ _____

Name of Researcher Signature Date

When completed, 1 copy for participant; 1 copy for researcher file.

APPENDIX J: General acceptability responses: Intervention 1 Feedback reports

Participant	beginning of interview	End of interview
1	I think it's good to have all the information but then it's also good to have really short little punchy things that you can send to committees..it is useful for people like me who implement policy and who write policy to make sure that we have all the information	I think they're fine, yeah. It's like everything isn't it, they could probably be improved but I don't know how exactly. But not actually content, I think the content is fine. Yeah they're okay.
2	Well, I found them acceptable. I think they were quite a good read, I mean, they were easy to read. They were clearer than what we've previously had some reports before. I think I like the format in things that are coloured, they highlight, make your eye go to places that you want us to read so if you were skimming reading it you would see the main points which I think is quite helpful.	Yes, I do think they are acceptable.
3	Very acceptable. Are you scaling it on 1 to 5 or something? I thought really good…. I only saw level 1 and level 2 – I didn't have a copy of level 3 – level 1, for me, was very simple. So that's what, with...in clinical audit you automatically look for what's the standard? What are the outcomes? And that's exactly what you've got here. It's not massive which is great. And it's set out exactly as I would have done. It's nice that you've got the comparison to a different, different time period – which I think is good, whether you're going up or going down. Yeah, no problems with it at all; I think it's good. And actually the recommendations, action plan, as we've discussed is really useful. Yeah. And it's, that's, I mean you could...that's really nice as well – that actually you're telling us in the action plan that it's decreased. You can pretty simply determine what your standards are and what your outcomes are. But just for me because that's just...basically get it in front of you, job done. It means I won't have to do anything!	Yes absolutely.
4	I think they're very good.	Yeah I'd say they were very acceptable.
5	I thought it was very acceptable. It's completely succinct to the point and pulls out all the key information immediately. There's absolutely no trailing through a 150 page document.	Yeah
6	I completely agree. Just what P5 had said before really, they're easy to read, they're to the point.	Yeah

7	I do like that and I think that it's very good as P8 is saying, as an in-your-face answer but sometimes I actually want a bit more background information but that's me personally but we don't necessarily have to give that out to people	Yeah
8	This brief audit report *(level 1)* is exactly what we need to be able to feed back to the clinical staff who don't have the time or actually, I hate to say it, the interest in blood transfusion to sit and read through pages and pages and pages and I think we lose interest from people and it's not that they're not interested in transfusion but it's on a long list of things that they have to keep up to date with and so by just producing a one or two page document I think it will keep their attention for longer and they will be more responsive to it, actually.	Yes I think they cater for everybody. I think they cater for what everybody will need and require whether you're ….whatever depth of information you'd like out of the reports.
9	Yeah, it's a tool to be able to -- if you do manage to get an audience there it is ready to use to go through to actually give feedback. One of the full type reports it's just too long-winded.	Yeah
10	I'd say that they were all definitely acceptable. This one was, obviously, more readable *(reference to shorter report)* and also the PowerPoint	Yeah
11	Yeah, they're fine. I think it's... Yes, they're all right. I think they're rather weighted for the people that are actually non-transfusion based. I think that one is probably the best. (*reference to shorter report*)	That page is, yeah. Just the key recommendations

APPENDIX K: General acceptability responses for intervention 2: Toolkit

Global acceptability responses for intervention 1: Feedback reports

Participant	Global Acceptability response beginning of interview	Global Acceptability response (end of interview)
1	it's using familiar tools and I think that's going to work if you introduce something I think people are so overloaded with information and they need it to sit in a familiar pattern. So I think that was a bonus for me, thinking -- and not in a derogative way just saying, "We've seen it all before", but actually, no, this is great because we know how to implement this across different pieces.	Yeah, it's me.
2	I found it acceptable except a lot of it felt like I've been here before, I've done this before, and we've tried these. So I think the toolkit is good in itself, I think there are some very good ideas in it but I don't think the toolkit in itself without the motivation and the drive and the enthusiasm of the people delivering it will make any difference.	No, I think it is acceptable
3	Very acceptable. I think it's got, as I say, the most important thing about the national audit process and something that doesn't happen easily is that ability to make change. The fact that you've got, and part of that is change management which actually isn't really, it's an art in itself. You know, you've got various tools and I see you've got the fishbone change management type tools in here so identifying, so you're giving, you're giving them the tools to hopefully make that change upfront. Which is, which I think is great. I do wonder whether it's a bit too much information	Yeah. Maye trim it down a bit. But yeah, no they're good.
4	- I don't really understand what you mean by "acceptable". I think the tools provided are well recognised and effective tools. In a sense I think that they kind of don't add very much to the sort of mechanisms that we are supposed to have for audit feedback already, in terms of like filling in a log frame of who is supposed to do what. We're already supposed to do that and things like the fishbone diagram, you know, that's quite useful. We don't use it in audit very much.	I think the tools are good tools and the way you've presented them is nice
5	We read it when you came before and, yes, it was and it gave you ideas on how to cascade, how to feedback but other than that I haven't been back to it.	
6		

7	Yeah	Yeah
8	It was fine. I found the information in there, things like the fish . . . we've seen it all before	Yeah, my opinion hasn't changed.
9	Yeah very useful.	
10	I really liked the toolkit	Yes. You know there was –gosh, who was the lot, the NSPA, they had toolkits that you could go in a web-based and there were these toolkits, you know, the fish diagram and all the rest of it. I preferred this.
11	Well it was all right but it's nothing that we haven't seen 100,000 times before. We know how to do all this. It's nice to have it, I suppose, a template, but there's nothing that I don't think you're reinventing the wheel or, in essence.	It's acceptable if people have got the time and you've got the audience.

APPENDIX L: Consent Form (interviews) BEB and HFS RCT

Moorfields Eye Hospital

Botulinum Toxin Clinic

City Road

London

EC1V 2PD

Direct Line: 0207 253 3411 ext 2109

Website: www.moorfields.nhs.uk

Version 1.2

Date: 21.04.15

Project number: 15/LO/0439

Patient Identification Number for this study:

CONSENT FORM (INTERVIEWS)

Title of Project: A randomised controlled trial to explore the effectiveness and cost-effectiveness of a patient-initiated botulinum toxin treatment model for Blepharospasm and Hemifacial spasm compared to treatment as usual.

Name of Principal Investigator: Mr Daniel Ezra 0207 253 3411 ext 2109

Please tick the box beside each statement below if you agree

1 I confirm that I have read and understood the information sheet dated 21.04.15 (version 1.2) for the above study and have had the opportunity to ask questions. ☐

2. I confirm that I have had sufficient time to consider whether or not want to be included in the study. ☐

3 I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, without my medical care or legal rights being affected. ☐

4 I understand all the information I provide will be treated as confidential ☐

5 I understand that the interview will be tape recorded ☐

6 I agree to take part in the above study. ☐

7. I understand that at the end of the study, the tape recording will be destroyed but an anonymous written copy of my interview will be kept for research purposes and potentially for teaching. ☐

8. I give my permission for anonymised transcripts of my interview to be used for teaching purposes ☐

9. I would like to receive feedback about the findings of the study. ☐

CONSENT FORM

Title of Project: A randomized controlled trial of a patient-initiated botulinum toxin treatment model for blepharospasm & hemifacial spasm

Name of Principal Investigator: Mr Daniel Ezra 0207 253 3411 ext 2109

Name of patient	Date	Signature

Name of person taking consent (if different from researcher)	Date	Signature

Researcher (to be contacted if there are any problems)	Date	Signature

Please attach a patient sticker to the front of this form

Original copy to be kept in site file

1 form for Patient

1 to be kept as part of the study documentat

APPENDIX M: Coding Manual

Applying the Theoretical Framework of Acceptability (TFA) to analyse Patient Interviews

Below taken from trial protocol paper:

Wickwar, S., McBain, H., Newman, S. P., Hirani, S. P., Hurt, C., Dunlop, N., ... & Ezra, D. G. (2016). Effectiveness and cost-effectiveness of a patient-initiated botulinum toxin treatment model for blepharospasm and hemifacial spasm compared to standard care: study protocol for a randomised controlled trial. *Trials*, *17*(1), 1.

Aims of trial:

The primary aims of this randomised controlled trial (RCT) are to:

1. Investigate the effectiveness of a patient-led model for botulinum toxin treatment in maintaining a more stable pattern of disease severity and disability in patients with hemifacial spasm and blepharospasm in comparison to standard care

2. Assess patient satisfaction with the new treatment model compared to standard care.

The secondary aims are the assessment the impact of the service on psychosocial outcomes, including quality of life, illness perceptions, mood, acceptability and cost-effectiveness

Control group
Participants in the control group will receive usual care. This consists of scheduled appointments in the nurse led outpatient botulinum toxin clinic, usually every 3 months.

Intervention group
Participants randomised to the intervention group will initiate their own treatment during the trial period (9 months). They will be given information about when and how to initiate an appointment in the nurse-led botulinum toxin clinic, in a leaflet sent to them by a trial co-ordinator after randomisation. Participants will be asked to contact the service when they feel their symptoms are returning at a sufficient level for them to seek medical help.

When participants in the intervention group contact the service to book an appointment they will be triaged by the trial co-ordinator. All patients with an activity score of 1 or above on the Jankovic Rating Scale (JRS) (Jankovic, Orman & Botulinum et al., 1987). Participants will be booked in to the next available slot within the twice-weekly nurse-led outpatient clinics, estimated within a 2-week period from the initial call. There will be no upper limit for the number of times participants in the intervention group can initiate an appointment.

Acceptability of appointment booking systems: Applying the theoretical framework of acceptability to analyse qualitative interviews

Method: Deductive Content analysis

Purpose of the deductive content analysis for this study is to code extracts from the transcript against the seven TFA definitions (see table 1 below).

Acceptability definition :
Acceptability is a multi-faceted construct that reflects the extent to which people delivering or receiving a healthcare intervention consider it to be appropriate, based on anticipated or experienced cognitive and emotional responses to the intervention. The theoretical framework of acceptability (TFA) consists of seven component constructs: affective attitude, burden, perceived effectiveness, ethicality, intervention coherence, opportunity costs, and self-efficacy.

Table 1: Definitions of the component constructs in the Theoretical framework of acceptability

Theoretical Framework of acceptability (TFA)	Definition
Ethicality	The extent to which the intervention has good fit with an individual's value system
Affective Attitude	Anticipated Affective Attitude: How an individual feels about the intervention, prior to taking part Experienced Affective Attitude: How an individual feels about the intervention, after taking part
Burden	Anticipated burden: The perceived amount of effort that is required to participate in the intervention Experienced burden: the amount of effort that was required to participate in the intervention
Opportunity Costs	Anticipated opportunity cost : The extent to which benefits, profits, or values must be given up to engage in the intervention Experienced opportunity cost: the benefits, profits or values that were given up to engage in the intervention
Perceived effectiveness	Anticipated effectiveness: the extent to which the intervention is perceived to be likely to achieve its purpose Experienced effectiveness: the extent to which the intervention is perceived to have achieved its intended purpose
Self-efficacy	The participant's confidence that they can perform the behaviour(s) required to participate in the intervention
Intervention Coherence	The extent to which the participant understands the intervention, how it addresses their condition and how it works

Construct sub theme	Definition description	Example quote - beginning of interview	Example quote - end of interview
Global Acceptability	Participants response to the global acceptability questions asked at the beginning and at the end of the interview 1) To code extracts of texts that represent the answer to this question (i.e. the single acceptability question) 2) the answer may also reflect one of the TFA constructs- in which case it should be coded to the reflecting TFA construct.	Me, personally I'm very happy with it It's okay. You can't always get the time that you want. Because I live quite a way away. I like an early appointment so that I can get home before the rush hour but that's not awlays possible.	I'm vert happy with it I would like it to be a bit more flexible, if there is a need for you to change an appointment. It is completely acceptable. There's nothing wrong with it at all. In my circumstance, it suits. I think the self-booking system is acceptable if it works within the parameters that were set out at the beginning. But if it is not going to be able to work in that way, that is to say, that patients aren't going to be able to get their appointment, for any reason, within one to two weeks then I don't think it would be acceptable.

Construct sub theme	Definition description	Example quote Control group	Example quote - Intervention Group
Affective attitude	How an individual feels about the intervention	[In response to what the participant like's about the current booking system]. it gives me a feeling of security I know that, that's done, I haven't got to think about it and I'll be sorted on that particular day	I suppose it is that element of uncertainty, will I get an appointment when I ring up? Yes, so it is that element of uncertainty - I like it because it, like I said, at least then I could have it any time, when I want it. I'm happy.

Construct sub theme	Definition description	Example quote- Control group	Example qoute- Intervention Group
Burden	the amount of effort that was required to participate in the intervention	I have so many differnet consultants to see, the staff is very good; they try and co-ordinate it together so as I don't have to keep coming back for different appointments. if i have to change it, i think it would rather difficult. i don't know how flexible it would be anymore. Because I've only had to do it that one time it's just about getting home really. I can get up here at anytime, but I don't like to travel back to victoria in the rush hour when rescheduling an appointment it is difficult to get though to the the number but I think it has only happened once There's not much flexibility in the system because they're so busy so it's hard to change a booked appointment	I don't like is the fact that you have to ring, you know, because it has been part of a research project, I've had to ring a number, leave a message, wait for someone to come back to me or chase them up it doesn't take a huge amount of effort. It's not been a huge probelm for me if I'm honest I honestly think it was easier when they come and say, right nine weeks, and yeah, always the week before they start shutting, so I think, perfect, that's what I need. it's very convenient. Convenient, yes.(p2, 84)

Construct sub theme	Definition description	Example quote - Control group	Example quote - Intervention Group
Intervention coherence	The extent to which the participant understands the intervention, how it addresses their condition and how it works	Well, I suffer from blepharospasm and Meige syndrome, which is lower hemifacial, but I'm not having injections through my own decision at the moment. I'm just having for eyes. I think it's the only thing I can get do for it, so I have to come every 3months. The only other alternative is an operation which I don't fancy	I'd like to think, that they're recognising that because this is a condition where, perhaps it make people anxious, but then equally the anxiety compounds the symptoms, that what they are trying out is to see whether if you get a greater degree of control over your own system then it will help you to manage, to feel like you are more in control and it will alleviate some of that anxiety. I really don't know. It's better for the patient. I mean sometimes before, I used to be in agony for two weeks, and you know, it's something I can't automatically bring it forward, but now as soon as I get the symptoms I know that in a weeks' time I'm going to get, my eyes are going to be bad so I can pre-empt it now. the patient is in control, you're more aware of what's happening, you know, you're kind of looking out for symptoms getting worse and so on so you're just becoming more aware of the condition.

Construct sub theme	Definition description	Example quote - Control group	Example quote - Intervention Group
Opportunity costs	the benefits, profits or values that were given up to engage in the intervention	(to attend the appointments) I now have got to take holiday I've been under a lot of stress this past three months, I'm moving house. And so I could of done with the treatment being about two or three weeks ago really	There are things like Bank Holidays cropping up, when clinics will be closed. You might have things going on in your home, private life that you want to work round and that actually you tend to think about all those things. So quite often you are working out in advance, when am I going to ring for my appointment, which may be, on occasions, almost it means you are not necessarily thinking just about your symptoms. No i wouldn't say it has because to some extent these appointments are my most important priority I couldn't actually get an appointment within that two-week window and I had to wait a week longer. In which time I had things that, you know, I felt it was beginning to interfere with my life outside work, family life, that kind of thing

Construct sub theme	Definition description	Example quote - Control group	Example quote - Intervention Group
Ethicality	The extent to which the intervention has good fit with an individual's value system	I think its fair, but I'm sure it depends on other individuals lifestyles I don't know because I have nothing to compare it to. It seems okay	I think that there is a fairness issue because I don't think all patients would feel as happy or as confident to do it as somebody like me might. I think perhaps that some people ought to still have the option of being able to book their next appointment when they come along, if that's what makes them feel better. So, I don't think it would be fair to force one system on other people well, it is fair, if you can get the appointment. But if theres lots of people got the same thing at the same time, I don't know how it will work

Construct sub theme	Definition description	Example quote- Control group	Example qoute- Intervention Group
Perceived effectiveness	Anticipated effectiveness: the extent to which the intervention is perceived to be likely to achieve its purpose Experienced effectiveness: the extent to which the intervention is perceived to have achieved its intended purpose	I guess it depends on your own personal illness, or situation, which works for you. Leaving it to me to ring in when I feel I need it would be a little nebulous I think. I think I would be probably very desperate on one occasion and then come in too early on another. No, it works as it is for me. I think to have the regular system rather than booking it myself as and when I want it is probably good for both myself and the hospital because one learns to manage. I think really having regular appointments … unless there is a real emergency, I think the system works best like this that we have a regular pattern of consultations.	I think this system could work better but there are still a few problems that need to be ironed out I didn't find it very good. Beacause I asked to come last week and they couldn't fit me in I don't know how it is going towork because if you have gota busy clnic they are not going to fit evetyon in it is effective beause i know when i need it and if i can phone up, get an appointment, I know I'll be alrighr because once I've had the need it will be fine. But it's if you can get that appointment.

Construct sub theme	Definition description	Example quote- Control group	Example qoute- Intervention Group
Self-efficacy	The participant's confidence that they can perform the behaviour(s) required to participate in the intervention	I don't (feel confident) I know when I come I sort of preapre myself for it (the injections) Yes, confident. While I am still able Oh, 100%. If I booked any appointment, I wouldn't not turn up.	I'm reasonably confident about managing all of that and booking my appointments but then what happened to me this time was, I actually couldn't get the appointment when I wanted it. I've had to wait three weeks for this appointment. I've been thinking about that a lot because I'm not sure that I do feel confident. I don't think I do and I think that, you know, I've just recently had a couple of weeks that I've been pretty convinced that I was on the downward trajectory and then I've had a period of, like, three or four days over the weekend, where my symptoms seem to have been alleviated yeah, I feel confident in booking it. it's if they can do It

APPENDIX N: single acceptability responses for control group- participants (standard-care appointment service)

Participant	beginning of interview	end of interview
1	It's okay. ***You can't always get the time that you want***. ***Because I live quite a way away. I like an early appointment so that I can get home before the rush hour but that's not always possible***. Sometimes I've had 3pm, 3.30pm appointments which is a bit late for me (Participant 1, Monday Control, 63-65)	It's okay. I just think it is a question of the numbers, so you just have to take your turn to have your appointment and that's it. (Participant 1, Monday Control 159-160)
2	The current service is okay. ***I was told they wanted to change the system that I could work earlier if I needed treatment, but my fear is, like, I needed treatment earlier but there might not be any appointments***. So, if I don't have appointment for today and my eye spasm is really worse and I delay the treatments, that's my only fear. And ***if I needed treatment and I call, say, tomorrow, and they said, "Come the next day," then that'd be fine. But I don't think that's going to be possible. If it's possible then it's fine.*** (Participant 2, Monday Control 56-61)	**It is very acceptable because, like I said, you know you have got an appointment, so it's guaranteed that you'll be seen.** I think that's great. (Participant 2, Monday, Control, 177-178)
3	Yes, very, very acceptable (Participant 3, Monday Control, 50)	No, it's still the same (Participant 3, Monday Control, 137)
4	***I think for me it does work. I have been offered the opportunity to book my own appointments but I'm a little bit wary of that knowing that when I have tried to change you're so, so busy. At least if I have an appointment in the books, I know that it's there*** (Participant 4, Monday Control,62-66)	***I would like it to be a bit more flexible, if there is a need for you to change an appointment.*** I take into account the fact that there are so many people coming through, I can see it's very difficult for any bookings ... so it isn't easy***. I would like a bit more flexibility but that isn't always a possibility***. (Participant 4, Monday Control, 163-166)
5 Friday	I'm very happy with it (Participant 5, Friday Control, line 75)	I'm very happy with it (Participant 5, Friday Control, 305)
6 Friday	***Well, it's extremely straightforward***. There's no problem with it as far as I can see. You can discuss it always, either with the specialist nurse or the doctor, and if you say, "Well, look, it's not working after six weeks now," they might say, "Well, I think six weeks is too much. Let's reduce it to eight weeks. How's that with you?" You have an opportunity to discuss it through and say, "Well, no, I can't manage at that time. Really do need six weeks." So you have to be guided by their expertise as well, but it is a discussion and then decided upon ten weeks, I go to the desk and make my appointment. I thus know exactly when I'm coming back (Participant 6, Friday Control, 74-80)	It is completely acceptable. There's nothing wrong with it at all. In my circumstance, it suits. (Participant 6, Friday Control, 292-296)
7 Friday	Yeah, I think it's good. (Participant 7, Friday Control, 77)	Acceptable, yeah. Very acceptable (Participant 7, Friday Control, 215)
8 Friday	***It works***, so that's fine, I think (Participant 4, Friday Control p3- 88)	It is okay (Participant 8, Friday Control, 238)

APPENDIX O: Single acceptability responses for intervention group- participants (patient-initiated appointment service)

Participant	response beginning of interview	response (end of interview)
9	It was fine (Participant 1,Monday PI 47)	It's acceptable to me ***because I can delay it if I want*** (Participant 2, Monday PI 172)
10	***Well if it works, it works well, I should imagine. But I've never had that yet.***(Participant 2 Monday PI 96)	***I think, in theory, it works. As long as the team know what's going on*** (Participant 3, Monday PI)
11	**I think it's brilliant. It works very well for me in our own personal situation. Yeah, I think it's excellent and long may it continue** (Participant 3 Monday PI 74-75)	For me, 100%, yeah.(Participant 3, Monday PI 194-195)
12	I think, having experienced it now, over kind of a period of about six months, ***I think I have got mixed feelings about it now because I think that it maybe it is not as responsive as it should be to really give people the confidence when they leave here, after treatment, that they'll be able to get their treatment next time*** (Participant 4, Monday PI)	I think the self-booking system ***is acceptable if it works within the parameters that were set out at the beginning. But if it is not going to be able to work in that way, that is to say, that patients aren't going to be able to get their appointment, for any reason, within one to two weeks then I don't think it would be acceptable***.(page 9, 282-285)
13	It's acceptable. I mean, it's obviously ***... it's quite nice to be able to choose your time of going back.*** In the past I've sometimes come in for an appointment that's been set at a set time and I've said, ***"Well, I don't think I'm ready for the injections" so I just make another appointment so in a way I've kind of played that a bit before***.(Participant 5, Monday PI 76-79)	Very acceptable.(Participant 5, Monday PI 203)
14 Friday	***Well, if the phone number definitely went straight through it would have been a lot simpler. Because I'm thinking of older people that might not understand when it comes up with a lady speaking and she is saying, you can put down the extension number, they are going to think, but I've just phoned the number; it is confusing.*** (Participant 1, Friday PI , 95-98)	***I do think it is acceptable. It is good that you can phone up when you feel that your symptoms coming on, but again it isn't acceptable if you phone up and need an appointment and they can't give you one. So I don't really know how that will work*** (Participant 1, Friday PI, 220-222)
15	I think it's very good. It is good (Participant 2, Friday PI 68)	I find it fine. (Participant 2, Friday PI 196)
16	Fine, yeah. (Participant 3, Friday PI 109)	I mean, yeah, ***it does make it so much easier*** (Participant 3, Friday PI 283)
17	Fine. Okay. Decent. Adequate. Good (Participant 4, Friday PI, 35)	It's fine. Acceptable (p6, 193)
18	I think it's a good idea for people that are really suffering with their eyes. At least then you can pick up the phone and say, "Okay, I could have it on the Monday or the Friday". ***The only thing that I think they should have done is had the system that you could have it done on any day, not just one Monday or Friday,*** so really…***you ring up and they squeeze you in where before there had to make an appointment, so that's the good thing, but I think they should have more days.*** (Participant 5, Friday PI 92-97)	Very acceptable.

APPENDIX P: Copy of BMC published paper