



Working in Partnership to Develop and Implement an  
Oral Health Promotion Programme:

“It’s Very Much Us and Them”

By

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A thesis submitted in partial fulfilment for the requirements for a degree  
of Doctor of Philosophy at the University of Central Lancashire

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## STUDENT DECLARATION FORM

I declare that while registered as a candidate for the research degree, I have not been a registered candidate or enrolled student for another award of the University or other academic or professional institution

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# ACKNOWLEDGMENTS

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While my name may be alone on the front cover of this thesis, I am by no means its sole contributor. Rather, there are a number of people behind this piece of work who deserve to be both acknowledged and thanked here.

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# ABBREVIATIONS

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**ARC** – Attachment, Self-Regulation, and Competency

**BCT** – Behaviour Change Theory

**BCTs** – Behaviour Change Techniques

**CBPR** – Community Based Participatory Research

**HBM** – Health Belief Model

**ID** – Interpretive Description

**IPB** – Integrative Model of Planned Behaviour

**MAP-IT** – Mobilise, Access, Plan, Implement, Track

**MI** – Motivational Interviewing

**NHS** – National Health Service

**NICE** – National Institute for Health and Care Excellence

**PARIHS** - Promoting Action on Research Implementation in Health Services

**PRECEDE/PROCEED** – Predisposing, Reinforcing and Enabling Constructs in Educational Diagnosis and Evaluation. Policy, Regulatory, and Organizational Constructs in Educational and Environmental Development.

**RCT** – Randomised Controlled Trial

**RE-AIM** – Reach, Efficacy, Adoption, Implementation, Maintenance

**SCT** – Social Cognitive Theory

**SLBs** – Street Level Bureaucrats

**SOC** – Sense of Coherence

**TPB** – Theory of Planned Behaviour

**TRA** – Theory of Reasoned Action

**TTM** – Transtheoretical Model

**WHO** – World Health Organisation

# ABSTRACT

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Dental decay is a worldwide Public Health problem. In the last decade Oral Health professionals in the UK have focused on developing national and regional Oral Health programmes to reduce dental caries rates in young children. Smile4Life is an example of a regional programme, which has been implemented in North West England. Recent research suggests health programmes should have a conscious theoretical base and incorporate multi-sectorial approaches.

A literature review was undertaken to identify the differences between the theoretical underpinnings used in Oral Health interventions compared to General Health interventions. This showed that Oral Health interventions have been predominately underpinned by educational approaches and used fewer approaches that consider organisational and environmental factors. However, the literature review did not identify barriers and facilitators to the use of theoretical underpinnings in real-life settings. To understand the barriers and facilitators to developing and implementing interventions in real-life settings, and how barriers and facilitators relate to the theoretical underpinnings identified in the literature review, semi-structured interviews were conducted with nine policymakers who were responsible for developing and ten implementers who were responsible for delivering Smile4Life. The analysis was undertaken using an inductive thematic analysis.

The interview findings consist of an overall meta-theme and three themes. The meta-theme refers to ‘intra-group relationships and inter-group boundaries’. Intra-group relationships refer to the relations within the policymaker group or implementer group. The inter-group boundaries refer to divisions between the two groups that meant people within each group perceived themselves to be distinct from people in the other group. The first theme intra-group inclusion and inter-group exclusion outlines that within each group, individuals interacted with one another and had a shared sense of unity and group beliefs. However, there were boundaries between the two groups due to a lack of interactions and feelings of exclusion between the groups. The second theme, different knowledge, experiences, and beliefs identified that each group shared similar knowledge and experiences, but between the groups this knowledge was not shared. The third theme standardised or flexible implementation identified that due to the differences in knowledge, experiences, and beliefs between the groups, these differences prevented the formation of a shared vision of how to implement Smile4Life. The groups divisions led to the implementers making changes to the intended implementation strategy of Smile4Life.

This research suggests that the implementers (middle managers) are important in the development and implementation of Oral Health programmes and potentially other interventions. Currently, theoretical underpinnings do not explicitly consider middle managers in the development and implementation of interventions. A set of Implementer Engagement Guidelines, underpinned by the Social Identity Theory, are presented that consider the engagement of middle managers in the development and implementation of interventions, to enable policymakers to develop future General and Oral Health programmes.

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# 1 INTRODUCTION

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## 1.1 Overview

This research explores the experiences of staff that were responsible for either developing (policymakers) or delivering (implementers) an Oral Health intervention (Smile4Life). The thesis aims to identify the barriers and facilitators to the process of developing and implementing an Oral Health promotion programme. To explore this topic two things needed to happen: an investigation into the approaches used by policymakers during the development of Smile4Life e.g. what theories, models, policies, experiences, and partnerships did the policymakers utilise during the development process; and an exploration of individual experiences to understand how staff from two separate groups tried to work together to deliver an Oral Health promotion programme (Smile4Life). By exploring these two areas any barriers to the research to practice gap can be identified, and the organisational relationships involved in developing and implementing interventions can also be explored and understood. Through understanding individual experiences of developing and implementing an Oral Health promotion programme, it will contribute to the Oral Health, General Health, behaviour change, and implementation literature, and enable a deeper understanding of the complex issues involved in the development and implementation of interventions in real-life settings.

This introductory chapter provides a contextual backdrop for the study and begins by outlining the background of Oral Health promotion before moving on to describe the national (UK) Oral Health promotion programmes that influenced Smile4Life. The chapter then focuses on the theoretical and evidence-based underpinnings of Oral Health and General Health interventions to allow for comparison and a holistic overview of the underpinnings of General and Oral Health interventions. Finally, the chapter identifies the calls by academics for promotion programmes to be underpinned by one or more theories, models, and frameworks and the importance of identifying the barriers and facilitators to developing and implementing interventions.

## 1.2 Oral Health in England

Oral Health has improved over the last century but the prevalence of dental caries in children remains a significant worldwide Public Health problem (Page, Weld & Kidd, 2010). Oral Health is also linked to General Health and well-being. Oral Health diseases are associated with coronary heart disease (Humphrey & Buckley, 2008; Mathews, 2008), and diabetes complications (Grossi & Genco, 1998; Stewart, Wager, Freidlander et al., 2001; Taylor, 2001). Dental caries is a common, preventable condition, which involves the localised destruction of teeth tissue through interactions between teeth, microorganisms, and dietary carbohydrates (Milsom, Blinkham, & Tickle, 2008). The consequences of suffering from dental caries include: severe pain, abscess formation, systematic infection, sleep loss, and behavioural problems (Milsom et al., 2008). The siblings of children suffering from dental caries are at a greater risk of also developing dental decay (Threfall, Hunt, Milsom, et al., 2006).

While Oral Health in England is improving across the population as a whole, Dental Health inequalities still exist (NICE, 2014). In 2010 the WHO published a report on the *'Equity, Social Determinants and Public Health Programmes'*, the focus of this report was to translate knowledge into practical concrete actions for implementing change (Peterson, 2011). Within this report Oral Health was identified as a severe Public Health burden with widening inequalities in Oral Health status between different social groupings. The WHO report suggested that social inequalities could be eliminated if policy focused on healthy environments, healthy lifestyles, and the reorientation of health services towards health promotion and disease prevention. The Ottawa Charter for Health Promotion (1986), the Marmot Review (2010), and the Delivering Better Oral Health Toolkit (2007) (an evidence-based toolkit for prevention) also advocate the need for Oral Health inequalities to be addressed and they will be discussed in more detail in the following sections.

The NHS Dental Epidemiology Survey Programme, which looked at the levels of dental disease among 12 years olds in England, showed that children's teeth are improving. However, since May 2006, data are only collected from children whose parents have provided written consent. Previously, consent was assumed if a letter was sent to the parents or guardians and no objection was received. Davies and Jones,

(2011) suggested that there is a bias towards the participation of those who are less likely to have tooth decay.

Additionally, despite data collected between 2008 and 2009 showing 66.6% of twelve-year-old children were free from visually obvious dental decay, 33.4% were reported as having dental caries (with one or more teeth severely decayed, extracted or filled). The same survey also reported a higher prevalence and severity of oral disease among children living in Yorkshire and the Humber, the North West and North East compared to those in the Midlands, with the lowest levels of disease reported in the country being in the South West. These findings are also supported by the National Dental Epidemiology Survey for five-year-old children living in England. Rates of dental caries ranged from 12.5% in Brighton to 53.2% in Leicester. Consequently, since 2013 NHS England has been working with County Councils and Public Health England to try to overcome these Oral Health inequalities by developing strategies and commissioning programmes to meet the specific needs of local populations.

### **1.3 Oral Health Promotion Programmes**

The reports, reviews, and toolkits called for the return to a holistic primary health care approach to address health inequalities and reduce the burden of poor Oral Health (WHO 2010; Peterson, 2011; Watt, 2002). Therefore, Oral Health interventions being developed from 2010 needed to promote and facilitate long-term sustainable improvements to Oral Health through changing policy and legislation to promote Oral Health and making environments conducive to Oral Health. Consequently, regional and national Oral Health promotion programmes began to be developed and implemented in the UK. In the following section the Oral Health promotion programmes that have been developed and implemented in Scotland, Wales, and England as a result of the previously discussed policies will be outlined. The intervention used in this research, Smile4Life, which was developed after the initial Oral Health and integrated health programmes, will also be discussed. The theoretical underpinning of these programmes will then be discussed.

#### ***1.3.1 ChildSmile***

ChildSmile is a national Oral Health promotion programme for children aged between 3 and 11 years old. The programme started in 2006 against a backdrop of poor General

and Oral Health inequalities in children who were identified by the national dental epidemiological programme. ChildSmile aims to improve Oral Health, reduce inequalities, and improve dental access. The programme also has several distinct but integrated components (1) a core programme including universal daily tooth brushing in all nurseries and primary schools (2) a targeted nursery and primary school fluoride varnish programme and (3) a universal dental practice programme to increase the provision of Oral Health promotion and increase parental awareness (NHS Scotland, 2012). ChildSmile also used the Delivering Better Oral Health guidelines. (Public Health England, 2014). Although ChildSmile follows policy and uses an integrated approach to improve Oral Health, evaluation has shown that fewer than 50% of eligible users have adopted the programme. Nanjappa and Freeman, (2014) claimed the reason for the lower eligibility rate was due to complicated resources and that the people responsible for delivering the programme were not getting the sufficient information to be able to deliver the programme. Furthermore, the theoretical underpinnings and the development process of ChildSmile have not been explicitly stated.

### ***1.3.2 Designed to Smile***

Designed to Smile was a NHS national programme developed by Cardiff University in 2008 and funded through the Welsh government to help 0-5-year-old children have healthier teeth (Welsh Government, 2010). The programme clearly states that it was underpinned by the Delivering Better Oral Health Toolkit and has similar principles to ChildSmile. Designed to Smile has six elements: tooth brushing, healthy eating, fluoride varnish, dental screening, fissure sealants, and guidelines on how to look after young smiles.

### ***1.3.3 Smiling for Life***

The Smiling for Life Programme was a national campaign delivered between 2000 and 2007 and was designed by the Health Education Authority to promote good nutrition and Oral Health to 0-5-year-old children across England.

The aim of the programme was to reduce dental disease and obesity, and to get children drinking from a cup by the age of one (Berkshire Health Primary Care Services, 2007). Smiling for Life was delivered through early years' settings, schools, and nurseries. The programme encouraged healthy snacking, reducing sugar and salt.

Settings could achieve a Smiling for Life award if they followed the criteria. The programme aimed to give consistent Oral Health and healthy eating messages across England and had a four level award scheme to encourage settings to deliver and adopt the programme.

## **1.4 Smile4Life**

Smile4Life is an example of an Oral Health promotion programme and is the focus of this research. Children in Lancashire have poorer Dental Health compared to children in many parts of England. Against the backdrop of poor Oral Health across Lancashire, policymakers from Public Health England started to develop the Smile4Life programme in Lancashire. After the initial conception of Smile4Life in 2009, the policymakers began to collaborate with Oral Health promotion staff from across Lancashire to address the problem of poor Oral Health. The programme aimed to reduce tooth decay in children and to lay a solid foundation for their good Oral Health throughout life. The approach focussed on sustained behaviour change and was supported across the health and social care systems in Lancashire. The programme's information and resources were informed by the Delivering Better Oral Health Toolkit (Public Health England, 2009). Smile4Life was designed to support everyone who had a role in the development of children and young people.

Four key areas for action provided the framework for implementing the programme and were developed into 'four teeth' (tooth one - facilitating healthier diets, tooth two - regular and appropriate tooth brushing, tooth three - adopting healthier lifestyles, and tooth four - regular access to dental services) in the Smile4Life programme. The setting could achieve a 'tooth award' for each section they successfully implemented in their setting. These related to facilitating healthier diets, regular and appropriate tooth brushing, adopting healthier lifestyles and regular access to dental services. An important aspect of the programme was equipping the wider workforce to support programme delivery. This involved a cascade training approach involving children and young people's staff, and the voluntary sector workforce in children's centres and other early years' settings. Experienced NHS Oral Health promoters and trained nominated Oral Health champions used a standardised training package and web-based resources. The Oral Health champions then shared and helped to deliver evidence-based Oral and General Health messages within their workplaces.

Smile4Life enables early years' settings to demonstrate and be recognised for their Oral Health improvement activity. The programme embraces social determinants of health and integrates Oral Health Promotion into broader Health Promotion Campaigns (e.g. Healthy Heroes) in an attempt to reduce conflicting health messages. The Smile4life programme was developed to promote the easy transfer of Oral Health knowledge between different groups of people (policymakers, front line staff and parents). This requires each group to work in partnership to deliver and receive clear and standardised messages about achievable Oral Health goals within the community setting.

Essentially, the idea for Smile4Life came from three policymakers who wanted to make the Delivering Better Oral Health Toolkit applicable to professionals outside of the Oral Health profession. The three policymakers consulted with a further five policymakers to start developing an intervention for early years' settings. After the initial conception of Smile4Life the policymakers needed to consult with experienced NHS and County Council staff (implementers) who were experienced and trained to deliver Oral Health programmes. The consultation process required the policymakers and implementers to work together to agree on the development and implementation process of Smile4Life. The implementers would then work with early years' settings to nominate a Smile4Life champion. The Smile4Life champion would receive a day of training, consisting of information on Smile4Life and how to use and complete the workbook. The training was delivered by the implementers and then the Smile4Life champions would have to implement Smile4Life in their settings. The implementers would regularly go into settings to meet regularly to go through the workbook, assess the progress of the implementation of Smile4Life, and award the settings when they had completed one of the 'four tooth' sections.

The Smile4Life workbook is a 50-page information, resource, and record keeping workbook. The workbook provides valuable Oral Health information and advice, Oral Health resources in the local area, and four sections (one section for each of the four tooth awards), which the Smile4Life champions need to complete to provide evidence of their good practice and to gain a 'tooth award'.

The terms 'policymakers' and 'implementers' will be used throughout this thesis. For

the purpose of this thesis a policymaker was a Dental Health professional working for Public Health England, NHS trusts, or the County Council, who had been directly involved in the planning and development process of Smile4Life. The policymakers had senior positions and managerial roles, and were experienced in developing and working with Public Health policies and Oral Health programmes. The policymakers did not have experience of implementing Oral Health programmes across Lancashire.

For the purpose of this research implementers were Dental Health professionals from either the NHS trusts or County Council settings across Lancashire and were responsible for liaising with staff from early years' settings and nurseries. The implementers' role included recruiting staff from these settings to implement Smile4Life. The implementers would then train staff to deliver Smile4life messages and complete the Smile4Life workbook. The implementers would then go into the settings and assess the workbook in accordance to criteria for receiving Smile4Life 'teeth awards'. The implementers had experience of implementing health interventions across Lancashire. Essentially, the implementers worked in four area teams (East Lancashire, Central Lancashire, South Lancashire and Blackpool, Fylde and Wyre) and each implementer worked with specific settings in their area to deliver Smile4Life and other health interventions and messages.

## **1.5 Integrated Health Promotion Programmes**

The integrated health promotion programmes are delivered alongside the Oral Health programmes in the same settings, therefore messages must be consistent across all programmes. This section outlines the different General Health and Oral Health promotion programmes that are being delivered in settings at the same time, which can cause issues for staff workload and the practical ability of staff to deliver a programme in settings and the possibility of conflicting messages between programmes.

The integrated health programmes discussed in this section and used in Lancashire have been developed as a result of the Healthy Schools Policy. This policy document provides information and guidance for all the community partners to work together for the benefit of children and young people. The Lancashire Healthy Schools Programme is a partnership between Lancashire County Council and the local NHS in North,

Central, and East Lancashire. The programme aims to motivate schools, early years' settings, and other community groups to target health and well-being.

### ***1.5.1 Eat Healthy Be Active***

Part of the Lancashire's Children and Young People's Plan is to reduce the proportion of obese and overweight children and provides the opportunity for young people to become proactively involved. It is a flexible resource that encourages families to cook healthier meals and participate in regular exercise (NHS choices, 2016).

### ***1.5.2 Healthy Heroes***

Healthy Heroes was developed in 2008 and is a flexible resource developed by Lancashire Healthy Schools Team using cartoon characters to provide tasks, information, and challenges to families to encourage healthy eating, physical activities, and overall healthier lifestyles. The focus is on flexible resources, allowing schools to use the resources in their own way and at their own pace (Lancashire County Council, 2008). This differs from the Oral Health programme's strategy of standardised messages to all settings.

### ***1.5.3 From Bump to Birth and Beyond***

The aim of the Bump to Birth and Beyond programme is to provide information, advice, and support to expectant parents in a friendly environment. The programme also aims to ensure they have access to information, which allows them to make informed choices about their pregnancy and the care of their new baby so babies are born healthy and are given the best start in life.

The integrated health programmes focus on flexibility and eating fruit, which contains sugar. Both of these messages contradict the Oral Health messages of reducing sugar and prevent the standardisation of messages. Conflicting advice can make programmes difficult to implement due to reduced credibility.

## **1.6 Underpinnings of Oral Health Programmes**

### ***1.6.1 Ottawa Charter for Health Promotion***

The Ottawa Charter was a Charter developed at a WHO conference in Ottawa in 1986, which focused on the call for action to achieve 'Health for All' by the year 2000 and beyond.

The Charter contained three messages: (1) *Advocate* political, economic, social, cultural, environmental, behavioural and biological factors can all favour health or be harmful to it. Health promotion action aims at making these conditions favourable through advocacy for health. (2) *Enable* healthy environments that enable people to live sustainably healthy lifestyles (3) *Coordinated action* by all concerned to promote the health needs of the population: by governments, by health and other social and economic sectors, by non-governmental and voluntary organization, by local authorities, by industry and by the media. Professionals, social groups, and health personnel have a major responsibility to mediate between differing interests in society for the pursuit of health (WHO,1986)

The Charter suggested that health promotion programmes should be underpinned by Public Health policy, create health environments, strengthen community action, develop skills to enable the community to improve their health, and reorient health services so that health settings are giving the same consistent health messages across all settings.

### ***1.6.2 Marmot Review***

The Marmot Review (2010) aimed to address the differences in health and well-being between social groups in the UK. The review describes how the social gradient on health inequalities is reflected in the social gradient on educational attainment, employment, income, and quality of neighbourhood. In addressing health inequalities, the review proposes that it is not sufficient just to focus on the bottom 10 per cent of the population as there are poorer outcomes all the way down the social gradient.

The review claimed that universal action is needed to reduce health inequalities within the social gradient, but with a scale and intensity that is proportionate to the level of disadvantage. Key to Marmot's approach was to enable conditions for people to take control of their own lives. This requires action across the country to address the social determinants of health, which is beyond the reach of the NHS and County Councils. Renewed emphasis was placed on the role of local government who along with national government departments, the voluntary and private sectors both have a key role to play. The Review contends that creating a sustainable future the UK is entirely compatible with action to reduce health inequalities though promoting sustainable local communities.

### ***1.6.3 Delivering Better Oral Health Toolkit***

The Delivering Better Oral Health Toolkit was published in 2009 and provides evidence based interventions and clinical advice on how Oral Health professionals can improve and maintain the Oral and General Health of their patients (Department of Health, 2009; Public Health England, 2014). The toolkit focuses on the clinical determinants of poor Oral Health and is written in language aimed at Dentists and other Oral and General Health professionals.

The toolkit identified the risk factors for General Health conditions that also affect Oral Health, such as: smoking, stress, alcohol, and poor diet.

The Delivering Better Oral Health Toolkit includes advice on:

- The use of fluoride
- Brushing your teeth
- How to prevent gum disease
- Tooth erosion
- Eating a healthy balanced diet
- Stopping tobacco use
- Drinking within the lower risk alcohol guidelines

## **1.7 The Theoretical Underpinnings of General and Oral Health Interventions**

Recent research suggests that it is more efficient to develop health programmes that begin with a conscious theoretical base and then incorporate multi-sectorial approaches, as this targets staff from different organisations and sites, requiring them to work together to deliver health messages (Michie, 2011). The needs of a targeted community must also be considered when developing and implementing a programme.

Furthermore, research has also shown that the success rate of current health interventions is less than 50% (Birken, Shoou-Yih & Weiner, 2012; Alexander, 2008). This low rate of success may indicate that the theories, models, and frameworks identified as sufficient underpinnings of General Health and Oral Health interventions

may not be translating into practice. Alternatively, intervention developers may not be using theories, models, and frameworks to underpin interventions, the lack of theoretical underpinnings may explain the low rates of implementation success.

Research is needed to identify the underpinnings that are being used in real-life interventions, to identify the barriers and facilitators to the use of theories, models, and frameworks. Also a review of the literature is needed to identify the types of theories, models, and frameworks that have been used to underpin Oral Health interventions. It has been claimed that Oral Health research is not as advanced in the understanding of theoretical underpinning as General Health interventions (Peterson, 2005). Therefore, a review of the literature should also attempt to identify any differences between Oral Health interventions and General Health interventions to gain a wider perspective of the underpinnings of interventions and differences between the underpinnings of Oral and General Health interventions. The low rates of implementation success may also be an indication that the methods used to develop and implement health interventions are not sufficient. Each health issue presents its own specific challenges; no single theory or model can address all variables that contribute to unhealthy lifestyles and poor Oral and General Health behaviour. Therefore, one particular model or theory may not be applicable to resolve every health issue. To create individual or community healthy lifestyles, the integration of multiple concepts from different theories, models, and frameworks, with environmental, organisational, evidence-based, and educational influences may be needed. However, research is required to explore if multiple concepts are needed and to determine the types of multiple approaches that are needed to develop and implement interventions in real-life contexts.

## 2 THE JOURNEY

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This chapter outlines the researcher's thoughts, feelings, beliefs, and knowledge before, throughout, and at the end of the PhD journey and how they have shaped the journey and made the study what it is. This section aims to set the backdrop to the development of this research in the words of the researcher, and to identify why particular policy, research literature, and participant groups were studied in this research.

### 2.1 At the Beginning

This section outlines the thoughts, feelings, and knowledge of the researcher before and at the conception of this PhD. It sets the scene for why the researcher took the PhD in the direction they did.

*Before I embarked on this PhD journey, my background was in psychology (Psychology BSc and Advanced Psychological Research Methods MRes). I thought about research from the perspective of the individual being studied and my knowledge consisted of theories to explain and predict behaviour. Although my background had also been in psychology, when I decided to apply for PhD studentships I wanted to expand my knowledge into health research. When the Oral Health studentship came up at the University of Central Lancashire it appealed to me as I felt like I could apply my previous knowledge and experience but it was also expanding my knowledge in a new area. Therefore, when the PhD research proposed to identify barriers and facilitators to the implementation of an Oral Health promotion programme, Smile4Life, I instantly thought about applying my psychology knowledge. I focused on theories and models to predict ways individuals adopt Oral Health interventions and change their behaviour to improve their Oral Health. Initially, I focused on behaviour change theories, models, and frameworks and focused on the way theories, models, and frameworks can be used to underpin Oral Health interventions.*

*Although my background influenced me to focus on behaviour change theories and ways to change the Oral Health of individuals and the overall population, I was also aware that I had little Oral Health knowledge or knowledge of Smile4Life. Therefore, due to this PhD being a change of research area for me, I wanted to conduct inductive*

*research that allowed the context of Smile4Life to inform the research, the policies used to frame the context of this research, and the literature that I would study. Consequently, although this thesis is formatted and structured according to the conventions of a traditional thesis structure, it is very much a representation of the thought and knowledge process that occurred through the inductive research process. Although my existing knowledge guided the initial focus on behaviour change theories, the focus of this PhD developed and changed according to the knowledge that I gained through interviewing those individuals involved in developing and implementing Smile4Life. This led to me needing to conduct a further literature search that included implementation literature.*

## **2.2 During the PhD**

This section refers to the development of knowledge through the research process. This section reflects upon how the accounts of the policymakers and implementers led to certain policy and literature to be used to inform the introduction section of this thesis and why the literature review question was chosen and conducted. Also, this section will explain why the policymakers and implementers became the focus of this research.

### **2.2.1 The Use of Policy**

*As previously mentioned, prior to embarking on this research, I had little knowledge of Oral Health or the policies and literature that informed the development of Oral Health interventions. I wanted to understand the perspectives of the policymakers and implementers, to generate robust data about their differing and subjective realities. This approach aligned to the concepts underpinning Interpretive Description (Thorne, 2008) that aims to understand situations and settings by acknowledging subjectivity, multiple realities, and the influence of the researcher in the co-construction of the data and findings.*

*Therefore, Chapter 1, the introduction chapter to this thesis, outlines policy and other General Health and Oral Health interventions that are a representation of the context that the policymakers and implementers portrayed through their interviews and discussions with the researcher. The introduction aims to set the scene and context that Smile4Life was developed and implemented within, through the lens of the Smile4Life staff.*

### **2.2.2 The Literature Review**

*The literature review again has been written within the constraints of a traditional PhD thesis and reads according to the conventional research process, which portrays that it was undertaken to inform the research process and before any interviews took place. However, as part of inductive research, I 'held back' from extensively reading the literature, rather the development of the literature search is an iterative process of conducting research, analysing the research, and looking for literature that reflects the analysis. Consequently, the literature review is a reflection of this iterative process and the reader of this thesis should bare this in mind when reading this thesis. Essentially, the literature review demonstrates three phases of my journey for knowledge and understanding of factors that influenced the implementation of Smile4Life. Firstly, my pre-existing behaviour change knowledge and my limited Oral Health knowledge. Secondly, the knowledge I gained from the interviews that influenced me to look at more complex organisational theories and to draw on General Health literature, to compare this literature to the Oral Health literature. Thirdly, the knowledge I gained from the analysis and interpretation of the literature that helped me to spot the gaps in the identified theories, models, and frameworks.*

*The literature review reflects my pre-existing knowledge and assumptions that this research will focus on behaviour change theories, as despite the inductive process, all researchers will have existing pre-conceptions that influence the research. My initial preconceptions were behaviour change theories and the belief that Oral Health improvement was merely about changing behaviour. As a result, the literature review starts by outlining behaviour change theories, models, and frameworks that have been used in previous interventions. As the research process moved on through interpreting the behaviour change literature and conducting the interviews, it became apparent that the successful implementation of Oral Health interventions needed to encompass and focus on more than just changing the behaviour of the population. It also became clear from the initial search of the Oral Health literature that Oral Health focused more on educational approaches and were 'behind' General Health literature in terms of focusing on more multi-level theories, models, and frameworks. Therefore, it was decided that the literature review also needed to consider and search for General Health interventions that had explicitly been underpinned by a theory, model, or framework. As a result of the progression through the research process the literature*

*review started to search and include multi-level theories and moved away from the behaviour change theories. This represents the progression of my knowledge and the research.*

*Initially I thought that individual behaviour change theories, models, and frameworks were sufficient but I then interpersonal and stage behaviour theories, models, and frameworks to try and explain the organisational and relationship factors that were appearing from the interview data to have an impact on the development and implementation of Smile4Life. However, the interpersonal and stage theories were still creating gaps in my knowledge and not fully explaining the policymaker interview data. Therefore, the literature review needed to be expanded and include multi-level approaches to developing and implementing interventions. This is represented in the literature review, firstly the initial Oral Health search is discussed and it highlighted the lack of underpinning theories, models, and frameworks, which resulted in General Health literature being included in the review. Then distinct stages in the literature review structure emerged, firstly individual behaviour change was outlined and gaps discussed, then the literature review progressed to look at interpersonal and multi-level theories but gaps still emerged between the literature and the interview data. Therefore, multi-level theories were searched to try and encompass more organisational theories but gaps still emerged, which told me that after extensively searching multiple theories, models, and frameworks, my interview data was capturing something unique.*

### **2.2.3 Initial Interviews**

*The interviews were conducted in two phases but initially the plan was to conduct interviews with the policymakers and then conduct focus groups with stakeholders to inform the development of a survey to be administered to stakeholders from the rest of the Smile4Life early years' settings. For this study, the stakeholders were the early years' staff from across Lancashire who were responsible for delivering the Smile4Life messages to 0-4-year-old children and complete the workbook, with the aim of achieving the four Smile4Life 'tooth awards'.*

*The initial groups were chosen from information given to me by the policymakers. They considered themselves to be the creators of Smile4Life and discussed that the stakeholders were the group that delivered the intervention within early years' settings*

*in Lancashire. After going to observe the Smile4Life strategic meetings and the Smile4Life settings, I was confident that these were the groups to interview to inform the context, experiences, and the factors that impacted on the development and implementation of Smile4Life. However, after initial interviews with five out of the nine policymakers, it became clear that there was another organisational tier involved in the delivery of Smile4Life.*

#### *2.2.3.1 The Discovery of the Implementers*

*After asking the policymakers about their experiences with interacting with each other during the implementation of Smile4Life it became apparent that there was another level of people involved in Smile4Life. Although I had included some of these individuals within the policymaker group, it was clear that within the policymaker group there were two distinct groups. It became apparent that there was a group of staff that would meet to discuss the implementation of Smile4Life. Their meetings were called the operational meetings. At this stage I was uncertain why this group had been 'masked' or why I hadn't been asked to attend the operational meetings. It definitely made me think that this group of people, which I later decided to call the implementers (through agreement with this group), were significant in the implementation of Smile4Life and needed to be interviewed. I contacted my core contact within the policymaker group and discussed the implementers and asked if I could attend an operational meeting. At this stage I was told by my core contact policymaker that they (the policymakers) did not attend these meetings, which is why I had never been asked to go. But I was given the contact of one of the implementers, who was initially down on my policymaker list and I emailed her to ask if I could attend the meeting. I also outlined in the email that I would like to recruit this group and asked if I discuss my study in the meeting and ask the implementers to write down their contact information on a sheet of paper, if they wished to be involved in the study, to enable me to contact them for an interview.*

*The initial meeting went very well but coming away from the meeting I entered my thoughts into my reflective diary:*

*'Everybody seemed very nice and friendly but overly keen to be interviewed, they seemed down and negative in some way towards Smile4Life but passionate about their jobs and the settings they work with. I can't help but feel that there are some relationship*

*issues here between themselves and the policymakers as they seemed to like Smile4Life and want to improve the Oral Health of the community. Most surprising, they all gave me their contact details and wanted to be interviewed asap... this makes recruitment a lot easier but I really need to think carefully about what to ask them and be cautious that there might be personality clashes and my interviews need to stay focused on Smile4Life and not personal issues.'*

#### **2.2.4 Focusing on the Partnerships Between the Policymakers and the Implementers**

*Once I interviewed the implementers it became clear that there were major development and implementation issues impacting on Smile4Life. When I continued to do my literature search it was becoming clear that the theories, models, and frameworks previously used to underpin real-life interventions assumed that the implementer group were passive in the implementation process or were not considered at all. This was making me think that my findings were unique, addressing a gap in the literature, and a significant contribution to the literature. Therefore, I needed to make a decision, either to focus on the policymaker and implementer groups and assess the emerging issues of partnership working, or continue to do focus groups with stakeholders and develop surveys to look at outcomes. Not only did I find the emerging issues of working in, or not in, partnership very interesting but I thought this was a significant and original contribution to the field as outcomes had been looked at in many research studies.*

*After many discussions with my supervisors, it was decided that the data collection needed to stop with the policymakers and implementers and this would be the focus of the PhD thesis.*

### **2.3 The end**

*Once the interviews were analysed it was clear that the role of the implementers was a significant impacting factor on the development and implementation of Smile4Life. The literature review demonstrates that this is an understudied area and many theories, models, and frameworks failed to address this issue. At this point the literature review was complete but further literature that helped interpret the findings*

would be outlined in a separate chapter before the discussion. This goes against the traditional academic structure and rule of not introducing anything new in the discussion but as previously mentioned this is not a conventional thesis and the inductive nature of the research meant that relevant literature and findings would only be truly known after the interviews took place. Therefore, a second but much shorter review of the literature found in support of the research findings will be discussed in chapter 8. The findings of the PhD research also suggested that guidelines were needed to inform policymakers, researchers, implementers, and health professionals on ways to develop and implement Oral and General Health interventions. These are theoretically based and chapter 8 also discusses the theory that I feel was appropriate to underpin these guidelines. It seemed necessary to use a theory to underpin the guidelines as my main criticism of many interventions was the lack of theory; however, the need for guidelines and what theory to use was only evident from the interview analysis. Therefore, the underpinning review of theories could only be presented at this stage. Again, this is reflecting the inductive, cyclic process of this qualitative study and this thesis is a demonstration of the thought and knowledge process that occurred throughout this PhD.

## 3 LITERATURE REVIEW

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### 3.1 Introduction

This chapter will provide an overview of the process taken to conduct the literature review. Essential components needed to conduct a comprehensive literature review will be outlined, before the explanation of the strategy taken and methods used to identify relevant literature for the purpose of this study. A Behaviour Change Technique Tool (Abraham and Michie, 2008) was used to identify relevant behaviour change theories, models, and frameworks and will be discussed and applied to the literature. Lastly the findings of the literature research will be presented and critically discussed.

#### 3.1.1 Reflections

*As previously mentioned in chapter 2, this literature review represents the journey of knowledge that was developed through this study. Due to the inductive nature of this study, literature was searched alongside the interviewing of the policymakers and implementers. The process of searching and reviewing the literature at the same time as the interviews were done to identify literature that matched what was being analysed and interpreted from the interview data. Despite this, I also recognise that my knowledge and position impacted on this process as I had existing assumptions that behaviour change theories, models, and frameworks would need to be considered in the development and implementation of Smile4Life and other interventions. Therefore, the start of the literature review focuses on my existing knowledge of individual behaviour change theories used to improve health with a focus on Oral Health. However, as the interview data was collected, it became clear that the focus of the literature review needed to widen to include more complex theories of behaviour change that took into account the context. Additionally, General Health literature was also included as it was discovered that the Oral Health literature did not include many of the issues that were arising from the findings. Therefore, this review encompasses the research process and represents an inductive cyclic nature that was undertaken through this process of existing knowledge, knowledge gained through the interviews, and searching the literature as a result of the interviews. Therefore, although the*

*literature review is presented before the interviews, it should be noted that it very much occurred alongside the interviews.*

### ***3.1.2 Background***

There has always been a gap between research findings (what is known) and health care practice (what is done), described as the “evidence-practice” or “know-do” gap (WHO, 2005; Elliott, Turner, & Clavisi, 2014). The focus of this literature review was to identify the underpinnings of interventions in the practical context or real-life settings to understand the methods adopted by health professionals during the development and implementation of interventions. The review also focuses on identifying differences between the methods used by General Health and Oral Health professionals when they develop and implement interventions. As a result of this, studies that involve researchers developing interventions to test the feasibility of a theoretical underpinning or focus on experimental methods to measure outcomes will be excluded from this review. There are many systematic reviews that have used randomised controlled trials to test the feasibility of theoretical underpinnings (Kay & Locker, 1996; Edwards, May & Kesten, 2015; DeBarr, 2004; Velcier, Prochaska, Fava et al., 1999; Abraham & Michie, 2008;) or outcomes of theoretically driven interventions (Moon, 2000; Frambach & Schillewaert, 2002; Cane, O’Connor, Michie, 2012) and explanatory papers to outline researcher’s claims and opinions of the use of theory (Bonner, 2003; Weinstein, Sandman & Blalock, 2008; Marchal, Van Belle & Vincent De Brouwere, 2014). However, they outline the evidence for theoretical underpinnings and do not identify the real-life methods used in practice.

### ***3.1.3 The Importance and Purpose of the Literature Review***

An objective, critical, and thorough summary of the literature is a purposeful and essential component of the research process (Hart, 1999; Cronin, Ryan, & Coughlan, 2008). This literature review provides a clear rationale for the present study. Before presenting the literature review it is important to justify the reasons for the choice of style and methods used for this review. Although narrative reviews are popular across a range of disciplines, they have been subject to bias and allowing researchers to ‘cherry pick’ literature that is relevant to their topic and supports their findings (Petticrew & Roberts, 2006). To avoid this criticism, a more systematic approach to identify the literature was decided on.

A systematic review is a rigorous approach to searching the literature that is particularly useful for assessing the clinical and cost effectiveness of interventions (Hemmingway & Brereton, 2009). Systematic reviews also provide a clear and up-to-date overview of the current state of a given topic and highlights gaps in research, whilst also providing a transparent audit trail of the search strategy, enabling future replication (Hemmingway & Brereton, 2009). Systematic reviews require strict research questions, clear inclusion and exclusion criteria, and focus on assessing the outcomes of the intervention. The present study focuses on the methods used to underpin interventions rather than the outcomes and the research question will evolve as the literature review progresses. Therefore, a pure systematic review was deemed inappropriate however, searching the literature was done in a systematic way to ensure all key terms were included. Flexibility was also incorporated into the search process to allow the research questions to be adapted as the literature search progressed.

#### **3.1.4 *Aims and Objectives of the Review of the Literature***

Aims:

This review aims to identify and understand the theories, models, and frameworks used in practice to target Oral Health and/or lifestyle change at the individual and/or at the community level.

Objectives:

1. To understand the theories, models, and frameworks used to underpin the development and implementation of Oral Health interventions within practice or real-life settings.
2. To determine if there are any differences between theories, models, and frameworks used to underpin Oral Health interventions compared to General Health interventions.
3. To identify important potential gaps in understanding the process of developing and implementing Oral Health interventions in real-life settings.

#### **3.1.5 *Defining a Theory, Model, and a Framework***

Due to the number of different theories, models, and frameworks that can be used to modify lifestyles or explain behaviour, it is necessary to differentiate between them.

For this review the definition of a theory is a set of analytical propositions or assumptions designed to structure the investigation and explanation of real-world phenomenon (Frankfort-Nachmias & Nachmias, 1996; Wacker, 1998; Carpiano & Daley, 2006). It has been proposed (Bunge, 1967; Reynolds, 1971; Dubin, 1978; Hunt, 1991) that a theory consists of several definitions of variables, a phenomenon where the theory applies and a set of relationships between the variables and specific predictions about the phenomenon. According to Nilsen (2012) “*A good theory provides a clear explanation of how and why specific relationships lead to specific events*”.

Models on the other hand, consist of a simplified explanation of a phenomenon (Nilsen, 2012). A model needs to be a complete representation of reality and is an explicit and coherent arrangement of clearly defined stages, sequences, or an order, which represents the application of a theory (Carpiano & Daley, 2006; Bunge, 1967; Reynolds, 1971; Dubin, 1978; Hunt, 1991; Bluedorn & Evered, 1980). Models are closely related to theories and sometimes the differences between a model and a theory is not always explicit (Nilsen, 2012). Unlike a theory, a model defines the pathway that people take to achieve a desired goal and have a narrowly defined scope of explanation. A model is descriptive whereas a theory consists of explanations and descriptions (Frankfort-Nachmias & Nachmias, 1996).

For this research, frameworks are defined as a conceptual outline, structure, overview or system of various courses of action consisting of descriptive concepts or variables and the relations between them are presumed to account for the phenomena (Frankfort-Nachmias & Nachmias, 1996; Sabatier, 2007). A framework can connect all aspects of enquiry from multiple disciplines. Frameworks are linked to a purpose, which leads to the desired outcome.

### **3.2 Literature Review Methods**

This section will discuss the methods taken to search and identify theories, models, and frameworks that have underpinned General and Oral Health interventions. The reasons for the initial search and refined search will be discussed, followed by the methods for each search, the inclusion/exclusion criteria, the quality appraisal of studies, and the use of the behaviour change coding manual to aid the consistent

identification and reporting of behaviour change techniques within the identified papers.

### ***3.2.1 Initial Search***

An initial search was conducted to identify the theories, models, and frameworks that have been used to underpin Oral and General Health interventions. However, the search appeared to be dominated by General Health research, and Oral Health interventions were difficult to identify. After looking at an initial 100 abstracts the dominance of health interventions was confirmed. The General Health research was intended to be more of a comparison exercise to identify differences and gaps between General Health and Oral Health literature. To ensure Oral Health studies were not overlooked within the combined Oral Health and General Health search, the search was divided into Oral Health and General Health searches.

Despite the General Health literature only being used as a method of comparison to Oral Health studies, the following section will discuss both review search strategies that were used to identify theories, models, and frameworks used to underpin Oral Health interventions or General Health interventions.

### ***3.2.2 Revised General Health Search Strategy***

The following section will outline the strategy taken to identify the theories, models, and frameworks used to underpin the development and implementation of General Health interventions in real-life contexts. Instead of including studies that have been developed by researchers and have used experimental methods for the purpose of testing the effectiveness or feasibility of a specific theoretical underpinning in an intervention. This literature review aims to identify studies that have evaluated or explained the underpinnings of interventions developed and implemented in real-life contexts.

For the purpose of this review a real-life setting is defined as a programme or intervention that has been developed and/or implemented by General Health and/or Oral Health professionals in reality: in the real-life context of General Health or Oral Health settings, not in the experimental or academic context. Therefore, professionals use their knowledge and experiences to develop the intervention to improve lifestyles,

rather than researchers developing the intervention to test the feasibility of theoretical underpinnings.

### *3.2.2.1 Criteria for Considering General Health Studies for this Review*

#### *General Health Types of Studies*

- Studies that focused on the underpinnings of interventions in the real-life context.
- Studies that focused on the use of a General Health intervention to improve the lifestyles of an individual and/or community, within a real-life context.

#### *Types of Participant*

- Any male or female that was targeted by a General Health intervention, or professionals who were responsible for developing, implementing, and delivering General Health interventions.
- Inclusion was irrespective of nationality, gender or age.
- The review included studies delivered through early years' settings, schools, NHS Secondary or Tertiary Care Services and other community or individual settings.

#### *Types of General Health Interventions*

- General Health interventions developed by health professionals (including education and/or skills and/ or behaviour change) taking place at the individual or community level around healthy lifestyles, hygiene and/or food and drink consumption. Studies were included with or without a follow up or evaluation of the intervention.
- The intervention could have been delivered by teachers, health or social care professionals, peers, parents, or other educators and delivered at the individual or community level. Elements of the intervention could have occurred at home and/or in clinical settings. Delivery of intervention components could have been written, verbal, web-based or through other electronic devices.
- The aim of the intervention must have been to improve lifestyles in real-life settings. Studies utilising one or more theories, models, of frameworks were also included. The identification of behavioural interventions was guided by the use of the Coding Manual to Identify Behaviour change Techniques in the Behaviour change Intervention Descriptions, detailed by Abraham & Michie,

(2008). This provided a pre-validated method to identify specific behaviour change techniques (BCTs) in the interventions, to ensure the use the same terminology to avoid confusion and inaccurate identification of behaviour change techniques. Examples of BCTs are reinforcement (healthy eating charts), modelling (facilitator demonstration of healthy cooking) and prompts (visual reminders).

### *Exclusion Criteria*

Studies were excluded if:

- The intervention was developed by researchers to test the feasibility or identify outcomes of the use of a theoretical underpinning in interventions. Therefore, experimental studies such as RCTs, quasi-experiments, and any other experimental study involving researchers developing the intervention to test the intervention.
- The intervention was targeted at individuals with a mental health illness or treatment for an illness due to the literature review focusing on Public Health interventions that aimed to promote or prevent poor health rather than target treatment adherence or treatment options.
- The intervention only included a clinical intervention treatment in NHS Tertiary or Secondary Care Settings.

### *3.2.2.2 Search Terms*

Key terms and Thesaurus terms used within the General Health search strategy were as follows (For the full search strategy please see appendix 3.1): Behaviour change OR behavioural change OR behavioural OR health intervention OR behaviour modification OR behavioural outcome OR behavioural strategy OR change behaviour OR community change OR cultural change OR effect behaviour OR group level effect OR influence behavior OR impact behaviour OR effect behaviour OR normative change OR organisational change OR population change OR social change OR societal change OR Health intervention OR prevent behaviour OR economic OR psychology OR sociology OR anthropology AND behaviour change OR Health Or health promotion OR Health Promotion OR medicine OR Public Health OR public health OR Nursing OR organisational OR business OR management OR marketing OR media OR sociology

### ***3.2.3 Revised Oral Health Search***

The Oral Health search focused on identifying Oral Health interventions that had been underpinned by theories, models, and frameworks. Oral Health interventions are defined as interventions that aim to prevent the occurrence of decayed missing or filled teeth within a community or individual setting, prevent or raise awareness of the causes of poor Oral Health and mouth cancers, or raise awareness of how to improve the health of teeth and gums. By focusing on Oral Health search terms, the ‘hits’ identified by this refined search were greater. The following section will outline the process undertaken to obtain the relevant papers needed for this review.

#### *3.2.3.1 Criteria for Considering Studies for this Review*

##### *Types of Studies*

- Studies that focused on the underpinnings of Oral Health interventions in the real-life context.
- Studies that focused on Oral Health interventions which, explicitly used theories, models, or frameworks as underpinnings to improve the lifestyles of an individual or community.

##### *Types of Participant*

- Any person targeted by an Oral Health intervention, or professionals responsible for developing, implementing, and delivering an intervention.
- Inclusion was irrespective of dental caries, fluoride exposure, both topical and via water, current dental treatment and attendance levels, and nationality, gender, and age.
- The review included studies delivered through early years’ settings, schools, dentists and other community or individual settings and mass media campaigns.

##### *Types of Interventions*

- Oral Health interventions (including education and/or skills and/or behaviour change) taking place at the individual or community level around oral public health, dental hygiene, and/or food and drink consumption. Studies were included with or without a follow up or evaluation of the intervention.

- The intervention could have been delivered by teachers, health professionals, peers, parents or other educators and must have been delivered at the individual or community level. Elements of the intervention may also occur at home and/or in clinical settings. Delivery of intervention components can be written, verbal, web-based or through other electronic devices.
- The aim of the intervention must be to improve Oral Health in real-life settings. Studies that utilised one or more theories, models, or frameworks were also included. The identification of behavioural interventions was guided by the use of the Coding Manual to Identify Behaviour Change Techniques in the Behaviour change Intervention Descriptions, detailed by Abraham and Michie (2008). This provided a pre-validated method to identify specific behaviour change techniques (BCTs) in the interventions and to ensure the use the same terminology to avoid confusion and inaccurate identification of behaviour change techniques. Examples of BCTs are reinforcement (healthy eating charts), modelling (facilitator demonstration of healthy cooking) and prompts (visual reminders).

#### *Exclusion Criteria*

Studies were excluded if:

- Studies that focused on an experimentally designed Oral Health intervention to assess feasibility or outcomes of the intervention. Therefore, RCT, quasi-experiments, and others studies that included interventions that had not been developed in a real-life setting.
- The intervention only looked at the use of fluoride within the water supply.
- The intervention targeted the Oral Health of individuals with a pre-existing health or mental health illness.
- The intervention only included a clinical intervention treatment (e.g. fluoride varnish).

#### *3.2.3.2 Search Terms*

Examples of the key terms and Thesaurus terms used within the Oral Health search strategy were as follows (For the full search strategy please see appendix 3.2): teeth OR caries OR cavity OR carious OR decay OR lesion OR demineralisation OR remineralisation OR dental or enamel OR pulp OR DMF index OR dental plaque index

OR oral hygiene index OR dental plaque OR mouthwashes OR dentifrices OR toothpaste OR toothbrush OR mouth rinse OR sugar intake OR sweet OR candy OR candies OR gum OR snack OR diet OR food OR drink OR beverage OR mouth health OR oral health OR dental OR teeth health OR mouth hygiene OR health education OR dental/health promotion

### **3.2.4 *Search Methods for Identification of Studies***

A search of the literature was conducted using the platform Ovid: Embase and Medline databases were searched for English only studies. Due to the focus being on identifying the progression and changes to the theoretical underpinnings of real-life Oral Health interventions over the years a start date was not chosen. Broad thesaurus words and keywords were used to identify relevant papers from a range of disciplines as previously illustrated and the full search can also be found in (Appendices 3.1 for General Health interventions and 3.2 for Oral Health interventions). Further literature was retrieved using references cited by relevant articles captured from the search process. A number of main texts and grey literature including unpublished theses and selected policy documents were also searched using the University of Central Lancashire Clok database and Google Scholar.

The studies identified from the Oral Health search are summarised in Appendices 3.3, 3.5, 3.7, and 3.9. The studies identified from the General Health search are summarised in Appendices 3.4, 3.6, 3.8, and 3.10.

### **3.2.5 *Data Collection and Management***

#### **3.2.5.1 *Selection of Studies, Applying Inclusion/Exclusion Criteria***

Once all the identified abstracts were presented in a standardised format on Endnote duplicates were removed and the application of the inclusion/exclusion criteria was conducted in 2 stages.

*Stage 1.* Titles and abstracts were screened twice by the researcher. Studies were excluded if the title or abstract did not meet the inclusion criteria. Studies were also excluded at this stage if they failed to address the scope of the review. *Stage 2.* Full copies of any studies, which appeared to meet the inclusion criteria were obtained and re-screened for relevance and for overlapping reviews and duplicates. Other publications, papers, articles, research projects, and grey literature, relating to the

identified studies were also searched and authors contacted for other relevant studies or information.

#### *3.2.5.2 Appraisal of Relevance*

Since the focus of this review was on the identification of theories, models, and frameworks used to underpin General Health and Oral Health interventions and not to analyse the feasibility and outcomes of studies, the quality of the studies methods, outcomes, or conclusions, were not relevant and therefore assessing the quality of study methods and outcomes was not appropriate.

### **3.3 Data Extraction and Synthesis**

#### *3.3.1 General Health Data Extraction*

After duplicates were removed, 5907 titles and abstracts were found in the General Health search. Of these, 5638 titles and abstracts did not meet the inclusion criteria with 5601 being discarded for being a RCT, quasi-experiment or created by researchers to test the effectiveness, feasibility or outcomes of a theory, model or framework. When the full text papers were screened a further 190 studies did not meet the inclusion. 79 papers were identified that met the criteria for inclusion in the review. Figure 3.1 presents and describes the data extraction process for the General Health research, followed by the Oral Health research. The process taken to synthesise the data will then be described.

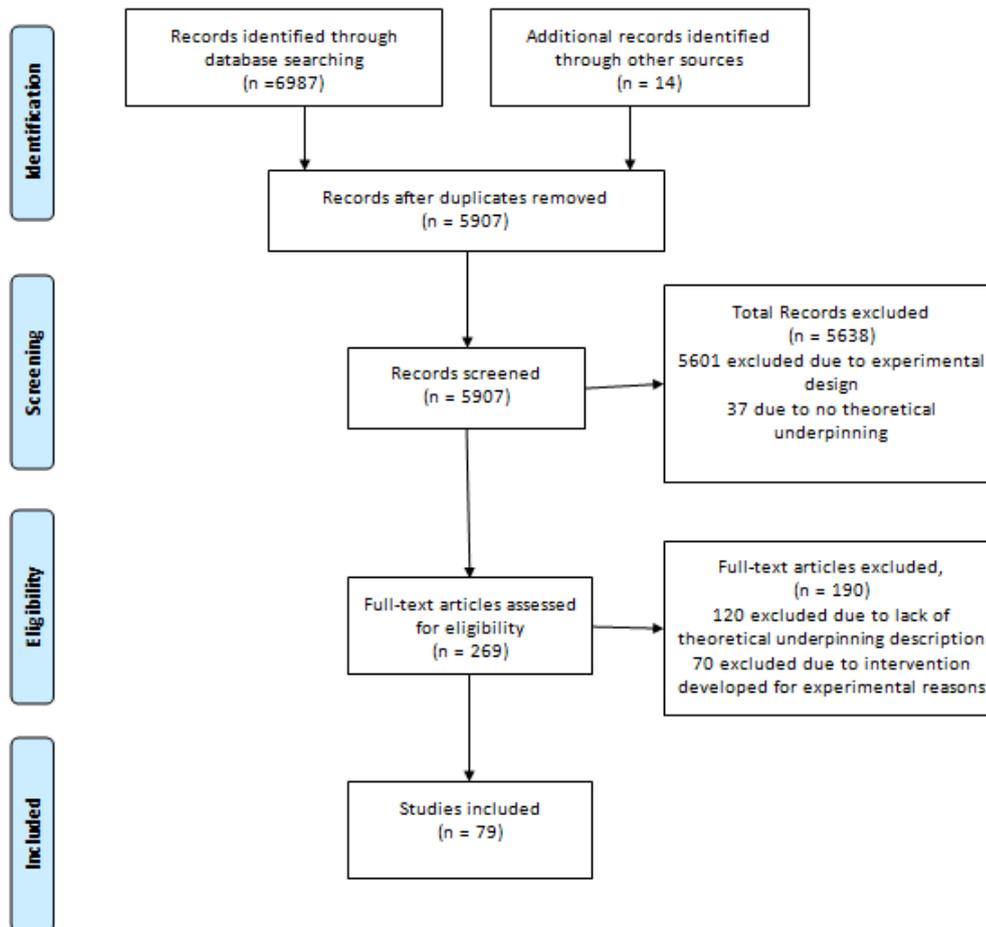


Figure 3.1 Represents the process of data extraction for the General Health Search adapted from Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement

### 3.3.1.1 Reasons for Excluding Studies

To further explain the exclusion of papers, 37 studies were excluded as they did not have a theoretical underpinning or use constructs of a theory, model, or framework. A further 120 studies were then excluded for not explicitly explaining the use of a theoretical underpinning or the constructs of a theory, model, or framework. Therefore, the study may have mentioned the use of a theory, model, or framework but then it failed to describe how the theory, model, or framework was used or what constructs were used to underpin the intervention, which prevented crucial information about the relevance of the approach and/or constructs being obtained. Of the 70 interventions that were excluded for experimental reasons, 68 of the studies were RCTs developed by researchers to test the feasibility of the chosen approach that

underpinned the intervention. 2 out of the 70 interventions were excluded as they aimed to survey participants to test the outcomes of the intervention to determine the effectiveness of the theory, model, or framework used to underpin the intervention.

### ***3.3.2 Oral Health Data Extraction***

After the duplicates were removed 1514 titles and abstracts were identified through the Oral Health search and subsequent hand searching. When titles and abstracts were screened 1336 were excluded for not meeting the inclusion and exclusion criteria with 970 being excluded due to the intervention being a RCT, quasi-experiment or created by researchers to test the effectiveness, feasibility or outcomes of a theory, model or framework of which 204 articles were excluded due to interventions only consisting of fluoride or clinical treatments, and a further 162 studies did not explicitly describe the intervention underpinnings. When the full texts of the studies were screened a further 94 articles were discarded for not meeting the inclusion criteria; 31 papers were identified that met the criteria for inclusion in the review. Figure 3.2 presents the data extraction process.

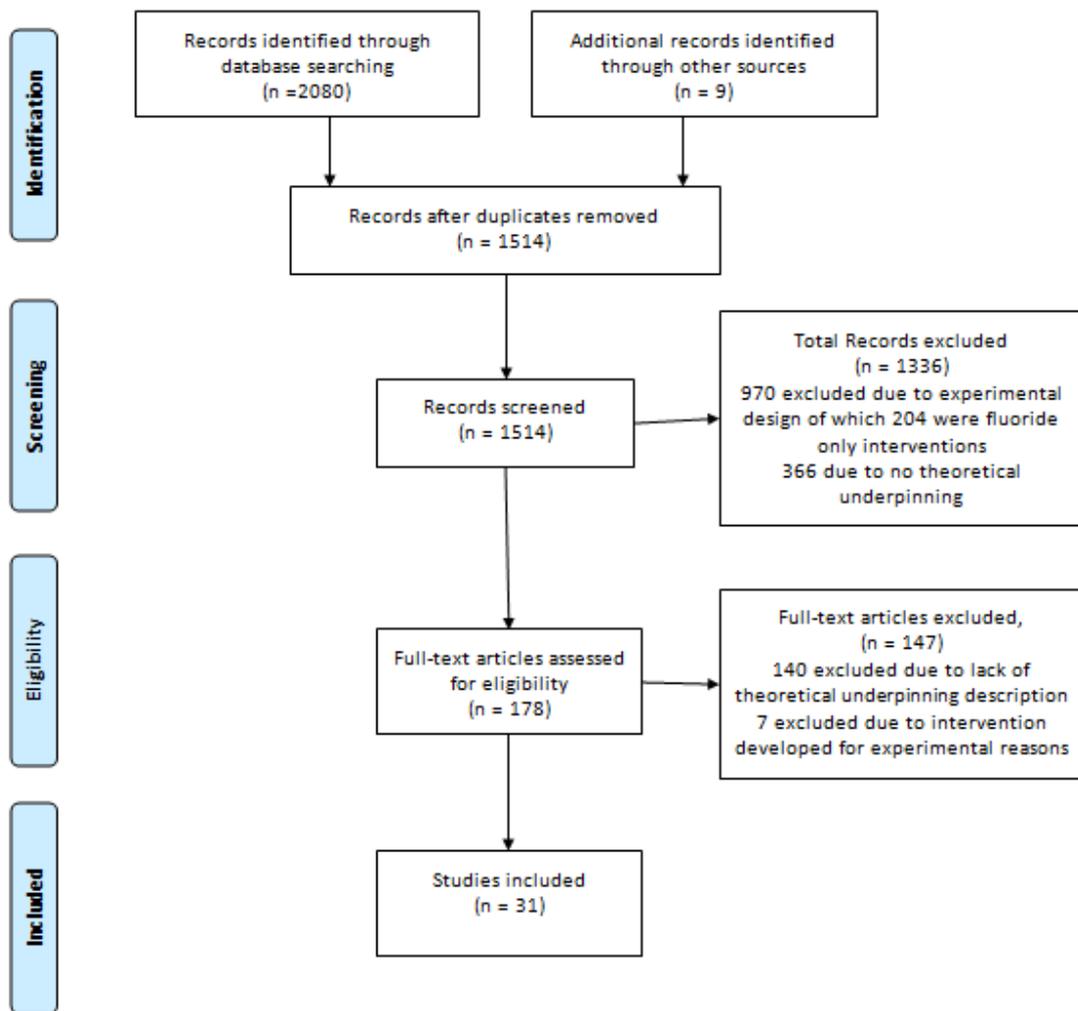


Figure 3.2 Represents the process of data extraction for the Oral Health Search adapted from Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement

### 3.3.2.1 Reasons for Excluding Studies

To further explain the exclusion of papers, 970 studies were excluded due to the experimental design, of which 766 were excluded due to them being RCTs to test the feasibility of adding fluoride to the water supply, a further 204 studies were RCTs to test the effectiveness of applying Fluoride varnish to children's teeth. 366 studies were excluded as they did not have a theoretical underpinning or use constructs of a theory, model, or framework. A further 140 studies were then excluded for not explicitly explaining the use of a theoretical underpinning or the constructs of a theory, model, or framework. Therefore, the study may have mentioned the use of a theory, model, or framework but then it failed to describe how the theory, model, or framework was used or what constructs were used to underpin the intervention, which prevented

crucial information about the relevance of the approach and/or constructs being obtained. Of the remaining 7 interventions that were excluded for experimental reasons, 4 of the studies were RCTs developed by researchers to test the feasibility of the chosen approach that underpinned the intervention. 23 out of the 7 interventions were excluded as they aimed to survey participants to test the outcomes of the intervention to determine the effectiveness of the theory, model, or framework used to underpin the intervention.

### ***3.3.3 The Use of the Behaviour Change Technique Coding Manual (Abraham and Michie, 2008)***

For this literature search the identification of behavioural interventions was guided by the use of the '*Coding Manual to Identify Behaviour Change Techniques in the Behaviour Change Intervention Descriptions*', detailed by Abraham and Michie, (2008) (refer to appendix 3.11). The Behaviour Change Coding Manual is a pre-validated method to identify specific behaviour change techniques (BCTs) in the interventions to ensure the use of consistent terminology to avoid confusion and inaccurate identification of behaviour change techniques. The manual has a 93% agreement of standardised reporting amongst experts. The manual is an accessible tool that overcomes the subjective and variable reporting of BCTs. The manual defines 26 BCTs that are regularly used in behaviour change theories, models, and frameworks. By clearly following the manual the identification of BCTs can be identified and mapped onto the theories, models, and frameworks that the techniques have been taken from. Examples of BCTs are reinforcement (brushing charts), modeling (facilitator demonstration of correct brushing) and prompts (visual reminders).

### ***3.3.4 Data Extraction***

Once the researcher had removed duplicates and applied the inclusion and exclusion criteria, the following criteria were extracted and the following information is reported in Appendices 3.3 to 3.10:

- General study information – published/unpublished, author(s), title, year of publication, journal, year that research was conducted, country of origin, and language.
- Intervention characteristics - model, theory, framework, constructs
- Description of the application of the theory, model, or framework

- Intervention setting – community, clinical, school, nursery.

### ***3.3.5 Synthesis of the Data***

Analysis of the data consisted of a mapping exercise similar to the one conducted in DeBarr's (2004) review of health theories. References were mapped into categories of type of approach (behaviour change or multi-level approach). Identified behaviour change papers were studied using the Coding Manual to Identify Behaviour Change Techniques (Abraham & Michie, 2008). Unfortunately, no such coding manual exists for multi-level theories, models, and frameworks, consequently constructs were identified through mapping of intervention descriptions onto descriptions of theories, models, and frameworks based on the researcher's knowledge of theories, models, and frameworks and using clearly defined constructs of the theory, model, or framework from the original developer of the approach. For example, when professionals discussed engaging with the community and key stakeholders, this is a construct of the Community Participatory Research approach.

The descriptive characteristics of each identified study: theory, model, or framework, short description of the approach, the environment used in the population, and the constructs used from the approach to underpin the intervention are shown in Appendices 3.3 to 3.10.

The identified studies were divided into individual behaviour change intervention studies (Oral Health n=17 and General Health n=19), interpersonal behaviour change interventions studies (Oral Health n=2 and General Health n=11), stage behaviour change intervention studies (Oral Health n=2 and General Health n=15) and multi-level approach intervention studies (Oral Health n=10 and General Health n=34). The identified theories, models, and frameworks are presented from most commonly used to least commonly used within the Oral Health studies. The General Health total number of studies identified per theory, model, and framework are presented in a column next to the Oral Health totals to allow for comparison between the Oral Health and General Health literature.

The descriptions of each theory, model, and framework used to underpin an Oral Health and General Health intervention, along with type of setting and constructs are discussed in further detail in the subsequent sections. Through identifying the

underpinnings of Oral Health interventions and making comparisons between Oral Health and General Health intervention research, conclusions will be made on the differences between the Oral Health and General Health approaches. Also the types of approaches that have transferred from evidence into practice and the barriers and facilitators to the implementation process will be identified.

The identified papers will be discussed in two sections in this review, first behaviour change theories, models, and frameworks, and second, multi-level theories, models, and frameworks.

### **3.4 Behaviour Change Theories, Models, and Frameworks**

Behaviour change theories, models, and frameworks focus on understanding behavioural intentions and actions, and use this understanding to modify behaviours that lead to poor health (DeBarr, 2004). Behaviour change theories, models, and frameworks are popular and well established approaches for Oral Health and General Health policymakers and researchers to draw upon when attempting to develop an intervention. Behaviour change theories, models, and frameworks essentially focus on explaining the process of behaviour change at the individual level, although they have been applied to community and population level interventions (DeBarr, 2004). This review identified 21 Oral Health and 45 General Health studies that used behaviour change theories, models, and frameworks as underpinnings of lifestyle interventions. The 21 Oral Health behaviour change studies were then categorised into four distinct categories: individual behaviour (n=17), interpersonal behaviour (n=2), and stage (n=2) theories, models, and frameworks. The 45 General Health behaviour change studies were also categorised into the same four distinct categories individual behaviour (n=17), interpersonal behaviour (n=2), and stage (n=2) theories, models, and frameworks. The three categories of the behaviour change techniques will now be discussed in subsequent sections.

#### ***3.4.1 Individual Behaviour Change Theories, Frameworks, and Models***

Individual behaviour change theories, models, and frameworks seek to understand and analyse health behaviours at the individual level, where motivations, intentions, and actions of carrying out healthy or unhealthy behaviour are independent of other people's actions (Green & Kreuter, 2005; Nutbeam & Harris, 2004; DeBarr, 2010). Table 3.1 illustrates the descriptive characteristics of the theories, models, and

frameworks found in the Oral Health and General Health review search. The strengths and limitations of each approach are also summarised in the table. For more detailed descriptions of each study and ways the theories, models, and frameworks were used by the studies to underpin each intervention (Appendix 3.3 for the Oral Health papers and Appendix 3.4 for the General Health studies).

*Table 3.1 Individual behaviour change theories, models, and frameworks identified by the Oral Health literature search*

<b>Description of Theory, Model, Framework</b>	<b>Total Oral Health interventions</b>	<b>Total General Health intervention</b>	<b>Behaviour change techniques used in the interventions</b>	<b>Strengths and limitations</b>
<p><b>Educational Approaches:</b> Educational interventions aim to change behaviour and improve health by increasing a person’s knowledge and influencing their attitudes to health behaviour. Information within educational interventions aims to influence behaviour change through increasing a person’s awareness of, and consideration to, their risk, susceptibility, self-efficacy, subjective norms, and attitudes to ill-health. Essentially behaviour is changed due to increasing knowledge irrespective of social factors.</p>	9	0	<p>Provide information linking behaviour to health, consequences, intention, role models, instructions, encouragement, contingent rewards, follow-up prompts, self-monitoring behaviour, identification of barriers, demonstrate behaviour, and feedback on performance.</p>	<p>Allows continuity of delivery and encourages planned behaviour and intention (Yusof &amp; Jaafer, 2013; Albert et al., 2014; Glanz &amp; Bishop, 2010). However, more health motivated people tend to be from higher Social Economic Status, and are more likely seek educational materials, which could increase health inequalities (Albert et al., 2014).</p>
<p><b>Motivational Interviewing (MI) (Miller and Rollnick 1991):</b> Attempts to increase a person’s awareness of potential problem behaviour, consequences, and risks. The aim is to discuss a healthier future, to help a person become motivated to change and to create a plan of action to change. Counselling attempts to make an individual think differently about behaviour and become aware of the potential gains for changing behaviour. Essentially the aim is to engage with individuals, elicit discussion of behaviour, and evoke motivation to change</p>	6	3	<p>Prompt identification of barriers, general information linking behaviour to health and consequences, Motivational Interviewing, self -talk, general encouragement, specific goal settings, follow up prompts, instruction,</p>	<p>Cheap and easy to train professionals in MI (Garbin et al., 2009) However, used in population approaches with MI methods being standardised, this loses the individualistic nature of MI, which advocates the tailoring of techniques to individual needs.</p>

<p><b>Health Belief Model (HBM) (Rosenstock, 1974; Janz and Becker, 1984):</b> The HBM was developed to understand and explain why people do or do not use preventative services. The model theorises about a person's beliefs regarding their risk of illness and their preconceptions of the benefits of taking action to prevent ill health. The HBM consists of five constructs: perceived threat, perceived susceptibility, perceived severity, potential benefits and barriers to taking action, cues to action, and self-efficacy.</p>	2	4	<p>General information linking behaviour to health and consequences, intention formation, general encouragement, barrier identification, feedback on performance, goal setting, instruction, self-monitoring, rewards.</p>	<p>It increases susceptibility and behavioural intentions to changes. However, the model assumes that behaviour is linear and to achieve behaviour change you must progress through the linear process</p>
<p><b>Cognitive Dissonance (Bandura, 1977):</b> The theory proposes that when equilibrium is disrupted an individual will act to restore balance by either changing their beliefs and opinions to support the behaviour that is causing dissonance or by stopping the behaviour. This theory also incorporates self-efficacy, which implies that if an individual feels more confident in their abilities to perform a desired behaviour then they are more likely to engage in that behaviour.</p>	0	1	<p>Information about others approval, identification as a role model, prompt self-talk,</p>	<p>Targets self-efficacy to improve an individual's action, intention, and motivation to change. Compliments educational and motivational interviewing approaches. However, it focuses on professional to patient interactions to deliver evidenced based advice; this neglects organisational and social influences on behaviour.</p>
<p><b>Integrative Model of Behaviour Prediction Fishbein, 2000; Fishbein and Yzer, 2003):</b> The IBM assumes that any given behaviour is most likely to occur if one has a strong intention to perform the behaviour, if the person has the necessary skills to perform the behaviour, and if there are no environmental constraints.</p>	0	1	<p>Provide information linking behaviour to health and consequences, instruction, intention formation, barrier identification, self-talk, general encouragement, model/demonstrate the behaviour, provide feedback, self-monitoring,</p>	<p>Builds on the TPB and TRA and identifies environmental barriers and resources needed to change behaviour. However it does not propose ways to overcome barriers or identify environmental factors that can impact on behaviour change.</p>

			goal setting, contingent rewards, provide prompts.	
<b>Theory of Planned Behaviour (TPB) (Ajzen, 1991, 2005):</b> The TPB places control on a continuum, starting with the situation that individuals find themselves in, from having complete to no control. The TPB considers individuals previous experiences that can influence an individuals perceived ease or difficulty of performing the behaviour.	0	9	General information linking behaviour to health and consequences, social comparison, identification of barriers, intention formation.	Considers ways that an individual's previous experiences can impact on an individual's intentions and actions to behaviour change. It is a unidirectional model that does not consider that variables such as knowledge and attitude could act in a reciprocal way.
<b>Theory of Reasoned Action (TRA) (Ajzen and Fishbein, 1980; Fishbein and Ajzen, 1975):</b> The TRA focuses on a person's behavioural intentions, which are based on personal attitudes to health behaviour and the influence of social norms towards performing that behaviour. The TRA assumes that behaviour change is within the individuals control at all times	0	1	Barrier identification, provide information linking behaviour to health and consequences, provide instruction	This approach considers social norms and attitudes that can impact on behaviour change. However, it does not propose ways to overcome or change attitudes. Also still assumes that behaviour is irrespective of organisational influences.

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#### 3.4.1.1 Educational Approaches

For the purpose of this review any learning opportunities that are designed to facilitate voluntary adaptations of behaviour, which are conducive to healthy lifestyles were categorised as using an educational model (WHO, 2012).

The educational model is an individualistic approach that assumes behaviour can be changed by increased awareness and knowledge of Oral Health regardless of other factors (Nutbeam, 2006). This is reminiscent of traditional professional and patient interactions (Albert, Barricks, Bruzelius & Ward, 2014); during dental check-ups the dentist will give the patient Oral Health knowledge and it is hoped that this knowledge will improve the Oral Health lifestyles of the patient. The use of Oral Health Education methods may reflect professionals' and researchers' attempts to incorporate the Oral Health scientific and evidence-based knowledge into practice.

Interestingly, the General Health literature search did not identify any interventions that had used educational methods as the sole underpinning of an intervention. This may reflect the differences between Oral Health and General Health's delivery of health information or interpretation of the definition of educational approaches. The WHO, (2012) proposed two definitions of the educational approach in health:

*“(1) consciously constructed opportunities for learning involving some form of communication designed to improve knowledge and developing life skills, which are conducive to individual and community health.” (2) The WHO health promotion glossary describes health education as not limited to the dissemination of health-related information but also “fostering the motivation, skills and confidence (self-efficacy) necessary to take action to improve health”, as well as “the communication of information concerning the underlying social, economic and environmental conditions impacting on health, as well as individual risk factors and risk behaviours, and use of the health care system”. (WHO, 2012 p13).*

Therefore, according to WHO (2012) health education can involve delivering information to improve knowledge, which reflects the Oral Health approaches professional to patient delivery of information. However, according to WHO the educational approach is not only to increase knowledge about personal health behaviour, but to also develop approaches that improve self-efficacy and other behaviour change approaches. This reflects the General Health interventions that have incorporated educational messages within Motivational Interviewing (Ismail,

Ondersma, Willem et al., 2011; Wagner, Greiner & Heinrich-Weltzien, 2014), the Theory of Planned Behaviour (Kothe, 2012; Brown, 2011) and the Transtheoretical Model (Falk, 2012).

The nine Oral Health education studies identified in this review (Appendix 2.3) used a variety of methods: role models, carers, parents, instructional DVDs, and prompts, in an attempt to improve Oral Health lifestyles. However, none of the interventions found a significant improvement in Oral Health after the use of the education intervention (Vonobbergen, Declerck, Mwalili, & Martens, 2004). Each intervention study concluded that the educational methods were insufficient as a sole underpinning of an intervention, and social and environmental factors needed to be considered (Worthington, Hill, Mooney, Hamilton, & Blinkhorn, 2001; Tai, Du, Peng, Fa; Bian, 2001; Vonobbergen, Declerck, Mwalili, & Martens, 2004; Alves de Farias & Fernandes, 2009; Garbin, Garbin, Dos Santos & Lima, 2009; Saied-Moallemi, Virtanen, Vehkalahti, et al., 2009; Yazdani, Ehkalahti, Nour & Murtomaa, 2009); Albert, Barricks, Bruzelius, & Ward, 2013; Yusof & Jaafer, 2013).

Despite the studies dating from 2001 to 2013 and each study concluding that there is a need for multi-methods to underpin Oral Health interventions, professionals responsible for developing Oral Health interventions still appear to rely on the education method. The reasons behind professional reliance on this theory in the development and implementation process of Oral Health interventions remains unclear. Understanding the barriers to policymakers using other theories, models, and frameworks in the implementation process may be necessary to create successful Oral Health interventions.

In 2004 Vanobbergen et al., proposed that to enable understanding of the complex interactions between staff, parents, children, and the environment when implementing health interventions qualitative methods such as interviews and focus groups are needed. This was supported by subsequent Oral Health Education intervention studies found in this review (Garbin, Garbin, Dos Santos & Lima, 2009; Yusof & Jaafer, 2013). Yet a decade on from Vanobbergen et al., (2004) initial claim, the Oral Health Education approach is still used as a sole underpinning to many Oral Health interventions.

The interventions that were underpinned by the educational approach also used behaviour change techniques, listed in Abraham and Michie's (2008) coding manual such as: social support, values, habits, intentions (Garbin et al., 2009), peer modelling (Yusof & Jaafar, 2013; Alves et al., 2009), motivational interviewing (Vanobbergen et al., 2004), and communication (Tai, Du, Peng, Fan & Bian, 2001). The studies only stated the use of educational approaches and failed to explicitly state or recognise that the identified behaviour change techniques were important theoretical concepts in not just other behaviour change theories (Health Belief Model (HBM), Motivational Interviewing, Transtheoretical Model (TTM), and Theory of Planned Behaviour (TPB)) but also in multi-level approaches (Social Network Theory and Diffusion of Innovations). This may indicate that the developers of the interventions lacked knowledge of other behaviour change and multi-level approaches. This could also indicate that their reliance on the educational approach was because it was the only approach they were familiar with, had experience using and/or understood. It is unclear whether the policymakers and professionals responsible for developing and implementing the interventions were unaware that the behaviour change techniques used were in fact constructs from other behaviour change theories, or if they just did not recognise the importance of explicitly stating that the techniques were taken from certain theories.

The problem of not explicitly stating the theoretical underpinnings of interventions may reflect the research to practice gap and is also a reason for Abraham and Michie's development of the behaviour change coding manual. Abraham and Michie were frustrated that in practice, policymakers draw on behaviour change theories and constructs without acknowledging that they have theoretical underpinnings. Without this explicit acknowledgment, the extent to which theories, models, and frameworks are used to underpin the implementation process, and identifying the most effective constructs to use when tackling specific Oral Health issues, becomes problematic for identifying facilitating factors to the development and implementation of interventions (Michie, Van Stralen & West, 2011; Jackson & Waters, 2005). However, it is not clear why policymakers fail to explicitly state intervention underpinnings, it may be due to the research-practice gap (WHO, 2005; Elliott, Turner, & Clavisi, 2014), with professionals in practice being unaware of the theoretical research. However,

interviewing policymakers would aid understanding into any barriers to the use of explicit theories, models, and frameworks in the development of interventions.

A reason for the popularity of Oral Health educational approaches is that it enables continuity of intervention delivery to all, regardless of social economic status (Yusof & Jafer, 2013). The theory also encourages planned behaviour and intention, which could be the foundations for subsequent interventions to motivate and aid behaviour change (Albert et al., 2014; Yusof & Jaafar, 2013; Glanz & Bishop, 2010). Despite this, research into the usefulness of standardised messages and interventions is limited and it is unclear whether this 'one-size fits all' approach for Oral Health interventions is appropriate (Albert et al., 2014). If Oral Health education messages are not targeted to education level then some groups may misunderstand the messages, which in turn could lead to bigger Oral Health inequalities (Watt, 2005).

Research into understanding the practicalities of implementing standardised education interventions into real-life settings was not found in this review or in subsequent hand searches. It would be beneficial to understand the barriers and facilitators to the practical implementation of the educational approach in real-life settings, to understand whether more complex methods other than educational approaches are needed to improve the successful implementation of interventions.

#### *3.4.1.2 Motivational Interviewing (MI)*

Motivational Interviewing (MI) is a patient-centred approach that encourages individuals to discuss their personal goals first and then offers the individual information and advice (Freudenthal & Bowen, 2010).

MI enables understanding of an individual's readiness to change, which is a stage of the Transtheoretical Model (TTM). Despite this, only one MI intervention (Freudenthal & Bowen, 2010) identified in this review mentioned the use of MI and TTM. Freudenthal and Bowen (2010), found that motivational interviewing was successful at moving individuals along the stages of change continuum. By explicitly stating the theoretical underpinnings of MI and TTM, MI was identified as a construct in detecting readiness to change in the TTM. Therefore, the explicit discussion of theoretical underpinnings enabled facilitating constructs to the TTM to be identified.

The MI approach is an individualistic method that considers individual differences and works with individuals to set goals and use strategies based on the individual's

readiness to change and personal goals. Therefore, the use of a standardised motivational interviewing intervention within communities seems inappropriate due to individual differences within the community and the inability of implementers to adjust the scripts according to individual goals and motivations.

The Oral Health search identified six studies that had MI underpinning Oral Health promotion programmes (Wagner, Greiner & Heinrich-Weltzien, 2014; Weinstein, 2014; Bray, 2013; Arrow, Reheb & Miller, 2013; Ismail, Ondersma, Willem et al., 2011; Freudenthal & Bowen, 2010). Two out of the six Motivational Interviewing interventions identified in the Oral Health review used Motivational Interviewing alongside educational approaches (Ismail, Ondersma, Willem et al., 2011; Wagner, Greiner & Heinrich-Weltzien, 2014). Although this is an attempt to overcome previous criticisms of the educational approach needing to incorporate multiple approaches to change behaviour, Motivational Interviewing is still an individualistic approach being standardised and then used in community interventions. By using standardised interview schedules and information tools, the interventions may be increasing rather than decreasing Oral Health inequalities, as the standardised method may not be suitable for individuals who have lower education levels and lack motivation to change.

Wagner et al., (2014) used MI to underpin an Oral Health intervention, in an attempt to improve the success rate of education interventions. It was hoped that MI would enable individuals to become aware of their poor Oral Health and become motivated to adopt the educational messages. Results from Wagener et al., (2014) research found that participants had increased Oral Health awareness and motivation to change, this was supported by a similar intervention study identified by the literature search (Ismail et al., 2011). However, like the previous Oral Health education findings, apart from self-reported changes, there were no improvements in dental caries rates or treatments needed.

Motivational Interviewing was only identified in four studies by the General Health search (Ludman, 1999; Ingersoll, 1997; Miller 1989, 1988). The General Health interventions that were underpinned by MI are over a decade old suggesting that General Health professionals have moved away from using this approach as a sole underpinning of interventions. However, there does not appear to be any research into

understanding the reasons for certain theories such as MI appearing to be outdated choices by health professionals.

MI is relatively easy and cheap to train policymakers and implementers in MI techniques. The intervention can also be implemented over a short period of time, which may explain why this method is used (Garbin et al., 2009). However, the strong points of MI are that it enables education level, understanding, personal goals, and motivations to be identified so that interventions, such as Oral Health education, can be tailored to individual needs. By standardising the sessions, the positive aspects of this individualistic approach are removed, preventing the interventions being appropriate to all members of the community. Research is needed to understand if standardised methods are a barrier or facilitator to the process of implementing interventions.

#### *3.4.1.3 The Health Belief Model (HBM)*

The HBM could be considered as a stage model to behaviour change since it assumes that changing behaviour is a logical stepwise progression. The reason why it has been classified as an individual model in this review is due to the assumption that the progression of change is determined by the individual with no consideration to other social or environmental factors, this is in line with DeBarr (2014) categories of behaviour change techniques.

The Oral Health search identified two studies that had used the HBM to underpin an Oral Health intervention. The first HBM intervention study identified by the Oral Health literature search explicitly stated the use of the HBM to guide the development and implementation of a children's Oral Health improvement intervention (Yekaninejad, Eshraghian, Nourijelyani et al., 2012). Yekaninejad et al., used Abraham and Michie's behaviour change technique coding manual to guide the development of the intervention, which enabled the consistent and explicit reporting of the theoretical constructs that underpinned the intervention.

Yekaninejad et al., found that when intervention tools were developed according to the five constructs of the HBM (Table 3.1), motivation, susceptibility, and self-efficacy were increased amongst the children. The developers of the intervention were also aware that susceptibility and severity of poor Oral Health is not viewed as seriously as other chronic diseases, such as heart disease or diabetes, a stance also

supported by Buglar, White and Robinson (2010). Consequently, sessions were held with parents and children, and pictures of decayed teeth, gingivitis, and other periodontal diseases were shown in an attempt to increase susceptibility. The study also suggested that parents and teachers could also act as role models to facilitate Oral Health behaviour. The use of role models is not an explicit construct in the HBM. However, role models are a construct within Social Network Theory (Leinhardt, 1977) and Diffusion of Innovation Theory (Rogers, 1962), it is unclear whether the intervention developers were aware of these theories due to them differing from Abraham and Michie's behaviour technique checklist, or if they were just reluctant to use theoretical underpinnings from approaches other than behaviour change. The study demonstrated that the use of the HBM led to improvements in behaviour and habits, it also advocates the need to consider multiple influences on children from their parents, to teachers, peers, and the environment, which relate to multi-level approaches. Although the intervention targets educational tools, children and parents, the HBM model is still an individualistic approach used in an intervention to target multiple factors of Oral Health. It appears that constructs from multi-level approaches could have been beneficial to this intervention but the reasons as to why the intervention developers only used HBM are unknown. It would be informative if the study had stated the reasons for using the HBM. The study highlights the accessibility of Abraham and Michie's behaviour technique checklist to explicitly describe interventions; however, the checklist focuses on behaviour change and it could cause intervention developers to ignore the contextual factors involved in the implementation process. Consequently, the behaviour change technique checklist may be overcoming the evidence to practice gap and enabling the translation of research into real-life settings, however it does not include contextual factors. This could cause professionals to focus on behaviour change approaches and ignore theories that concentrate on contextual and implementation factors. The other study identified in the Oral Health literature search (Solhi, Zadeh, Seraj & Zadeh, 2010) also supports Yekaninejad's findings, increasing individual perceptions of their susceptibility to ill health, increased motivation to change.

The General Health search found a total of four studies (Shafer, Cates, Diehl & Hartmann, 2011; Hazavehei, Taghdisi, & Saidi, 2007; Rimberg, 1994; Clarke, 1991), which consisted of health interventions that had been underpinned by the HBM

(Appendix 3.4). Interventions on safer sex (Rimberg, 1994), breast examinations (Clarke, 1991), vaccine promotion (Shafer, 2011) and osteoporosis prevention (Hazavehei, 2011) were all underpinned by the HBM. Similar to the Oral Health research, the reviews demonstrated that the HBM could successfully explain and predict an individual's intentions to carry out preventable health behaviours by identifying an individual's perceptions of how susceptible they were to an illness.

Despite the General Health literature search identifying 79 studies compared to the Oral Health search identifying 31, the HBM model was only identified in four papers by the General Health search and two papers in the Oral Health search. It would appear that the HBM is not as widely used in General Health interventions. Research is needed to understand if the use or lack of use of the HBM is due to the evidence to practice gap or if there are other factors which prevent the use of the HBM in interventions.

In summary, the HBM is an individualistic model that describes behaviour as linear stages that individuals progress through irrespective of social and environmental factors. Behaviour cannot be understood and predicted by just one linear stage theory; it requires a less holistic theory that accounts for interactions between factors (Woods, 2000). Although the model identifies the usefulness of raising awareness of people's perceptions of their sustainability to illness, it does not explain or identify the barriers to getting individuals from intention to long-term change.

#### *3.4.1.4 Approaches Only Found in the General Health Literature*

The Theory of Planned Behaviour (TPB), The Theory of Reasoned Action (TRA), The Integrative Model of Behaviour Prediction (IBP), and Cognitive Dissonance were theories that were only identified in the General Health literature.

The TPB places behaviour control on a continuum from an individual having control to no control over their behaviour. The TPB differs from the previous individual behaviour change theories as it considers that an individual's previous experience can influence their perceived ease or difficulty of changing their behaviour.

The use of the TPB in real-life settings was identified by nine studies in the General Health search (Kothe, Mulla, & Butow, 2012; Brown, Hurst, & Arden, 2011; Hanbury, Wallace, & Clark, 2011; Hardeman, Kinmonth, Michie, & Sutton, 2009; Keats & Culos-Reed, 2009; Vallance, Courneya, Plotnikoff, MacKey, 2008; Edwards, Walsh,

& Courtney, 2007; Reger, 2002). The TPB focuses on explaining individual predictors to health behaviour but it does not identify ways to develop an intervention that incorporates the predictors, when predictors should be used in interventions and in what ways. For example, what type of goals, when are goals most influential and do goals vary between individuals. The TPB concentrates on measuring the internal validity of the predictors and fails to measure external validity and potential barriers to implementing interventions that use the predictors in real-life settings. However, this theory does identify the significance of targeting an individual's attitudes to ill health and behaviour change, to illicit intentions to change their behaviour.

Other theories identified by the General Health search were The Theory of Reasoned Action (TRA) (Cheng 2006) and The Integrative Model of Behaviour Prediction (IBP) (Hightow-Weidman, 2011). The TRA was the original theory, of which the TPB and IBP were later adaptations. The TRA assumes that behaviour change is in the complete control of the individual.

The General Health literature search identified a trend for TPB to be used more often to underpin real-life health interventions compared to the TRA and IBP. This may indicate that the TRA placed too much emphasis on behaviour being in the individual's control but the IBP may have put too much emphasis on factors that could motivate change. However, without research focusing on understanding professionals' choices to use a theoretical underpinning in practice, the reason for the TPB being more popular remains unclear.

It is also unclear why Oral Health professionals have failed to use these theories in practice but it could be assumed that these theories place emphasis of behaviour change being in the control of the individual and not in the control of the professional. Oral Health literature identified that educational approaches are popular with Oral Health professionals and the TRA, TPB, and IBP focus more on attitudes, motivation, and intentions rather than top-down knowledge transfer.

However, the lack of use in Oral Health intervention may be due to the theories failing to consider habitual behaviour e.g. brushing teeth twice a day and only considers the adoption of new behaviour. Consequently, it may not be applicable to use this theory to break unhealthy habits.

Another theory identified in the General Health search was Cognitive Dissonance Theory (Becker, 2012). It is unclear why Oral Health has not used this theory to underpin interventions, since Cognitive Dissonance Theory focuses on evidenced-based and clinical elements of health which appears to compliment the Oral Health interventions use of clinical evidence. For example, sugar causes dental decay, and to restore cognitive balance an individual will stop eating sugar. This theory also reflects the Oral Health focus of professional to patient interactions and the transfer of clinical or evidenced-based knowledge through these interactions. Therefore, it is unclear why Cognitive Dissonance Theory has not been used to underpin Oral Health interventions. Furthermore, Oral Health research tends to focus on this knowledge transfer through educational approaches or Motivational Interviewing, which were not used as the sole underpinnings of interventions in the General Health reviews. This may indicate Oral Health policymakers' reliance on the individual methods of knowledge transfer, with a lack of consideration to more multi-level approaches.

In summary, like many of the individual behaviour change theories the TRA, TPB, IBP, and Cognitive Dissonance Theory are unidirectional theories, which fail to consider that variables such as knowledge and attitude, could act in a reciprocal way (Biddle & Mutrie, 1991). Improving health is not simply about predicting behaviour change; it involves partnerships, development, and implementation issues, and social and environmental influences. Therefore, although interventions have used the TRA, TPB, and TBP to predict influences on behaviour, the external validity of constructs, the barriers to them, and ways to develop interventions to target predictors and overcome barriers is unclear.

#### *3.4.1.5 Summary of Individual Behaviour Change Theories, Models, and Frameworks*

In summary, the Oral Health individual behaviour theories, models, and frameworks reviewed in this chapter have strengths and weaknesses. The individual behaviour change theories identify that increasing susceptibility to perceptions of ill health can motivate people to change. However, they focus on intentions rather than actions and fail to consider ways to enable sustainable change once the perceptions of threat of ill health have reduced.

When comparing the findings from the Oral Health search with the General Health search, there appears to be a trend for General Health interventions to be underpinned by theories, models, and frameworks that move away from the transfer of evidenced-based or clinical knowledge and instead focus more on the importance of self-efficacy and the role of cognition. As well as the HBM and TPB, the General Health search identified interventions that had been underpinned by the Theory of Reasoned Action, Integrative Model of Behaviour Prediction, and Cognitive Dissonance. All of these theories propose that the use of self-efficacy can improve an individual's intention, motivation, and action to change through increasing an individual's belief that they are able to change their behaviour.

Individual behaviour change approaches focus on behaviour norms through one-to-one interactions with the assumption that behaviour is in the control of the individual. However, the interventions identified in this review have used the individual behaviour change approaches to underpin community interventions. Implementing interventions in the community with theoretical underpinnings from approaches that focus on individual behaviour and one-to-one advice appears inappropriate. The individual behaviour change approaches do not consider the problem of multiple complex and unpredictable interactions between the individual and the setting. Therefore, the individual behaviour change theories, models, and frameworks focus on understanding and predicting behaviour norms during individual interventions, not the unpredictable and complex context of groups of individuals in multiple settings.

Furthermore, policymakers, researchers, and intervention developers fail to state the theoretical underpinnings of interventions and even when intervention developers have stated the use of a theory, model, or framework, they fail to explicitly state the reasons why that particular theory, model or framework was used (Yekaninejad et al., 2012; Solhi et al., 2010; Hollister & Anema, 2004; Buglar et al., 2010). The intervention developers also mention other constructs from multi-level approaches but fail to acknowledge that they are multi-level underpinnings and instead only discuss and explain the constructs from the behaviour change approaches (Yekaninejad et al., 2012). This may be due to the use of Abraham and Michie's behaviour change technique checklist causing policymakers to only focus on the behaviour change approaches, or it could be a lack of awareness of multi-stage approaches. However, the reasons behind the choice of theoretical underpinnings remain unclear. A better

understanding of policymakers' choice of theoretical underpinnings and the barriers to policymakers' use of theory, models, and frameworks is needed to identify the most appropriate underpinnings for interventions. It will also identify whether the underpinnings of interventions are theoretically driven or based on the intuition of those developing and delivering the programme.

The individual behaviour change theories, models, and frameworks are easy to understand behaviour norms. The behaviour change approaches assume that one intervention will work for a population or community and therefore enables continuity of delivery. Therefore, those responsible for delivering and implementing interventions can understand and use the theories, models, and frameworks with very little training and the continuity of one intervention to all appeals to the Public Health preventative ethos of 'consistent messages to all' (Department of Health, 2004). However, research is needed to identify the practicalities of implementing Oral and General Health interventions in real-life settings. Evaluations and understandings of external as well as internal measures of implementation are needed. Instead of using multiple individualistic approaches that have similar conceptual approaches, which is what some Oral Health interventions have done (Wagner et al., 2014; Braw et al., 2013; Arrow et al., 2013), the incorporation of multiple approaches is needed to draw on factors associated with settings and interpersonal relationships (McCormick, Rycroft-Malone, DeCorby et al., 2013).

### ***3.4.2 Interpersonal Behaviour Change Theories, Models, and Frameworks***

Interpersonal behaviour theories, models, and frameworks build on individual behaviour change approaches. Interpersonal behaviour approaches consider the effect that interactions between individuals and the environment have on behaviour therefore, they focus on socio-environmental factors. Table 3.2 illustrates the descriptive characteristics of the study interventions found in the Oral Health and General Health review search. Also the strengths and limitations of the approaches are also outlined. For more detailed descriptions of the interventions and ways the theories, models, and frameworks were used in the interventions, refer to Appendix 3.5 for the Oral Health literature and Appendix 3.6 for the General Health literature.

*Table 3.2 Interpersonal behaviour change theories, models, and frameworks identified by the Oral Health literature search*

Description of Theory, Model, Framework	Total Oral Health interventions	Total General Health interventions	Behaviour change techniques used in the interventions	Strengths and limitations
<p><b>Sense of Coherence (SOC) (Antonovsky, 1979):</b> Focus is on the beginnings of health, where health and ill health are a continuum of ‘ease to disease’. Factors such as internal and external stressors and tensions can contribute to the disease end of the continuum. Sense of Coherence refers to an individual’s conceptual, perceptual, and social cognitive perceptions of ill health in relation to stress. Interventions that use the Sense of Coherence Theory aim to set goal orientated Oral Health tasks to overcome stressors to develop and improve a person’s Sense of Coherence</p>	1	0	<p>Self-report, barrier identification, intention formation, specific goal setting, encouragement, rewards, general information linking behaviour to health and consequences</p>	<p>The SOC focuses on stress and coping, and claims to be universally appropriate regardless of gender, culture, or social economic status. However, the SOC does not refer to a specific coping strategy or ways to overcome barriers to coping, instead it highlights buffers to illness and focuses on concepts that relate directly to health. This approach may be more appropriate for helping individuals deal with the diagnosis of a chronic illness rather than preventing ill health due to the focus on health and coping with stressors involved in ill health.</p>

<p><b>Locus of Control (Rotter, 1966):</b> The theory predominately focuses on the extent to which an individual believes they control events affecting them. An individual's perceived control is conceptualised as internal or external control. Essentially, behaviour is controlled by rewards and punishments. Locus of Control is a scale designed to measure and assesses external and internal control by forcing an individual to choose between two contrasting alternatives.</p>	1	0	<p>Social support, social comparison, intention formation, information of other's approval, rewards, encouragement, prompts, and graded tasks.</p>	<p>Highlights ways individual perceptions of control can impact on behaviour, but it does not identify factors that could influence perceived control.</p>
<p><b>Social Cognitive Theory (SCT) (Bandura, 1991, 1997, 2005):</b> explains and understands behaviour as a three-way interaction between personal factors, environmental influences, and behaviour. The model combines multiple elements from behaviouristic, cognitive and emotional psychology models. The assumption of SCT is that people not only learn through their own experiences but also by observing actions and outcomes of others behaviour</p>	0	11	<p>Barrier identification, intention formation, specific goal setting, encouragement, rewards, general information linking behaviour to health and consequences, prompts, stress management, and relapse prevention.</p>	<p>Accounts for cognitive processes and explains a large number of behaviours, it is also easy to understand. However, emphasis on what happens instead of how the observer deals with the situation. It also ignores behavioural differences, what one person views as punishment, another person may view as a reward</p>

#### *3.4.2.1 Sense of Coherence*

Sense of Coherence (SOC) refers to an individual's ability to view life in a coherent, manageable, and meaningful way. According to the developer of SOC, Antonovsky (1979), individuals with a high SOC have: comprehensibility, which is the extent to which an individual perceives the event as making logical, ordered, and structured sense; manageability is the extent to which an individual believes they are able to cope with the event; and meaningfulness, which is the extent to which the individual perceives their life is still meaningful and they have commitment to deal and get over the event. In other words, individuals with high SOC are able to assess situations as non-stressors, perceive that resources are available, are able to effectively overcome the situation, and view ill health as a challenge that is worth overcoming.

The Oral Health literature search identified one real-life intervention, which was underpinned by the SOC theory (Nammontri, Robinson, & Barker, 2013). Nammontri et al., (2012) intervention aimed to enhance SOC by improving school children's perceptions of: comprehensibility, manageability, and meaningfulness. The intervention consisted of four, 45-60 minutes long sessions, over two months, which were delivered by teachers. Facilitators of the intervention included: incentives, supportive leadership, teacher training, and pupil participation. It was found that the intervention enhanced SOC and self-reported Oral Health behaviour and quality of life was improved. Nammontri et al., reported that improving SOC leads to less stress, which leads to less physical and biological effects. SOC also helps people cope better with stress and feel that they can manage situations. Additionally, the SOC may help people to choose better Oral Health behaviours through perceptions that the tools to achieve good Oral Health (dental check-ups, sugar free food) are accessible.

Although Nammontri et al., explicitly stated the use of the SOC underpinning the intervention, and advocated the use of theory to enable selection of place, time, and processes on which to intervene and that theory incorporates subjective aspects of Oral Health. The intervention does not state where the facilitating factors of incentives, supportive leadership, teacher training, and pupil participation came from. The factors did not match the behaviour change techniques identified by Abaraham and Michie (2008), or any theory, model, or framework mentioned. Therefore, it is difficult to determine the reliability or justifications for using these facilitating factors.

The General Health search did not identify any interventions that had been underpinned by the Sense of Coherence in real-life settings. This may highlight potential barriers to applying this theory in practice, however, research has not investigated these potential barriers.

The SOC theory assumes that it is not affected by culture, but ways of dealing with stress are different in different cultures, therefore the concepts of SOC may be culturally specific. Like previous theories, models, and frameworks the SOC fails to identify ways to incorporate the most important constructs of the theory into interventions that improve SOC. Furthermore, the physiological, behavioural, and emotional pathways by which SOC affects an individual's Oral Health, needs to be identified.

#### *3.4.2.2 Locus of Control*

The Locus of Control theory was identified in one Oral Health intervention in this review search (Duijster, van Loveren, Dusseldorpt, & Verrips, 2014). The Locus of Control refers to an individual's expectations of a situation in reference to the amount of control an individual believes that they have over a situation. Individuals with an external Locus of Control are more likely to attribute successes and failures to factors such as fate, luck, and chance. Conversely, individuals with internal of Locus of Control tend to attribute situation outcomes as a result of their personal abilities, efforts, and control over the situation.

Duijster et al., (2014) used the Locus of Control to identify the pathway to changing Oral Health behaviour and found that individuals with external Locus of Control had poorer Oral Health, however improving self-efficacy developed internal Locus of Control.

The General Health search did not identify any real-life interventions that had been underpinned by The Locus of Control theory. The Locus of Control was only developed to predict behaviour and traits, it cannot be used to predict specific health outcomes and this could be the reason why this review search did not identify any General Health interventions that were underpinned by this theory. The theory does not identify ways to change a person's Locus of Control or overcome barriers to the implementation process. The theory just highlights the ways that a person's perceived control can impact on behaviour. The theory could be used to tailor interventions to

personality traits; however, the theory is only meant to identify behaviour traits and was not developed to influence behaviour change. It is a rather simplistic model that merely explains traits rather than ways to change behaviour.

#### *3.4.2.3 Approaches Only Found in the General Health Literature*

The General Health literature search only identified one interpersonal behaviour change approach, the Social Cognitive Theory, which had been used in practice to underpin ten General Health interventions (Appendix 3.8). The Social Cognitive Theory was not identified in any Oral Health intervention, it appears that when it comes to the use of interpersonal behaviour change theories, Oral Health and General Health professionals choose to use different approaches.

The approaches chosen by the Oral Health professionals place behaviour on a continuum of health to ill-health and include factors that allow Oral Health professionals to provide support and knowledge to prevent behaviour progressing along a continuum to ill-health. The approaches allow for top-down methods to be used and enable professionals to prevent ill-health. In contrast, the Social Cognitive theory places behaviour on an equal three-way interaction between individual factors, environmental influences, and behaviour (Bandura, 1991). Although the SCT consists of professional support and information giving, the interventions underpinned by this approach focused more on enabling individuals to have the confidence to regulate and change their own behaviour (Hightow-Weidman, 2011; Smith-Anderson & Bill, 2011). Also the General Health interventions included culturally relevant information within the interventions rather than standardised interventions (Backmann, 2011). General Health interventions were also delivered through community settings (Anderson, 2010; Gritz, 2007) and online (Danaher, 2008) rather than health settings. Therefore, the General Health interventions appear to have adopted approaches that enable individuals to take control over their behaviour and consider creating environments that are conducive to health. Alternatively, Oral Health professionals have used approaches that enable a top-down approach to the delivery of Oral Health knowledge.

#### *3.4.2.4 Summary of the Interpersonal Behaviour Change Theories, Models, and Frameworks*

The interpersonal behaviour change theory, models, and frameworks move attention away from the biological and individual determinants of poor Oral Health, towards investigating the broader social context that shapes individual behaviour and affects biological determinants.

In summary, despite the General Health studies using the SCT and considering the environment, the interpersonal behaviour change approaches still focus on explaining behaviour actions rather than guiding the development and implementation process and identifying potential barriers and ways to overcome these barriers to implement interventions in real-life contexts.

#### ***3.4.3 Stage Behaviour Change Theories, Models, and Frameworks***

Stage behaviour change approaches describe a sequence of behaviour and accept that behaviour is the result of multiple actions and adaptations over a sequence of stages. The stage theories predominantly describe, follow, and predict the progress of the adoption of behaviour. Similar to the interpersonal approaches, stage behaviour change approaches identify the impact that interactions between socio-environmental factors and the individual have on changing behaviour. Table 3.3 illustrates the descriptive characteristics of the study intervention found in the Oral Health review search. For more detailed descriptions of the interventions and ways the theories, models, and frameworks were used to underpin the interventions, refer to Appendix 3.7 for the Oral Health studies and Appendix 3.8 for the General Health studies.

Table 3.3 Stage behaviour change theories, models, and frameworks identified by the Oral Health literature search

Description of Theory, Model, Framework	Total Oral Health interventions	Total General Health interventions	Behaviour change techniques used in the interventions	Strengths and limitations
<p><b>Transtheoretical Model (TTM) (Prochaska &amp; DiClemente, 1983; Prochaska, DiClemente, &amp; Norcross, 1992):</b> The Transtheoretical Model (TTM) is an integrative and comprehensive model that combines emotions, cognitions, and behaviours, to explain intentional behaviour change. The model focuses on understating, explaining, and predicting the decision making process of individuals.</p>	2	14	<p>The intervention targets the stages of change and decisional balance components of TTM. General information linking behaviour to health and consequences, intention formation, barrier identification, instruction, and information about other’s approval.</p>	<p>TTM enables and encourages interaction between professionals and patients or communities and it can help professionals to overcome frustrations when a patient relapse. However, the model can be difficult to understand and it is not clear how all components of the model can be applied to real-life settings. This could also lead to difficulties and misinterpretations when developing and implementing health interventions.</p>
<p><b>Information-Motivational-Behavioural Skills (Fisher and Fisher, 1992):</b> This theory focuses on three components that result in behaviour change: information, motivation and behaviour skills. Information relates to the basic knowledge about a medical condition, and is an essential prerequisite for behaviour change but not necessarily sufficient in isolation.</p>	0	1	<p>Encouragement, general information linking behaviour to health, provide information on consequences, social exchange, and identification of barriers, and prompts.</p>	<p>It is easy to operationalise the constructs. Another advantage is that the model has been thoroughly tested with HIV prevention behaviours, and results have shown adequate predictability of behaviour (Manoj, 2012). However, information and motivation are often not mutually exclusive. The model also lacks environmental and cultural factors.</p>

### 3.4.3.1 The Transtheoretical Model (TTM)

The TTM focuses on intention and therefore the TTM can account for those individuals who intentionally change their own behaviour without help, and also those individuals who use a range of help interventions from minimum interventions (e.g. self-help programmes) to maximise interventions (more formal structured and prescriptive interventions) (Prochaska & DiClemente, 1983).

Unlike the Theory of Planned Behaviour, the TTM explains the full process of intentional behaviour change from when the individual first becomes aware of their problem behaviour to when the problem behaviour no longer exists. The TTM is also a flexible model that allows new behaviour change techniques to be incorporated, if they are found to contribute to how individuals intentionally change their behaviour.

The TTM consists of two stages, first, the stages of changes and second, the process of change. The stages of change consists of five constructs: pre-contemplation, contemplation, preparation, action, and maintenance. The stages of change explains components that impact on behaviour change. The process of change is the second component of TTM and unlike the stages of change component, the process of change refers to the ‘how’ part of the change equation, since it refers to the covert and overt activities that individuals use to progress through the SOC. Figure 3.3 visually demonstrates the two stages of the TTM.

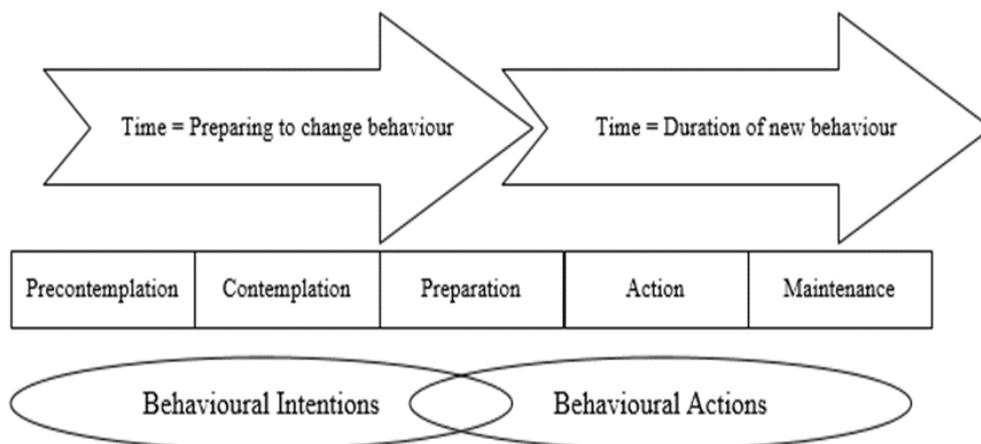


Figure 3.3 This figure aims to aid the explanation of the components, stages, and process of behaviour change in the TTM model (adapted from Woods, 2005).

The Oral Health search identified two interventions that had been underpinned by the TTM (Arpalahti, Jarvinen, Suni, & Pienihakkinen, 2012; Hricko, 2007; Kasila, Poskiparta, & Kettunen, & Pietila, 2006). The Oral Health search identified an intervention that was underpinned by the TTM and also used Motivational Interviewing within the intervention (Kasila et al., 2006). As previously mentioned Motivational Interviewing could be used within the TTM to motivate people to change and understand their readiness to change (Freudenthal & Bowen, 2010). However, the results of the intervention were rather inconclusive and although the intervention successfully understood and targeted individual characteristics for changing Oral Health behaviour (stage of change or process of change), no significant improvements in Oral Health were found. Therefore, although the TTM can be used to predict an individual's stage of change and the process of change, there are unidentified barriers to this process that prevent the interventions creating sustainable behaviour change in real-life settings.

A core criticism identified in this review of behaviour change studies is that they fail to consider the practicalities of delivering the interventions in real-life settings or understand the barriers to implementation. Arpalahti et al., (2012) used the TTM to underpin an intervention to improve oral hygiene; however, they also used questionnaires and interviews to identify the nurses' (implementers') acceptance and implementation methods of the TTM intervention. The intervention developers also stated their reasons for using the intervention. The TTM was used as it enabled a person's thoughts, feelings, goals, and attitudes to be identified and for Motivational Interviewing to be adapted to the individual's needs. The study found that the implementers needed a longer training period to understand how to use the TTM as it is a complex model to understand. Although it was reported that nurses readily accepted the programme, questions asked in the questionnaires and interviews centred on the TTM suitability for the target population and the success of the intervention. Barriers to the implementation and the implementers' adoption of the TTM intervention were not gathered.

The General Health search identified fourteen interventions that had used the TTM to determine an individual's stage of change (Appendix 3.8). Studies included interventions for sun protection advice (Falk, 2012), tobacco, alcohol, and drug use (Ever, 2010; Dents, 2004; Pickett, 1998), physical activity (Dishman, 2010; Kanning,

2010; King, 2008) and cancer screening (Smith, 2007; Crane, 1998). The General Health literature consists of many real-life interventions that have been underpinned by the TTM dating from 1998 to the present day, it is evident that the TTM still remains a popular choice for health professionals to use when developing and implementing interventions. The main findings of the TTM intervention studies are first, the high rates of successful recruitment (Dent, 2004; Crane, 1998) and second, studies found that when an individual's needs and stage of change are matched to the intervention, the intervention is more successful at changing behaviour (Evers, 2010; Dishman, 2010; Butler, 2003).

The TTM is an appropriate model for recruiting populations as it stages individual attitudes to a particular behaviour, rather than assuming that an entire population is at the same stage and ready to change. By targeting an individual's stage, higher numbers of the population are able to participate in the intervention. This targeted stage approach also leads to higher retention rates as a person's needs are matched to the intervention.

The main concern about the TTM is the lack of focus on the process of change, most of the focus surrounds the stages of change and little is known about the applicability of the process of change (Woods, 2000). It is also argued that human behaviour is too complex to be simplified into stages, instead individual behaviour may evolve along a continuum and not through distinct stages with artificial cut off points (Bandura, 1997; 1988; Davidson, 1999; Sutton, 1996).

Furthermore, this is a complex model that requires extensive understanding of the underpinnings and measures needed to implement the model. However, like previous behaviour change approaches, the TTM highlights the importance of staging a person's intention to change. However, it is still individualistic and the TTM's applicability to population-based interventions is questionable, despite its popularity.

#### *3.4.3.2 Approaches Only Found in the General Health Literature*

The General Health search also identified a study that had used the Information-Motivation-Behavioural-Skills model to encourage girls to delay when they became sexually active (Rye, 2008). This model aims to provide individuals with knowledge, motivation, and the necessary skills to enable them to change their behaviour. According to this model an intervention would establish the baseline levels of

information and target information gaps. The second component, motivation, results from personal attitudes towards adherence; perceived social support for the behaviour; and subjective norms or perceptions of how they might behave. Finally, behavioural skills include factors such as ensuring that the individual has the skills, tools, and strategies to perform the behaviour, as well as a sense of self-efficacy to be confident in performing the behaviour. This model emphasises and focuses on the individual gaining skills in order to control their own behaviour. This again goes against many of the approaches used within Oral Health that focus on the professional being in control and responsible for preventing poor Oral Health.

#### *3.4.3.3 Summary of the Stage Behaviour Change Theories, Models, and Frameworks*

Unlike previous individual theories, frameworks, and models that suggest a single intervention is appropriate for all members of the population, the TTM identifies methods to tailor an individual's stage of change to the intervention. Therefore, the first step of the TTM is to assess the distribution of the population's stage of change. This is similar to the theory of interpersonal behaviour that also claims interventions need to be tailored to the individual's stage. However, the TTM goes one step further by proposing measures to identify an individual's stage and ways to progress an individual through the stages.

It has been argued that behaviour is too complex to be simplified into distinct stages and that when people are interviewed regarding their Stages of Change, their stages are different to the constructs of TTM. Therefore, the TTM constructs may have internal validity but lack the external validity of changing behaviour in real-life settings.

Although the TTM is a complex model it has appeared to be a popular and explicitly used intervention to underpin General Health interventions. Although the TTM was also used in Oral Health interventions, it was used fewer times compared to its use in General Health interventions. The literature search identified a trend for Oral Health interventions to be underpinned more frequently by individual behaviour change approaches than interpersonal and stage behaviour change approaches. The General Health search also identified that The Information-Motivation-Behavioural-Skills Model was another stage approach that had been used to underpin a General Health

intervention. Conversely, the literature search only identified one stage behaviour change theory that had underpinned an Oral Health intervention. This may be due to the TTM's ability to incorporate the individual behaviour change approach of Motivational Interviewing and professional to patient interactions.

This Literature review has highlighted a trend for General Health interventions to be underpinned more frequently by approaches that consider the environment and allow the individual to take control of their behaviour, conversely Oral Health interventions appear to rely on approaches that enable top-down methods to deliver the intervention.

#### ***3.4.4 Summary of Behaviour Change Theories, Models, and Frameworks***

It is apparent from individual, interpersonal, and stage theories, models, and frameworks of behaviour change, that they are individualistic in nature and focus on changing the behaviour of the targeted individual, whilst ignoring the multiple factors that are involved in developing and implementing health interventions (Albert, Barricks, Bruzelius & Ward, 2014).

Behaviour change theories, models, and frameworks describe, understand, and predict behaviour, however, they do not highlight the barriers and facilitators to implementing behaviour change interventions in real-life contexts (Worthington, Hill, Mooney, Hamilton, & Blinkhorn, 2001; Tai, Du, Peng, Fa; Bian, 2001; Vonobbergen, Declerck, Mwalili, & Martens, 2004; Alves de Farias & Fernandes, 2009; Garbin, Garbin, Dos Santos & Lima, 2009; Saied-Moallemi, Virtanen, Vehkalahti, Tehranchi, & Urtomaa, 2009; Albert, Barricks, Bruzelius, & Ward, 2013; Yusof & Jaafer, 2013). The behaviour change approaches do not propose ways to overcome barriers to behaviour change or increase the occurrence of facilitators. It is clear that qualitative research is needed to understand the process of changing behaviour in real-life contexts. Qualitative research could also enable understanding of the factors that impact on the translation of theories, models, and framework into real-life settings and the overall development and implementation of interventions. Although the TTM attempts to identify strategies to recruit individuals and apply the models to real-life contexts, the process is oversimplified, focusing on the individual and ignoring the needs and impact of the behaviour of those responsible for developing and implementing interventions.

Whilst the behaviour change approaches have identified some important constructs of behaviour change such as self-efficacy, goal setting, sense of coherence, and role models, many are just explanations and lack clear guidelines on the most important constructs needed to develop interventions (Abraham and Michie, 2008). The behaviour change approaches ignore the partnerships involved in developing and implementing health interventions, it is not a passive process and conflicts, resistance, and changes to the intervention can occur. The behaviour change approaches need to consider the organisational and community factors that can impact on the implementation of interventions. Interestingly, despite the individualistic nature of the behaviour change approaches, they still remain widely used in population-based interventions, which may indicate reluctance for researchers, professionals, practitioners, implementers, and policymakers to change their methods.

### **3.5 Multi-Level Theories, Models, and Frameworks**

Emerging from the criticisms that previous behaviour change theories, models, and frameworks focus too much attention on the individual, researchers from multiple disciplines have emphasised the need to understand the diverse factors involved in developing and implementing interventions to improve health.

Multi-level approaches to Oral and General Health interventions have been advocated as offering an understanding of social influences on behaviour and incorporating multi-level variables involved in health interventions (Watt, 2005). The multi-level approaches situate intervention development and implementation in the social context, allowing the intervention to be tailored to important contextual factors within the community and organisation (Baric, 1993; Frolich & Poland, 2007; Poland, Green & Roofmar, 2000; Whitelaw, Braxendale, Byrce, et al, 2001). The multi-level approaches move away from the individual perspectives of behaviour change approaches and consider the physical, organisational, and social contexts in which individuals are the objects of enquiry, not just separate entities that are not influenced by environmental factors (Poland, Krupa & McCall, 2009).

Multi-level approaches carefully analyse and understand the intervention context to identify any potential factors that can impact on the implementation of the intervention. This approach also enables both qualitative and quantitative analysis of behaviour actions and interventions to take place, acknowledging that understanding

real-life settings is as important as identifying measurable and observable changes in behaviour.

The 44 multi-level interventions identified in the Oral Health search (n =10) and the General Health search (n=34) cannot be separated into distinct categories as in the behaviour change categories, due to each approach discussing a range of concepts. Therefore, the multi-level approaches will be discussed from most frequently used to least. Table 3.4 illustrates the descriptive characteristics of the interventions identified by the Oral Health and General Health search. For more detailed descriptions of the interventions and ways the theories, models, and frameworks were used in the interventions, refer to Appendix 3.9 for the Oral Health study information and Appendix 3.10 for the General Health study information.

*Table 3.4 Multi-Level theories, models, and frameworks identified by the Oral Health literature*

Description of Theory, Model, Framework	Total Oral Health interventions	Total General Health interventions	Constructs used to underpin intervention	Strengths and limitations
<p><b>Diffusion of Innovation Theory (Rogers, 1962; 1995; 2003):</b> This theory focuses on the dissemination of new ideas and the systematic adoption of the innovation by individuals that were previously unaware of the innovation. Communication is essential to this Theory as it serves as a link between those that have know-how of the innovation and those yet to adopt this know-how.</p>	3	3	Diffusion, dissemination, innovation, communication channels, social system, innovation development, adoption, implementation, maintenance, sustainability, institutionalisation.	The theory identifies key organisation barriers to programme adoption. However, it also assumes that individuals are passive and will promote the intervention. It does not account for individuals that are reluctant to promote the intervention.
<p><b>Social Ecological Theory (Bronfenbrenner, 1989; 1994; 1999):</b> This theory is based on the assumption that behaviour is influenced by multiple complex factors in reciprocal causation. Therefore, individual behaviour shapes and is shaped by the social environment. This model is similar to Social Cognitive Theory, however the Social Ecological Theory considers social networks, public policy, and other factors that make up the social system as a whole. Behaviour is not regarded a distinct entity but as a component of a whole social system.</p>	2	9	Individual characteristics, interpersonal group norms and support, organisational norms, community norms, public policy	Considers behaviour as part of a whole social system that consists of many factors. However, lacks details on what social factors can facilitate behaviour change and ways to overcome barriers.

**Community-Based Participatory Research (CBPR) (Israel, Eng, Schulz, Parker, & Satche, 2005; Israel, Coombe & McGranaghan, 2010) (CBPR):** Community-Based Participatory methods are an approach that equitably involves community members, organisational staff, and researchers in all aspects of the intervention development process. The different groups work in partnership to share expertise, decisions, and ownership over the programme. The aim of Community-Based Participatory Research is to increase knowledge and understanding of the community needs and issues to aid policy and research. The knowledge gained through engaging with the community creates an integrative intervention that is tailored to the community in an attempt to increase the success of implementation and adoption of health programmes.

2

5

Acknowledge community as a unit of identity, build community strengths and resources, facilitate collaboration, equitable partnerships, foster co-learning and capacity building, integrate and achieve balance of knowledge generation for mutual benefits, focus on local relevance of public health and ecological problems, cyclical and iterative process of systems development, dissemination of results to all, commitment to sustainability.

Develops research that is actually relevant to the community's needs. Helps the research and academic community to do more valid, quality research with respect to the community. Helps to bridge gaps in understanding, trust, and knowledge between academic institutions and the community. However, the approach is reliant on the community wanting to engage and information gathered is only reflective of the individuals who attend the research meetings

**Social Network Theory (Barnes, 1954; Milgram, 1967; Granovetter, 1973):** The Social Network Theory is actually a set of theories, methods, and techniques used to understand social relationships and how these relationships might influence individual and group behaviour. The basic assumption of Social Network Theory is that: individuals are influenced by the people they have contact with and this behaviour can either be constrained or manipulated by their social positions within different groups.

1

2

Strength of networks, differences between interacting individuals, proportion of population already adopted innovation

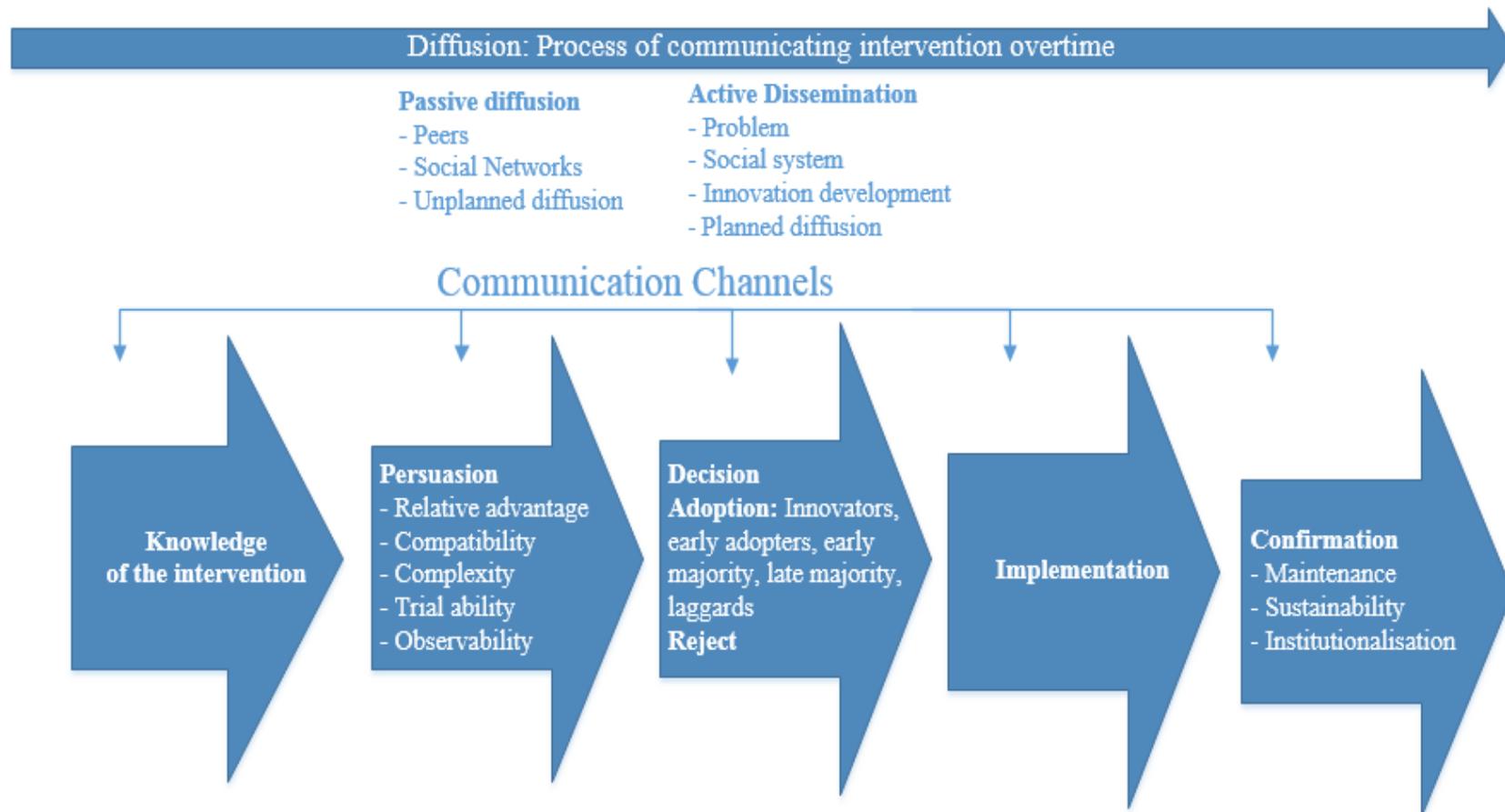
It explains social media networks and how to integrate health messages into a mass audience. However, it does not account for negative network influences.

<p><b>PRECEDE-PROCEED (Green, 1974; Green, Kreuter, Deeds, Partridge, 1980; Green, Kreuter, 2005; Glanz &amp; Rimmer, 2005; Gielen, McDonald, Gary, Bone, 2008):</b> Predisposing, reinforcing, and enabling constructs in educational diagnosis and evaluation policy, regulatory, organisational constructs in environmental development. Essentially, the model was designed to aid programme planners, policymakers, and organisational staff to understand the needs, goals, and problems of the community. The precede-proceed model uses a bottom up approach enabling the targeted population to have an active role in defining their needs, problems, and developing solutions.</p>	2	7	<p>Social diagnosis, epidemiological, behavioural and environmental diagnosis, administrative and policy diagnosis. Implementation, process evaluation, impact evaluation, outcome evaluation</p>	<p>The frameworks orderly sequence facilitates the selection of programme goals, and behavioural and environmental objectives. Target groups within the community could also be easily identified through feedback from surveys and focus groups. However, it is a detailed framework that requires substantial amounts of time to learn and can be open to misinterpretation.</p>
<p><b>Oral Health Framework (Simpson, 2011):</b> Aims to understand the procedural concepts involved in the process of implementing sustainable Oral Health promotion interventions. It is a multi-stage framework that considers: preparedness of organisations, follows four intervention implementation stages (training, adoption, implementation, and practice) and addresses social and behavioural barriers to long-term intervention sustainability.</p>	0	1	<p>Preparedness, Training, Adoption, Implementation, Practice, Sustainability.</p>	<p>Considers an organisations preparedness to change and identifies barriers to implementation. However, the framework assumes a passive relationship between the implementers and the programme developers and does not consider the challenges that may be faced within this partnership.</p>

<p><b>RE-AIM (Glasgow, 1999):</b> The RE-AIM framework is designed to enhance the quality, speed, and Public Health impact of efforts to translate research into practice in five steps: (1) Reach your intended target population. (2) Efficacy or effectiveness. (3) Adoption by target staff, settings, or institutions. (4) Implementation consistency, costs and adaptations made during delivery. (5) Maintenance of intervention effects in individuals and settings over time</p>	0	5	<p>Positive attitudes, encouragement, support, access, knowledge acquisition, resources.</p>	<p>The RE-AIM acknowledges programme fidelity and the sustainability of programmes but it also assumes that organisations are passive and will share the same opinions and beliefs on ways to develop and implement health interventions.</p>
<p><b>MAP-IT (Office of Disease Prevention and Health Promotion):</b> MAP-IT (Mobilize, Assess, Plan, Implement, Track) is a framework that can be used to plan and evaluate public health interventions in a community. Health professionals can utilise the steps in MAP-IT to create a healthy community. This process involves a series of steps to ‘map out’ the path toward the desired change in a community. MAP-IT, a step-by-step, structured plan can be developed by a coalition that is tailored to a specific community’s needs. The steps are mobilise, access, plan, implement and track.</p>	0	1	<p>Facilitate community input through meetings, events, or advisory groups, resources and access, clear objectives, implementation plan and evaluation.</p>	<p>Allows the community to take control of the health improvement. It requires community members to be motivated enough to educate themselves on how to understand and apply this approach and to then develop and programme.</p>

### ***3.5.1 Diffusion of Innovation Theory***

A key assumption of the Diffusion of Innovation Theory (Rogers, 1962), is that some interventions diffuse quickly for example the rapid adoption of Facebook. Conversely, some interventions are weakly or never adopted and others are adopted and later abandoned. Innovations are also adopted by different groups or individuals and diffused at different rates; with people described as: innovators, early adopters, early majority adopters, late majority adopters, and laggards. The theory also describes three factors that impact on the diffusion of innovations: (1) characteristics of the innovation, (2) characteristics of the adopters, and (3) features of the settings or environment. Diffusion can also be passive (unplanned) or active (planned). The process and constructs of this theory are illustrated in more detail in Figure 3.4.



*Figure 3.4 This figure is the researcher's illustrative interpretation of the stages of diffusion, determinants of diffusion, and characteristics of adopters*

The Oral Health literature search identified three interventions that had used the Diffusion of Innovation theory to understand the implementation process of Oral Health interventions (Pesaressi, Villena & van der Saden, 2014; Gussy, Waters & Kilpatrick, 2005; Graham, Negron, Domoto & Milgram, 2003).

Pesaressi et al., (2014) claimed that Oral Health care was over-reliant on the dentist giving Oral Health advice and claimed that this was a dated method. Dental visits in early infancy are rare and therefore the dentist cannot effectively give Oral Health advice to new parents. However, General Health advice is given to parents during health visits, check-ups and during vaccination appointments. Therefore, Pesaressi et al., created an intervention that involved nurses giving Oral Health advice alongside General Health advice during check-ups and vaccination appointments. The intervention involved training nurses in Oral Health advice and the nurses' diffusion of the intervention was assessed. Pesaressi et al., conducted interviews and surveys on the nurses' adoption of the intervention to understand factors that impacted on the implementation of the intervention. The study found that potential barriers to the intervention were: importance of Oral Health, perceived responsibility, intention to deliver, training, social norms, and experiences and knowledge. The identified potential barriers relate to constructs from HBM, TTM, and Social Network Theory and therefore by identifying real-life contextual barriers, constructs from these theories can be used to overcome these barriers. For example, intention relates to the TTM, which attempts to identify a person's intention to change and adopt a new way of working. However, the nurses reported that they perceived Oral Health as important and had positive intentions to adopt the intervention. However, the nurses reported that training and approval from dentists were the biggest barriers, which relate to organisational and partnership barriers that are wider areas than the Diffusion of Innovation Theory accounts for.

Gussy et al., (2006) also used an intervention that required multiple health professionals to deliver Oral Health messages. Similar to Pesaressi's findings, nurses and other health professionals were willing to deliver Oral Health messages. However, despite the claims that dentists predominantly give Oral Health information to patients, the dental professionals did not perceive they had responsibility for delivering messages, rather they saw themselves as delivering treatment. The dentists claimed that it was the role of other health professionals to promote Oral Health, but the nurses

claimed that they did not feel confident in giving Oral Health messages. Therefore, a breakdown in partnerships, lack of understanding of roles and responsibilities, and poor transfer of knowledge through training, appeared to be barriers in delivering the intervention. The intervention claimed that consistent messages and standardised interventions would help nurses and other health professionals to feel confident in delivering Oral Health interventions.

Additionally, Graham et al., (2003) also found that General Health care providers regarded Oral Health promotion as very important and were motivated to learn and deliver Oral Health messages. However, the lack of responsibility, unclear roles, and lack of approval from dentists appeared to act as barriers. Other health care providers also lacked confidence, knowledge or support by Oral Health professionals to deliver Oral Health interventions. Therefore, partnerships, training, and the transfer of knowledge appear to be issues with the implementation of Oral Health interventions.

The General Health literature search identified three interventions that were underpinned by the Diffusion of Innovation Theory. The interventions all targeted the use of tobacco (McCormick & Tompkins, 1995; McCormick, Stretcher, & McLeroy, 1998; Brink, Basen-Engquist, O'Hara-Tompkins, Parcel, et al., 1995). Brink et al., (1995) found that the adoption of the Smart Choices intervention increased in the areas where the intervention had been underpinned by the Diffusion of Innovation theory due to the intervention being demonstrated to staff, staff were supported by senior management to use the intervention, and staff were also allowed to pilot the intervention. McCormick & Tompkins (1995) not only supported Brink's findings but also found that diffusion of Centres for Disease Control Prevention guidelines for schools required planned organisational change over time through extensive communication channels. These results have been replicated by McCormick, Stretcher and McLeroy's (1998) study.

The General Health interventions highlighted the importance of communication, trialability, and observe-ability as contributing to a professional's willingness to adopt a new intervention or way of working (Rogers, 2003). Implementers and staff are more likely to adopt new practices and interventions when they are allowed to test the constructs to feedback and adapt, observe others using the new intervention, and discuss the outcomes of using the new intervention.

Although this theory has had positive impacts on diffusion, there are several criticisms that can be made. First, General Health interventions are preventative in nature and require people to make changes to avoid the possibility of ill health in later years. Such a long interval means diffusion may occur more slowly and requires long-term adoption, therefore it is hard to test the measures of this theory and access its true impact. Diffusion of Innovation Theory is a complex process, which requires multiple levels of understanding and collaborative work across multiple settings, utilising many strategies (Parcel, Perry & Taylor, 1990) and this makes it difficult to understand and identify which factors contribute to the successful diffusion and adoption of the innovation.

The Diffusion of Innovation Theory describes the delivery and adoption process and although it identifies characteristics of adopters it does not elaborate on the ‘why’ some adopters are more willing than others or that the partnership between adopters and developers could impact on the adopter’s willingness. Therefore, the Diffusion of Innovation Theory describes the processes involved in adoption but ignores the complex organisational partnerships that can occur between adopters and developers.

### ***3.5.2 Social Ecological Model***

The overall focus of the Social Ecological model is to move away from the individual perspectives of behaviour change theories and consider the physical, organisational, and social contexts in which individuals are the objects of enquiry, not just separate entities that are not influenced by environmental factors. The Social Ecological Model is versatile and considers health determinants at various levels from the intrapersonal to the policy level.

The Oral Health literature search identified two interventions that had been underpinned by the Social Ecological model (Muirhead & Lawrence, 2011; Vichayanrat, Steckler, Tanasugarn & Lexomboon, 2012). Vichayanrat et al., developed an Oral Health intervention consisting of three components: Oral Health education, home visits, and community involvement. The components were underpinned by Social Ecological Model’s components of intrapersonal, interpersonal, organisational, and community factors, which had underpinnings from the HBM, and the Social Network Theory. The multi-level intervention significantly improved tooth brushing practices and the uptake of fluoride supplements. However,

the intervention did not change bottle feeding habits or snack consumption, which may have indicated that parents were not successfully targeted by the programme since parents are responsible for the snacks and bottle habits of young children. However, the parents may have had low self-efficacy, meaning that the parents lacked confidence in their abilities to change snack habits and bottle feeding practices. Therefore, as previous studies found (Arpalahti, Jarvinen, Suni, & Pienihakkinen, 2012; Hricko, 2007; Kasila, Poskiparta, & Kettunen, & Pietila, 2006), self-efficacy is an important construct in behaviour change and should be considered when aiming to change parental behaviour.

The intervention also used supportive measures in terms of resources and professional support. The supportive element of the intervention relates to Social Network Theory (Barnes, 1954) and Social Support Theory (Wills, 1985), which were not mentioned as underpinnings of the intervention. Vichayanrat et al., (2012) advocate the use of behaviour change theory to avoid intervention developers relying on intuition and applying a systematic process to the development process. However, it appears that several approaches other than HBM and Social Network Theory, could have been used to underpin the intervention. The rationale for the use of the theories is not clear and without this rationale it can be considered that intervention developers used approaches that matched their intuitions or that they were most familiar with, rather than searching for the most appropriate theory, model, or framework. The use of theory does allow for a more systematic development process but the theory used needs to be appropriate, which requires understanding the intervention developers' rationale for the use of theory.

Muirhead and Laurence (2011) evaluated a Healthy Schools Oral Health intervention and, despite the intervention being given to all school children, the Social Ecological Theory was used to target children categorised as low socioeconomic status. The intervention was successful at increasing access to Oral Health care and knowledge to children categorised as lower socioeconomic status, which led to Oral Health improvements. Although Oral Health improvement was shown for all children, regardless of socioeconomic status, the most improvement in Oral Health was shown amongst those children categorised as lower socioeconomic status. Therefore, this suggests that an important barrier to Oral Health within individuals categorised as lower socioeconomic status is access. Despite this, access appears to be a barrier for

those categorised as lower but not high socioeconomic status. Children from more affluent families still have Oral Health issues and therefore factors other than access still need to be targeted by interventions.

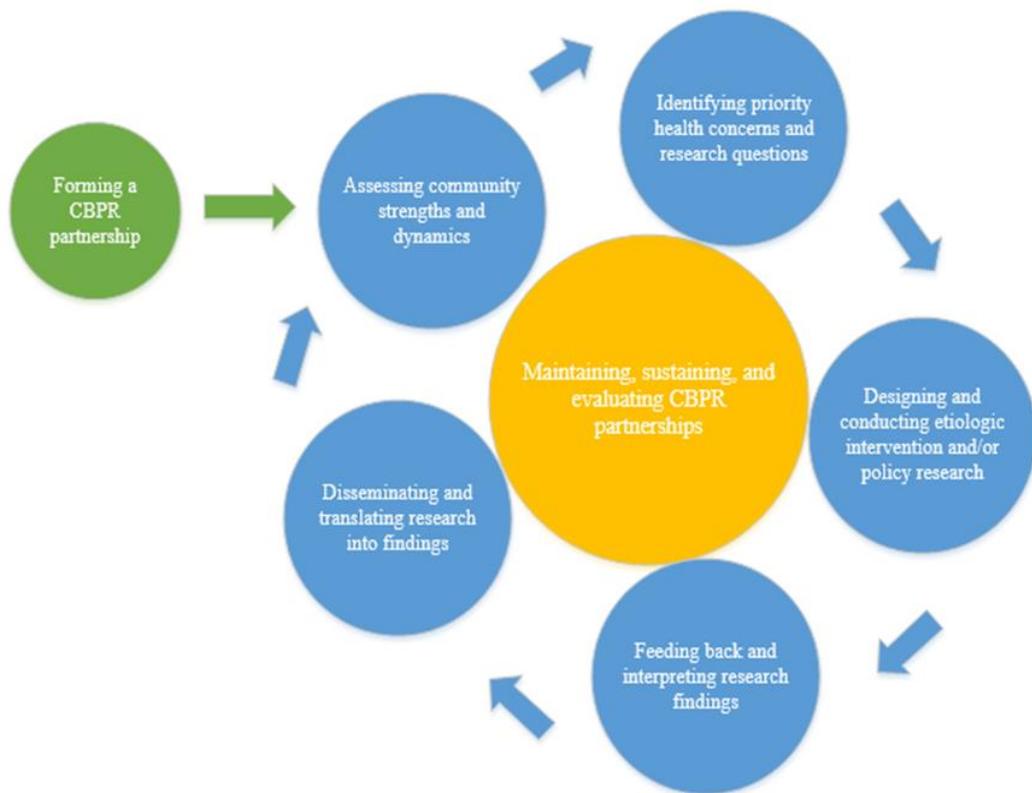
The General Health literature search identified ten interventions that had been underpinned by the Social Ecological Theory (Appendix 3.10). The Social Ecological Theory has been used to underpin exercise interventions (DeCocker, 2011; Bronson, 2005; Hilsdon, 2001), tobacco prevention interventions (Stillman, 2003) and diabetes prevention interventions (Robert Wood Johnson Foundation, 2002). The General Health interventions used the Social Ecological Theory to implement interventions into diverse communities, through mass media campaigns, and also individualised targeted health messages. This approach appears to have been popular with General Health professionals as it enables interventions to be tailored and adapted, this contradicts the dominant approaches chosen by Oral Health professionals that support standardised delivery of interventions.

The Social Ecological Theory moves away from individualistic behaviour change models and considers multiple social and environmental factors involved in changing behaviour. However, the Theory does not provide guidance on ways to overcome barriers and facilitate the implementation process. The Social Ecological Theory is simple to understand compared to other multi-level approaches or stage theories such as TTM. Despite this, it is still focused on explanations rather than guiding the implementation of interventions in real-life settings.

### ***3.5.3 Community-Based Participatory Research (CBPR)***

The aim of CBPR is to increase knowledge and understanding of community needs and issues to aid the development of interventions. The knowledge gained through engaging with the community creates an integrative intervention that is tailored to the community in an attempt to increase the success of the implementation and adoption of health programmes (Israel et al., 2005).

The model has seven core sequential stages or phases that are more circular than linear, with some elements continuing throughout the planning process. The seven planning phases are overlapped rather than distinct stages of progression. The seven core components are illustrated in Figure 3.3 (adapted from Israel, Coombe & McGranaghan, 2010).



*Figure 3.5 This figure represents the researcher's visual interpretation of the core phases of the CBPR application*

The Oral Health literature search identified two interventions that had been underpinned by the CBPR framework. Nicol et al., (2014) used the CBPR framework to identify barriers to the implementation of interventions and to develop a framework to overcome these barriers. They found that parental beliefs were the main barrier to childhood Oral Health. The interventions included parental beliefs and ensured the intervention was culturally relevant to specific parental beliefs. Although significant improvements to parental beliefs were found, improvements in childhood caries were not shown. It is clear that there are other barriers to implementation and changes to parental attitude do not necessarily result in sustained changes in behaviour. The intervention assumed that those responsible for implementing the programme were passive as the impact that their beliefs may have on the interventions implementation was not considered. Nicol et al., claimed that school support, professional support, and

access to Oral Health information needed to be considered in the development and implementation of interventions.

Freeman et al., (2001) created a Boost Better Breaks Oral Health intervention that was underpinned by the CBPR framework. The interventions accessed partnerships between dieticians, dentists, promotion officers, teachers and supervisors. The intervention targeted those from lower socioeconomic areas and linked policy to practice and practice to policy. Although the use of the CBPR led to improvements in Oral Health in those children categorised as being from lower socioeconomic areas, the improvement was only to the level of those from high socioeconomic areas. Therefore, the CBPR intervention improved social demographics more than preventing tooth decay in the population. Like the previous comments, the CBPR focuses on the community and outcomes, assuming that those implementing Oral Health interventions are passive adopters of the intervention.

The General Health literature search identified five interventions (Appendix 3.10) that had used the CBPR to underpin safer sex (Alacantra, 2015; Rohdes, 2013; Flicker, 2008), asthma prevention and awareness (Parker, 2003), and increasing physical activity (Wilcox, 2007). The CBPR supports many of the previous approaches used by General Health research as it allows the intervention to be tailored to the community, considers organisational and community factors, and enables individuals rather than professionals to be in control of their health.

The CBPR depends on the active involvement of the community and the level of knowledge sharing, partnership, and engagement depends on those individuals from the community attending the engagement meetings. Those individuals may not be representative of all levels and groups of the community, with those from higher socioeconomic status, lower risk groups, and those conscious of ill health are more likely to participate. Consequently, messages will be tailored to those who attended the meetings and they may not reach or meet the needs of individuals from all levels of the community. Furthermore, the CBPR presumes that once the intervention is developed it does not need to be changed but communities are naturally occurring environments within varying conditions and contexts. Therefore, the CPBR needs to include a continuous stage of adjustment and alterations.

The CBPR framework, similar to previous behaviour change approaches, assumes the different levels of the partnership are passive and will easily engage and work together. Communities, implementers, and policymakers will have different norms, beliefs, opinions, and experiences that are bound to cause some conflict; the CBPR approach needs to consider these differences.

### ***3.5.4 Social Network Theory***

Social Networks are patterns of friendship, advice, communication or support that exist among members of a social system. There have been numerous adaptations of the Social Network Theory (Milgram, 1967; Granovetter, 1973) that all originate from the initial process of counting the number of times an individual is nominated as a network partner within a social group, which is then correlated to the time taken for individuals within the group to adopt the intervention (Barnes, 1954).

The Oral Health literature search identified one intervention that had been underpinned by Social Network Theory (Reinhardt, Lopker, Noack, Rosen & Klein, 2009). Reinhardt et al., developed an intervention to target cultural and linguistic barriers to Oral Health and used tutoring by older peers to deliver the intervention in the hope that peer modelling would lead to greater uptake of the intervention messages. The use of peer modelling led to significant improvements in tooth brushing and peer modelling appeared to overcome culture and linguistic barriers. This is a simple construct that can be easily incorporated into the implementation process of interventions. However, the findings were based on self-reported measures and peer pressure to give socially desirable answers may have occurred due to the peer modelling process. The findings are also only based on culture and language and no other implementation barriers were tested.

Oral Health professionals may be more inclined to use the Social Network Theory as it enables educational methods to be used through the use of peer to peer delivery of the educational messages. Despite this, the Social Network Theory assumes that role models will be passive receptors of the intervention and the theory fails to consider the possibility that the role model may resist the programme. Therefore, despite this intervention consisting of an underpinning that considers environmental factors, it does not consider that individuals can act in undesirable ways and impact on the implementation process.

The General Health literature search identified two interventions that had been underpinned by the Social Network Theory to promote health in schools (Beck, 2014; Rothpletz-Puglia, 2011). The studies identified quicker intervention adoption and greater adherence to the interventions when opinion leaders were used to implement the programme. The research identified how social networks can be used to identify and target opinion leaders to elicit behaviour change within a group. Targeting groups and using opinion leaders may be easier than targeting individuals, due to group reinforcement, support and peer pressure.

The Social Network Theory moves away from the focus of changing individual behaviour and identifies the influence that social groups and a person's position within a group can have on changing behaviour. Although research and programmes have focused on changing behaviour the theory can also be used to prevent the adoption of unhealthy behaviour through the influence of group opinion leaders.

Social Network Theory is complex due to its interdisciplinary nature and requiring extensive knowledge of social groups within a target population. Consequently, requiring enough knowledge of all of the disciplines and calculations needed to use and evaluate this theory would require extensive training, which is time consuming and costly. Despite this, using a survey to identify opinion leaders is a simple construct of social networks that can easily underpin the implementation process of interventions. More research would be needed to understand if this could be applied to the organisational setting.

### ***3.5.5 PRECEDE-PROCEDE Framework***

The PRECEDE-PROCEDE framework is influenced by both individual and environmental factors that make up a multi-dimensional framework with five planning phases, one implementation phase and three evaluation phases as shown in Figure 3.4, which illustrates the nine phases in more detail and how these phases aid the assessment of health and community needs, whilst also guiding the design, implementation, and evaluation of the intervention.

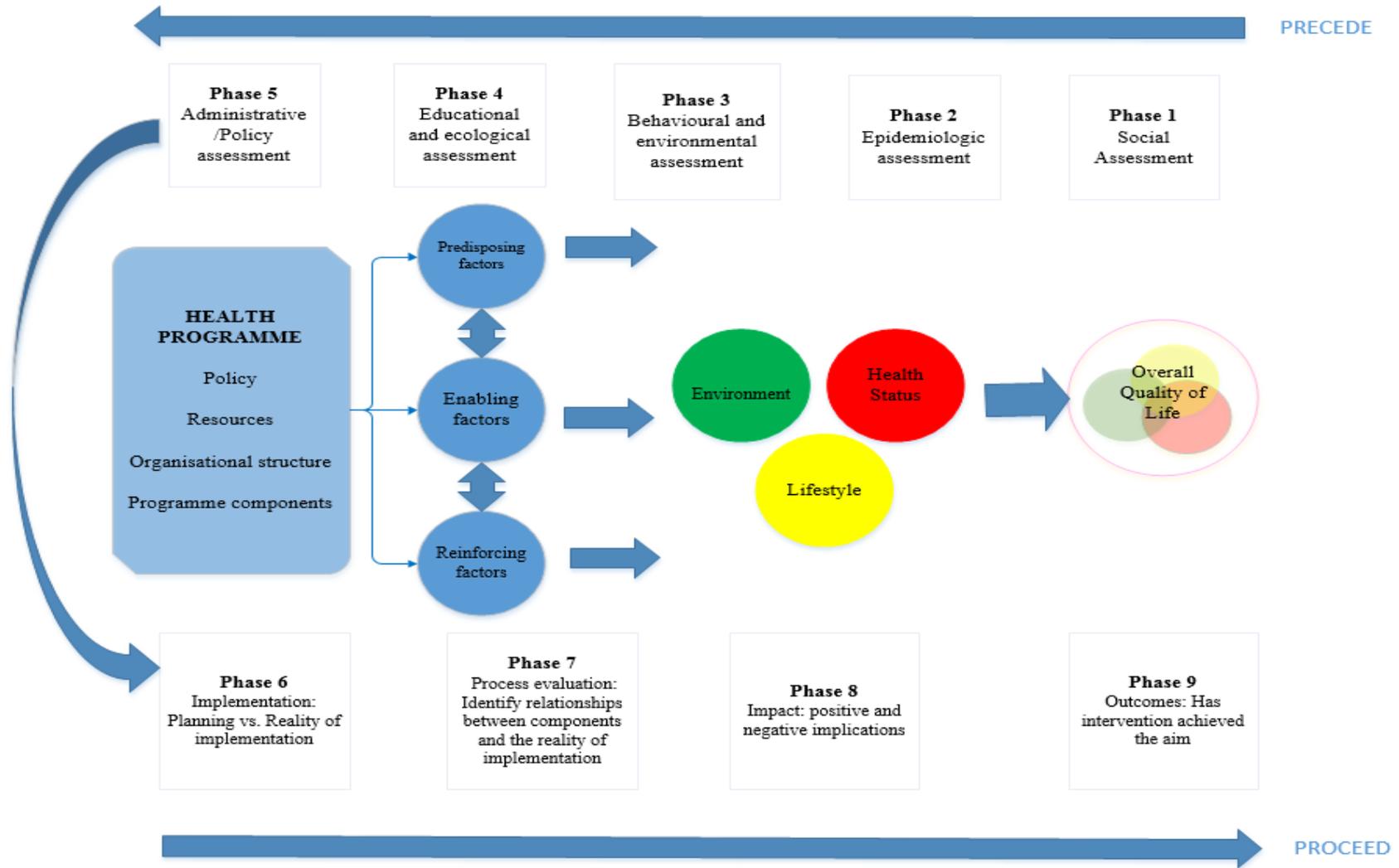


Figure 3.6 This Figure illustrates the planning phases in the Precede-Proceed Model adapted from Green (2009).

The Oral Health search found two interventions that had used the PRECEDE-PROCEED framework (Gabrielle, Cannick, Howitz, Garr, et al., 2008; Watson, Horowitz, Garcia & Canto, 2001). Gabrielle et al., (2008) investigated an intervention that had used the PRECEDE-PROCEED framework to guide the implementation and process evaluation to improve the Oral Health of a community. The PRECEDE-PROCEED framework facilitated the identification of resources, educational, and behavioural barriers and enabled a culturally relevant intervention to be developed. The intervention was tailored to the community needs and enabled a pilot stage of the intervention to allow cultural barriers to be accounted for. The community reported interest and increased knowledge in Oral Health and the PRECEDE-PROCEED framework allowed the intervention to draw upon existing community resources. The intervention enabled good partnership working between the community and the developers. However, like previous theories, models, and frameworks the partnership between intervention developers and implementers is overlooked and assumed to be a passive relationship.

Watson et al., (2001) evaluated an 'oral cancer and early detection training programme' for dental students, which used the PRECEDE-PROCEED framework to guide the systematic identification of barriers to teach oral cancer prevention messages and detection methods. The framework also guided the development of a strategy to overcome the identified barriers and facilitate the delivery of the oral cancer prevention and early detection teaching programme. The new teaching programme was conducted with second year dental students and the Objective, Structured, Clinical Examinations (OSCE) scores of those second years who had received the new teaching programme were significantly higher on oral cancer prevention section compared to those that had not received the new teaching programme (Watson et al., 2001).

The General Health search identified six interventions that had used this framework to understand the target population and guide the development process of the health intervention. The interventions identified included Diabetes and Heart Disease awareness (Kay-Post, 2015), weight management (Cole, 2008; Nickleson, 2003) smoking cessation (Aldiabat, 2013), immunisation awareness (Luna, 2033) and pedestrian safety (Howat, 1997).

Cole and Horacek (2008) evaluated a weight management programme of 295 military families. The weight management programme followed the nine phases of the framework to plan the development and implementation of the programme. The programme developers used surveys and focus groups to gather information for the PRECEDE diagnosis phases. Certain areas of the health programme were altered as a result of the feedback from the surveys and focus groups. At the end of the PRECEDE stage end 'My Body Knows When' was developed through identifying potential barriers (e.g. length of programme, hours required, incentives and times of activities) and allowing the community to take ownership of the development phase. Programme ownership was developed through creating slogans, naming the programme, and deciding calendar dates and the timings of the activities. The approach taken also drew upon the Stages of Change Model to assess a person's stage of readiness to change so the programmes education strategy and techniques could be tailored to individuals. The findings showed high levels of adherence to the programme and weight reduction.

The PRECEDE-PROCEED framework encourages the use of qualitative research to understand community issues and the practical barriers and facilitators to the process of implementation in real-life contexts. The framework also enables stage models such as the TTM to be used to determine an individual's readiness to change. This appears to complement the General Health approaches to considering community factors and allowing the community to take control. The one Oral Health intervention that has used this framework used it in a way that tailored the intervention to the teaching styles of professionals and still focused on the professional delivering information. Therefore, although Oral Health professionals may be using methods other than behaviour change approaches they are still focusing on interventions that involve the professional being in control of the intervention.

Despite the reports of improved and more tailored interventions when using the PRECEDE-PROCEED framework, it is not without its flaws. The framework is a complex process consisting of nine distinct stages. Consequently, the framework is open to misinterpretation if policymakers are not adequately trained in using the framework. The success of the programme is dependent on community responses and participation, the information collected may actually misrepresent the community if an unrepresentative sample takes part in the surveys and focus groups. It is known that those individuals from higher socio-economic status tend to participate more in

research and adopt health prevention programmes more readily (Hiscock, Bauld, Amos, Fidler & Munafo, 2012; Grywacz, & Fuqual, 2012). Therefore, considering the low participation rates identified when using this framework (Howat et al., 1997), the surveys and focus groups may only collect responses of those that are considered to be low risk and misrepresent those considered high risk, which could lead to greater health inequalities. Although the framework considers the implementation of interventions in real-life settings, the assumption that policymakers and implementers will work passively and without barriers across different working groups is still assumed. The impact that implementers may have on the delivery of interventions is overlooked in each model, theory, and framework identified by the literature searches used in this review.

### ***3.5.6 Theories, Models, and Frameworks Only Identified by the General Health Search***

The General Health search also identified three other multi-level approaches that had been used to underpin General Health interventions, the RE-AIM, The I-MAP framework and the Oral Health Framework. Although the Oral Health framework had been developed for Oral Health interventions it was used in practice to underpin a stop smoking intervention.

The Oral Health framework was developed by Simpson (2011) and is a multi-level approach that focuses on the active dissemination of interventions through considering organisational preparedness to change and the maintenance of interventions. The framework is similar to the PRECEDE-PROCEED framework, advocating the need to consider aspects of the implementers' environment and individual characteristics. However, unlike the PRECEDE-PROCEED framework, the Oral Health framework focuses on organisational context and relationships between individuals responsible for delivering the intervention.

The Oral Health Framework considers the implementers' perceptions of an innovation, suitable training, and the ability for implementers to pilot and practice the intervention. Also, where other approaches such as the Diffusion of Innovation Theory, focus on passive diffusion of interventions, the Oral Health Framework guides the intended planning, dissemination, and implementation of interventions.

Figure 3.5 is a visual representation of the Oral Health Framework and highlights the importance of considering an organisations preparedness to change and the impact that organisational change can have on the maintenance of the intervention. Factors that facilitate the four main constructs (training, adoption, implementation and practice improvement) are: needs, access, decision, trials, and actions. Barriers that can impact on these four constructs are lack of leadership, versatility and low-fidelity.

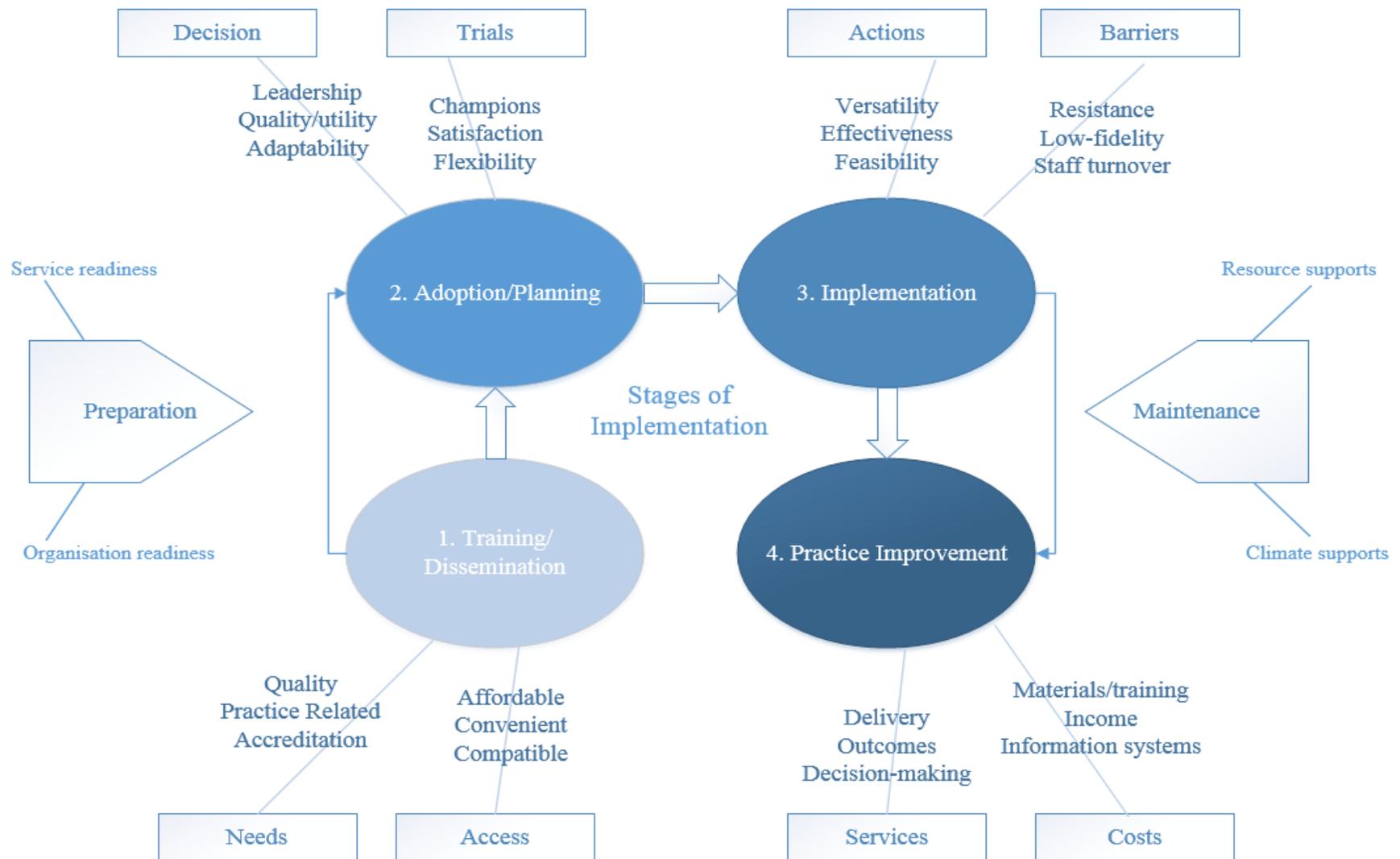


Figure 3.7 The factors, constructs, and potential barriers involved in the implementation and sustainability of interventions adapted from Simpson (2011).

Interestingly, although the framework has been developed to guide Oral Health interventions, the framework has only been used to underpin General Health interventions to target smoking addiction (Simpson, 2011). Although stop smoking interventions can improve Oral Health, the main focus of the intervention was to target addiction, not Oral Health. The intervention targeted 800 patients and significant correlations were found between implementers positive ratings of training, adoption, and implementation, with patients' positive attitudes to adopt the intervention and change behaviour. However, four years since the framework's publication it has only been referenced eleven times and not a single Oral Health intervention has reported using this framework. This may indicate that intervention developers are relying on their intuition and are reluctant to seek, understand, and apply new theories, models, and frameworks. Alternatively, it could represent an issue with the multi-stage approaches being too complex to understand and apply to interventions. Consequently, the traditional individualistic behaviour change approaches are favoured due to the relative simplicity. Whatever the reason, research is needed to understand the motivations and rationale behind intervention developer's developmental choices. To date, research is lacking into understanding programme developers' and implementers' experiences of working together to develop and implement Oral Health interventions.

Furthermore, the framework still assumes a passive relationship between the implementers and the programme developers and does not consider the challenges that may be faced within this partnership. This further supports the need for research that explores the implementers' and programme developers' experiences of developing and implementing Oral Health interventions. Additionally, the framework identifies potential barriers and facilitators but it does not go beyond surface level explanations, for example the framework identifies training as an important construct but whether this training should be flexible or standardised, or how to identify potential intervention champions are not discussed. The framework's external validity needs to be tested in real-life contexts to understand the deep and complex issues that arise when implementing interventions in real-life settings.

The RE-AIM Framework was also used to underpin five interventions identified by the General Health search (Appendix 3.10). The RE-AIM attempts to understand and identify barriers to the implementation of interventions in real-life contexts. The RE-

AIM Framework was used to underpin physical activity promotion (Carlfjord, 2012; Collard, 2010), cancer prevention (Chino, 2011), community engagement projects (King, 2010a; King 2010b). However, similar to the PRECEDE-PROCEED framework, RE-AIM assumes that organisations are passive and will share the same opinions and beliefs on ways to develop and implement health interventions. Despite this, the RE-AIM is the only approach identified in this literature review search that identified the factor of programme fidelity, and acknowledges that changes are made during the implementation of health interventions. However, the reasons for the changes and the impact of an intervention lacking programme fidelity have not been identified. Lastly, the framework considers both internal and external variables and the use of qualitative and quantitative methods to understand the context of the target population. However, when the RE-AIM is used to evaluate interventions it reflects the unwillingness of policymakers to report external measures and qualitative factors. Similar to the policymakers and programmes developers' over-reliance on behaviour change approaches, the policymakers and programme planners appear to also be unwilling to change their working norms and adopt ways to focus on external measures. This may also be an indication of the strength of organisational mental models and norms.

The MAP-IT Framework (Department of Health and Human Services, 2014) has been developed by the Office of Disease Prevention and Health Promotion to enable communities to use an easily accessible online framework advocating and guiding the use of mobilising the community, easily accessible resources, clear planning, and tracking the implementation process. This framework has been used to underpin an intervention in America that allows communities to get involved and take control of the lifestyles of their community. This approach is in contrast to the approaches used by Oral Health professionals as the main focus is on individual and communities designing the intervention and taking control.

The three multi-level approaches that were only identified by the General Health search predominately focus on organisational factors, with professionals and individuals being equal and working together to develop the intervention. Therefore, they do not complement the top-down approaches dominated by the underpinnings of Oral Health interventions.

### ***3.5.7 Summary of the Multi-Level Theories, Models, and Frameworks***

The multi-level theories, models, and frameworks offer an alternative understanding to the dominant focus on changing behaviour of the individual. Instead the multi-level approaches illustrate the complex issues within the community and organisational contexts that can impact on the implementation of interventions.

It is again apparent that General Health interventions use a greater number of different theories, models, and frameworks, with more recent interventions being underpinned by the multi-level approaches rather than behaviour change approaches. Conversely, Oral Health interventions are underpinned less frequently by multi-level approaches with more recent interventions still being underpinned by the individualistic behaviour change approaches. Research is needed to understand the developers' and policymakers' experiences and justifications for the development methods chosen to underpin interventions, to aid understanding of why certain theories, models, and frameworks are used over others. This will also aid understanding of barriers to the evidence-practice gap.

Lastly, the multi-level approaches assume that the relationship between those responsible for developing interventions and those who implement the interventions are passive. Despite the Oral Health Framework proposing the need to consider the role of implementers in the implementation process, the Oral Health framework is untested and has not been adopted by Oral Health intervention developers. Consequently, the role of the implementers during the implementation process needs to be understood and may be a significant factor in low implementation success rates.

## **3.6 Summary of the Literature**

The purpose of this literature review was to understand the theories, models, and frameworks used to underpin the development and implementation of Oral Health interventions. The literature review search also compared the underpinnings of Oral Health interventions to a separate search of the underpinnings of General Health interventions.

The literature review search identified that both the General Health and Oral Health interventions were underpinned by a variety of behaviour change (individualistic,

interpersonal, and stage) and multi-level theories, models, and frameworks. The literature search identified that although the behaviour change approaches remain popular, General Health interventions have started to rely less on these individualistic methods and have started to focus more on multi-level approaches. Conversely, Oral Health still poorly states but widely uses traditional behaviour change approaches to underpin Oral Health interventions, whilst also incorporating clinical treatments, such as fluoride varnish.

The behaviour change approaches add value to interventions with several facilitating constructs identified as successful predictors of behaviour change: message framing (Amir, 2014), self-efficacy (Buglar et al., 2010), peer/parent modelling (Bugler et al., 2010; Nammontri et al., 2012), personal goals (Milgrom et al., 2013; Freudenthal & Bowen, 2010), perceived susceptibility (Yekaninejad, et al., 2012) and identifying a person's readiness to change (Prapavessiss et al., 2004; Kidd et al., 2003). However, these behaviour change constructs are individualistic and fail to address the complex interactions between the individual, environment, and organisations.

The individual methods are focused on the individual and therefore consider individual differences and tailoring an intervention to the individual's readiness to change, personal goals, and perceptions of susceptibility. Despite this, the individual behaviour change approaches have been used to underpin large-scale community interventions that advocate standardised implementation of the intervention, therefore eliminating the individualistic principles of the theories, models, and frameworks. This claim was also supported by Arpalahti et al., (2012), Yekaninejad et al., (2012) and Kraft et al., (1991) who all claimed that the success of behaviour change interventions is dependent on tailoring the intervention to the targeted individual, community, and setting. Furthermore, behaviour change approaches also focus on explaining the process of behaviour and measuring the internal constructs predictive value of changing behaviour rather than measuring the value of the theories, models, and frameworks external validity and identifying the barriers and facilitators to the implementation of interventions in real-life settings.

The reason for the reliance of behaviour change approaches to underpin Oral Health interventions remains unclear due to policymakers and intervention developers failing to explicitly state the rationale for using their chosen approach. The reliance on

behaviour change approaches may be due to the theories, models, and frameworks being easier to understand and the research that has been undertaken to aid the use and explicit reporting of behaviour change techniques, such as Abraham and Michie's behaviour change manual. However, this point becomes redundant considering that General Health research has started to use behaviour change techniques less frequently. Another consideration for Oral Health's reliance on behaviour change approaches may be due to the stronger hierarchies within Oral Health, with dental professionals preferring top-down techniques where the professional delivers the information to the patient. Alternatively, the multi-level approaches have been criticised for being too complex and difficult to use and apply to interventions (Hiscock et al., 2012; Grywacz & Fuqual, 2012; Parcel et al., 1990), therefore, policymakers and intervention developers may prefer to rely on their intuition and use interventions that they understand and have experience with. Research is needed to interview policymakers to understand the evidence to practice gap and development decisions, experiences, and rationale for the use of behaviour change approaches.

As previously mentioned, compared to the Oral Health search the General Health search identified that General Health interventions were underpinned by more multi-level theories, models, and frameworks. The multi-level approaches identified that the facilitators to the implementation of interventions were: allowing implementers to observe the intervention being used; practicing with the intervention; piloting the intervention to allow for feedback and changes: and allowing the implementers to decide that the new intervention is better than the previous tools being used (Pesaressi et al., 2014; Gussy et al., 2006; Negron et al., 2003). The multi-level approaches also advocated the use of behaviour change approaches such as self-efficacy and stages of change (Vichayanrat et al., 2012; Muirhead & Lawrence, 2011; Valente, 1999).

The multi-level approaches also identify the potential organisational barriers to implementing interventions. Research by Pesaressi et al., (2014) and Gussy and et al., (2006) used qualitative research to understand the experiences of nurses implementing Oral Health messages to new mothers. The research identified that the barriers to implementation were the complex relationships between the dentist and nurses, and not the nurses' unwillingness to implement Oral Health messages. The research unfortunately did not identify specific barriers or ways to overcome the barriers between the nurses and dentists but it does indicate that individuals who implement

interventions are not passive and there are complex factors involved when engaging across organisations or professions. Although the Oral Health Framework indicates the need to consider the impact implementers can have on the implementation of interventions, the framework failed to identify any barriers or facilitators that can affect the implementers' ability to deliver interventions. More research is needed to understand the relationships between the policymakers and those responsible for delivering the interventions in settings. This is an understudied area and a gap in the literature.

This review has highlighted several gaps in the literature, firstly the underpinnings of interventions are not only poorly stated but when the underpinnings are outlined the rationale for the choice of underpinning is unclear. Research needs to be carried out to understand the theoretical underpinning of interventions to determine why policymakers rely more on behaviour change approaches. Secondly, qualitative research to understand the process and individual experiences of developing and implementing interventions is sparse but is necessary to identify the real-life barriers and facilitators to this process, which would also aid understanding to the evidence to practice gap. Lastly, research focuses on improvements to General Health and Oral Health to determine the success of interventions, however these outcomes can take years to gather and can be determined by other extraneous variables. Qualitative research can be used to understand policymakers' and implementers' experiences with the intervention and gather their perceptions of the failings and successes of the interventions to inform changes in a shorter space of time and increase the chances of long-term improvements to health. Based on the gaps identified it is necessary to conduct qualitative research with policymakers and implementers to try and answer some of the gaps.

## 4 THESIS AIMS AND OBJECTIVES

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### 4.1 Introduction

The literature review identified that the rationale for professional's use of particular theories, models, and frameworks is a missing component of the literature. Also research is needed to understand the barriers and facilitators to the development and implementation of real-life Oral Health interventions. Additionally, the policymakers and implementers of Smile4Life were keen to explore the partnerships and organisational structure that occurred between the two groups when they needed to work together to develop and implement Smile4Life. The literature review highlighted that organisational partnerships could impact on General Health and Oral Health interventions, however, understanding of organisational partnerships and the impact they may have on real-life interventions is underrepresented in the literature. Consequently, to understand the reasons why professionals chose specific underpinnings of interventions, to identify the barriers and facilitators to the development and implementation of Oral Health interventions in a real-life context, and to understand partnerships between different groups needing to work together, it was decided that semi-structured interviews with those responsible for delivering and implementing Smile4Life would help answer these questions. The following section outlines the aims and objectives of the thesis.

#### 4.1.1 Reflections

*The policymakers were very keen for the partnerships within their group to be explored and believed that their partnerships contributed to the development and implementation of Smile4Life. However, they were not as keen for the partnerships between the policymakers and the implementers to be explored. Therefore, the aims and objectives of the thesis also reflect the iterative process of this research and upon the discovery of the implementer group, the aims and objectives were refined from focusing on stakeholder outcomes and policymaker partnerships to the aims and objectives presented here that encompass the policymaker and implementer groups.*

## **4.2 The Primary Aim of this Thesis**

The primary aim is to identify the barriers and facilitators to the process of developing and implementing an Oral Health promotion programme (Smile4Life).

## **4.3 The Objectives of this Thesis**

The objectives of the study are to

1. Understand the policymakers' and implementers' experiences of the development and implementation of Smile4Life.
2. Explore the theoretical underpinnings of Smile4Life.
3. Determine what the policymakers and the implementers perceive to be the successful elements of the development and implementation of Smile4Life

# 5 METHODOLOGY

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## 5.1 Introduction

In the previous chapter the aims and objectives of this research were presented. In this chapter the research approach, 'Interpretive Description' (Thorne 2008), which was selected to frame the study, will be discussed. A brief consideration of why other qualitative approaches such as Grounded Theory and Case Study were rejected will also be discussed. Finally, the rationale for using a thematic approach to analysis is presented.

### 5.1.1 Reflections

*As previously discussed, I had little knowledge of Oral Health, the Smile4Life development and implementation process, or the overall Smile4Life context. Consequently, I believed that qualitative analysis using an inductive approach would be the most appropriate to enable my understanding of the Smile4Life context and Oral Health. However, the most appropriate qualitative inductive approach to use required some reading, discussion with my supervisors, and careful consideration. The following section will discuss the decision process that I went through to decide on the approach I undertook.*

## 5.2 Identifying a Research Approach

### 5.2.1 Background Considerations

Qualitative methods have been increasingly advocated by researchers as a method for understanding the uptake of interventions (Worthington, Hill, Mooney, Hamilton, & Blinkhorn, 2001; Tai, Du, Peng, Fa; Bian, 2001; Vonobbergen, Declerck, Mwalili, & Martens, 2004; Alves de Farias & Fernandes, 2009; Garbin, Garbin, Dos Santos & Lima, 2009; Saied-Moallemi, Virtanen, Vehkalahti, Tehranchi, & Urtomaa, 2009; Albert, Barricks, Bruzelius, & Ward, 2013; Yusof & Jaafer, 2013). However, as the literature review outlined, qualitative methods to explore the development and implementation of health interventions remains an underused approach, especially in Oral Health intervention studies where much of the focus has been on measuring the feasibility and effectiveness of interventions.

The benefits of adopting a qualitative approach are that it can provide deeper understanding and explanation of the topic or area when compared to data gathered through quantitative methods (Halloway & Todres, 2003). In relation to this study, a qualitative research approach offers the prospect of a better understanding of the context (including external variables) and the settings in which the intervention is implemented. Furthermore, qualitative research offers the opportunity to enhance the understanding of behavioural and organisational change (Creswell, 2007). In summary, gaining rich insights into policymakers' and implementers' experiences of developing and implementing an intervention was felt to be especially important to aid understanding into the reasons why fewer than 50% of interventions are successful (Birken et al., 2012; Alexander, 2008). Existing theories and approaches to generating evidence do not adequately reflect the complex issues of developing and implementing interventions. By providing an understanding of the complex implementation issues that occur during the development and implementation process, it may also lead to increases in implementation success rates.

When choosing a specific qualitative approach for this study various characteristics were considered in relation to the conceptualisation and conduct of the research including the ontology (reality), epistemology (assumptions and beliefs of knowledge), and methodology (gaining knowledge) (Creswell, 2007; Denzin & Lincoln, 2000; Lincoln & Guba, 1994). The principles underpinning this study are based on the assumption that meaning and experience are constructed and reproduced through a person's individual social interactions and encounters (Braun & Clarke, 2006; Doran, 2015) and that the environment and culture amongst other factors shape individual interpretations (Creswell, 2007). The research approach adopted is framed by Thorne's (2008) 'Interpretive Description' and more detail will be presented about this later in the chapter. However, before the decision to adopt an 'Interpretive Description' approach was made, various other qualitative approaches were explored as possible options. Of those considered as possible options, two approaches were identified as a 'good fit', these were Grounded Theory and Case Study. However, after careful consideration they were rejected as being inappropriate for the study; these are now briefly presented and the rationale for them not being used is given.

### ***5.2.2 Grounded Theory***

Grounded Theory is an inductive approach that focuses on generating and advancing theories, as well as providing explanations of social interactions (Charmaz, 2006). Data are collected through observations, interactions, and materials that relate to the topic being studied. The methodological process involves coding, memo writing and analysis that follows a rigorous process and principles and concepts are developed that turn into the foundations of theory (Streubert-Speziale & Carpenter, 2003).

Although the inductive approach to understanding experiences of reality in great detail enables a deeper understanding of the phenomenon (McLeod, 2001), Grounded Theory is complicated by the different versions and interpretations of this approach (Charmaz, 2002; Bryant 2002; Glaser & Strauss, 1967). Despite Grounded Theory being focused on generating a theory that is grounded in the data, many grounded theory studies are criticised for being ‘light’ on the coding procedures and rigorous analytical process (Braun & Clarke, 2006) and thus the theories produced are insufficiently robust. Grounded Theory is a complex process that requires extensive data collection to obtain data that explicates categories that are developed from data gathering (Charmaz, 2006).

Therefore, despite the in-depth inductive methods that initially made this approach attractive, grounded theory appeared to require a range of data from multiple interventions beyond the scope of this study. The Grounded Theory approach would also require data collection of an intensity that would not be compatible within the study setting. Another factor that contributed to not selecting Grounded Theory as the approach was that the aim of the study was not specifically focused on theory development.

### ***5.2.3 Case Study***

Case Study methods are advantageous when a researcher wants to understand an issue that is bound within a system or particular context such as an organisation (Stake, 2005). The Case Study approach involves gathering a variety of data sources that provide in-depth, rich information regarding an experience that occurred in a setting over a set period of time. This approach was considered as the study involved understanding the context of the implementers and policymakers working together over a set period of time to develop and deliver Smile4Life. This allowed the

experiences to be compared and applied across settings. Case Study would also have provided a rich and rounded perspective of the Smile4Life process (Doran, 2015).

One of the core challenges with Case Study research is defining the case and when case study research was initially considered it proved complicated to determine the boundaries of the case. This was partly due to the fluidity of the organisational setting and the identification of the system to be studied. An additional concern with using this approach was that a robust approach to case study would require other participants e.g., staff and implementers working on other health promotion programmes within the same settings as Smile4Life to be studied, to gain a more rounded experience of people who had contact or experience with Smile4Life. It was thought that this approach would not only be time consuming but also may dilute the experiences of, and relationships between the people who were the main focus of the study: the policymakers and implementers.

#### ***5.2.4 Justification for Drawing on Interpretive Description***

Interpretive Description (ID) is an approach developed by Thorne, Reimer, Kirkham, & MacDonald-Emes (1997) as a means of answering complex and contextually embedded practice based questions. ID is often undertaken with small samples and often uses interviews with individuals as a core means of generating primary and secondary data. Interpretive Description in this thesis, more accurately reflects the thinking, values, and approach taken to the study more than any other term available and allowed the researcher flexibility to generate and follow the data.

Thorne (2008) talks of how ID has developed in response to some of the discontent she experienced when designing and undertaking health-related studies, which did not easily fit within some of the established, specific named qualitative research approaches. As an established and highly respected qualitative nurse researcher she became intrigued by the fact that practice oriented research did not always fit within more established approaches such as Grounded Theory. However, ID borrows from other methodologies in its thinking and analytical methods. ID assumes objective knowledge is inaccessible through empirical analysis and realities are subjective. Realities are socially and experientially based, and contingent in form and content on the individual who holds them (Guba & Lincoln, 1994). Understandings of research are co-constructed through the researcher and the participant to create a shared

understanding and the *“inquirer and the ‘object’ of inquiry interact to influence one another”* (Thorne et al., 2004, p. 5). In such an inquiry, *a priori* theoretical understandings cannot adequately account for the phenomenon under study.

ID often draws on interview-based data with individuals as well as using purposively or theoretically sampled to gain robust data that can be supported through other methods such as secondary data and observation. Data are analysed inductively to *“seek understanding of clinical phenomena that illuminate their characteristics, patterns and structure . . .”* (Thorne et al., 2004, p. 6). The analytic process is characterized by a concurrent and responsive relationship between data collection and analysis.

### **5.3 Thematic Analysis and the Analytical Journey**

Analysis within a study using ID broadly fits within an interpretive thematic approach with the aim of *“moving beyond the self-evident”* (Thorne, Reimer Kirkham, & O’Flynn-Magee, 2004, p.4) and is *“intended to extend beyond what any individual might see” in his or her own situation and allow us to understand commonalities within a range of instances of a phenomenon”* (Thorne, Reimer Kirkham, & O’Flynn-Magee, 2004, p.5). Within this study, thematic analysis was utilised as it offered a clear approach to managing the data, it has resonance with ID and encourages flexibility in an inductive data-driven approach to produce themes, interpretation of the data and the conclusions drawn (Braun & Clarke, 2006).

Thematic analysis essentially is a widely, albeit often poorly, used method for identifying and analysing patterns in qualitative data (Braun & Clarke, 2006). Thematic analysis was first named as approach in the 1970s (Merton, 1975) and since its conception there have been a number of different versions of the analytic approach (Aronson, 1994; Boyatzis, 1998; Attride-Stirling, 2001; Joffe & Yardley, 2004; Tuckett, 2005; Braun & Clarke, 2006). Braun and Clarke (2006) argue that it is a flexible analytic method free from the constraints of theoretical frameworks.

An inductive analytical approach to thematic analysis, in line with the broad constructivist principles underpinning Interpretive Description was selected since the focus was on the policymakers’ and implementers’ experiences rather than matching the data to existing literature. Essentially, an inductive approach is data driven and data are not forced into an existing coding frame; the aim was to generate a rich

interpretive and subjective understanding of the data that reflected the local realities of the experiences of the participants and which were shaped by many factors including the researcher's own engagement in the study.

### ***5.3.1 Introduction to the Analytical Process***

The thematic methods outlined by Braun and Clarke (2006) guided the analysis in this study. Although Braun and Clarke (2006) do not supply rules, they do provide '*basic precepts*' that can be applied flexibly to the process of data analysis. The following section will present a brief overview of the engagement with the literature, followed by a visual representation of Braun and Clarke's thematic phases, then, detailed phases of the analytical journey undertaken in this study will be described.

Some authors claim that reading can narrow the analytical journey (Corbin 1976) whilst others argue that reading the literature can enhance the analysis through increasing the researcher's awareness of subtle points (Tukett, 2005). For this study only a minimal literature search was conducted before the interviews took place (the literature review presented in chapter two was undertaken after the interviews took place) and the interview schedule was developed through the researcher undertaking brief shadowing of the policymakers' and implementers' day-to-day work activities, to gain an insight into the questions to be asked. The interview schedule was kept flexible and consisted of broad research questions to allow elaboration and exploration of different experiences.

The six phases of the analytical journey are not linear and the researcher did not move directly from one phase to the next in a linear fashion, instead a back and forth process developed and evolved over time (Ely, Vinz, Downing et al., 1997). Figure 5.1 presents the six '*recursive*' phases outlined by Braun and Clarke (2006) that were used in the analysis phase of this study.

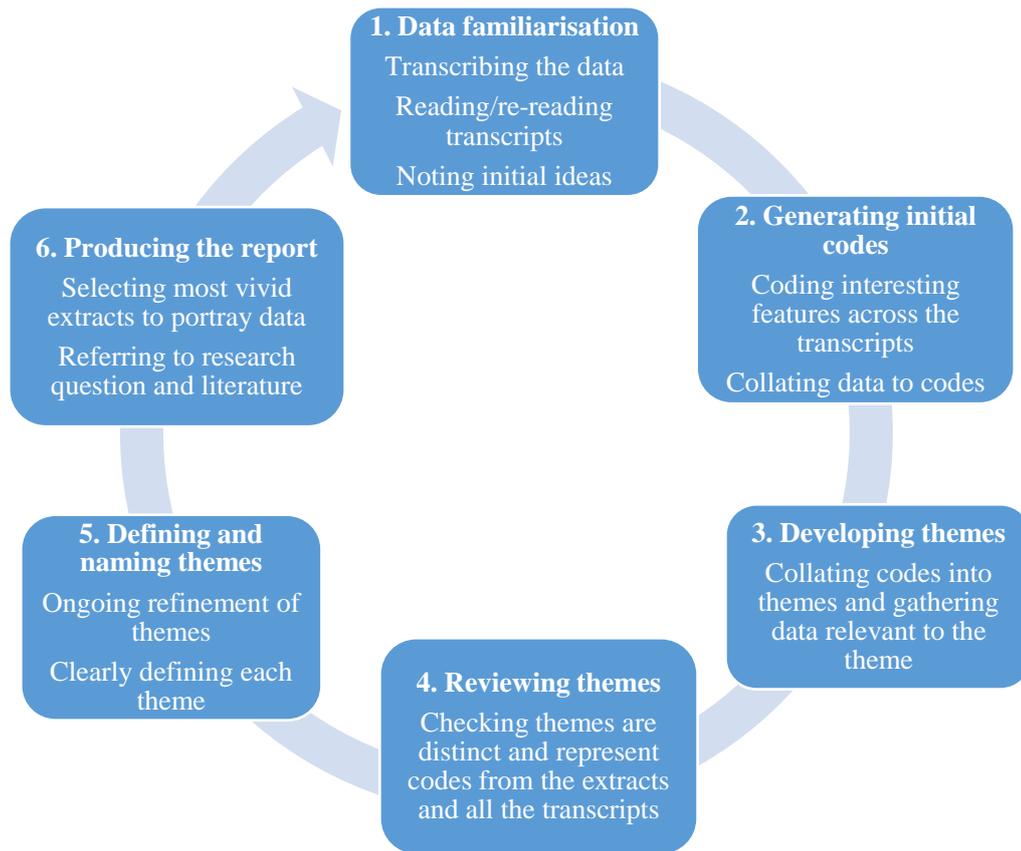


Figure 5.1 *Six phases of the analytical journey (adapted from Braun and Clarke, 2006).*

### **5.3.2 Phase 1: Data Familiarisation**

Phase 1 is about engaging with the data recordings and because the researcher conducted all the interviews she had an initial iterative understanding of the data. Although the process of transcription can be time consuming it is stated to be advantageous to transcribe some of the interview recordings (Reissman, 1993). The act of transcription is an interpretative process rather than it just being a mechanical act of putting spoken language onto paper as some of the meanings of the data can be created in this process (Lapadat & Lindsay, 1999). Whilst some qualitative approaches such as discourse analysis and conversation analysis require a strict set of transcription guidelines to be followed, to ensure that extensive detail of the language used is documented, this is not as necessary in thematic analysis. Since thematic analysis is less concerned with the language a more flexible approach to transcription can occur. The researcher transcribed nine of the transcripts but due to time constraints University transcribers were used for ten of the transcripts. However, the researcher listened and re-listened to the data to ensure that she was satisfied with the transcription process

and ensured that meanings were not lost and shaped inappropriately. A transcription guide developed by the researcher was used to ensure that all the transcribers transcribed the data in a similar way (refer to Appendix 5.1). Each transcription aimed to be a rigorous verbatim account of the spoken language that stayed 'true' to the spoken accounts and retained the context and information needed for this study.

As a result of undertaking both the interviews and transcribing some of the interviews the researcher came to the initial data analysis with some prior knowledge and some preliminary ideas about what was happening. A reflexive diary was kept and the researcher's preconceptions and ideas were documented, for example *'initially I had preconceived ideas that the implementers were difficult and reluctant to work with the policymakers but after talking to the implementers I realised that the policymakers' accounts were biased due to their experiences and I had a different experience and interaction with the implementers, after speaking with them'*. These diary entries were referred back to throughout the analytical journey and they helped to create an audit trail of decision-making and thinking. After each interview the researcher would write her experiences, perceptions, and views of the interview and write the initial notes taken during the interview into the diary, with times the notes were taken. This enabled the notes to be incorporated into the analysis. For example, when facial expressions were made or changes in tone of voice that would be difficult to hear in the audio-recordings, the notes enabled these expressions and changes in tone statements to be highlighted and interpreted as intended. The researcher became immersed in the interviews through listening and re-listening to the audio-recordings and then became immersed in the transcripts by reading and re-reading the transcripts before any initial analytical notes and codes were made. This immersive and active reading allowed the researcher to start to appreciate patterns and meanings. Vague notes were made before more definitive notes were written to enable these preliminary patterns and meaning to be reflected upon and understood before they became the focus of subsequent listening and note taking. Although this process was time consuming it prevented the data from being selected too soon due to a lack of familiarisation.

### ***5.3.3 Phase 2: Generating Initial Codes***

Phase two involved the production of codes from the initial ideas and notes made in the previous phase. Codes were used to identify extracts of the data that were interesting.

Coding was done line by line as well as incorporating wider areas of the transcript. Initially the coding was quite rough and the note taking accompanied the process. The aim of this first approach to coding was to enable the systematic coding of the entire data set, giving equal weighting to each segment of discussion and ensuring that coding could inform as many potential themes as possible. Latent codes developed during this process through further interpretation and understanding of the data provided a deeper meaning into the semantic context. Contradictions within the data were also coded and interpreted.

Although transcription was undertaken within the NVivo 10 software package, coding was done by hand and notes and highlighters were used to identify the latent codes (words, extracts or ideas) and patterns within each of the transcripts. NVivo was then used to identify words and patterns that occurred across the entire data set.

### ***5.3.4 Phase 3: Searching for Themes***

Themes can be either latent or semantic. Semantic level themes offer surface level interpretations of the data with the researcher only focusing on what the participant has said whereas latent level themes go beyond the surface and identify the underlying ideas that are shaping the semantic content (Frith & Gleeson, 2004). This study used latent level themes as the researcher wanted to go deeper than the explicit semantic content and understand how relationships and experiences throughout the development and implementation process led to the semantic accounts.

Once the latent codes and extracts representing the codes were identified and collated, this phase began to re-focus the analytical process at a broader level with the initiation of grouping codes into potential themes. At this stage the highlighted extracts, which were identified through hand coding and through NVivo were cut from the transcripts and sorted into piles with each pile representing an interesting pattern within the data. The piles were checked for the level of distinctness; piles that were related rather than distinct were grouped together to become sub-themes of a pile that represented their

overall meaning. The codes were grouped into sub-sub-themes, that were linked together to create potential sub-themes, these had the potential to link together to form an overall central concept – the meta-theme. The themes, extracts, and codes were considered and analysed for their relationships between each other and their relationship to potential themes and between different levels of the themes.

#### ***5.3.5 Phase 4: Reviewing Themes***

At this stage the themes and sub-themes were reviewed for their internal homogeneity and external heterogeneity (Patton, 1990). Each category of theme was checked to ensure that each sub-theme cohered together meaningfully but also each theme was distinct and identifiable from the other themes. At this stage some sub-themes were collapsed into each other. Themes that appeared to overlap with other themes were collapsed into sub-themes to form an overall more distinctive theme.

Essentially, the level of refinement occurred in two stages: first the extracts of data and codes were re-read to determine if they coherently represented the defined themes and sub-themes; second, the relevance of themes, and sub-themes were considered for the relevance to the entire data set. A worked example of how this reviewing of themes was undertaken is presented with the initial theme ‘developmental control’ and its three sub-themes before refinement of the themes was undertaken (see Figure 5.2).



Figure 5.2. *Initial theme, sub-themes and codes*

The initial thematic map focused on policymakers’ development control but after reflection and further analysis, the researcher felt the theme ‘development control’ did not accurately represent the development process of Smile4Life. The theme focused too much on the need the policymakers had for control and also portrayed the policymakers in a negative way as it ignored the policymakers’ belief that they did try to be inclusive. Instead the development stage needed to reflect the policymakers’ discussions of inclusion and the implementers’ discussions of exclusion. Consequently, the themes, sub-themes, and codes were reorganised into the theme ‘development exclusion vs. development inclusion’ and the sub-themes ‘exclusion during the development’ and ‘inclusion during the development’. This theme and the other themes and sub-themes were developed after many false starts, dead ends and different iterations during this stage. At this stage in the analytical journey it became

apparent from the data set that the relationships between the policymakers and the implementers were the important aspect to follow that could contribute to the research question and theory regarding the real-life context of intervention development and implementation, consequently it was decided that this would be the focus of the study, rather than including the stakeholder experiences.

### ***5.3.6 Phase 5: Defining and Naming Themes***

Once the thematic map was constructed the defining and further refining of the themes took place. This required exploring and identifying the essence and richness of each theme and sub-theme. The aim of the analysis and the development of the final themes aimed to ensure that each theme was distinct and coherent to the outside reader and was clearly embedded in the data and not to simply reflect the analytical thoughts of the researcher. It was important to not make the theme go beyond the extracts and sub-themes, therefore it was decided that sub-sub-themes were needed to further define the overall theme but to also present important sections of the analysis. This also reflects the recursive nature of thematic analysis; themes were further refined, sub-themes were further collapsed, and sub-sub-themes were developed. For example, the theme ‘different knowledge, experiences and beliefs initially had two sub-themes ‘policymakers’ knowledge, experiences, and beliefs’ and ‘implementers’ knowledge, experiences, and beliefs’. However, the sub-themes overlooked the different types of knowledge in terms of knowledge-how and knowledge-why. The two sub-themes were changed to ‘knowledge-how strategic or practical experiences’ and ‘knowledge-why strategic or practical beliefs’ with sub-sub-themes relating to the policymakers and implementers types of knowledge and beliefs (see Figures 5.3 and 5.4).

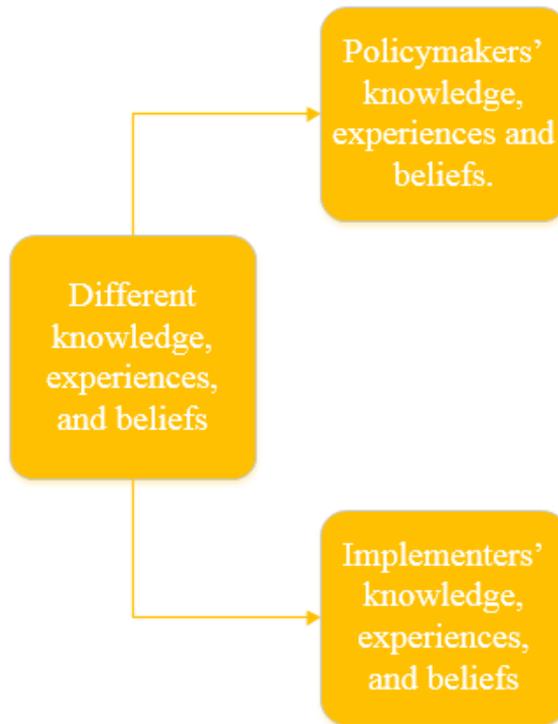


Figure 5.3 *Initial theme: knowledge, experiences, and beliefs*

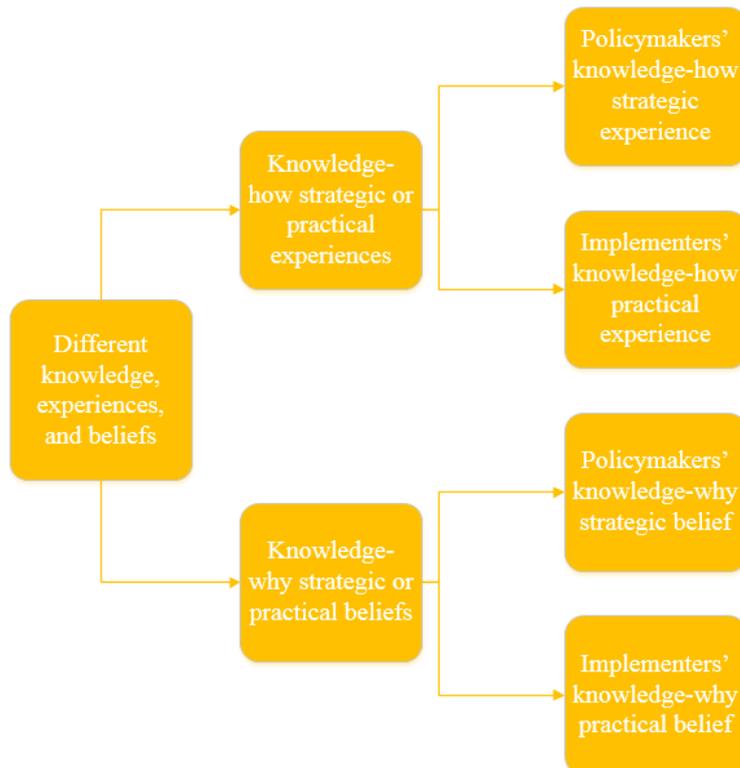


Figure 5.4 *Refined theme, sub-theme and sub-sub-themes*

Therefore, the extracts and codes were further analysed, categorised and refined into a coherent structure that represented the finer details of theme. From this the latent codes that interpreted the extracts were paraphrased to further explain and refine the meaning of the theme.

#### *5.3.6.1 The Policymaker Coding Refinements and Development of Themes*

The nine policymakers' interviews were transcribed and coded before the implementers' interviews took place to enable an understanding of the development stage of Smile4Life before generating implementation data. Coding of the policymakers' transcripts was inductive and took place over six phases as outlined by Braun and Clarke (2006). After familiarisation of the data through transcribing, reading and re-reading of the transcripts, phase one coding was done line-by-line. After initial line-by-line coding, a deeper level of interpretative analysis of the transcripts took place. Data analysis was done systematically within each transcript to identify items of interest. The process of coding was laborious and iterative with initial ideas for many of the codes shifting and changing until the final most precise code label was identified. For example, the final code label 'boundaries' was originally labelled as 'understanding roles' and 'level of involvement' although having reflected on their use, neither of these terms seemed to represent what was being said, whereas the code 'boundaries' worked effectively. This iterative process was achieved through a process of internal reflection by the researcher and through iteratively working with the data, reflecting on what was said and through making notes. The coding was also helped through informal discussions with colleagues as well as through some challenging discussions within supervision sessions. There were also some instances when theme titles were refined to ensure more depth to the theme rather than just a superficial and descriptive title. For example, 'Programme ownership' became 'intra-group inclusion and inter-group exclusion', which changed the theme from a subjective description to a clearer description of the relationships between the groups.

The development and refinement of codes was done using a mix of workings on paper copies and using the computer software package NVivo. The paper copies enabled areas of interest to be highlighted, cut up, and grouped in piles, whilst NVivo could quickly identify nodes, words, and sentences that were used across the data set. Therefore, the working with paper copies allowed familiarisation with each transcript whilst NVivo enabled easier coding and interpretation of the entire data set.

The stages and refinement of coding and development of themes as shown in Table 5.1, although it should be noted that the process was iterative within and across each stage. Further examples of the coding and development of themes can be found in Appendix 5.2.

Table 5.1 *Policymakers' stages of coding, indication of the number of codes and development of sub-themes and themes.*

Stage	Description	Total Codes	Total Sub-themes	Total themes
Line by line	Reading and re-reading of the transcripts. Semantically coding each line	484		
1 <sup>st</sup> stage refinement	Identifying interesting features of the data and refining initial semantic codes into conceptual codes	70		
2 <sup>nd</sup> stage refinement	Ensuring conceptual codes are concise across the data set and putting similar codes into categories	36		
Sub-themes	The sorting and merging of the categories of conceptual codes. Separate categories were merged to form sub-themes of undefined but emerging themes.		11	
Main themes	Checking the themes work in relation to the sub themes, codes, and the data set. Making sure that the themes tell a convincing story of the data			3
Meta theme	Weaving together the analytical narrative and the data sets to give a contextualised and persuasive argument of the data.			1

### 5.3.6.2 *The Implementer Coding Refinements and Development of Themes*

Once themes for the policymakers' interviews were developed, the implementers' transcripts were analysed. Coding of the implementers' transcripts was carried out both inductively by looking for new codes and by using the *a priori* codes and themes that had already been established from the policymakers' data. Inductive analysis also helped to identify contradictions and differences between the policymakers' and implementers' experiences. For example, the theme 'standardised or flexible

implementation’ was initially ‘standardised implementation’ but after analysis of the implementers’ transcripts the theme was refined to represent the conflict between the groups’ implementation vision. After familiarisation of the data through transcribing, reading, and re-reading of the transcripts, phase one coding of the implementers’ transcripts was done line-by-line. After initial line-by-line coding a deeper level of interpretative analysis of the transcripts took place. Data analysis was done iteratively through each transcript to identify potential codes and examine whether the identified potential codes developed into repeated patterns across the entire data set. To prevent forcing the data into predetermined codes and themes, coding still took place over six phases (see Table 5.2 below).

Table 5.2 *Implementers’ stages of coding, indication of number of codes and development of sub-themes and themes.*

Stage	Total Codes	Total sub-themes	Total themes
Line by line	590		
1 <sup>st</sup> stage refinement	84		
2 <sup>nd</sup> stage refinement	39		
Sub-themes		11	
Main themes			3
Meta theme			1

It should be noted that the implementer data had more initial codes due to the implementers’ discussions of development and implementation experiences, rather than just the policymakers’ developmental experiences. The new codes were categorised as sub-themes and sub-sub-themes of previously established themes. For example, knowledge codes, although different (the policymakers had codes referring to strategy and the implementers had codes representing their practical knowledge) could still form a theme that represented both groups’ different knowledge beliefs and experiences. The policymakers’ transcripts were checked for experiences that matched or contradicted the implementer codes, sub-sub-themes and sub-themes.

### **5.3.7 Phase 6: Producing the Report**

Phase six is described in detail in chapter 6. However, this phase focused on explaining the thematic map and overall interpretations of the data through vivid extracts that

were embedded in analytical narrative, going beyond description of the data and making a clear argument in relation to the research.

## **5.4 Coding Reliability and Presentation of Quotes**

A variety of measures were taken in order to ensure that the researcher's descriptions and coding of the data reliably reflects the vivid and detailed descriptions of the policymakers' and implementers' experiences. The following section focuses on describing the measures taken to ensure reliability of the coding and the ways quotes have been used to convey the essence of the policymakers' and implementers' experiences to others.

### ***5.4.1 Reliability and Consistency of the Codes***

In order to determine consistency of coding, an independent coder was given a sample of extracts to code individually and independently from the researcher's codes. The independent coder was then given a codebook (created by the researcher) to compare their initial codes and themes with the researcher's codes and themes (an example from the codebook is presented in Appendix 5.2). The description of codes and themes were carefully constructed, for example the code: 'no discussion' 'describes the implementers' claims that the policymakers would not allow the implementers to share their opinions on how Smile4Life should be developed'. This code was categorized in the theme 'lack of consultation', which represents the 'implementers' belief that they were prevented from discussing, deliberating, and making key decisions in the development of Smile4Life'.

Agreement was sufficient from the sample of extracts, with agreement being over 95%, the independent coder's and researcher's codes were similar and the independent coder's codes did not add anything new to the findings. Therefore, a further review of the coding was not needed. The researcher's reflexive diary was also useful here as it helped the researcher to understand how their experiences, perceptions, and understandings influenced the interpretation of the data. An extract from the diary shows useful these notes were in ensuring reliability: *At first I sympathised with the policymakers and thought the implementers were unwilling to change, I therefore coded more negatively towards the implementers 'ignoring advice' and 'resistant to change'. However, after interviewing the implementers I became more sympathetic to*

*the implementers' experiences and refined my initial codes to give more of a balanced perspective: 'difference in thinking' and 'lack of belief'.*

Once the findings were written, two feedback meetings took place between the policymakers and the researcher and the implementers and the researcher. This enabled the participants to challenge and verify the themes, codes, and overall interpretations of the data. The participants agreed with the themes and interpretations, although in one instance the implementers felt that they had not been resistant to change their way of working during the implementation of Smile4Life and questioned the theme 'resistance to the change'. After presenting quotes and definitions of the theme and sub-sub-themes the implementers agreed with the theme and the interpretation of the quotes. However, it was agreed that the theme should become 'resistance to the implementation' since they were resistant to work in line with an implementation strategy that they disagreed with. The feedback meetings were an important element in the data analysis process, adding to the credibility of the researcher's interpretations of the data and ensuring accurate representations of the policymakers' and implementers' experiences.

#### ***5.4.2 Anonymity and Use of Quotes***

Due to the small number of policymakers (n=9) and implementers (n=10) who were eligible to participate in the interviews, anonymity has been maintained by labelling quotations presented as either 'policymaker' or 'implementer' with no other finer detail (e.g., Policymaker 1, Implementer 3) provided. In addition, any features (e.g. identifiable styles of speech, specific reference to their role, site of work) that could identify a participant have been removed.

Quotes have been used in the analysis to reflect the opinions and feelings of the policymakers and the implementers. When names were mentioned or other identifying information was discussed, they have been replaced with XXX and referred to as generic name e.g. Policymaker or location e.g. Lancashire. Quotations are presented as both long, indented extracts, and as smaller segments, which have been integrated in the main text. The quotations and extracts were shown to the participants and each group confirmed that the quotes were appropriate to use and unidentifiable.

Within the main text, quotations are indicated by the use of '...'. Pauses and utterances that do not add any value to the quote have been removed to aid the flow of the quote.

At the start of each theme and sub-theme an illustrative quote is used to provide a vivid sense of the descriptions and words used by the participants.

## **5.5 Summary of the Methodological Journey**

It is difficult to articulate and share the exact analytical journey and the process of interpretation that occurred during this study as analysis is complex, subjective, interpretative and individualistic. However, this chapter has attempted to be as explicit as possible in presenting the analytical journey undertaken. It is hoped that the findings of this study will further present the analytical journey and provide clear narratives, distinct themes, vivid illustrations, and verbatim quotes to describe the experiences of the policymakers and the implementers.

# 6 METHODS

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## 6.1 Introduction

In the previous chapter the research approach underpinning the present study and the rationale for its use in this study was discussed. This chapter outlines the study methods undertaken for this study.

## 6.2 Study Design

This was a semi-structured interview study using an iterative description approach (Thorne, Reimer Kirkham & MacDonald-Emes 1997) and thematic analysis (Braun & Clarke, 2006).

## 6.3 Study Population

The study population consisted of two sets of individuals. The first set were the policymakers. The policymakers are Dental Health professionals from Public Health England, NHS trusts, or the County Council, who had been directly involved with the planning and development process of Smile4Life. The policymakers had senior positions and managerial roles, and were experienced in developing and working with Public Health policies and Oral Health programmes. The policymakers did not have experience of implementing Oral Health programmes across Lancashire.

The second set of individuals were the implementers. The implementers were Oral Health professionals from either the NHS trusts or County Council settings across Lancashire and were responsible for liaising with staff from early years' settings and nurseries. The implementers' role included recruiting staff from these settings to implement Smile4Life. The implementers would then train staff to deliver Smile4Life messages and complete the Smile4Life workbook. The implementers would go into the settings and assess the workbook in accordance to the criteria for receiving Smile4Life 'teeth' awards. The implementers had experience of implementing health interventions across Lancashire. Essentially, the implementers worked in four area teams (East Lancashire, Central Lancashire, South Lancashire and Blackpool, Fylde and Wyre) and each implementer worked with specific settings in their area to deliver Smile4Life and other health interventions and messages. The teams of implementers

regularly met to discuss their work, experiences, and implementation issues and success.

The policymakers were interviewed before the interviews with implementers were undertaken. The reason for this was the policymakers were the initial developers of Smile4Life and it was believed that to understand the journey of development and implementation, it made sense to first understand the experiences of those involved in the conception of Smile4Life

## **6.4 Procedure**

### ***6.4.1 Ethical Issues***

The study was approved by the University of Central Lancashire STEMH ethics committee (Appendix 6.1). The research did not require NHS or County Council ethical approval, as neither patients nor patient records were involved. Research governance approval was obtained from all the relevant NHS organisations (Lancashire Care NHS Foundation Trust, Lancashire Teaching Hospital NHS Foundation Trust and Blackpool Teaching Hospitals NHS Foundation Trust) and Lancashire County Council (Appendix 6.1). Good Clinical Skills Training was undertaken (Appendix 6.4) and an NHS Research Passport (Appendix 6.5) was obtained before the research took place.

### ***6.4.2 Sampling***

Participants were selected through snowball sampling. For the policymakers a known key contact (Public Dental Health Consultant) was asked to identify other key policymakers across Lancashire who were involved with the planning and development of Smile4Life. Those policymakers who agreed to be interviewed also identified others who had been involved in the development of Smile4Life and contacted them to see if they would be willing to take part. Convenience sampling was used to identify implementers attending a Smile4life network meetings in Lancashire.

### ***6.4.3 Recruitment***

Policymakers: The key contact sent a letter that informed other policymakers about the study and that a researcher would be in contact within seven days with more

information. The policymakers were given the opportunity to opt out of any further contact about the study by informing either the key contact or researcher.

Implementers: The implementers were provided with initial information about the study at a network meeting and they left their contact details with the researcher if they were interested in taking part.

For both groups, unless they had expressed a wish for no more contact, the researcher contacted potential interviewees by email or by post with information about the study and included the participant information sheet (Appendix 6.2) and consent form (Appendix 6.3). Within the initial information potential participants were informed that if they wanted to obtain more information or opt into the study then they should contact the researcher within seven days. After seven days all policymakers identified by the key contact and implementers who had left details, contacted the researcher to opt into the study. After the participants had opted into the study the researcher rang or emailed the participants. During the telephone call or email, the researcher discussed the study in more detail and clarified any issues that the participants had. The researcher confirmed that the participant still wanted to take part in the study and arranged a convenient time and place for the interview to take place. During this call the potential participants were also given the opportunity to decline further contact. Written consent was obtained before the interviews took place. The opt-in approach for being contacted by the researcher was decided upon to prevent the participants from being pressured by line managers and/or colleagues to take part in the study. Potential participants were also informed that the key contact would not be informed of who had opted in or declined further contact; this was to avoid the key contact pressuring staff to opt into the study.

#### **6.4.4 Data Collection**

A semi-structured schedule was used to guide the discussion during the two sets of interviews (for the policymaker interview schedule refer to Appendix 6.6 and for the implementer schedule refer to Appendix 6.7). Examples of questions asked were as follows: *Please tell me about how you became involved with Smile4Life? Please tell me about your experiences with Smile4Life? And please explain any guiding principles and evidence-base that you believe have influenced the development and*

*implementation of the programme?* Interviews were conducted at a convenient time and place for the participants and the interviews were audio-recorded.

Participants were asked not to disclose any identifying information regarding other members of the Smile4Life team or early years' setting staff, parents, careers or children, or to voice any professional concerns about other Health or County Council professionals. If identifying information was disclosed it was deleted from the audio-recording. Participants were advised that they did not have to answer any questions that they did not want to and they could stop the interview at any time

The audio recordings for each policymaker and implementer were given numbers, which were also used to identify the transcripts. These numbers are not used in the thesis to refer to participants because often the interviews were done in batches at one workplace and participants may have known who went in before or after them and presume numbers relate to a certain order in which participants were interviewed. The link between the numbers and the participant contact details were destroyed one month after the data were collected, providing the participant with some time to withdraw their data.

The intention to digitally audio record the interviews was made clear within the information sheet, and participants were advised that written notes could have been taken if preferred. However, all the participants agreed to be audio recorded.

Data were also collected on gender, age and ethnicity of the participants. Information was also collected on the type of organisation that they worked for. Since the sample came from a readily identifiable target population great care needed to be taken to maintain confidentiality. Therefore specific participant details such as role grade, role title and place of work were not collected in detail. In addition, as part of the governance approval, one of the organisations requested that no information was presented that was specifically attributable to the organisation.

Interviews were transcribed verbatim from the audio recordings by the researcher and the transcribers. Transcripts included details such as voice inflections to help ensure that the meaning of words was not altered from the spoken word to written texts and also included any relevant additional field notes taken.

Although they could have withdrawn from the interview at any time during the

interview, withdrawal from the study was only possible up to one month after the interview had taken place. After this, withdrawal was no longer possible since analysis would have commenced and the analysis of the specific dataset could have influenced the ongoing analysis of the other data. However, none of the participants wished to withdraw from the study.

## **6.5 Other Considerations**

### ***6.5.1 Anonymity***

Since the sample comes from a fairly readily identifiable target population great care was taken when presenting the data, reporting the findings, and writing the overall thesis that quotations and data extracts were not attributable to an individual. To maintain this in the reporting of the data, participants are not given a number but referred to by whether they were an implementer or policymaker. Manual records of consent forms have been stored in the locked filing cabinet of the researcher. Manual transcriptions of the data were also stored in a separate locked filing cabinet of the researcher, with no link between transcribed data and consent forms. Electronic data are kept in a password protected folder in the researcher's personal area on the UCLan network. Email correspondence with participants regarding participation was deleted after the interview. Transcribers signed a declaration preventing them from discussing or transferring recordings to unauthorised personnel. The transcribers had no link between the participant number and the recordings; only the research team had a link between recordings and participants.

# 7 FINDINGS

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## 7.1 Introduction

In the previous chapters the aims and objectives of the study and the methodology, and methods used for this study have been outlined. The purpose of this chapter is to present the findings of the policymakers' and implementers' experiences of designing and implementing an Oral Health programme (Smile4Life). The chapter opens with an overview of the characteristics of the policymakers and implementers who participated in the study. A description of the development of themes, sub-themes, and sub-sub-themes will follow. The findings from the data will then be presented in three sub-sections that are consistent with the theme categories of: intra-group inclusion vs. inter-group exclusion; different knowledge, experiences and beliefs, and standardised or flexible implementation. The subsequent sections will consist of each theme being presented, described, and supported with the sub-themes, sub-sub-themes and direct quotes from the policymakers' and implementers' interviews. Direct quotes are both woven into the text and denoted by the use of '..' or they are presented as more extended quotes and are indented from the text.

### 7.1.1 Reflections

*This study was done iteratively and despite the findings being presented after the literature review, the policymakers' and the implementers' interviews were conducted alongside the development, implementation, and analysis of the interviews and the literature review. Therefore, findings from the data analysis informed the literature review.*

*When the initial interviews with three of the policymakers were undertaken, I was not aware of the implementer group. As a result of the interviews with some of the policymakers, the implementer group emerged and the direction of the study changed. Therefore, the study objectives were refined and the interview schedules adjusted to account for the implementer group. Additionally, it meant that the implementers were interviewed after the policymakers' interviews and analysis of their interviews had taken place. Rather than being detrimental to the research, interviewing the implementers after the policymakers represented the initial process of the development of Smile4Life as the implementers were consulted after the initial conception of*

*Smile4Life. This provided some context of first being submerged in the development process and understanding the experiences of those involved in the conception of Smile4Life. Then I was submerged in the delivery process of Smile4Life and the experiences of those involved after the initial conception of the programme and were responsible for delivering Smile4Life in early years' settings. It also enabled me to create an interview schedule specifically for the implementers, which allowed for comparison and clarification of the policymakers' interviews but also to include questions regarding the delivery of Smile4Life within the early years' settings, which is something the policymakers did not take part in*

## **7.2 Participants**

Nineteen people participated in the study, of these nine were policymakers and ten were implementers. The nineteen participants were recruited across Lancashire and worked for Public Health England, NHS Trusts, and the County Council. Eighteen participants were female, one participant was male; all of the participants were White Caucasian and aged between 30 and 60 years old.

## **7.3 Description of the Interviews**

The interviews lasted between 34 minutes and 1 hour 24 minutes. All nineteen interviews were conducted at different locations across Lancashire. Twelve of the interviews took place at a County Council office, four interviews took place at a Public Health England office, and three interviews took place at a meeting room at the University of Central Lancashire. All of the participants agreed to be audio-recorded and recordings were transcribed into NVivo for analysis.

## **7.4 Meta-Theme and Themes**

This section will define and give an overview of the meta-theme whilst also presenting the meta-theme and the relating themes, sub-themes and sub-sub-themes. Further detailed descriptions of the themes and sub-themes will be presented in subsequent sections and once the detailed descriptions of the themes and sub-themes have been presented, a detailed description of the meta-theme will then be outlined.

### 7.4.1 Overview of the Meta-Theme and Themes

The meta-theme represents the essence of the policymakers' and implementers' experiences. Figure 7.1 is a visual representation of the meta-theme and the associated themes

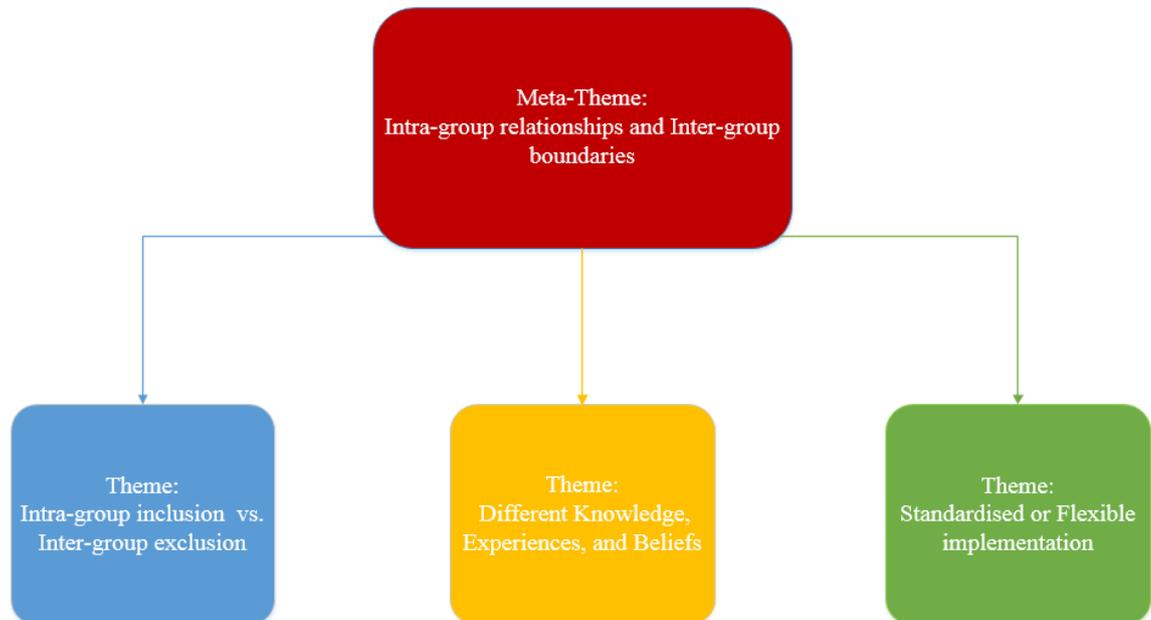


Figure 7.1 *Meta-Theme and Themes*

The meta-theme that encompasses the findings of this study is 'Intra-group relationships and Inter-group boundaries'. The meta-theme refers to 'Intra-group relationships and Inter-group boundaries'. Intra-group relationships are the relations between the people within their own group (policymaker group or the implementer group). The inter-group boundaries refer to the divisions between the two groups that meant people within each group perceived themselves to be distinct from people in the other group. Three themes underpin the meta-theme: intra-group inclusion and inter-group exclusion; different knowledge, experiences, and beliefs; and standardised or flexible implementation. The theme intra-group inclusion and inter-group exclusion outlines that within each group, individuals interacted with one another and had a shared sense of unity and group beliefs. However, there were boundaries between the two groups due to a lack of interactions, different knowledge, experiences, and group beliefs. Different knowledge experiences, and beliefs identifies that each group shared similar knowledge and experiences, but between the groups this knowledge was not shared. A standardised or flexible implementation outlines that due to each group

feeling excluded from the other group and the differences in knowledge, experiences, and beliefs, these differences prevented the formation of a shared vision of how to implement Smile4Life.

#### ***7.4.2 Themes within the Meta-Theme***

Three themes underpin the meta-theme: intra-group inclusion and inter-group exclusion; different knowledge, experiences, and beliefs; and standardised or flexible implementation. These themes are illustrated in Figure 7.2.



Figure 7.2 Themes, sub-themes and sub-sub-themes

## 7.5 Intra-Group Inclusion Vs. Inter-Group Exclusion

*‘I think the biggest challenge and most unexpected challenge was engaging with the delivery staff [implementers], and getting them to work differently and take on a new problem’ [Policymaker]*

### 7.5.1 Introduction

Intra-group inclusion vs. inter-group exclusion is a theme that reveals the feelings of inclusion and exclusion, which occurred when the policymakers and implementers were required to work together. The theme highlights that despite the sense of a shared passion of ‘improving the Oral Health of the community’, the two groups failed to work together effectively and create positive inter-group relationships. The theme also highlights barriers to the two groups working together to form a cohesive group for the purpose of the Smile4Life programme. Figure 7.3 outlines the sub-themes and sub-sub-themes that occur in this theme.

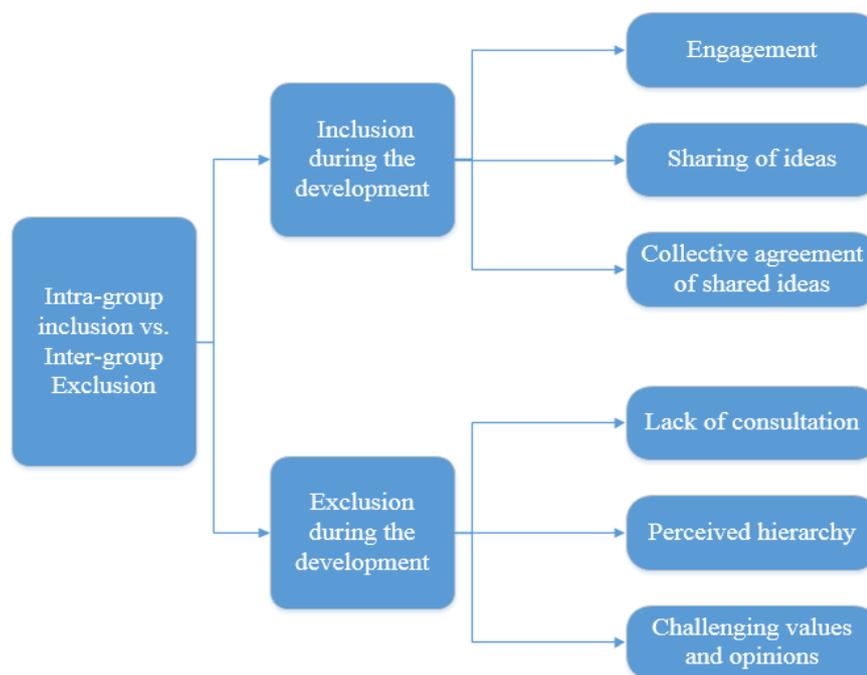


Figure 7.3 *Intra-group inclusion vs. Inter-group exclusion*

In the next section, the two sub-themes of inclusion and exclusion during the development of Smile4Life (illustrated in Figure 7.3) are explained in more detail and it is demonstrated how these themes were generated from the data.

### 7.5.2 *Inclusion During the Development*

*‘The moment in time where I thought: we’ve done it; we’ve created something that’s broken down the barriers’ [Policymaker]*

Inclusion during the development of Smile4Life refers to the policymakers coming together and developing Smile4Life. Inclusion during the development of the programme occurred through three phases: regular group engagement within the policymaker group, sharing of ideas within the policymaker group, and collective group agreement of the shared ideas. The following section will explain the sub-theme ‘inclusion during the development’ through the detailed explanations of the sub-sub-themes represented in Figure 7.4.

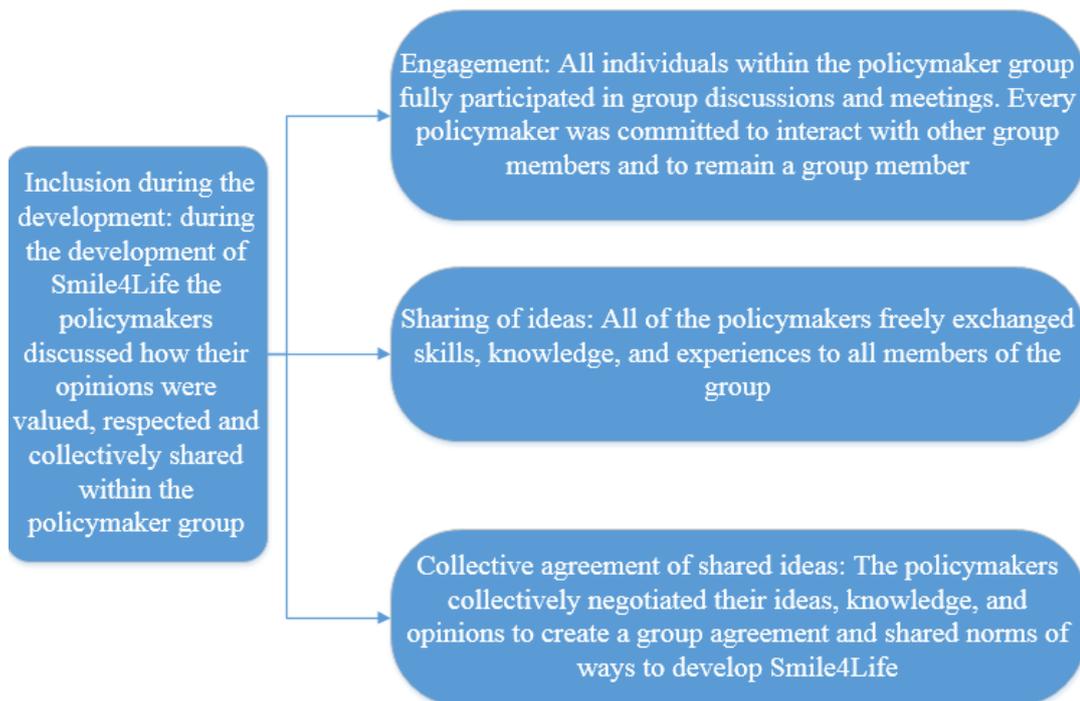


Figure 7.4 *Inclusion during the development*

#### 7.5.2.1 *Engagement*

During the ‘initial’ designing stage of Smile4Life, four of the nine policymakers from the policymaker group engaged with each other and they all felt ‘heavily involved’ in

the planning of Smile4Life. After the initial four policymakers engaged with each other they ‘came together’ with a further five policymakers from the County Council. The policymakers claimed that they all ‘worked very closely with each other’ and felt included in the ‘strong development discussions’ that took place within the policymaker group.

The policymakers talked about how they created a sense of group belonging as each policymaker felt ‘very listened to’ and had the opportunity to be ‘very hands on’ during the development of Smile4Life. The policymakers regarded their coming together as a ‘positive experience’ and were ‘most proud of the partnership’ that they formed within the policymaker group:

*‘I have to say that the thing that has worked the best for me is the partnership. I have never seen it so well done, the partnership between the XXX and XXX [policymakers]...it’s worked really, really well and I think it’s been really, really nice to see’  
[Policymaker]*

The policymakers described their group partnership as a ‘bomb drop moment’ because they had created ‘something that’s broken down all of the barriers’ between the individual policymakers. The policymakers claimed that the partnership worked for several reasons:

*‘You are able to challenge each other on thought process, keep each other grounded through the process and it is hugely important to do that in a respectful way...it’s about your characters, and your beliefs and your commitment and then on top of that your willingness to kind of expose yourself and almost be vulnerable to that person’ [Policymaker]*

The policymakers spoke about how respect, willingness, and commitment facilitated the creation of strong partnerships within the policymaker group and without these elements the partnership might not have ‘necessarily work[ed]’.

Due to regular successful engagements, mutual respect and feeling valued, the policymakers broke down the boundaries between each individual policymaker and created a group of policymakers to ‘bring [the Smile4Life] programme together’.

#### 7.5.2.2 *Sharing of Ideas*

When the policymakers came together to share ideas to develop Smile4Life both ‘conflict’ and ‘disagreements’ were thought of as ‘constructive’ and ‘really healthy’

for creating ‘a good plan’. When the four initial policymakers contacted the other policymakers, feelings of exclusion could have occurred between the initial and new policymakers. However, each policymaker felt that they respected each other’s knowledge and that their different opinions were perceived to be ‘interesting’ and that the sharing of knowledge was a ‘really enjoyable experience’. The policymakers described each other as ‘enthusiastic’ and were willing to share their experiences, despite ‘coming from different organisations’:

*From the partnership of course you’re bringing a wealth of information from wider organisations as well so from XXX [policymaker organisation] they had their intelligence and structure that’s already in place and likewise within the XXX [policymakers from another organisation]. So you can get very channelled into your own system when you work within these organisations’ [Policymaker]*

Through respect and trust the policymakers openly shared their different knowledge. One policymaker described the experience of sharing knowledge as ‘being able to see the other person’s view’ and understanding that ‘you don’t necessarily need to all have the same level of understanding’ because that could, ‘in fact be detrimental’ to the development process. The policymakers freely shared the ‘best’ of their experience, discussed what ‘needed to be put into this one particular programme’ and further developed their sense of building a team. The policymakers talked of feeling ‘lucky to have been able to draw on the expertise’ of each other and they had ‘the opportunity to bring lots of versions’ of Smile4Life plans ‘to the table’.

The policymakers all had clinical experience and previous experience of working on similar policies and programmes. The willingness to share knowledge and experience within the policymaker group may have been due to the policymakers’ understanding that their experiences and beliefs would be similar.

#### *7.5.2.3 Collective Agreements*

The policymaker group collectively agreed on the information to use in the development of Smile4Life, which was based on each other’s’ experiences of ‘work[ing] as a team’. The policymakers believed that they worked ‘seamlessly’ together, and were ‘fully included’ in collectively deciding on the ‘innovative’ programme.

The facilitating factors that created group unity and collective decision making within the policymaker group were reported to be their characters, beliefs, commitment to the group, and willingness to share their experiences and knowledge. Respect was also reported as a facilitating factor, when the policymakers' had different opinions they were challenged in a respectful way and made democratic decisions. Repeated positive interactions increased the policymakers' enthusiasm to work as a group and develop Smile4Life in a way that all of the policymakers agreed with.

### 7.5.3 Exclusion During the Development

***'Consulted, I don't think they [policymakers] know the word, no, never consulted, we were never consulted' [Implementer]***

Development exclusion occurred as a result of the implementers feeling that they had not been fully consulted during the development of Smile4Life. Through lack of consultation, perceptions of a hierarchy, and challenging values and opinions the implementers felt excluded from the development of Smile4Life. The following section will explain the sub-theme 'exclusion during the development' through the detailed explanations of the sub-sub-themes represented in Figure 7.5.

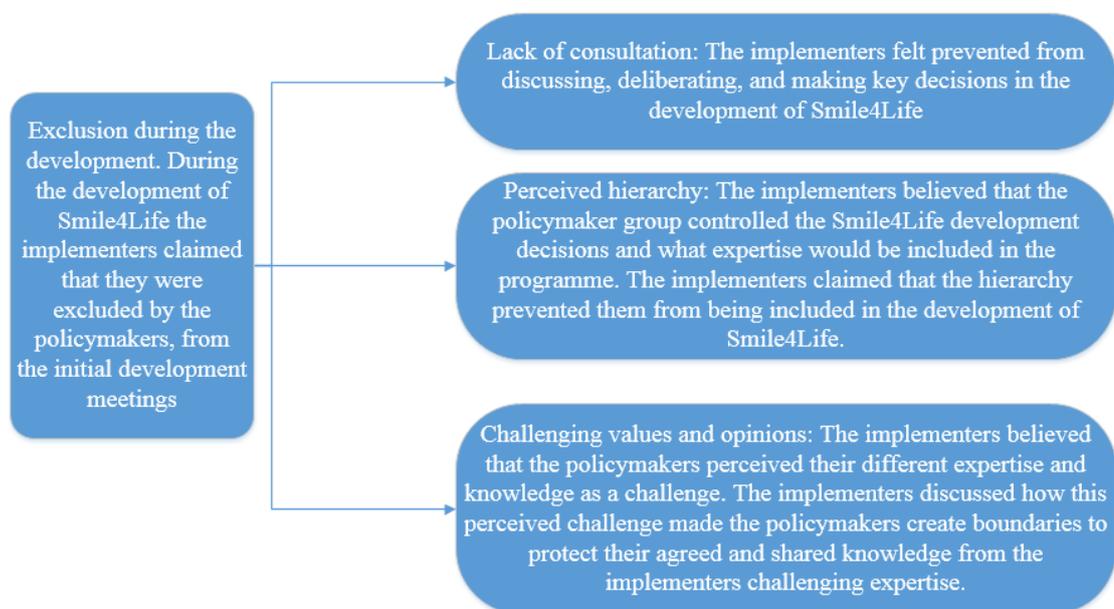


Figure 7.5 Exclusion during the development.

### 7.5.3.1 Lack of Consultation

Whilst the style of engagement within the policymaker group fostered strong relationships, feelings of inclusion, respect, and the free-flow of ideas, this was not replicated when the policymakers and implementers initially came together. Instead the implementers felt excluded and talked of a sense of being ‘prevented’ and denied from either fully participating or being ‘consulted’ in the development of Smile4Life. The implementers claimed that the development of Smile4life ‘was going on’ and they ‘only got to hear about it through somebody else who heard it through somebody else’. This resulted in the implementers being unable to ‘give feedback’, and reporting they ‘had not been listened to’ therefore they ‘had no input in the programme at all’. One of the implementers made this clear when asked whether they were consulted, saying with ‘exasperated’ feeling:

*‘We weren’t involved in any of the meetings, in the writing of the programme or anything, we were just given this programme and we didn’t have a clue what we were doing’ [Implementer]*

When the two groups did meet, the implementers believed that they were only ‘invited along to meetings to make us feel better’ about being part of the development process, but the implementers sensed that the policymakers ‘didn’t really want’ them there. One of the implementers explained their response to the first meeting with the policymakers: ‘it was like here is Smile4Life [and wondered] why didn’t you [policymakers] ask us what we’re already doing’. The implementers reported that they were ‘very frustrated’ by the feeling that they ‘were never consulted’ and expressed their further frustration that the policymakers did not consult with them in a way that they would have done:

*‘We would’ve asked everybody to come together and say what works for you and what doesn’t work’ [Implementer]*

The approach the implementers would have used would have been to consult everyone to get ‘everyone to agree on’ the development of Smile4Life. However, according to the implementers ‘honestly, this never happened’. The implementers discussed the process of working with the policymakers as a ‘negative’ experience:

*‘Tiring, frustrating, and insulted, I use the word insulted cos I’m insulted about how they’ve [policymakers] treated us’ [Implementer]*

The implementers' descriptions of working with the policymakers, is in stark contrast to the descriptions of how the policymaker group worked together. With the implementers feeling 'frustrated' and 'insulted', the boundaries between the two groups are evident.

The policymakers talked about their firm belief that 'every effort was made to keep them [implementers] involved in the process' and they 'tried very hard to understand where they [implementers] were coming from'. But the policymakers claimed that the 'biggest' and 'most unexpected challenge of Smile4Life' was their engagement with the implementers. The policymakers were insightful about the implementers' feelings and sensed that the 'unexpected challenges' may have been a result of the implementers feeling 'that they hadn't been part of the consultation process throughout the whole thing'.

It should be noted that although the policymakers claimed that they did 'try to include' the implementers, the policymakers 'strongly believed' that 'you can't really start' developing a programme from the point of view of the 'people [implementers] delivering it'. Therefore, the policymakers acknowledged that they 'did not plan' on when or how they were going to consult with the implementers. When the policymakers thought back to the 'lack of a plan' on how they would consult with the implementers, they explained that they would in future 'involve the implementers in the development' although they were unclear how they would do this.

The policymakers tried to consult and be inclusive with the implementers after the initial development of Smile4Life although the implementers did not recognise this and reported that they were not 'consulted', 'valued', or 'respected'. In hindsight, the policymakers recognised that the implementers 'views weren't taken into account' from the start and that this probably underpinned why the implementers 'dug their heels in'.

#### *7.5.3.2 Perceived Hierarchy*

The perception of a hierarchy was strong with both groups using language that reflected hierarchical practices, for example, through use of language relating to power, different levels of practice, types of experience, and knowledge. The policymakers claimed they had used a 'top-down approach' and the implementers did not 'understand [roles] roles' and resisted this approach.

The implementers discussed how Smile4Life was developed through a hierarchy and they were ‘pretty much told what they were doing’ by the policymakers. The implementers believed that they were excluded by the ‘powers that be’ from development meetings, as they ‘didn’t get invited to those [development] kind of meetings’. The implementers talked about how the policymakers ‘at the top aren’t listening to the people [implementers] that are doing the work on the ground’. The implementers discussed how the hierarchy between the policymakers at the ‘upper level’ and implementers ‘at the bottom’, prevented Smile4Life messages from getting filtered down and ‘caused the breakdown in understanding of messages’.

The implementers expressed a belief that there needed to be ‘discussion’ between the policymakers and implementers because this would have ‘produced something that everybody was happy with’. However, the implementers perceived that the policymakers ‘sat in their ivory towers’ when developing the programme. The implementers’ perception of a hierarchy is further highlighted when the implementers talked, ironically, about being the policymakers’ ‘little soldiers’ and how the policymakers should have come to ‘see what we are doing in the trenches’. The implementers’ understanding of the ‘new structure’ was one in which they, and the staff they worked with, were positioned as soldiers and the implementers expressed a sense of ‘frustration’ that their ‘feedback was [not] being filtered’ back through the hierarchical structure.

As a result of the perceived hierarchy and the lack of consultation the implementers felt Smile4Life was ‘thrust upon’ them and that they were ‘more or less told that was the way forward for Dental Health in the area’. The implementers claimed the hierarchy was ‘very deliberate’ to make it ‘become us and them’ to ensure ‘Smile4Life was taken forward’, as was evident in the heavy irony of one implementer describing this as being ‘alright’:

*‘As long as we know that we’re down here and we’re not up at their strategic level. Then it’s alright’ [Implementer]*

As a result of the ‘us versus them’ mentality and feelings of exclusion, the implementers claimed they ‘all felt depressed by what was actually happening’ in the production of Smile4Life as it was ‘a dictatorial thing’:

*'I have not found it easy, I've found it stressful, I found the links with the powers that be the problem' [Implementer]*

The implementers perceived that the links with the 'powers that be' were negative and the implementers did not believe that the programme needed 'all those people [policymakers] at the top involved'; this further fostered a sense of exclusion.

### 7.5.3.3 *Challenging Values and Opinions*

Although the policymakers claimed that they tried 'very hard' to include the implementers in the development of Smile4Life, the implementers reported that the policymakers just 'would not listen' to their opinions when they challenged the policymakers' development vision. The implementers claimed that the policymakers ignored and 'did not really respect' their 'years of professionalism':

*'There's been quite a lot of us with experience of Oral Health promotion and that's been totally dismissed' [Implementer]*

The implementers reported that the policymakers united against them and communicated with them in a way that ensured their opinions did not result in changes to the policymakers' collective development vision:

*'It was very much, one sends you an email and says "I want your feedback by the close of play today or tomorrow", which is impractical, knowing how we work and we are out and about delivering, I don't even get my emails the same day, so then it was, "Oh sorry feedback is too late, we'll just have to go ahead as it is" [Implementer]*

The implementers saw this as a 'deliberate' attempt by the policymakers to override the conflicting group beliefs by preventing the implementers from being able to give feedback and share their opinions.

As a result of the policymakers viewing the implementers' values and opinions as challenging, rather than constructive critique, the implementers 'got together' with a focus to discuss the problems and agreed that they had been excluded and prevented from sharing their opinions and values in the development of Smile4Life. The implementers perceived that the policymakers viewed their 'strong bond' and sense of 'alliance' as a means of collectively challenging the development of Smile4Life.

The implementers expressed concerns about voicing their opinions, as one implementer explained, 'if we say something, they [policymakers] thought, oh they're

challenging us here'. The implementers claimed that the policymakers' response to this challenge was to act as 'a shoulder to cry on' whilst internally thinking 'we're [policymakers] not gonna change anything'. The implementers claimed that their opinions and values were ignored, creating feelings of exclusion, whilst the policymakers perceived these differing values and opinions as a challenge.

#### ***7.5.4 Summary of Intra-group Inclusion and Inter-group Exclusion***

The analysis revealed the ways in which Smile4Life generated a sense of inclusion within the policymaker group and within the implementer group separately, but also fostered a sense of exclusion between the two groups. This was apparent when examining the development journeys that occurred.

It became apparent when undertaking the analysis that the policymakers' approach to the initial development of the programme excluded and denied opportunities for the implementers to participate in this early planning phase. This apparent exclusion appears to have set up the conditions and context for some of the conflict and dysfunction that occurred in the implementation phase. Regardless of best intentions, the initial approach taken by the policymakers was perceived as being both exclusive and hierarchical by the implementers. Rather than fostering a sense of inclusion, what actually occurred was negativity from the implementers as a result of them feeling excluded. The implementers felt Smile4Life was dictated to them.

It is clear that within the group of implementers there was a growing sense of resistance towards the policymakers and Smile4Life; this unease started during the development stage of Smile4Life. This was compounded by the fact that the policymakers and implementers were working within their own separate groups and these groups were informed by different sets of beliefs, values and ways of working. The implementers formed strong intra-group relationships in order to unite as a group to challenge the policymakers' development decisions. Put simply, Smile4Life was created by individuals from the policymaker group who did not sufficiently engage with the individuals who made up the implementer group.

Barriers to the two groups uniting were exclusion from meetings, disrespect, and poor communication (for example, failing to listen to the other group's opinions). These factors were compounded by different group knowledge, goals, expectations and a perceived hierarchy that led to Smile4Life consisting of just the policymakers'

development vision. At the development stage it is clear that the implementers felt excluded from the development of Smile4Life, which created the initial breakdown in relationships between the policymakers and implementers.

## **7.6 Different Knowledge, Experiences, and Beliefs.**

*‘There are different skill sets and knowledge, different backgrounds, and experiences when you are developing something and what you think something means might actually mean something different to someone else’ [Policymaker]*

### **7.6.1 Introduction**

This theme discusses two types of knowledge. Knowledge-how skills are acquired through multiple experiences of working with policy and developing population interventions, or implementing previous programmes within settings. Knowledge-why beliefs are developed through training and understanding the type of evidence to use when developing or implementing programmes. With regards to these types of knowledge, the policymakers had a strategic focus and the implementers had a practical focus, due to their different training and experiences. Figure 7.6 outlines the sub-themes and sub-sub-themes within this theme.

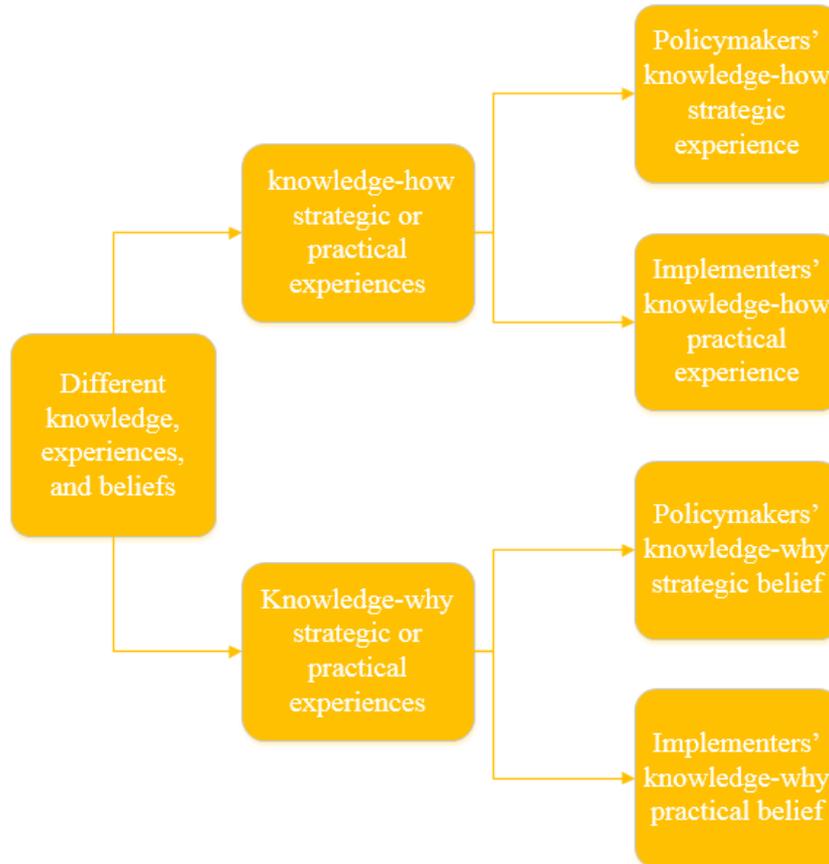


Figure 7.6 *Different knowledge, experiences, and beliefs*

The two groups had different knowledge of how and why experiences and evidence could and should, be used in the development and implementation of Smile4Life. The previous theme presents how the lack of sufficient engagement and collaboration between the groups led to boundaries and created a lack of shared belief in the development process. Inevitably this set the scene for the difficulties that occurred when the two groups needed to share their different knowledge, experiences, and beliefs.

### **7.6.2 Knowledge-How Strategic and/or Practical Experience**

*‘It’s to do with experience not necessarily other tangible programmes’ [Policymaker]*

Knowledge-how in this context is the implicit knowledge based on experience of how to develop and implement an Oral Health promotion programme. Implicit knowledge is often inferred between individuals who have shared in similar experiences, as it is difficult to articulate and directly express. This knowledge is acquired through

experience and reinforced by successfully developing and/or implementing promotion programmes.

The policymakers' knowledge-how was acquired through previous experience of strategically developing population-based Oral Health programmes. Conversely, the implementers' knowledge-how was developed through practically implementing health programmes within community settings. The implicit nature of this knowledge meant that both the policymakers and implementers could not specifically identify or translate to each other, how skills from their specific experience could be used to develop Smile4Life. Due to the difficulties of both groups being unable to express their knowledge-how to the other group, the groups could not understand each other's experience or reach a collective agreement on a shared development and implementation vision.

The following section will explain the sub-theme 'Knowledge-how strategic and/or practical experience' represented in figure 7.7.

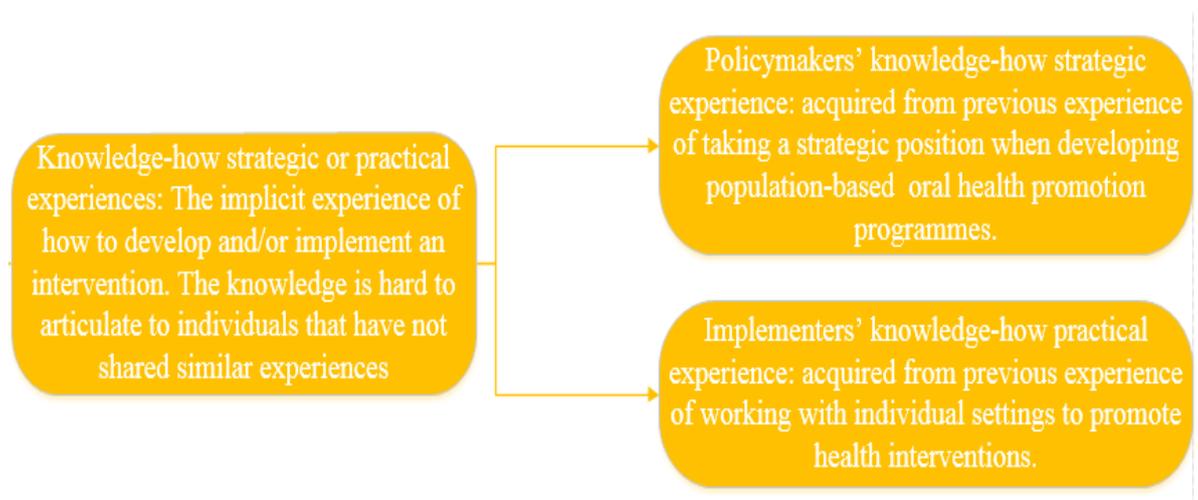


Figure 7.7 *knowledge-how strategic experience and/or practical experience*

#### 7.6.2.1 *Policymakers' Knowledge-how Strategic Experience*

Table 7.1 illustrates the specific knowledge-how programmes and policies that the policymakers had experiences with, which informed their strategic focus on how Smile4Life needed to be developed and underpinned.

Table 7.1 *The policymakers' knowledge-how experience*

Programme	Description	Frequency Mentioned in Interviews
ChildSmile	Started in 2005, ChildSmile is a national Oral Health improvement programme in Scotland. The programme aims to improve Oral Health and reduce inequalities within all 3 to 11 year olds	9
Smiling For Life	The Smiling for Life Programme was a national campaign delivered across Lancashire between 2000 and 2007 and was designed by the Health Education Authority to promote good nutrition and Oral Health to 0 – 5 year olds.	4
Designed to Smile	Designed to Smile is an NHS Dental programme funded by the Welsh Government helping children to have healthier teeth.	1

Table 7.1 illustrates the limited knowledge-how experiences that were specifically articulated and with just three programmes mentioned by the policymakers, it may reflect the implicit nature of this knowledge. The policymakers shared similar knowledge-how experience and whilst all policymakers had experience with ChildSmile only four talked of the Lancashire based programme ‘Smiling for Life’.

The policymakers talked about their knowledge-how experiences, by stating that they ‘had a lot of experience’ with the strategies that they used to develop other programmes. One policymaker discussed being ‘privileged enough to work with ChildSmile’ in Scotland and claimed that they ‘had learned a lot from that experience’, and it influenced the development of Smile4Life:

*‘We used some of the examples that have been used in Scotland, we’ve got quite a lot of good sort of examples of what’s worked and what hasn’t worked’ [Policymaker]*

This strategic experience of developing other programmes became the policymakers’ knowledge-how experience and they used these experiences to inform ‘a model’, which they ‘designed’ and then used to develop Smile4Life.

Despite the policymakers’ accounts of ‘being strategically involved’ in developing other programmes and their claims that they had a ‘strong reliance on previous experience’ when developing Smile4Life and these experiences guided them to the

‘best way’ to develop Smile4Life, they were unable to explicitly identify the specific experiences and skills they used from their knowledge-how experiences:

*‘There was never a meeting where we actually discussed how it [Smile4Life strategic plan] was devised and how we were going to achieve our objectives’ [Policymaker]*

The policymakers’ vague explanations of knowledge-how experience may reflect the implicit nature of this knowledge, reflecting the difficulties of articulating this knowledge to other individuals, especially those people who have not shared similar experiences.

The policymakers’ strategic focus was on developing and delivering consistent messages at ‘very little cost’. The policymakers’ experience came from working with national programmes and therefore the policymakers believed that Smile4Life needed to become national because this is how they thought programmes became successful.

#### *7.6.2.2 Implementers’ Knowledge-how Practical Experience*

The specific knowledge-how of programmes and policies that the implementers had experiences with, and informed their strategic focus on how Smile4Life needed to be developed and underpinned are summarised in Table 7.2.

Table 7.2 *The implementers' knowledge-how experiences*

Programme	Description	Frequency Mentioned in Interviews
Smiling for Life	The Smiling for Life Programme was a campaign delivered across Lancashire between 2000 and 2007 and was designed by the Health Education Authority to promote good nutrition and Oral Health to 0 – 5 year olds.	10
Healthy Heroes	Healthy Heroes has been designed to help primary age children and their families make healthier food and activity choices across Lancashire	10
From Bump to Birth and Beyond	The aim of the Bump to Birth and Beyond programme is to provide information, advice and support to expectant parents in a friendly environment ensuring they have access to information which allows them to make informed choices about their pregnancy and the care of their new baby so babies are born healthy and are given the best start in life.	9
Eat Healthy, Be Active	Part of the Lancashire's Children and Young Peoples Plan to reduce the proportion of obese and overweight children and provides the opportunity for young people to become proactively involved.	9

The programmes outlined in Table 7.2 were all in place before Smile4Life was ‘thrust upon’ the implementers and formed the implementers’ practical knowledge of how to implement health programmes. Similar to the policymakers’ knowledge-how, the implementers’ knowledge-how experiences were also limited and apart from the explicit mentioning of the underpinnings of their knowledge-how experiences, the implementers were unable to articulate specific skills that they had developed through the use of these programmes. The implementers collectively agreed on the underpinnings of their knowledge-how, which illustrates that this knowledge was closely held and an unchallenged implementer group norm.

In contrast to the more strategic approach adopted by the policymakers, the implementers talked of a more practical approach to implementation. The implementers' previous knowledge-how experience informed them that by 'work[ing] as a team to produce something' to 'get an end result that everybody [people involved in the programme] is happy with' was the most appropriate way to develop a programme. The implementers had historically brought 'different areas of expertise together' to share and learn from the 'barriers they've [implementers] come across' to 'create a shared vision' of how to develop and implement the programme:

*'So it was inevitable as a team that we look at what's good work, and the bad work that we do, what's successful and what's not successful. And, wherever we've delivered [implemented] something it was always tip top' [Implementer]*

The implementers' knowledge-how was essentially developed from experience of how to engage with colleagues and the community to share implementation knowledge and community needs so as to create agreement on 'what does and what does not work'. However, the implementers believed that the policymakers' knowledge did not include this experience:

*'I think if you can't actually listen to experience and we [implementers] are actually going out there and visiting settings...it's not somewhere they've [policymakers] been out too much and experienced... I don't think they've [policymakers] actually seen what goes on' [Implementer]*

The implementers also felt that the policymakers 'lacked' the practical knowledge-how, consequently the implementers believed that Smile4Life was developed without their practical knowledge and they 'collectively agreed that Smile4Life would be impractical':

*'It is like, it's as if we've never been doing, we've never done any Oral Health promotion in our lives and then a merry band of people [policymakers] have come over to tell us how to do an Oral Health programme and actually they've [policymakers] have never actually delivered an Oral Health programme...we're [implementers] thinking Argh! Irritating!' [Implementer]*

The implementers thought that they were 'experts' in delivering interventions and the use of their knowledge-how experience was a 'good idea' as it allows people to share their experiences of delivery into 'what worked well' and ideas that they 'wouldn't do

again'. This allowed the implementers to have a collective understanding of the barriers and facilitators to implementation. The implementers believed that their knowledge-how experience would have enabled both groups to 'pick the best [evidence] and use that':

*'Us oldies, we do think we know best but some of that is because we have experience of delivery in the past... you [implementers] know how it works through doing, evaluating and doing needs assessments and they [policymakers] should've put it out as a pilot first' [Implementers]*

'Oldies' was used deliberately to define the 'years of experience' of delivering programmes, and the practical knowledge they had gained of 'how it works', something they claimed the policymakers did not have because they have not implemented programmes.

The implicit nature of the implementers' knowledge-how was unavailable to the policymakers as they did not have experience of implementing health programmes. The implementers wanted to share their knowledge with the policymakers but it was difficult to articulate this to the policymakers. They stated that the policymakers did not attempt to understand their knowledge; rather the policymakers used their own knowledge and dictated this to the implementers:

*'Well to be quite honest, everybody's an expert aren't they? There isn't one person that isn't an expert, but I think lots of people have things to contribute about how best something would work, so maybe it was more dictated and not a team effort into the resources that we [implementers] in effect would go out and roll out and use because we'd got the experience' [Implementer]*

This implementer is reflecting on the different knowledge-how that exists between the policymakers and implementers. Although people will always have their own 'expert opinions', the implementer felt that their knowledge-how should have been acknowledged by the policymakers and they all should have collectively discussed and agreed upon the best knowledge-how to create a shared underpinning of Smile4Life between the two groups. The policymakers talked of how they did 'include' the implementers' knowledge-how experiences into the Smile4Life programme, but the implementers 'failed to understand' that their knowledge was included. This 'lack of understanding' may reflect the implicit nature of the knowledge

that is difficult to articulate and easy to misunderstand if people have not shared the same experiences.

The sub-theme of ‘knowledge-how strategic and/or practical experiences’ essentially outlines that both the policymakers and implementers have experienced different knowledge-how, which is also implicit knowledge and therefore the experiences are difficult to transfer verbally or in writing to the other group. Conversely, within each group there was a shared sense of experiences within the policymaker group and within the implementer group, the knowledge-how experiences were easier to understand and interpret amongst group members.

### ***7.6.3 Knowledge-Why Strategic and/or Practical Beliefs***

***‘The principal piece of evidence which, is actually a document, brought all the evidence related to Oral Health together and the promotion of Oral Health, and that document’s called ‘Delivering Better Oral Health’’ [Policymaker]***

This sub-sub-theme represents the policymakers’ and implementers’ understandings of why a certain evidenced-based tool, approach, policy, or strategy should be used in the development and/or implementation of programmes. Knowledge-why is developed and reinforced through witnessing success when applying a tool, approach, policy, or strategy. The success of applying knowledge-why creates and strengthens the belief in that tool, approach, policy, or strategy. When a group of individuals have similar working experiences they will tend to share their beliefs and collectively apply and witness the success of using an approach, thus creating a collective knowledge-why belief. This type of knowledge is explicit and was easier for the policymakers and implementers to articulate, demonstrate and explain to each other. The following section will explain the sub-theme ‘Knowledge-why strategic and/or practical beliefs’ through the detailed explanations of the sub-sub-themes represented in Figure 7.8.

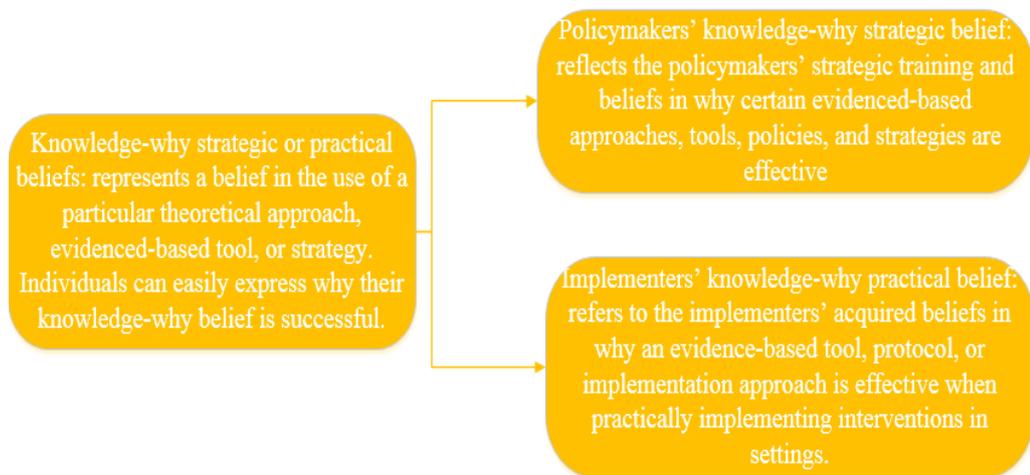


Figure 7.8 *Knowledge-why strategic and/or practical Beliefs*

### 7.6.3.1 *Policymakers' knowledge-why strategic Beliefs*

Table 7.3 outlines the programmes that had informed the policymakers' knowledge-why strategic belief and how often these were referred to within the interviews.

Table 7.3 *The Policymakers' Knowledge-why Strategic Belief*

Model/ Theory, Framework/ Policy	Description	Frequency Mentioned in Interviews
Delivering Better Oral Health	An evidenced-based tool kit for guidance of dental teams across England for preventing poor Oral Health through clinical based prevention methods	9
Behaviour Change	Theories, models, and techniques to explain or predict the processes involved in changing an individuals or community behaviour.	9
Clinical Evidence-base	An integration of the best available clinical expertise and evidence-based research that identifies determinants to poor Oral Health	9
Medical Model	Drives research and theorising about physical and psychological difficulties on the basis of causation and remediation	7
Marmot Review	An independent review commissioned in 2010 to propose the most effective evidence-based strategies to reduce health inequalities	7
Ottawa Charter	A charter for health prevention emphasising the need for healthy public policy, supportive environments, community action, developing personal skills and reorienting services	7
Stages of Change	This is a category of behaviour change that describes the process of change through distinct stages that an individual or community go through in order to achieve the desired outcomes	3
Dahlgren and Whitehead Rainbow	A figure to identify the inter-relationships between the wider determinants of health	1
Qualitative Research	Using interviews and focus groups to understand the barriers to implementing Oral Health interventions	1

Table 7.3 illustrates that the policymakers were able to discuss more knowledge-why underpinnings. Compared to the policymakers' previous knowledge-how strategic experience, the policymakers were able to discuss many more underpinnings of their knowledge-why strategic beliefs.

The policymakers' knowledge-why beliefs were based on 'scientific evidence', a 'medical model' and 'policy documents such as the Marmot Review and Delivering

Better Oral Health', which they had previously worked on. The policymakers' strategic knowledge-why beliefs told them to look at policies and evidence that viewed 'settings as a whole', rather than looking at the different types of settings. Therefore, by viewing settings as a whole, the policymakers needed to 'translate' Delivering Better Oral Health into a tool that would ensure the standardised delivery of Smile4Life.

The policymakers outlined their gathering of knowledge-why beliefs through using a 'whole hierarchy of evidence' from 'systematic reviews right down to expert opinion' and considering 'behaviour change models', 'Ottawa Charter', 'Dahlgren Whitehead Rainbow', 'motivational behaviour change factors' and 'qualitative research'. The policymakers described the process they went through to decide which knowledge-why evidence was the most appropriate for Smile4Life:

*'We were presented with a piece of evidence, there was a reference and there was also an estimate of the strength of the evidence for that piece of work... so we knew the 'how' but that [the evidence] was definitely the 'why' [Policymaker]*

The policymakers' 'extensive clinical background' meant that their knowledge-why beliefs referred to clinical determinants of Oral Health focused research:

*'It will be research about increasing fluoride...will look at say the Marmot Review around the benefits of fluoride varnish...it's always driven back to a clinical focus' [Policymaker]*

The policymakers also defined their knowledge-why beliefs to be around biological determinants 'about why decay and gum disease...can progress', and the need for 'controlling environments':

*'The information being (im)parted, the fact that we're [Smile4life advocates] limiting sugary drinks and all those things and encouraging brushing with fluoride toothpaste, all those things are the evidence base' [Policymaker]*

The policymakers' knowledge-why was restricted to clinical evidence explaining why an approach should be used and theoretically why it can be successful but, as they admitted, their knowledge-why did not extend to cover the 'process' of how it will work practically, rather, why it is important to include healthy eating and lifestyle into Oral Health programmes:

*'There is no evidence-base to say that if you wrap it up in a package which is Smile4Life and deliver it in partnership then it will produce the outcome' [Policymaker].*

The policymakers valued their knowledge-why belief as a 'fairly strong evidence-base' because it was supported by staff with whom they had previously worked and with whom they shared similar knowledge and experiences and this included 'some big names in dentistry'. Essentially, all of the policymakers had experienced similar training and work experiences and, as a result of this, they had a shared intra-group strategic knowledge-why belief.

#### *7.6.3.2 Implementers' Knowledge-Why Practical Beliefs*

The programmes and knowledge that informed the implementers' knowledge-why practical beliefs are presented in Table 7.4. The implementers claimed this knowledge should have informed the development and implementation plan of Smile4Life.

Table 7.4 *The implementers' knowledge-why practical beliefs*

Model/ Theory/Framework/ Policy	Description	Frequency Mentioned in Interviews
Smiling for Life	The Smiling for Life Programme was a national campaign delivered across Lancashire between 2000 and 2007 and was designed by the Health Education Authority to promote good nutrition and Oral Health to 0 – 5 year olds.	10
Healthy Schools Policy	Provides information and guidance for all the Partners working together for the benefit of Children and Young People. The Lancashire Healthy Schools Programme is a partnership between Lancashire County Council and the local NHS in North, Central and East Lancashire. The programme aims to motivate schools, early years' settings and other community centres to target health and well-being. This incorporates many programmes that the implementers have worked with and gained knowledge of how to implement the health school policy through delivering programmes such as: Healthy Heroes, Bump Birth and Beyond, Be Active Eat Healthy.	10
Education and Health Well-being group across Lancashire	Delivered through the Local Authority in Lancashire, the group aims to work in partnership to deliver real improvements to the health and wellbeing of Lancashire's citizens and communities.	10
Evidence-base through process evaluations	The implementers gained practical knowledge and reinforcement of their practical knowledge-why beliefs through surveying and feedback from their settings. The feedback is shared amongst the implementers and they will make changes based on this feedback.	7
Department of Health cross infection	Cross infection tool to prevent illness being transmitted through dental practice within community settings	7

Table 7.4 illustrates the shared knowledge-why beliefs amongst the implementers that were strongly held group norms. The implementers had previously worked together to develop and deliver a previous Oral Health programme in Lancashire, called Smiling for Life. Throughout the interviews the implementers discussed Smiling for Life and

claimed they gained their knowledge-why beliefs of improving Oral Health through implementing this ‘very successful programme’.

For the implementers, Smile4life ‘was everything that Smiling for Life was already doing’. However, they noted that Smiling for Life encompassed their knowledge-why of previous training and collective experience of delivering Oral Health programmes, and was therefore ‘correct’. Conversely, Smile4Life contained the ‘wrong information’. Their knowledge-why belief in Smiling for Life meant the implementers regarded it as being ‘very easy to deliver’, ‘very straightforward’ and there were ‘no problems with it’. The implementers regarded their practical knowledge-why in terms of flexible implementation and resources that could be tailored to each setting to be a strength when implementing programmes in different settings:

*‘They [Smiling for life] had a brilliant poster that you could put up in early years’ settings...and that worked well. Now why did it work well? It worked well because it gave the freedom to the Oral Health people [implementers and settings staff] to put their personal stamp on it...and you adapted it to your [setting] environment’ [Implementer].*

This freedom and flexibility is something that the implementers felt Smile4Life had not given them. For the implementers, Smiling for Life worked practically in their settings, they gained positive feedback from the stakeholders, and this collectively reinforced their group knowledge-why belief of their ‘good practice’.

The implementers’ knowledge-why belief clashed with the policymakers’ strategic knowledge-why focus. Consequently, the implementers believed that ‘some of the [policymaker] information was incorrect’:

*‘There are things on the website that weren’t correct, but nothing has been done about it, you feel like you can’t say that information because there are things on there that aren’t right .... All the toothbrushes are put in the same holder, which is cross infection [Implementer]*

This tension was also evident with the workbook and resources, which the implementers said did not adhere to their ‘true’ knowledge-why beliefs and they challenged the evidence-base used to underpin the workbook and resources:

*‘You’re promoting that website or that resource and then you find something in there that isn’t evidence-based but it’s supposed to be.*

*It's supposed to be from Delivering Better Oral Health and scientific base, I think there's a lot of other evidence-bases that the policymakers quote but it's not...it's not accurate... the signposting to services and resources are wrong and the signposted resources aren't right' [Implementer].*

This 'difference in thinking' was also evident when the implementers talked about the 'brushing on site' component of Smile4Life, which aimed to get children to brush their teeth in the early years' settings. The policymakers' strategic knowledge-why told them that children needed to brush their teeth whilst in the early years' settings, but they did not have the practical knowledge of why this could not happen. The implementers claimed that due to their knowledge of the Department of Health 'cross infection' guidelines, children could not 'brush together in a sink'. This instance reflects the policymakers' lack of practical knowledge, the policymakers' knowledge-why did not consist of this knowledge of cross infection. The implementers had this practical knowledge of cross-infection but due to the boundaries between the groups this knowledge was not transferred from the implementer group to the policymaker group.

#### ***7.6.4 Summary of Strategic and/or Practical Knowledge, Experiences and Beliefs***

It is apparent that the policymakers and implementers acquired knowledge-how and knowledge-why through different working experiences, training, and beliefs. The policymakers and implementers had both witnessed and experienced 'success' from using their own acquired knowledge and beliefs of how and why to develop and deliver Oral Health interventions. This reinforcement of success resulted in each group believing in and to some degree reifying in their own knowledge, practices, and ways of working. Knowledge-how experience and knowledge-why belief was shared within each group, closely held, and regarded as 'right'. For knowledge to be shared between the policymaker group and implementer group, respect, trust, and shared work experiences needed to occur. Instead, each group felt excluded from the other and they did not communicate across the group boundaries.

Within the two groups, intra-group relationships were strengthened through a united belief in their own knowledge as being 'right'. The policymakers united in the belief that their resources and evidence bases were 'the most appropriate' and the implementers united against this. The implementers claimed that the policymakers

lacked practical knowledge of how and why to implement the programme; this opinion combined with the implementers' feelings of having their opinions 'dismissed', fuelled their collective belief that Smile4Life would not work practically.

The policymakers and implementers claimed that the other group had a 'lack of understanding' of their group's knowledge. This may reflect the implicit knowledge used by the groups, which was hard to articulate and transfer across the inter-group boundaries.

Despite the fact that the policymakers and implementers had a shared a vision of 'improving the Oral Health of the community', the analysis showed that they passionately believed in different ways of achieving this. The shared vision appears to have been insufficient to overcome the differences in thinking that existed between the groups.

## **7.7 Standardised or Flexible Implementation**

*'The criteria for Smile4Life needed to be more flexible so we could actually work with the settings to set their targets, rather than them being standardised for every setting'*

### **7.7.1 Introduction**

Standardised or flexible implementation is a theme that outlines the differences between the policymakers' perceived implementation strategy and process, compared with the implementers' perceived practical implementation and process. The implementation of Smile4Life involved the implementers working in-line with pre-defined criteria, which were developed by the policymakers. The implementers felt excluded from this development process and due to their flexible implementation beliefs they did not share the same implementation vision as the policymakers, which was to have a standardised implementation across Lancashire. The implementers wanted to deliver Smile4Life flexibly to meet each setting's needs. Consequently, the implementers resisted the implementation criteria. The policymakers and implementers were more likely to view the parts of the implementation that adhered to their beliefs as being more successful than those parts that did not. Figure 7.9 outlines the sub-themes and sub-sub-themes that represent this theme.

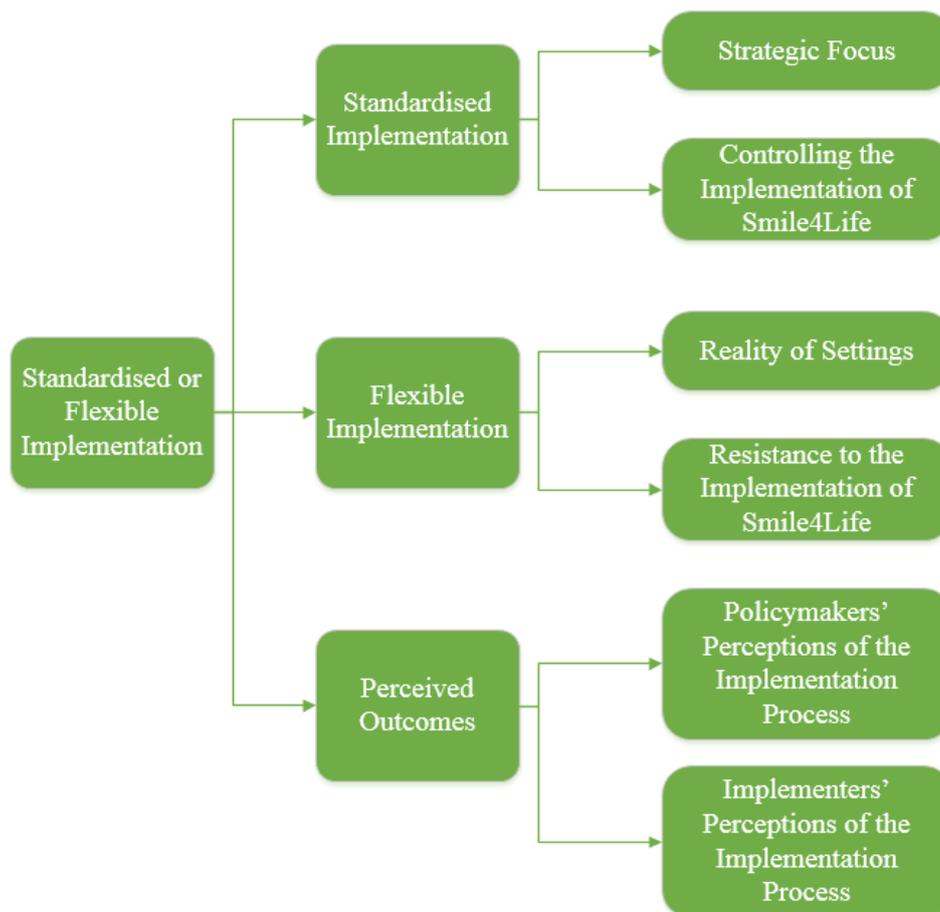


Figure 7.9 *Standardised or Flexible Implementation*

In the next section, the three sub-themes illustrated in Figure 7.9 are explained in more detail and it is demonstrated how these sub-themes and sub-sub-themes were generated from the data.

### 7.7.2 *Standardised Implementation*

*‘We try and control it so that everybody still has some level of ownership of their information’ [Policymaker]*

Standardised implementation refers to the policymakers’ aim of implementing Smile4Life consistently across all early years’ settings in Lancashire. The policymakers’ strategic experiences told them that a ‘one size fits all’ approach was necessary. The policymakers believed that maintaining control over the implementation of Smile4Life would ensure their knowledge underpinning Smile4Life would not be changed, the programme would be standardised across all settings and would overcome any implementation resistance. The following section

will explain the sub-theme ‘standardised implementation’ through the detailed explanations of the sub-sub-themes summarised in Figure 7.10.

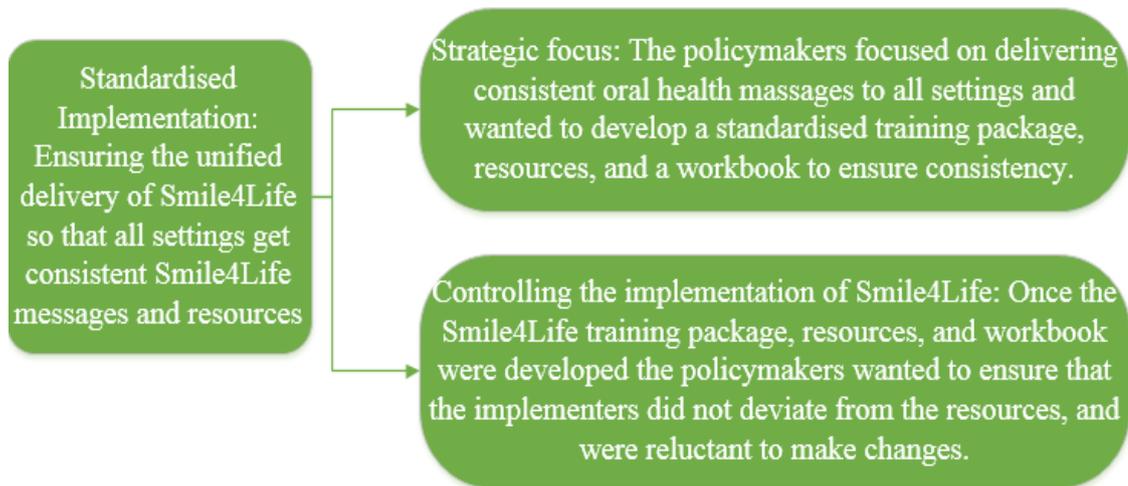


Figure 7.10 *Standardised implementation*

#### 7.7.2.1 *Strategic Focus*

During the development of Smile4Life, the policymakers had a strategic focus of delivering a ‘standardised Oral Health programme’ to early years’ settings across Lancashire. Their strategic focus also aimed for a much ‘wider programme’ and they wanted the programme to be implemented in ‘youth centres, colleges, homes for the elderly and prisons’. The policymakers talked of wanting to ‘create a good tool’ and wanting to share ‘their good practice’ nationally.

As it was the policymakers’ aim for Smile4Life to become a national programme, it was important for the policymakers to understand the outcomes of Smile4Life, so they developed the workbook as a strategy for ensuring that settings received the same messages, and met the standardised criteria to enable ‘the process to be measured’ and ensure the consistent reporting of ‘behaviour outcomes’. Essentially, the policymakers’ development strategy was to enable a ‘broader conclusion’ to be developed through the ‘settings adoption’ of the Smile4Life workbook. The policymakers believed that the workbook would reflect the process data and ‘show the number of settings getting the awards and reaching the standardised standards’ set by the policymakers. If the process data were good, then they believed this would allow them to share their ‘good practice nationally’. Therefore, the policymakers wanted to

ensure that the implementers used the Smile4Life resources and the implementation strategy so as to ensure successful process data.

#### 7.7.2.2 *Controlling the Standardised Implementation of Smile4Life*

When the policymakers discussed the standardised implementation of Smile4Life they believed in a ‘holistic overview’ of Oral Health messages and wanted ‘everybody singing from the same hymn sheet’ to avoid the general public from getting confused. However, this standardisation of training and resources was seen as being controlling and restrictive by the implementers who were frustrated by being given ‘a locked power point’ in which they ‘couldn’t change anything’; as one implementer further explained:

*‘It’s like, this is what you’re doing, this is how it’s got to be done, we’re not allowed to go off it really, it’s very difficult’  
[Implementer]*

The tensions between the differing knowledge bases and beliefs, and the sense that the implementers were not buying into the implementation process, increased the policymakers need to control the implementation process of Smile4Life to prevent the implementers from deviating from the implementation strategy:

*‘There does need to be some buy-in and I think that’s an issue...we’ve almost had to say “it’s not an option.” [Policymaker]*

The policymakers’ claimed that the implementation of Smile4Life was ‘in danger’ because of ‘negative forces’, ‘resistance’, and a ‘destructive operational [implementation] layer’. These challenges added to the policymakers’ reluctance to ‘release control’ to the implementers; they wanted their approach to Smile4Life to ‘become a norm like putting on your seatbelt’. The policymakers did not want ‘to empower’ the implementers out of fear that this would lead to negative process data. Therefore, the implementers were ‘not allowed’ to work outside of the Smile4Life training and consistent delivery processes; this control was justified through claims that:

*‘The whole thing about being consistent is everybody uses the same tools and there’s been some issues with understanding... what that call for support is’ [Policymaker]*

If changes to the implementation strategy were requested by the implementers, they claimed that the policymakers ‘needed to read over it’ and have an ‘external verifier’

to ‘check that it was right’ and ‘it would take about 12 months’. As one implementer explained:

*‘We’re [policymakers] the managers, we do this and we tell you what to do, and you don’t make changes’ [Implementer]*

Although the implementers understood that changes ‘have got to go higher up’ than them, they felt very frustrated that the changes ‘were never made’ because the policymakers believed that the programme they had developed contained the most appropriate information and resources to create implementation success.

The implementers believed that the policymakers focused too much on maintaining ‘control’ of the programme and ‘lost sight’ of how to successfully implement the programme:

*‘I think they lost sight of how to get to their end product...they thought the only way was to rail road it in that way and hold the reins and not let go of them and sadly it can’t work like that’ [Implementer]*

Policymaker control made it ‘very very difficult’ for the implementers to do train the Smile4Life champions and implement the programme because they were ‘never allowed to change anything’ even though they needed ‘flexibility’ to ‘deliver [implement] in a different manner’. The policymakers believed that controlling the standardised implementation was ‘one way of making sure that Smile4Life stays strong because everybody is being trained’ in the same way.

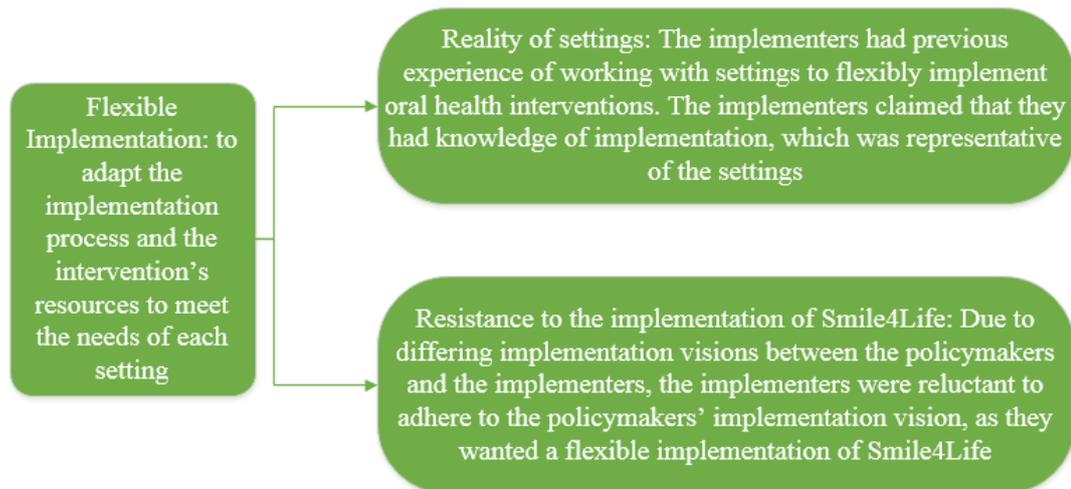
The policymakers acknowledged that the settings ‘had to jump through hoops’ to meet the Smile4Life standards but this was seen to be acceptable to the policymakers as it was a way of controlling the standardisation of Smile4Life. The policymakers were also aware of the animosity from the settings about the workbooks. One policymaker acknowledged that the workbooks were ‘hate[d]’, ‘complicated’, involved ‘a lot of criteria’ and had been described by the implementers as ‘being like an NVQ’, and a ‘paper chase exercise’. However, despite this negativity from the implementers and the settings, this was deemed to be acceptable by the policymakers as they were not focused on individual settings, and they believed the workbooks were the most appropriate ‘quality assurance mark’ to determine the process data across the Smile4Life settings.

Although the implementers agreed with the need for ‘consistency’, the implementers and policymakers had a different vision of the best way to implement consistent messages. A standardised implementation as a means of ‘driv[ing] Smile4Life forward’ further strengthened the boundaries between the policymakers and implementers. The implementers felt disrespected and dictated to and ‘negativity’ towards the programme was fostered. The changes the implementers wanted never occurred, consequently, the implementers did not ‘believe’ in the Smile4Life training, the resources, or the overall implementation criteria. The implementers’ lack of belief in the programme further strengthened the ‘bond’ within the implementers to ‘resist’ the programme ‘as a team’. The implementers’ perception of being controlled led them to unite in ‘working around the workbook’.

### ***7.7.3 Flexible implementation***

***‘I keep saying about this flexible thing and I don’t know if you’d have the workbook, or just set goals and action plans for each setting’ [Implementer]***

Flexible implementation refers to the implementers’ understanding of the settings’ priorities, resources, and community needs, which Smile4Life needed to target and work with. The implementers had worked closely with settings on previous Oral Health interventions, and they knew the most appropriate ways to create implementation criteria that could be practically delivered in settings. The following section will explain the sub-theme ‘flexible implementation’ through the detailed explanations of the sub-sub-themes summarised in Figure 7.11.



### 7.7.3.1 *Figure 7.11* Flexible implementation

#### 7.7.3.2 *Reality of Settings*

The implementers believed that the policymakers lacked ‘understanding of the settings’. They also talked about how the settings were ‘sick of initiatives and they’re sick of programmes’. The implementers claimed that Smile4Life consisted just ‘a tiny bit’ of the settings’ work and that it was ‘not really relevant’ on ‘the list of their [settings] priorities’. The implementers perceived the policymakers as being ‘very naïve’ to think Smile4Life was the only programme out there. The implementers talked of how ‘they know their settings’ and the policymakers just ‘sat in their ivory towers and put Smile4Life together’ and ‘have not been out in the field’.

The implementers anticipated that the settings would find the Smile4Life resources ‘unrealistic’ and that they would not be able ‘to do to some of things’ required to achieve the Smile4Life awards:

*‘Realistically is that person going to be able to disseminate the messages’ [Implementer]*

The implementers discussed how the settings ‘weren’t in a position to implement’ the programme’s criteria and that a lot of the criteria ‘just went way above their [settings staff] heads’. The implementers felt that the policymakers lacked the practical understanding of the demands on each setting and the need for Smile4Life to work flexibly around each setting’s workload. The implementers claimed that the rigid

criteria of Smile4Life were too much work for themselves and the settings. The implementers stated the settings were ‘resistant’ and ‘unwilling’.

*‘There was a lot of work for the children’s centres and it was a lot of work for me’ [Implementer]*

The implementers were frustrated by the policymakers’ lack of understanding of ‘what’s happening on the ground’ and the ‘pressures that the settings were under’, whereas they ‘knew the settings’ since they ‘had experience of delivering programmes’:

*‘We are actually going out there and visiting the settings, whereas I don’t think the [policymakers] have had particularly much reason to go to the nurseries’ [Implementer]*

The implementers ‘really tried to push’ for a ‘whole settings approach’ and thought the criteria ‘needed to be more flexible depending on each individual children’s centre’. They wanted to work with the settings to ‘look at what they can do rather than what they’ve been told’ and rejected the programme ‘being standardised for every setting’:

*‘I think it needs to be more flexible to suit the individual communities. So work with the children’s centres to identify and make goals. What realistically are the issues and what realistically can staff actually do’ [Implementer]*

The implementers did not agree with the rigid resources and therefore ‘united’ against the Smile4Life implementation training, resources, and workbook. This created ‘negativity in the whole team of deliveries [implementers]’, which ‘strengthened the partnership’ within the implementers’ group and strengthened the boundaries between the policymakers and implementers. The implementers ‘didn’t agree’ with the Smile4Life criteria due to their lack of reality in the context of settings. The implementers wanted a flexible rather than standardised implementation because ‘every setting is different’ and ‘everybody’s got different needs and target groups’.

#### *7.7.3.3 Resistance to the implementation of Smile4Life*

The implementers claimed that they ‘do move forward and accept change readily’ but it has to be ‘good change’ and due to the implementers having their ideas ‘not listened to’ during the development process, they resisted the programme as they did not believe Smile4Life was a ‘good change’.

One of the factors that prevented the implementers' desire for a flexible implementation was the workbook. The implementers claimed that the workbook was 'quite a barrier' to embedding Oral Health messages in the settings and they 'had a lot of issues' with it. Due to the complexity of the workbook, there was 'negativity' amongst the implementers and settings towards using it.

Although the policymakers believed that the workbook enabled consistent messages, the implementers claimed that their settings were 'all working off three different workbooks' due to changes that the policymakers had made. As a result, the implementation of Smile4Life was 'complicated' and 'you didn't know if you were coming or going'. The implementers claimed that the workbook has 'been a struggle' and 'that they [implementers] have all found the workbook a problem'.

The implementers 'knew what was going on in the children's centres [settings]' and rather than a workbook, they wanted to 'work with them' to 'set goals'. One implementer describes their experience with the workbook, with 'frustrated' feelings:

*'A lot of the issues were when you've got a lot of children's centres on different workbooks, they've changed the workbooks, they've changed the programme a few times, they've changed the criteria a couple of times, so the children's centres didn't like that very much'*  
[Implementer]

The implementers 'wanted to adjust it' themselves but 'they haven't been able to do that' and the changes that they had 'recommended were never included'. The policymakers did make some changes to the workbook but the implementers viewed the changes as 'traumatic' for themselves and the settings and believed that the workbook was still 'too complicated', 'too time consuming' and it had 'got too complex':

*'If I was an Oral Health champion [settings staff] and I was faced with a 57-page workbook, I'd have a fit of vapours actually when I've got all these other things to do'* [Implementer].

The policymakers talked of the implementers being resistant to 'somebody coming into their domain'. The policymakers 'didn't expect so much in house challenge' from the implementers during the initial implementation of Smile4Life. The policymakers

discussed how the implementers' 'problems believing in' Smile4Life 'kept the corporate spirit' of resistance to Smile4Life 'going':

*'They don't like the workbook and when they go out to the settings, the settings say "there's a problem with this workbook" and I think they [implementers] agree with them and it's kind of almost keeping the corporate spirit going [Policymaker]*

The policymakers perceived 'a lot of conflict' and resistance in their attempts of bringing the implementers 'around to their view point', which was a 'pretty major challenge'. The policymakers believed that the implementers had 'issues with understanding... that this [Smile4Life] really is quite a good thing' and it was the 'most sensible thing to do rather than take fragmented programmes'. This may reflect the difference in thinking, as the policymakers believed that their standardised implementation plan was the most appropriate way to deliver Smile4Life, whereas the implementers believed that the policymakers' standardised approach was too rigid and clashed with their desire for flexibility.

The policymakers also believed that the implementers were 'reluctant to let go of the way that they have historically done things', they did not want to change their 'previous ways of working' and the implementers' resistance to implement Smile4Life was due to them not wanting 'to make the change over':

*'If you're a small team and this is you doing your work and then somebody comes along and says actually we're going to create a different way of working, you know that's not the way I've done it. So why you telling me different' [Policymaker]*

However, whilst the implementers 'totally agree[d] that there should have been a programme' and that Smile4Life 'has a lot to offer' due to the lack of consultation and inclusion of their knowledge, the implementers did not agree with the criteria. The implementers explained that the policymakers had 'missed the opportunity to work with a good enthusiastic working group' and that the policymakers' inability to listen and consult them had resulted in the implementers' resistance to implement Smile4Life.

The implementers wanted a flexible implementation and believed that the policymakers did not understand the settings, which led to them resisting the Smile4Life implementation. The policymakers tried to overcome this resistance by

controlling the implementation of the resources, however this further strengthened the relationships within the implementer group. The implementers united against the policymakers' control over a standardised implementation and it further strengthened their desire for a 'settings approach' programme. The implementers wanted the Smile4Life criteria to consider the 'reality of settings' and for them to make 'a lot of tweaks' to ensure 'appropriate resources' and 'correct information'.

#### **7.7.4 Perceived Outcomes**

*'It's been successful, in the point that we have moulded it slightly ourselves...I think the actual success of what's happened in our settings has been down to us, the actual people who go out and deliver it and have ended up having to mould it and deliver it in a way that's workable' [Implementer]*

*'...they've [implementers] taken the model, jiggled it about in their heads to make it fit their old way of working...I think the outcome of that is because it's done [implemented] in a traditional way, there'll still be high levels of dental disease' [Policymaker].*

Perceived outcomes refer to the policymakers' and implementers' perceptions of the Smile4Life implementation process. Smile4Life was developed without a clear plan of how to measure the programme's success, in terms of the adoption of messages and improvements to Oral Health. Both groups claimed success of the implementation of Smile4Life, which was a result of their own group's implementation actions. However, each group also believed that any potential failings of the programme would be a result of the opposing group's implementation actions. The following section will explain the sub-theme 'perceived outcomes' through detailed explanations of the sub-sub-themes represented in Figure 7.12.

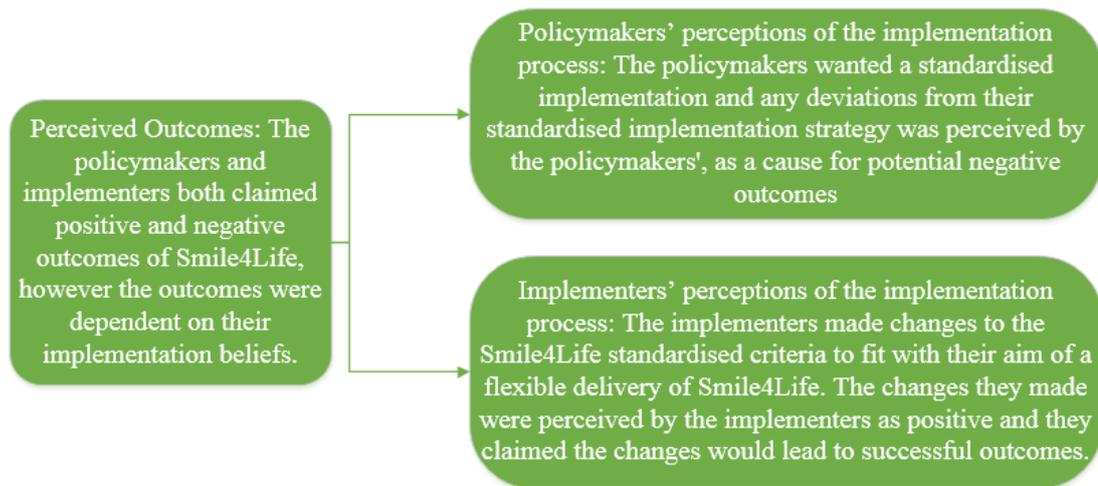


Figure 7.12 *Perceived outcomes*

#### 7.7.4.1 *Policymakers' Perceptions of the Implementation Process*

The policymakers were ‘particularly happy’ with the development of the Smile4Life workbook criteria as it had been ‘well received nationally’. Their confidence in the workbook’s ability to access settings progress and the ‘four teeth’ award system further supported their commitment to their implementation strategy of Smile4Life being ‘delivered in exactly the same way’ in all settings to enable process measures to be identified.

However, the policymakers were disappointed and challenged by the implementation process of Smile4Life; blaming this on the implementers’ ‘lack of belief’ and ‘buy-in’ and their wish to maintain old ways of working rather than for the greater good of Smile4Life:

*‘I’m not completely convinced that the model that’s being delivered and should be delivered in all areas, is actually being delivered in the way it should be and I honestly think they [implementers] have taken the model in many areas and just from the information I’ve received. I think they’ve taken the model and delivered it in their old ways’ [Policymaker]*

The policymakers perceived the changes to the intended implementation process of Smile4Life as dysfunctional due to it deviating from their knowledge, experiences, and beliefs and were concerned that this would affect the overall adoption of the programme and create ‘issues with the outcomes’.

Due to the breakdown in relationships between the two groups and the creation of boundaries, the policymakers found it very challenging to get the implementers ‘on board’ and engaged with the intended criteria:

*‘The biggest challenge was engaging with front line staff [implementers] and getting them to work differently and to take on a new programme... and that’s been the biggest challenge, to bring them along and to get them to change and do it’ [Implementer]*

As a result of this lack of adherence the policymakers claimed that:

*‘If the outcomes show increased dental disease, then it’s a result of the implementers changes’ [Policymaker]*

Therefore, this policymaker is assigning blame and potential failings of Smile4Life to the implementers as a consequence of them failing to implement the programme as intended by the policymakers.

#### *7.7.4.2 Implementers’ Perceptions of the Implementation Process*

The implementers ‘did not believe’ in the Smile4Life workbook criteria and the implementation strategy and they made changes to ‘facilitate the roll out and delivery of the programme’, which aligned to their own beliefs and experiences. The implementers were ‘passionate in wanting to make Smile4Life better’ and believed that changes to the implementation process were for the good of Smile4Life:

*‘We’ve gone off on our own, gone off on our own backs and done our own things and made Smile4Life workable’ [Implementer]*

When describing the implementation process, the implementers talked of ‘working together [with each other] to work out how best to deliver Smile4Life’. The implementers created different guidance notes and ended up writing all of their own evidence notes for the workbooks.

The implementers made changes to the implementation process as they perceived that the changes ‘would make it easier for settings’ by ‘giving them a list that they needed’ to include in the Smile4Life workbook. The implementers perceived that they made the implementation of Smile4Life more flexible as a result of their changes.

*‘I kind of looked at it and thought, “oh god what’s all this about”, what’s all this writing about, it’s too much... so I ended up doing it [the workbook] and going through the whole of the workbook’ [Implementer]*

The implementers talked of how they ‘took it off’ the settings and did the workbook for them. The implementers stated that they made the workbook ‘workable’ in the settings and if they had not completed the workbook for the settings, then the workbook ‘just wouldn’t get done’. The implementers allowed settings to follow their highlighted examples and in some cases ‘completed’ the workbook for the settings instead of monitoring and accessing the embedding of the programme.

During the training sessions about the Smile4Life resources that the implementers delivered to the staff in the settings, they were frustrated by having to use locked power point slides of the training package that went against their previous experiences of delivering training. Therefore, they added their own slides that aligned to their beliefs and knowledge and told the settings staff ‘good information’... ‘that wasn’t on the slides’:

*‘You weren’t telling them anything wrong, you were actually telling them evidenced based stuff and crucial information for their job but it wasn’t on the power point ‘cos they [policymakers] never asked us about what should be on the power point, then you felt like a naughty school girl cos you’d added it yourself. You felt like you were being a rebel’ [Implementer]*

One implementer described the implementation process as a ‘carrot to encourage settings to get awards’ but once they were in the settings ‘they [the settings] chucked it [Smile4Life workbook] out of the window’. The implementers’ resistance to the workbook criteria and the implementation strategy led them to write their own criteria in the workbook, for the settings to use that was based on their beliefs and previous experience. The implementers made changes to the training and overall messages that were ‘absolutely fantastic’ and any ‘success’ of the programme was ‘down to’ them:

*‘We got hold of that programme and ran with it, and we actually enabled the team [implementers] to be able to deliver it in a better way, by the team coming up with aids to help the establishments’ [Implementer]*

The implementers claimed their changes had ‘a great impact’ and ‘all the settings now seem positive about the Smile4Life programme’:

*‘I think the people that have worked on it, have made it a success and I think that’s from all the hard work and the additional stuff that we’ve done’ [Implementer]*

The dissonance between the two groups regarding the workbook criteria and implementation strategy was sustained and implacable. The policymakers believed that close adherence to the intended workbook criteria and implementation strategy was necessary for Smile4Life and any changes would lead to negative outcomes. Conversely, the implementers firmly believed the changes were vital. However, without clear and measurable outcomes neither group had robust evidence on which to support their claims.

In conclusion throughout this sub-theme of perceived outcomes, it is clear that each group are justifying their own methods. The policymakers claim that changes to the implementation strategy and workbook criteria will lead to increased dental disease. Alternatively, the implementers justify the changes that they made were to ensure the successful implementation of Smile4Life.

#### *7.7.4.3 Summary of Standardised or Flexible Implementation and the Perceived Implementation Process*

The sub-themes outline the policymakers' belief that a 'consistent' standardised implementation of Smile4life was needed for the programme to be 'fully adopted' by settings and to show reliable 'process data' of behaviour change. The policymakers wanted to make Smile4Life a national programme and were committed to a 'one size fits all' set of criteria as the basis for a national programme. Whilst the policymakers wanted the controlled, standardised implementation of Smile4Life, the implementers regarded this approach to implementation as 'too rigid', 'unrealistic', and lacking understanding of the 'individual needs' of each setting. Due to the boundaries between the two groups the implementers' experience of delivery and the settings needs were not 'filtered' across to the policymakers and the implementers claimed that this led to a Smile4life programme that was 'very difficult to implement'. Resistance occurred through the implementers making changes to disseminating the programme and not adhering to the workbook criteria.

All of these factors strengthened the boundaries between the groups as well as strengthening the relationships within the two groups; this resulted in both groups collectively resisting each other's vision. Each group laid claims for the success of the programme; the policymakers talked of success being based on their strict criteria,

while the implementers claimed success resulted from the changes they made to accommodate the context of the settings.

Due to the lack of planning, by either group, of ways to measure actual outcomes of Smile4Life, the extent of Smile4Life's success, if any, is not clear. What is apparent though is that boundaries exist and these do not create the climate for successful change management.

## **7.8 Meta Theme: Inter-group Boundaries and Intra-group Relationships**

*'I'd say that it's very much strengthened partnerships in our own teams. It's absolutely strengthened us as a bond. We know we want to give the same information and we all want to give it in the same way. But it's been very much us and them, so there's no bond there' [Implementer]*

The meta-theme encompassing the findings of this study is 'Inter-group boundaries and Intra-group relationships' and it essentially reflects the contradictory inter-group structure between the policymaker group and the implementer group, which created boundaries between the two groups. However, it also outlines the cohesive intra-group structures within the two groups, which led to strengthened within-group relationships.

Essentially, the findings revealed both barriers and facilitators to the development and implementation of Smile4Life. The barriers to the two groups coming together to develop and implement Smile4Life are reflected by the implementers' feelings of exclusion in the development of Smile4Life, the defining of group structures and the 'us vs. them' mentality. The group structures were reinforced through physical and behavioural manifestations in terms of meetings, office spaces, and the lack of consultation between the policymakers and implementers. The implementers also perceived an imposed hierarchy through the lack of consultation in the development of Smile4Life, which further defined the boundaries between the two groups.

The dissonance between the different beliefs, knowledge, approaches and 'visions' created tensions, which were not resolved and acted as additional barriers to the development and implementation of Smile4Life. The policymakers' 'strategic focus' and desire to make 'Smile4Life a 'branded' national programme' consisting of 'easy to understand' messages that could be delivered in the same way to all settings was at odds with the implementers' more practical perspective based on local knowledge and

‘aware[ness] of the pressures’ that individual settings were under and the ‘specific needs’ of each setting. Put simply, a further barrier to Smile4Life was that the policymakers’ strategic approach was at odds with the practical settings approach advocated by the implementers.

The implementers wanted a flexible implementation and the policymakers believed in a standardised implementation across all settings. The ‘difference(s) in thinking’ and the lack of ‘sharing’ experiences was a further barrier to the implementation of Smile4Life and led to the implementers believing that the policymakers’ knowledge ‘was wrong’ and the Smile4Life resources contained the ‘wrong information’. The policymakers ‘dismissed’ the implementers’ knowledge, and claimed that the resources were ‘very good’ and the implementers were just ‘resistant’ to carrying out more work. As a result of these differences in thinking, the policymakers wanted to control the implementation of Smile4Life and the implementers resisted this control by rejecting the Smile4Life implementation strategy, workbook criteria, resources, and training package. Consequently, the implementation of Smile4Life was affected.

Relationships were formed in this study through shared development and implementation visions of Smile4Life and a sense of integration of knowledge, ideas, experiences, beliefs, and resources within each group that led to a unified belief system. The integration of shared ideas, knowledge, beliefs, and understanding required regular contact, mutual respect, and trust, to allow individuals from each group to openly share their ideas and feel fully included in the group. Within the policymaker group and within the implementer group, relationships were created and strengthened through engagement, sharing of ideas, knowledge and beliefs.

In summary, the findings reveal that engagement, sharing of ideas, knowledge, and beliefs unified group thinking within the policymakers and within the implementers, which created collective agreement on the ways to develop and implement Smile4Life. However, the development of group structures, perceived hierarchies, differing experiences, and opposing beliefs, meant boundaries between the two groups occurred. These between group structures were compounded across the period of development and implementation, to the extent that each group is claiming success but for different reasons and without real evidence.

## **7.9 Summary**

This chapter outlined the findings from the semi-structured interviews with policymakers and implementers to understand the barriers and facilitators to working across different groups to develop and implement Smile4Life. The knowledge, experiences, and beliefs which underpinned Smile4Life were also explored. The quotes and narratives that have been presented offer a glimpse into the experiences of the policymakers and implementers during the development and implementation of Smile4Life. The findings identify the barriers and facilitators to working across different groups, as well as the importance of differing knowledge and theoretical underpinnings in this process.

The following chapter will offer an interpretation and discussion of these findings and compare the underpinnings of Smile4Life with the theories, models, and frameworks identified in the literature review.

# 8 LITERATURE REVIEW TO INFORM THE FINDINGS

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## 8.1 Introduction

This chapter outlines literature to inform the interpretation of the findings from this thesis. This section will outline key theories that underpin and set the context for the implementation guidelines developed from the findings. The key theories will be explained in detail in the discussion chapter, along with implementation theories and policies that are relevant to the findings but were not discussed in the review of the literature in chapter 3.

## 8.2 Reflections

*Due to the inductive nature of the research it was unclear what key theories, models, frameworks, and overall findings would emerge from the data. Although it was thought that the barriers and facilitators to the implementation of Smile4Life would involve behaviour change and organisational theories, these proved to be less influential for the interpretation of the findings. Therefore, further literature was explored, which could explain the group behaviour and dynamics identified in the research and the influence on implementation. Therefore, as a result of the inductive nature of this study, it was felt that another review of the literature needed to be conducted and outlined to underpin and inform the interpretation of the study findings and develop potential solutions to the issues found. One of these potential solutions was the proposal of implementation engagement guidelines to inform the engagement process between the policymakers and implementers, so when examining the literature, there was also an emphasis on implementation theory, policy, and the key role of the implementers or middle managers.*

## 8.3 Deciding on a Theory to Underpin Ways to Understand the Role of the Implementers in the Process of Implementation

In Chapter 3 behaviour change theories, models, and frameworks that had been used to underpin Oral Health and General Health interventions were outlined. The theories,

models, and frameworks were categorised into individual behaviour change, interpersonal behaviour change and stage behaviour change. However, these behaviour change approaches did not help to understand the issues arising from the analysis. In part, this was because the role of the implementers or middle managers had not been considered previously in the development and evaluation of Oral Health and General Health interventions. Therefore, in this section, there is a brief recap and review of the theories outlined in chapter 3 and the reasoning behind why they were not used to underpin ways to understand the role of the implementers (or middle managers) in the process of implementation.

### ***8.3.1 Individual Behaviour Change Theories, Models, and Frameworks***

Individual behaviour change theories, models, and frameworks seek to understand and analyse health behaviours at the individual level, where motivations, intentions, and actions of carrying out healthy or unhealthy behaviour are independent of other people's individual actions (Green & Kreuter, 2005; Nutbeam & Harris, 2004; DeBarr, 2010).

The individual behaviour change theories identified in chapter 3 focused on the underlying proposition that increasing susceptibility to perceptions of ill health can motivate people to change. However, they focus on intentions rather than actions and fail to consider ways to enable sustainable change once the perceptions of threat of ill health have reduced.

The HBM (Rosenstock, 1974; Janz and Becker, 1984), TPB (Ajzen, 1991, 2005), TRA (Ajzen and Fishbein, 1980; Fishbein and Ajzen, 1975) and Cognitive Dissonance (Bandura, 1977) approaches focus on behaviour norms through one-to-one interactions, assuming that behaviour is in the control of the individual. However, the findings of this study are based on the implementation of a community intervention and the findings demonstrate that implementing interventions in the community with theoretical underpinnings from approaches that focus on individual behaviour and one-to-one advice appears simplistic. The individual behaviour change approaches do not consider the problem of multiple, complex and unpredictable interactions between the policymaker and implementer groups.

The use of individualistic theories, models, and frameworks to underpin the development and implementation of interventions fail to understand and account for

factors associated with the context in which the intervention is being developed and implemented (McCormick, Rycroft-Malone, DeCorby et al., 2013).

### ***8.3.2 Interpersonal Behaviour Change Theories, models, and frameworks***

Interpersonal behaviour theories, models, and frameworks such as Sense of Coherence (SOC) (Antonovsky, 1979) and Locus of Control (Rotter, 1966) build on individual behaviour change approaches by focusing on socio-environmental factors. The interpersonal behaviour change theories, models, and frameworks focus on the broader social context that shapes individual behaviour and affects biological determinants. The need to use theory that incorporates the intervention context has been identified from the interviews with the policymakers and implementers as essential. However, despite the interpersonal theories, models, and frameworks considering the environment, the interpersonal behaviour change approaches focus on explaining behaviour actions rather than guiding the process of implementation and identifying potential barriers and ways to overcome these barriers to implement interventions in real-life contexts.

### ***8.3.3 Stage Behaviour Change Theories, Models, and Frameworks***

Stage behaviour change approaches describe a sequence of behaviours and accept that behaviour is the result of multiple actions and adaptations over a sequence of stages. The stage theories, models, and frameworks predominantly describe, follow, and predict the progress of the adoption of behaviour. Similar to the interpersonal approaches, stage behaviour change approaches identify the impact that interactions between socio-environmental factors and the individual have on changing behaviour.

The TTM was the dominant stage theory described in the literature review and it identifies methods to tailor an individual's stage of change to the intervention (Prochaska & DiClemente, 1983; Prochaska, DiClemente, & Norcross, 1992). Therefore, the first step of the TTM is to assess the distribution of the population's stage of change (Prochaska & DiClemente, 1983). However, the results of this study suggest that before identifying the population's stage of change, it is essential to focus on organisational factors and ways to get organisations to work together to develop the intervention. The findings also demonstrate that the context of developing and implementing an intervention is too complex to be simplified into distinct stages. Rather, barriers and facilitators to the development and implementation process overlap and are entwined, if issues are not resolved at one 'stage', then they will

continue and even escalate overtime. Therefore, the stage theories used to underpin Oral Health and General Health interventions do not consider many of the barriers and facilitators to developing and implementing Smile4Life, which were discussed in the interviews for this study.

#### ***8.3.4 Summary of Behaviour Change Theories Models, and Frameworks Identified in the Literature Review***

It is apparent from individual, interpersonal, and stage theories, models, and frameworks of behaviour change, that they are individualistic in nature and focus on changing the behaviour of the targeted individual, whilst ignoring the multiple factors that are involved in developing and implementing health interventions (Albert, Barricks, Bruzelius & Ward, 2014).

Also, the behaviour change approaches assume that one intervention will work for a population or community. Therefore, promoting a standardised implementation of the intervention across all settings, which reflects the policymakers' desire for standardised implementation of Smile4Life. This also enables those responsible for delivering and implementing interventions to understand and implement the intervention with very little training. The one standardised intervention for all appeals not only to the policymakers in this study, but it is also consistent with some Public Health approaches of 'consistent messages to all' (Department of Health, 2004). However, this standardised implementation approach caused conflict between the policymaker and implementer groups. The implementers claimed that a standardised implementation was inappropriate and ignored the practicalities of implementing Oral Health interventions in real-life settings.

Behaviour change theories, models, and frameworks describe, understand, and predict behaviour, but they do not highlight the barriers and facilitators to implementing behaviour change interventions in real-life contexts (Worthington, Hill, Mooney, Hamilton, & Blinkhorn, 2001; Tai, Du, Peng, Fa; Bian, 2001; Vonobbergen, Declerck, Mwalili, & Martens, 2004; Alves de Farias & Fernandes, 2009; Garbin, Garbin, Dos Santos & Lima, 2009; Saied-Moallemi, Virtanen, Vehkalahti, Tehranchi, & Urtomaa, 2009; Albert, Barricks, Bruzelius, & Ward, 2013; Yusof & Jaafer, 2013). The behaviour change approaches do not propose ways to overcome barriers to behaviour change or increase the occurrence of facilitators.

The behaviour change approaches identified in the initial literature review do not consider the partnerships involved in developing and implementing health interventions. The development of partnerships are not a passive process and conflicts may occur creating resistance and changes to the intervention. The behaviour change approaches identified need to consider the organisational and community factors that can impact on the implementation of interventions. Interestingly, despite the individualistic nature of the behaviour change approaches, they still remain widely used in population-based interventions.

## **8.4 Implementation Theories**

Given the limitations of behaviour change theories, models, and frameworks in this context, a review of implementation theories that have been developed to understand the successful translation of evidence into practice was undertaken. This section explores the definition of implementation and the different types of implementation theory, using the categorisation of Nilsen (2015), discussing the relevance of these to Smile4life and the findings of this study.

### ***8.4.1 Definition of Implementation***

Implementation science is a relatively modern topic which grew out of a need to understand why interventions are not adopted in practice. The Journal of Implementation Science was first published in 2006 and is now the most recognised and prestigious journal for academic research into implementation.

According to Eccles and Mittman (2006), Implementation Science is the study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice. To improve the quality and effectiveness of health services and care various theories, models, and frameworks of implementation have been proposed by Estabrooks et al. (2006); Sales, Smith, Curran & Kochevar (2006); Graham & Tetroe (2007); Mitchell et al. 2010; Flottorp et al., (2013); Meyers et al., (2012); Tabak, Khoong, Cambers, Brownson, (2012). However, there is general consensus that Implementation Science covers: knowledge translation, knowledge exchange, knowledge transfer, knowledge integration, and research utilisation (Mitchell, Fisher, Hastings, Silverman & Wallen, 2010; Graham, Logan & Harrison et al., 2006; Estabrooks, Thompson, Lovely & Hofmeyer, 2006; Wilson, Brady & Lesesne, 2011; Robin & Browson, 2012). Implementation Science has also been considered part of the diffusion-dissemination-implementation continuum in which:

diffusion is the passive, untargeted, and unplanned spread of new practices; dissemination is the active spread of new practices to the target population using planned strategies and implementation is the planned process of integrating new practices within a setting (Robin & Browson, 2012; Meyers, Durlak, Wandersman, 2012).

#### ***8.4.2 Background***

As concluded in the literature review in chapter 3 of this thesis and supported by many implementation researchers, the use of theory to underpin implementation in General Health, and more importantly for this research Oral Health, has been criticised for not providing explicit information regarding the theoretical underpinnings of this process (Godin, Belanger-Gravel, Eccles & Grimshaw, 2008; Mitchell, Fisher, Hastings, Silverman & Wallen, 2010; Rycroft-Malone & Buckness, 2010; Cane, O'Connor & Michie, 2014). The lack of explicit theoretical underpinnings makes it difficult to identify factors that impact on the implementation process or to determine and evaluate implementation success. Consequently, there is pressure for intervention developers to use theories that enable the implementation process to be studied, and gain detailed understandings into the factors that enable successful implementation. The following sections will give a brief overview of implementation theory, drawing on a review by Nilsen (2015), followed by how social policy implementation may also change the ways groups work together, before discussing the need for intervention developers to understand the role of the middle managers when developing and implementing interventions.

#### ***8.4.3 Implementation Theories, Models, and Frameworks***

According to Nilsen (2015) there are three categories of theoretical approaches used in implementation as illustrated in the following figure 1.

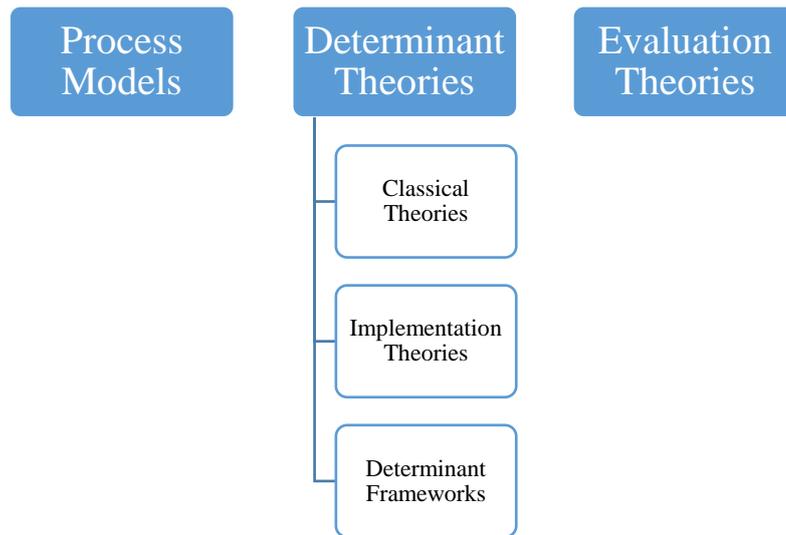


Figure 1. *Visual Representation of Implementation Categories.*

The three implementation categories proposed by Nilsen (2012) are process models, determinant theories (consisting of three sub categories classical theories, implementation theories, and determinant frameworks), and evaluation theories.

Process models focus on describing the process of implementation. Determinant theories aim to explain what factors influence implementation outcomes. This category is made up of three sub-categories: (1) classical theories, which draw on psychology or sociology to explain aspects of implementation; (2) implementation theories, which are developed by implementation researchers to provide understanding how interventions are adopted in practice and (3) determinant frameworks, which specify independent variables that can act as implementation factors influencing implementation outcomes (dependent variables). Lastly, evaluation theories outline specific factors that could be evaluated to determine the successful implementation of an intervention. The following sections outline the process models, determinant theories, and evaluation theories in more detail.

#### 8.4.3.1 *Process Models*

As previously stated process models aim to describe the process of implementation. They have origins from the stage behaviour change theories but have been developed to guide the implementation process. The Knowledge to Action framework is an example of a process model that describes the linear process of putting research knowledge into practice by which the knowledge intervention is transferred from developers to stakeholders (Wilson, Brady, Lesesne, 2011). However, there are

adaptations of the process models which include guidance on planning the implementation process and the use of facilitators. These ‘how to models’ such as Pronovost, Berenhotlz & Needham’s (2008) Quality Implementation Framework focuses on highlighting the importance of planning the stages of implementation and the use of a facilitator. However, the process models assume that implementation is a linear process that does not consider contextual factors which could inhibit movement along the linear implementation process. Although later process models have advocated the importance of understanding contextual factors and the extensive planning of the intervention (Grol & Wensing, 2004), they fail to outline organisational factors that can occur when groups work together.

#### *8.4.3.2 Determinant Theories*

Determinant theories are divided into three sub-categories: classical theories, implementation theories, and determinant frameworks. The theories consist of a number of factors or implementation determinants that are thought to impact on implementation outcomes. Some frameworks also identify casual relationships between factors. However, the determinants are evaluated individually in implementation studies and assume a linear implementation process similar to the previous process models. Assuming a linear process ignores interactions between the implementation context and multiple behavioural, individual, social, and organisational factors.

A key factor in determinant theories is context, which is understood as the conditions or surroundings, for example the real-life context in which the intervention is being implemented within. Context refers to the physical “environment or setting in which the proposed change is to be implemented” (Godin, Belanger-Gravel, Eccles & Grimshaw p150). According to Nilson (2015), context is a critically important concept for understanding and explaining implementation and there remains a lack of consensus amongst implementation experts regarding how this concept should be interpreted, in what ways the context is established and the means by which contextual influences might be identified in research. Determinant theories emphasise that the context in which interventions are being implemented within is an important factor in understanding implementation factors. However, the theories fail to explicitly state, understand or describe the context.

#### *8.4.3.2.1 Classical theory*

Classical theories are essentially behaviour change theories that have been used in implementation science. The Theory of Diffusion is an example of a classical theory that was mentioned in the initial literature review in chapter 3 section 3.4.1 as it is a behaviour change theory adapted to implementation science. Developed by Rogers (2003), the theory proposes five attributes, i.e. relative advantage, compatibility, complexity, trialability, and observability, that have been widely applied in implementation science, both in individual studies (e.g. Aubert & Hamel, 2001; Vollink, Meertens & Midden, 2002) and in determinant frameworks (e.g. Rabin & Brownson, 2012; Titler, Kleiber, Steelman, Goode et al., 1995) to assess the extent to which the characteristics of the intervention affect implementation outcomes. Furthermore, the Theory of Diffusion highlights the importance of organisational staff (opinion leaders, change agents and gatekeepers) in the successful adoption and implementation (Vollink et al., 2002), which is reflected in roles described in numerous implementation determinant frameworks (e.g., Foy, MacLennan, Grimshaw et al., 2002; Oxman, Thomas, Davis & Haynes, 1995) and implementation strategy taxonomies (e.g. Oxman et al., 2002; Walter, Nutley & Davis, 2003). The Theory of Diffusion is considered the single most influential theory in the broader field of knowledge utilisation of which implementation science is a part (Estabrooks et al., 2008).

Although the Theory of Diffusion has had positive impacts on the implementation of interventions, the theory is complex. With implementation researchers still debating the most appropriate ways to identify, study, and understand the implementation context. Consequently, it is difficult to understand and identify which factors contribute to the successful diffusion and adoption of the interventions.

The classical theories, as highlighted with behaviour change models, assume that if steps are followed then the desired behaviour will be achieved. They do not account for interacting factors or ways to overcome potential barriers.

#### *8.4.3.2.2 Determinants Frameworks*

Determinant frameworks consist of existing constructs from theories, models, and frameworks used in Psychology, Sociology, and Public Health but they have been adapted to be used in implementation and consider the organisational climate.

Determinant frameworks describe and outline constructs of determinants that are hypothesised or have been found to influence implementation outcomes. Each type of determinant consists of a number of individual barriers and/or facilitators, which are proposed to have an impact on implementation outcomes. The Ecological Framework was a determinant framework that hypothesised about the relationship between provider factors and the environmental context of the community setting in which the intervention was being implemented within (Durlak & DuPre, 2008).

Determinant frameworks describe the type of implementation interventions that could be used but they fail to provide sufficient understanding of why they might be useful in different contexts. For example, in the context of this study it was important to demonstrate the relevance of the intervention to the end-users (e.g. implementers and stakeholders) This suggests that understanding the end-user's relevance to the implementation of the intervention is an area where further research is needed for better analysis of how various end-users may influence implementation effectiveness.

Furthermore, Nilsen (2015) claims that there is also an issue of whether perceived implementation barriers and facilitators are the actual determinants of implementation success or otherwise. The perceived importance of particular factors may not always correspond with their actual importance.

#### *8.4.3.2.3 Evaluation Theories*

This category outlines ways to evaluate the process of implementation and implementation outcomes. These theories were previously identified by the literature review in chapter 3, section 3.5. In particular, the RE-AIM (Reach, Effectiveness, Adoption, Implementation, Maintenance) (Glasgow, 1999) and PRECEDE-PROCEED (Predisposing, Reinforcing and Enabling Constructs in Educational Diagnosis and Evaluation-Policy, Regulatory, and Organizational Constructs in Educational and Environmental Development) (Green, 1974; Green, Kreuter, Deeds, Partridge, 1980; Green, Kreuter, 2005; Glanz & Rimmer, 2005; Gielen, McDonald, Gary, Bone, 2008) were two popular evaluation theories discussed in the review of the literature in chapter 3 section 3.5 and are frequently used in Public Health. Both frameworks specify implementation aspects that should be evaluated as part of the process of implementation.

Although evaluation frameworks may be considered in a category of their own, previous theories, models, and frameworks of implementation have concepts that overlap with the evaluation theories as they specify constructs that can be applied to evaluation purposes because they can be operationalised and measured. The PARIHS framework is an example of a framework with evaluation constructs, including constructs to understand the implementation context and organisational readiness to change (Rycroft-Malone, 2004).

#### ***8.4.4 Relevance of Implementation Theory to this Study***

The implementation theories, models, frameworks highlight that many implementation theories are extensions of the behaviour change and organisational theories, models, and frameworks identified throughout the literature review in chapter 3. However, the implementation approaches have attempted to understand how to use these theories to inform implementation, the context of implementation, the need to consider the users of the intervention, and to evaluate the implementation process. However, as identified in this literature review, ways to understand context, the need to consider end-users, and the extent to which identified implementation factors occur and impact on implementation is still being debated.

The process models, like the stage behaviour change theories, models, and frameworks assume a linear relationship where implementation success will be achieved if simple steps are followed. This suggests that guidelines on implementation might be helpful to support the planning of implementation. This is further explored in the discussion of this thesis, in which a set of Implementer Engagement Guidelines are developed and discussed. Determinant frameworks are generic and do not give specific contextual details of potential barriers and ways to overcome them. Therefore, they describe the process, rather than give details on ways to increase facilitating factors and overcome barriers. The implementation theories also do not consider the role of policy in influencing intervention development and implementation. Therefore, the following section of this chapter will look at policy implementation theories to try to explain and inform the findings from this thesis.

### **8.5 Policy Implementation**

As outlined in the previous sections, the development and implementation of interventions should be underpinned by behaviour change theories to target the intended population but also implementation theories should also be used to inform

the context of developing and implementing interventions. However, it should also be noted that Smile4Life was also underpinned by an Oral Health policy (The Delivering Better Oral Health Toolkit, Public Health England, 2009) that informed the organisational context, as the policy dictated the interventions that were needed to achieve the policy Delivering Better Oral Health. Therefore, policy implementation is discussed to understand and potentially inform the ways in which the policies followed by the policymakers may have determined the development and implementation of Smile4Life.

The process of developing, implementing, and evaluating Public Health policy has been debated for at least five decades (Etzioni, 1967; Lasswell, 1956; Lindblom, 1959; March & Olsen, 1984; Sabatier, 2007). Birkland (2005) proposed that policy implementation is important to understand ways to structure policy that enables the policy to be embedded into professional routine practice and to be successfully adopted by the target population. The following section outlines the policy implementation literature to inform the interpretation of the findings and conclusions of this study.

### ***8.5.1 Policy Implementation Background***

Before the development of Bailey and Moher's investigation into the administration of the elementary and secondary education action in 1965, which set the foundation for public funded policy, the implementation of policy received little academic attention. In 1972, a review of President Johnson's housing policy in the United States highlighted the importance of understanding the factors that impact on the successful implementation and adoption of public policy (Dertick, 1972). Four years after the implementation of President Johnson's housing policy not one new house had been built (Dertick, 1972). This further emphasised the importance of understanding factors that impact on the implementation of policy.

In 1971, Michael Lipsky proposed the existence of 'Street-Level Bureaucrats' (SLBs), referring to public sector workers that directly interact with the community and their role in urban reform. In 1980, he published the Street-Level Bureaucrats Theory that claims rather than focusing on top-down policy development, the focus should be on the impact and factors that bottom-up approaches have on the implementation of policy. The theory of Street-Level Bureaucrats suggests that the implementation of policy should be studied during the policymaking process and it should be emphasised

that if the implementation of a policy affects the organisational structure then the process of implementation will be affected (Bardach, 1977).

Essentially, Lipsky's (1980) theory focuses on those public sector workers who interact with the community and who have substantial autonomy when acting out their job tasks. Lipsky proposed that SLBs assume that there are two positions within an organisation; a manager's desire to secure control and the worker's ability to resist control and seek discretion. Therefore, the decisions of SLBs, their routine working practices, and the practical actions they take to cope and overcome work pressures effectively become the public policies they deliver. Key to Lipsky's theory is that the implementation of policy is best studied and understood through frontline workers, the SLBs. Resistance to the implementation of a new policy is shown through the struggles and conflict between the frontline staff and individuals within the community. Those professionals who work to deliver the policy into the community encounter competing demands of their job and meeting the needs of the community, which are not considered in policy development and implementation.

Hudson (1989) proposed that there are four main types of accountability that SLBs have: (1) the organisation, (2) consumers, (3) law, and (4) professional norms. Each is often problematic. Hudson claims that to increase the accountability to an organisation, efforts must be made to increase worker behaviour and agency policy, but for SLBs the rewards of agency are minimal and do not play a significant role in creating organisational behaviour. The role of consumer (e.g. community) should be fully informed and engaged in the policy to receive it, but understanding ways to encourage those individuals within the community who receive policy is context dependent and difficult to understand. It has been proposed by Hudson (1989) that SLBs can exhibit a lack of responsiveness to receiver's demands and needs. Laws are put in place to attempt to ensure SLBs obey policy but the legal system is not well equipped to deal with SLBs autonomy of working practices. Lastly, professional norms are seen to be the biggest influence on SLBs as professionalism is what focuses SLBs. However, the theory and practice of accountabilities of professional conduct and the law can be very different.

### ***8.5.2 Relevance to the Study Findings***

In relation to the study findings, Lipsky's claim that a manager's desire for control and the policy implementers' desire to resist control and have discretion, reflects the

Smile4Life policymakers' discussions about wanting to control and have a standardised implementation of Smile4Life and the implementers' desire to resist standardised implementation and deliver Smile4Life in a way that they believe is best in practice. Despite this, the finer details and explanations of SLBs are not reflected by the study findings. Firstly, accountability to the organisation is regarded by Lipsky as a way to ensure managerial control over the implementation of policy. However, it does not explain what happens when staff from different organisations need to come together to implement policy. The findings from this study outline that both the policymakers and the implementers felt accountable to their own organisational group and they discussed a strong sense of group belonging. This sense of accountability to their own organisation prevented the two groups from working together with one group belief. Both groups resisted the other group's beliefs and this meant that the implementers resisted the policymakers' development and implementation vision. Therefore, understanding the different organisational context when implementing policy is crucial and in contrast to Lipsky's claim that organisational accountability has a low impact on SLBs behaviour. When two different groups need to work together this organisational accountability can be used to justify the resistance to implement the policy.

Secondly, Lipsky's theory claims that SLBs fail to consider or include the community or those who will receive the policy. Again this claim is not reflected by the results of this research. In fact, the implementers claimed that they were motivated to resist the policymakers' implementation plan as a result of them knowing their settings and truly believing that the standardised implementation plan would not suit the settings or work practically. Furthermore, the Smile4Life resources and training were also regarded by the implementers as factors that impacted on the implementation of Smile4Life. This is something that is not outlined or studied in the theory of Street-Level Bureaucrats. This was also supported by Ritterman-Weintraub et al., (2014) who studied Lipsky's theory within healthy schools policy and found that training was an important implementation factor that should be included in the theory. Lastly, in the context of Smile4Life, the law and legal system were not discussed by either the policymakers or the implementers; this makes it difficult to discern the relevance of these components of SLBs theory to the current study. Therefore, although Lipsky's claims that SLBs aim for autonomy and to resist control, reflects the implementers' resistance

to a certain extent, the findings from this study outline that there are more complicated factors involved in this need for autonomy from groups such as, group boundaries, understanding what works practically rather than strategically, and the need to fully consult and consider the needs of this middle layer in implementation.

## **8.6 The Role of the Implementers or Middle Managers**

This section acts as a summary to the previous sections and highlights the importance of considering the role of the implementers or ‘middle managers’ in the development and implementation of interventions. The main barriers and facilitators to the development and implementation of Smile4Life, which were discussed by the policymakers and implementers, are also considered.

It should be noted that within this research the middle managers are defined as those staff responsible for delivering the intervention to the target population. For this thesis the middle managers are referred to as the implementers, a name for this middle organisational layer in implementation that was co-created between the researcher and those staff attending the operational Smile4Life meetings and delivering the Smil4Life programme. When referring to wider literature or applying the findings to other implementation strategies and interventions the term middle managers will be used due to the term ‘middle manager’ appearing in the literature (Birken et al., 2012)

It is evident from the findings that the implementers had an impact on the development and implementation of Smile4Life and they have a vital role in the success of interventions. Although their role has been largely ignored in the literature, the reviewed theories, models, or frameworks have failed to incorporate either the role of the implementers in the development and implementation process or their influence in real-life settings.

The role of the implementers or ‘middle managers’ as they are referred to in management literature (Birken, et al., 2011), has received little attention in General Health and, especially, Oral Health research. However, understanding the role of the implementers may reveal an opportunity to improve the current success rate (<50%) of interventions (Burstin, Conn, Setnik et al., 1999; McGlynn, Asch, Adams et al., 2003; Li, Simon, Giles et al., 2004; Birken et al., 2011). Furthermore, previous research also supports this study’s claim that the role of the middle managers is not just overlooked but that their role is assumed to be passive and unproblematic in the

development and implementation process (King & Zeithaml, 2001; Currie & Proctor, 2005; Birken et al., 2012).

Despite the limited research into the role of the middle managers in health research, some studies show that the implementers' commitment should to be fostered in order to improve the intervention's success (Birken et al., 2011; Birken, Shoou-Yih & Weiner, 2012). However, Birken et al., (2011; 2012) argue that the implementers' commitment is influenced by the support they receive from top-managers, a finding also supported by Bostram, Wallin and Nordstrom (2007). The findings of this study challenge this, outlining that although the implementers did not feel supported by the policymakers, the main issues were the lack of knowledge transfer across the groups and the lack of piloting of Smile4Life, something that only became apparent due to the in-depth interview process (this may not have become clear in the structured survey method used by Birken et al., 2012).

Research has also shown that middle managers create knowledge through social networks and synthesise this knowledge to deliver it to settings (Nonaka, 1994). Furthermore, in order for the implementers to deliver the policymakers' knowledge, the implementers need to work flexibly to adapt this information to translate the broad strategy into concrete practical tasks suitable for implementation (Dopson & Steward, 1990). As with this thesis study, Barlett and Ghoshal (1993) showed that the implementers act as horizontal links, enabling the diffusion of information throughout the settings and to the stakeholders. This supports this study's proposal that the implementers are the mediators between the policymakers' strategy, their practical knowledge, and the settings needs. However, middle manager research is sparse and fails to identify that different working practices, organisational norms, and beliefs can be difficult to articulate and transfer between groups that have not shared similar experiences.

The findings of this study identified that the implementers can also contribute to and create negative social networks that can discredit the intervention if they have not effectively engaged with the development of the intervention or given the opportunity to test, feedback, and agree to implement the intervention. This study is also the first to research the role of the middle managers within a real-life context and identify the facilitating factors to the development and implementation of interventions. It

addresses the calls of other scholars to investigate the role of implementers or ‘middle managers’ in the health intervention context (Woolridge, Schmid & Floyd, 2008; Birken et al., 2012).

This section identifies the importance of considering the role of the middle managers in implementation theory and the lack of consideration it has thus far received. The remaining section of this chapter outlines a theory proposed to understand the formation of intragroup boundaries and intergroup relationships, as identified in the study contained in this thesis.

### ***8.6.1 Theory to Underpin the Implementers or Middle Managers’ Role in the Implementation Process: Social Identity Theory***

After reviewing the behaviour change theory literature and outlining the findings of this study, it is apparent that a theory to understand the role of the implementers in the process of implementation should consider the development of group identity and perceptions of the in-group and out-group or as reflected by the analysis of the interviews from this thesis, the development of intragroup and intergroup mentality.

Tajfel (1970; 1972; 1978) attempted to account for types of social conflict, for example, the Holocaust, through understanding the social context of group membership rather than individual personality traits. Consequently, the Social Identity Theory was proposed with a view to understanding the psychology of in-group relations, particularly as played out against the backdrop of large-scale social conflict. In the wake of World War II, dominant social psychological approaches sought to explain events such as the Holocaust with reference to individual-level factors (e.g., personality). Tajfel (1970) theorised that in-group relationships and out-group conflict occurred due to the role that social context and group memberships play in individuals identifying themselves as belonging to a group and group members characterising who belongs or does not belong in the group.

In less extreme social conflict situations, Sherif and Sherif et al., (1956;1961) conducted ‘boy’s camp studies’ and demonstrated that outgroup competition could dramatically transform well-adjusted middle-class boys from good friends into vicious opponents. Yet Tajfel (1970) wondered whether realistic competition was in fact the main reason for individuals changing from friends into opponents. Tajfel (1970) conducted ‘minimal group studies’, which aimed to identify the subtlest conditions

that could lead individuals to identify themselves as a group and discriminate against individuals that they perceived to be out-group members. The key findings from these studies were the mere act of individuals categorising themselves as group members was sufficient to encourage individuals to make in-group favouring responses (Tajfel, 1979; Turner, 1975). Also, participants tended to deviate from a strategy of fairness by awarding more points to in-group members (Rees, 2015). Furthermore, rather than maximizing absolute in-group gain, the participants favoured a strategy of maximizing relative gain by out-doing the out-group (Rees, 2015).

After the minimal group studies and the initial development of the Social Identity Theory, Tajfel and Turner (1975) expanded on the initial Social Identity Theory to propose that individuals seek to achieve or maintain self-esteem by positively differentiating their in-group from comparison to the out-group. When individuals formed an in-group identity they would refer to themselves using ‘us’ and ‘we’ rather than ‘I’ and ‘me’, individuals were also motivated to regard ‘us’ as distinct from and better than the out-group members, which were referred to as ‘them’.

Tajfel and Turner (1975) outlined three key factors that lead to the formation of in-group positivity and out-group negativity: (1) the extent to which individuals identify and relate to the in-group, (2) the extent to which the environment and setting creates comparison between the in-group and out-group, and (3) perceived value of the comparison. Therefore, according to Tajfel and Turner’s theory (1975), individuals are more likely to display in-group positivity and out-group negativity when the comparison and favouritism leads to successful outcomes.

### ***8.6.2 Relevance to the Study Findings***

Tajfel and Turner’s (1975) Social Identity Theory reflects the findings of this study and appears to be an appropriate theoretical underpinning for the development of the proposed Implementer Engagement Guidelines outlined in the following chapter. Firstly, the three key factors reflect the formation of the intergroup boundaries and intragroup relationships that formed between and within the policymaker and implementer groups. For example, the extent to which individuals relate and identify with each other is reflected in Smile4life: the policymakers worked together as a team and shared offices; the implementers also worked in a team and lived in the same area they were working and delivering programmes in. Smile4life also reflected the way

the environment creates comparisons: both groups had clearly defined but separate roles; the policymakers held strategic meetings where they developed Smile4Life. The implementers would hold separate operational meetings to discuss ways to deliver Smile4Life. The perceived value of comparison is also identified in the findings of this thesis, each group perceived that the other group contributed to any potential failing of Smile4Life but the in-group contributed to any success of Smile4Life. The Social Identity Theory suggests that we construct and perceive our identity through group memberships and consequently a group-based rather than an individualistic approach is needed to achieve successful integration between two organisations (Tajfel and Turner, 1986; Kreindler, Dowd, Starr and Gottschalk, 2012; Carpenter and Dickinson, 2016). Therefore, instead of the policymakers and implementers perceiving themselves as two separate professional groups, a common categorisation is needed, such as ‘Oral Health professionals’ or ‘Oral Health promotion experts’ or the ‘Smile4Life team’; the emphasis of one united title should be used from initial intergroup contact. However, Carpenter and Dickinson (2016) claimed that this new identity could only be accepted if the new identity was perceived to be more positively attractive than their old separate group identities. Alternatively, Hewstone and Brown (1986) argued that it is difficult for groups to create new identities and instead ‘mutual intergroup differentiation’ is needed. According to ‘mutual intergroup differentiation’, each group’s originality, differences, and distinctiveness should be recognised, valued, and respected by the other group. During initial contacts, each group should emphasise their group expertise to promote and protect the salience of group boundaries and generalisations of the out-group. This will maintain positive in-group perceptions about their own group, but also develop positive generalisations regarding the out-group.

According to Tajfel and Turner’s original Social Identity Theory, individuals will naturally categorise themselves and others and it may be difficult to overcome these group boundaries and categories. Although Tajfel and Turner’s work on Social Identity Theory have provided the platform to understand the formation of group boundaries, they do not provide an understanding of ways to overcome the formation of groups. Therefore, interventions need to recognise Tajfel and Turner’s Social Identity Theory but Hewstone and Brown’s (1986) proposal of creating positive out-group stereotypes and respecting the outgroups expertise should also be considered.

## **8.7 Summary of Chapter**

This chapter provides an in depth literature review on areas highlighted as important to the interpretation of the study findings. It briefly highlights the relevance of the literature to the study and the gaps between the literature available and the findings of this thesis. These themes are explored in more depth in the discussion chapter which follows.

# 9 DISCUSSION

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## 9.1 Introduction

The findings from this thesis provide an insight into the policymakers' and implementers' experiences of trying to develop and implement Smile4Life. The findings also identified the development and implementation underpinnings of Smile4Life, and the barriers and facilitators to this process. By extending what is currently known about the development and implementation process of Oral Health interventions in real-life settings, the study offers an insight into some of the many factors that are involved in this process. It also highlights the need for intervention developers to understand the complex and unique issues that can impact on the implementation of interventions. The findings also contribute to knowledge by highlighting the extent to which the implementers can alter the development, implementation, and sustained adoption of interventions.

The findings of the thesis will be contextualised within the academic literature following on from the previous chapter 8. A proposed set of guidelines to guide the development and implementation of Oral Health interventions, which have been developed as a result of the thesis findings, will also be outlined in this chapter. The limitations of the thesis are discussed, as are the recommendations for future research and the implementation of Oral Health interventions. The implications that this thesis has for Smile4Life policy and the current and future implementation of interventions will also be outlined.

The discussion is shaped by findings of this thesis and this chapter is structured around the meta-theme and its associated themes and sub-themes (see list below). It should be noted that due to the nature of the natural, cyclical experiences of real-life, there may be some unavoidable overlap between some themes and sub-themes.

### **Inter-Group Relationships and Inter-Group Boundaries**

- Intra-group inclusion vs. inter-group exclusion
  - *Inclusion in the development*
  - *Exclusion from the development*
- Different knowledge, experiences, and beliefs

- *Knowledge-how strategic or practical experience*
- *Knowledge-why strategic or practical beliefs*
- **Standardised or flexible implementation**
  - *Standardised implementation*
  - *Flexible implementation*
  - *Perceived implementation outcomes*

### **9.1.1 Reflections**

*Due to the inductive and less conventional structure of this PhD thesis, the discussion chapter discusses literature and underpinning theories, models, and frameworks which were not identified in the review of the literature in chapter 3. This is due to the findings of this thesis identifying that approaches other than behaviour change needed to be addressed, to help answer the implementation factors highlighted in the findings. Chapter 8 attempts to address these implementation factors by outlining implementation approaches and policy theory. However, gaps in the available research evidence still emerge. In this chapter I try to draw on theories, models, and frameworks to answer the questions raised in the findings. Therefore, the discussion may draw upon theories, models, and frameworks that have not been fully discussed in other chapters. This section reflects the inductive approach whereby at the end of the research process, due to me having little knowledge of the Smile4Life context or Oral Health, and allowing the participants of this study to guide the research process, there will be ‘new’ ideas, evidence, and discussion topics that emerge and need to be discussed in the discussion.*

## **9.2 Intra-Group Inclusion vs. Inter-Group Exclusion**

This section reflects the theme ‘Intra-group inclusion vs. inter-group exclusion’ and the two sub-themes ‘inclusion in the development’ and ‘exclusion in the development’ of Smile4Life. The ways that inclusion within the two groups and exclusion between the two groups created perceptions of ‘us and them’ and the inter-group boundaries will be discussed as will the policymakers’ and implementers’ experiences. The impact that inclusion and exclusion in the development of interventions has on the intervention will be examined and relevant approaches adapted from theories, models, and frameworks, to overcome these barriers will be proposed.

### ***9.2.1 Contributing Factors to the Development of ‘It’s Very Much Us and Them’***

From the findings outlined in chapter 7 it is evident that the development and implementation of Smile4Life generated a separate sense of inclusion within the policymaker group and within the implementer group and also fostered a sense of exclusion between the two groups. Consequently, perceptions of ‘us and them’ were perceived by both groups. The complexities of two separate groups needing to work together are something that may only emerge when investigating the development and implementation of interventions in real-life settings (Birken, et al., 2012; Alexander, 2008).

When examining the journey of development that occurred within the policymaker group, it is apparent that each member of the policymaker group felt respected, trusted each other, and their opinions were valued. As a result of this they were able to work together to share their experiences, beliefs, and knowledge. However, the feelings of inclusion did not transfer between the two groups and it was evident from the findings that the initial development of Smile4Life excluded and denied opportunities for the implementers to participate in this early planning stage. Regardless of best intentions, the initial approach taken by the policymakers was perceived as being both exclusive and hierarchical by the implementers. Subsequently, the implementers united against the policymakers’ exclusions, creating a sense of ‘us and them’. This finding offers an explanation to Birken et al., (2012) question regarding the role that middle managers can have in the implementation of health programmes. When implementers feel excluded and their opinions are not supported by the policymakers and instead, their opinions are dismissed, the implementers will resist the implementation strategy. Whitelaw et al., (2011) also support the ‘us and them’ finding by proposing that ‘*top down normative approaches to development*’ should be avoided (p128). Instead a flexible approach should be taken and the policymakers should work with the implementers and provide the opportunity for good communication, keeping the implementers up-to-date with progress and support the implementers’ practical beliefs (Birken, Shoou-Yih, Weiner et al., 2015; Birken, Shoou-Yih, Weiner, et al., 2013; Birken et al., 2012; Whitelaw, Graham, Black et al., 2011).

The ‘us and them’ mentality identified in this study is supported by Tajfel’s (1979) Social Identity Theory. Tajfel claims that it is human nature to divide ourselves and

others into ‘them’ and ‘us’ through the process of social categorisation, the result of this is what the Social Identity Theory calls the in-group (us) and the out-group (them). Tajfel’s Social Identity Theory also proposes that groups will enhance their self-image by discriminating against the out-group. Members of the in-group will actively seek negative aspects of the out-group (e.g. the process driven strategy of the policymakers was perceived as being negative by the implementers and the policymakers did not respect the pragmatic drive of the implementers). By identifying these negative aspects, the individual similarities within in-group members and individual differences between the in-group and out-group members become more entrenched. Terry and O’Brien (2001), identified that when companies needed to merge, the conflict which occurred between the separate companies could be explained by the Social Identity Theory. Although not separate companies, conflict was evident between the policymakers and implementers and regardless of the need to work together, each group united against the other.

The ‘us and them’ mentality found in this study resonates with and adds credence to other theories and approaches to health promotion that identifies similar barriers to intervention development. Community-Based Participatory Theory (CBPR) (Israel et al., 2005) proposes that exclusion, lack of trust and communication in the intervention development process can create barriers as also seen in this study. Other multi-level approaches such as Availability, Responsiveness, and Continuity (ARC) framework (Kinniburgh & Blaustein, 2005) and the Cross-Sector Collaboration Framework (Bryon, Crosby & Middleton-Stone, 2006) also identify similar implementation barriers to those identified in the CBPR and within Smile4Life but they do not propose ways to overcome these barriers.

However, the ARC framework aims to improve organisational effectiveness through a phased process of fully including and understanding several aspects of an organisation, which could be another strategy to breakdown group divisions. The ARC has three stages: collaboration, participation, and innovation, which propose strategies to prevent and overcome group barriers (Kinniburgh & Blaustein, 2005). Within the policymaker group, facilitating factors outlined by the ARC framework: regular communication, articulate changes, and negotiate changes, are evident and occurred without the need for an external implementation expert to facilitate the process. However, the facilitating factors of respect, communication, boundary spanning, one-

to-one communication, support, commitment, and enthusiasm did not occur when the policymakers and implementers needed to work together. This may be due to each group creating in-group and out-group divisions, but the ARC proposes that a trained implementation specialist can facilitate separate groups working together to develop and implement interventions (Beidas & Kendall, 2014; Morris, Bloom & Klang, 2007) and overcome the 'us and them division'.

The lack of an external implementation expert to mediate the process may have emphasised the implementers' perceptions of differences between their group and the policymakers' group (Morris, Bloom & Klang, 2007). The implementers also discussed that the 'us and them' mentality created a hierarchy as the policymakers were in control of the engagement process, decided who attended the development meeting, and the content of the meetings. Therefore, the content of the meetings, which may not have contained information that the implementers regarded as relevant, and the lack of one-to-one interactions may have impacted the implementers' belief and commitment to Smile4Life. The implementers regarded the policymakers as the 'gate keepers' to meetings and deciding if the implementers would have an input into the development of the programme. This further strengthens Whitelaw and Colleague's (2011) claim that 'top-down' approaches should be avoided when developing interventions. The findings also propose an alternative to research that claims the 'top-managers' commitment and support of an intervention are the main facilitating factors in the implementation process (Levinson, Aunno, Gorawara-Bhart et al., 2002; Palinkas, Schonwald, Hoagwood et al., 2008; Helfrich, Weiner, McKinney & Minasian, 2007; Arons, Sommerfield & Walrath-Greene, 2009; Flanagan, Ramanujam & Doebbeling, 2009; Proctor, Knudsen, Fedoravicius et al., 2007; Kimberley & Cook, 2008). Instead, the findings suggest that 'top managers' or policymakers must work with implementers or 'middle managers' to gain the implementers' commitment to adopt and deliver the programme. The policymakers were committed to the successful implementation of Smile4Life, however their top-down approach did not consider the implementers' commitment or beliefs, and this impacted on the implementers' commitment to Smile4Life. The top-down hierarchical methods also impacted on the development of the programme as the implementers claimed Smile4Life was dictated to them by the powers, which prevented the sharing of knowledge and beliefs between the two groups during the development of Smile4Life. The findings suggest

that when implementers do not feel supported by the policymakers or ‘top managers’ they will resist the programme and the implementation strategy. Birken et al., (2015) also supports the claim that the commitment, belief, and opinions of those responsible for delivering programmes should be considered in the development and implementation process.

The policymakers also advocated the use of a top-down approach which in accordance to other studies that have identified Oral Health professionals favour approaches that enable interventions to be delivered in a top-down way (Satur, Gussy, Morgan et al., 2006; Watt, 2005; Newton & Bower, 2005; Marmot & Wilkinson, 1999). This top-down, hierarchical approach was also a barrier to the policymakers and implementers working in partnership during the development and implementation of Smile4Life (Watt et al., 2005). From the evidence of this thesis and other studies, Oral Health professionals should consider using approaches that enable bottom-up (Watt et al., 2007) or equitable development (Birken et al., 2015) in the development and implementation process.

Conflict is another factor identified by the findings that contributed to the development of ‘us and them’. The Cross-Sector Collaboration Framework highlights conflict as a barrier to the collaboration process and without resolution it can lead to boundaries and hierarchies between groups. Conflict can take many forms during the process of development and implementation. According to cross-sector collaboration researchers (Gray, 1996; Merrill-Sands & Seridan, 1996), conflict can arise as a result of different organisations failing to agree that there is a problem that they both need to work together to resolve. Conflict over sharing of knowledge can emerge during the later development stages and issues over power and control can occur during the implementation of the intervention (Gray, 1996; Merrill-Sands & Seridan, 1996).

The findings of this thesis mirrored the stages of conflict identified in the previously outlined Cross-Sector Collaboration Framework. First, conflict emerged due to the implementers failing to agree that there was a sector failure and a new intervention was needed. Secondly, issues over sharing information and knowledge are evident throughout the data from the initial perceptions of exclusion, and due to subsequent issues over different knowledge, values, and beliefs, which will be discussed in more detail in the next section of this discussion. Conflict also resulted from issues over

power and control during the implementation stage with the policymakers' unwillingness to allow the implementers control over the delivery of Smile4Life in settings, which will also be discussed in more detail in subsequent sections.

Although conflict was a major issue within the findings of this study, the ways in which conflicts arise and how to overcome conflict in real-life health interventions is scarce within the research literature (Blanch, Boustead, Broothroyd et al., 2015). Although the Cross-Sector Collaboration Framework claims that conflict is problematic between inter-group alliances in the development of interventions (Agranoff, 2006), the framework still only describes the stages that conflict can arise and does not propose ways to overcome conflict barriers. However, the findings of this thesis portray and outline a deeper understanding of conflict between different groups and will attempt to propose ways to reduce conflict from occurring. Therefore, the findings of this study clearly outline the stages in which conflict can occur in real-life settings and describes the reasons for conflict occurring, such as; initial development exclusions and both groups believing in an 'us and them' mentality, which prevents the two groups agreeing on the development process. Conflict also arises due to a perceived hierarchy that prevents the sharing of knowledge, the policymakers' desire to maintain control over Smile4Life also resulted in implementation conflict with the implementers resisting the implementation strategy.

Research that has elaborated on the Cross-Sector Collaboration Framework and looked at conflict within cross-sector and community collaboration (Blanch et al., 2015). The research identified that inter-group alliances are necessary and desirable for addressing complex social and healthcare problems (Blanch et al., 2015); Smile4Life is a good example of the sort of complex health and social care problem. Blanch et al., (2015) proposed that partnerships need to be identified and potential conflict recognised at the start of the collaboration process, this did not occur in Smile4Life. Furthermore, sectors or groups need to be able to create an environment that conflict can be raised and resolved in and recognise that conflict is constructive to the development process providing it is resolved. The findings identified that the policymakers did not consider the conflict between themselves and the implementers as constructive, rather the policymakers regarded all conflict between the two groups as destructive to Smile4Life. Although the policymakers talked of the conflict within the policymaker group as constructive, the policymakers claimed that between the

policymakers and the implementers, the implementers created destructive conflict that was detrimental and led to negative forces impacting on the programme. Blanch et al., (2015) propose that conflict is difficult to identify and resolve, which is why it goes unnoticed and unresolved. However, the findings of this study contradict this assumption and in the real-life context studied, it appears that conflict was recognised but whether the conflict was considered constructive or destructive by the policymakers and implementers was at least partly dependent on the conflict emerging within the group or between the groups. The findings illustrate that conflict added to the 'us and them' mentality and each group (us) united against the perceived conflict from the other group (them).

Additionally, Blanch et al., suggest that conflict needs to be raised and resolved but groups are either avoidant of the conflict and unable to deal with it, or groups are informed and have the skills to deal with the conflict. The policymakers claimed that they were aware of the conflict but ignored it until they could no longer ignore it. This suggests that the policymakers were sensitive to the conflict but were unable to deal with it and subsequently the conflict escalated. This also suggests that this conflict did become destructive to the development and implementation of Smile4Life due to the escalation of the conflict as a consequence of the two groups' inability to resolve their issues.

Although the findings of this study contradict Blanch et al., finding that conflict is difficult to recognise since both groups were completely aware of the conflict, the rest of the findings support Blanch et al., finding that it can be difficult to resolve and overcome. The findings of this thesis present a picture that within the policymaker group conflict was seen as constructive and the policymakers were able to resolve it. Alternatively, the conflict between the two groups was considered to be negative and the policymakers avoided the conflict until it was destructive and they could no longer ignore it. At this stage boundaries between the groups were formed and the conflict could not be resolved, instead the groups perceived 'us and them' mentalities. The different perceptions of inter-group and intra-group conflict may be due to the different goals and expectations between the groups. Due to the different opinions between the groups, each group may have regarded the different opinions as a conflict and challenge to their shared group norms. This may have led to the two groups uniting against the challenging opinions to maintain their group norms. The findings also

expand on previous research by identifying that a hierarchical structure may impact on conflict resolution. The ‘top managers’ may ignore conflict or be unmotivated to resolve it, as they are at the top of the hierarchy and they may believe that eventually the other group lower down in the hierarchy will have to do as they are told. Lastly, the findings identified that whether conflict is regarded and constructive or destructive depends on if the conflict is within or between groups.

### ***9.2.2 Overcoming ‘Us and Them’ Divisions***

Although conflict was evident, there were examples in the study where facilitating factors such as those evident in the ARC appeared to enable the policymakers’ to have positive group interactions. ARC’s facilitating factors (engagement, commitment, support, respect, articulating goals, and building relationships) appeared to be factors that helped the policymakers to welcome new members in the group and this facilitation prevented an us (founding members) and them (new members) mentality occurring within the policymaker group.

The ARC advocates the first stage of collaboration should be engagement with the leaders. Communication between the leaders should be explicit and regular to prevent feelings of exclusion and to create common goals. However, the ARC proposes that leaders should be identified and engaged with initially. The findings of this study conflict with the ARC engagement strategy as the policymakers initially collaborated with each other and this created a hierarchy between the policymakers who were involved from the start and the implementers who were consulted later. By collaborating and engaging with people at different stages the findings of this study show that it makes it easier for individuals to create group boundaries, which is what happened between the policymakers and implementers. This study also highlights how group boundaries and exclusion can occur through a lack of communication and creation of a hierarchy due to the collaboration stage starting after the initial conception of Smile4Life. The ARC proposed that an implementation expert could facilitate the collaboration process and overcome hierarchies and group divisions. However, many interventions are developed with a limited budget and within a short space of time, and the ARC expert requires a master’s degree and two years training. This is very time consuming, expensive, and unachievable for many interventions (Beidas et al., 2014). There are also many factors involved in the development and

implementation of interventions and the ARC framework fails to acknowledge facilitators to the sustained implementation of interventions or the needs of the community. Consequently, approaches to guide the development and implementation of interventions should consider multiple contextual factors.

The Cross-Sector Collaboration Framework is another approach that aims to guide the process of different groups or organisations linking and sharing resources, activities, and capabilities, to jointly achieve a desired outcome that neither group could achieve individually (Bryson, Crosby & Middleton-Stone, 2006). Researchers using the Cross-Sector Collaboration Framework have identified that relationships begin with varying degrees of trust and building trust is an on-going requirement for successful collaboration (Huxham & Vagen, 2005). Again this was evident in this study where trust had been built within each group but where there was lack of trust between the two groups boundaries occurred. Furthermore, the framework outlines facilitating factors to building trust and creating relationships through competency, good intentions, liaison meetings, and follow through (Crosby & Bryson, 2005; Arino & De La Torre, 1998).

The implementers talked of how trust between the two groups was missing and according to the Cross-Sector Collaboration Framework it may be due to the lack of follow through, legitimate liaison meetings, and insincere intentions. The thesis identifies that mistrust developed through the implementers' claims that the policymakers would never follow through on what they had agreed with the implementers and the policymakers did not liaison with the implementers.

Management literature has suggested over many years that trust is essential to individuals working together as one organisation (Beccerra and Gupta, 1999; Bibb and Kourdi, 2004; Meyerson et al., 2006). Management research has also suggested that communication (Hartman et al. 2009), employees' commitment (Ristig, 2004; Paine, 2006; Darrough, 2008), employee's satisfaction (Driscoll, 1978; Callaway, 2007; Shockley-Zalabak et al., 2010), continuance of collaboration (Malhotra and Lumineau, 2011), and team performance (Ferrin and Dirks, 2002; Webber, 2002) are all dependent on trust. However, trust remains an underexplored factor in the development and implementation of Oral Health and General Health interventions.

Rather than focusing on building trust, the Cross-Sector Collaboration Framework proposes that for cross-sector collaboration to occur more freely, both groups must experience sector-failure. This entails the previous way of working or the previous intervention to fail and both groups acknowledging that change and a new intervention is needed. The policymaker group agreed that a consistent and standardised intervention was needed across Lancashire and they believed that this was something that was lacking in Lancashire. For that reason, the policymakers readily agreed and accepted the need for a new intervention. However, the implementers claimed that they were already doing Smile4Life in the form of Smiling for Life and they believed that programme was successful, worked, and it did not need to be reinvented. Additionally, they did not need the policymakers to achieve success. Consequently, the implementer group did not experience 'sector failure', this may explain the reasons for the policymakers accepting the change and the implementers' resistance to the new intervention, as the implementers thought the policymakers were reinventing the wheel and it was not needed. Despite this, the Cross-Sector Collaboration Framework reflects many of the findings from this study, it is evident that respectful communication, building trust, following through on group decisions and collective agreement with the need for collaboration, are all facilitators to cross-sector collaborations in the real-life context during the development of Smile4Life. However, other approaches and factors such as building trust and overcoming social identity need to be considered.

The Community-Based Participatory Research (CBPR) theory focuses on community engagement during the development of interventions. Although this framework aims to improve engagement between programme developers and the community, constructs of the CBPR reflect issues identified in this study. Consequently, this theory will be discussed in terms of its relevance to implementer engagement to overcome exclusion and 'us and them' group mentalities.

The facilitating factors noted within the CBPR collaboration stage represent issues identified in the findings. The CBPR states that equity within all groups is essential to the collaboration process and a hierarchy can create barriers. This is supported by the findings that outline the lack of collaboration and the creation of a hierarchy between the policymakers and the implementers led to 'us and them' group beliefs. The CBPR

encourages equitable engagement from the start of the development of interventions as this may overcome feelings of exclusion and hierarchy.

However, the CBPR fails to acknowledge that organisations or professionals involved in the development of interventions can consist of multiple levels across several different organisations. This thesis identified an important contribution to the literature by highlighting that the process of collaboration between professional groups can impact on the interventions development and implementation. Since the CBPR fails to acknowledge constructs to facilitate this engagement process, it may explain the mixed results from intervention research that have used the CBPR (Charlton et al., 1995; CMMIT research group, 1995; Merzel and D’Afflitti, 2003). Despite this, the constructs of CBPR may be beneficial to the development of much needed implementer engagement guidelines that create positive relationships across groups through identifying group dynamics and strengths, equity, identifying group goals, and feedback.

Figure 9.1 is a visual representation of the barriers (red boxes) and facilitators (green sails) to the collaboration process, which ultimately led to the policymakers and implementers claiming that their experiences of working in partnership, or lack of partnership, across separate organisations led to the ‘us and them’ mentality between both groups.

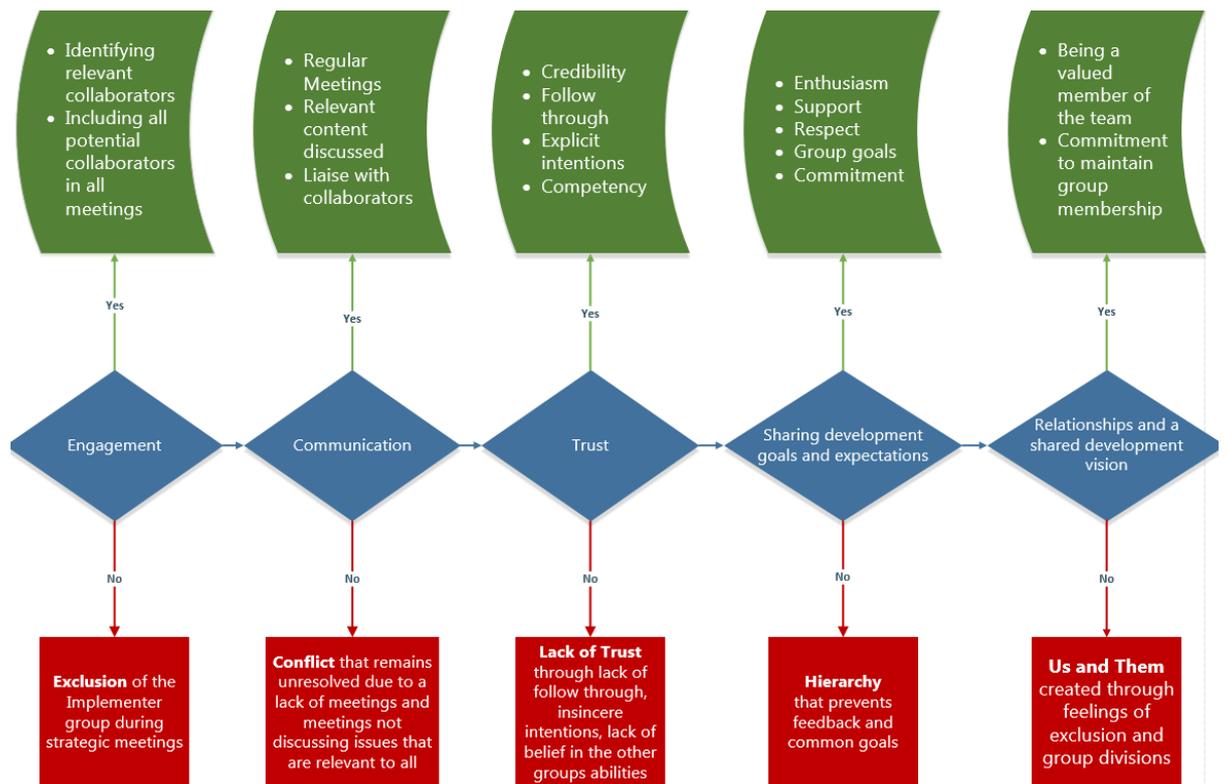


Figure 9.1 *Barriers (red box) and facilitators (green box) to the collaboration stage of the development of interventions*

### 9.2.3 Summary of Intra-Group Inclusion and Inter-Group Exclusion.

This section has identified the importance of intervention developers engaging with those responsible for delivering interventions right from the initial conception of an intervention. However, it is evident from the literature review that most of the theories, models, and frameworks identified did not consider the importance of cross-sector collaboration from the initial conception of the intervention. This is supported by the policymakers’ claims that forging relationships with the implementer group was the most difficult and unexpected challenge of the whole Smile4Life development and implementation process.

The majority of the policymakers’ knowledge regarding the development of Smile4Life led them to consider the individualistic behaviour change approaches and the top-down process of the expert delivering the information to the individual. Consequently, the policymakers were unaware of the need for engagement and to avoid exclusive actions, which ultimately resulted in ‘us and them’. Furthermore, the policymakers were unaware that their top-down approach caused a hierarchy and conflict that was detrimental to the development of the intervention.

The findings reflect some of the facilitating constructs identified in the ARC, Cross-Sector Collaboration Framework, and CBPR theory, but the findings from this study elaborate on these approaches by identifying the applicability of the constructs in real-life contexts. The study findings also identify the stages in development and implementation when the constructs are most effective, the consequences of not considering the constructs, and the implications that a lack of engagement across groups can have on the success of an intervention.

### **9.3 Different Knowledge, Experiences, and Beliefs**

This section will discuss the implications of the policymakers' and implementers' shared passion to improve Oral Health but their different visions of how and why to do this through the theme 'different knowledge, experiences, and beliefs'. The two sub-themes 'knowledge-how strategic and practical experiences', and 'knowledge-why strategic and practical beliefs' will also be discussed. At the end of this section each group's different and strongly held knowledge and beliefs will be identified in relation to the impact that these differences had on the intervention.

#### ***9.3.1 Contributing Factors to 'Shared Passion but Different Visions'***

The implementers' apparent exclusion during the development of Smile4Life appears to have set up the conditions and context for some of the conflict and dysfunction that occurred throughout the development and implementation of Smile4Life. The findings identified that both of the groups were very passionate and shared the same vision of improving the Oral Health of the community. However, the analysis also revealed that both groups believed in distinctly different ways of improving Oral Health.

The policymakers' strategic knowledge-how and knowledge-why, was acquired through information and skills they had used to develop previous interventions. The policymakers' focus was on the strategic planning of Smile4Life. The policymakers may not have had experience implementing interventions, but due to their acquired strategic knowledge of population-based interventions they were adamant that they knew the most appropriate ways to develop the intervention. Consequently, the policymakers collectively agreed on the most appropriate knowledge and beliefs that needed to underpin Smile4Life.

The previous section outlines that due to the successful collaboration within the policymaker group, knowledge and beliefs were easily shared. However, the findings also revealed that although the policymakers may have encountered some discrepancies over specific knowledge and beliefs, overall the policymakers' knowledge was similar. The policymakers described the policies and evidence bases that they were familiar with and it was apparent that the policymakers' experiences and beliefs focused on developing a strategy for achieving a standardised approach that could be developed into a national programme. Due to the similar knowledge, experiences and beliefs it may have been easier for the policymakers to accept and view competing knowledge as legitimate due to the knowledge and beliefs still having the strategic focus that was shared amongst the policymaker group. Furthermore, the findings identified that many of the beliefs and experiences were implicit and difficult to articulate to individuals that had not shared similar experiences. Osterloh and Frey (2000) also distinguished between explicit knowledge-why and implicit knowledge-how sharing and argued that the different types of motivations (extrinsic and intrinsic) are important in sharing the two kinds of knowledge. As a result of the policymakers having similar work experiences, norms, and clinical backgrounds, this implicit knowledge may have been more easily transferred within the group due to individuals perceiving group-belonging and being motivated to strengthen this belonging by sharing their knowledge. The findings also support research that has found that knowledge sharing is critical to an organisations success in working together and creating organisational norms (Grant, 1996).

Von Hippel (1994, p. 430) defined the concept of sharing knowledge as "*the incremental expenditure required to transfer a given unit of information to a specified locus in a form usable by a given information seeker.*" Tacit knowledge or knowledge-how, by nature, is more internalised than explicit knowledge-why (Von Hippel, 1994). Consequently, it is natural for individuals to adjust their willingness to share knowledge according to how internalised their knowledge is. Moreover, some researchers have suggested that explicit and tacit knowledge have different economic values (Reychav & Weisberg, 2010). Explicit knowledge is regarded as relatively less expensive because it is easy to transfer to others. By contrast, tacit knowledge carries a higher value since it is concerned with direct contact and the observation of individual behaviours and related to more complex ways of acquiring knowledge from

others. Therefore, tacit knowledge-how is more difficult to share than explicit knowledge-why, which makes knowledge-how costlier to share. The group boundaries and different knowledge types may have made the knowledge-how harder to transfer and the policymakers and implementers may have perceived this knowledge as too costly to transfer, when their knowledge-why, the 'cheaper' knowledge, was not even being shared across the group boundary.

The two groups had different knowledge of how and why experiences and evidence could be used in the development and implementation of Smile4Life. Essentially, the two groups worked in different contexts and settings, informed by their own beliefs, experiences, knowledge and ways of working. Consequently, each group consisted of different group milieu that shaped group practices and interactions. This section outlines how the lack of sufficient engagement between the groups led to boundaries due to each group resulting in an unwillingness to share knowledge across the groups. Smith (2001) compared individual's willingness to share knowledge-why and knowledge-how across organisations and identified that a supportive organisational structure is a significant factor in the success of both knowledge-how and knowledge-why sharing. Within the policymaker group and the implementer group, individuals felt supported and easily shared knowledge. However, this was not the case between the groups and the lack of support acted as a barrier to knowledge sharing. Becerra, Lunnan, and Huemer (2008) also explored the impact of trusting others on the intention to share knowledge-how and knowledge-why and found that trust has an impact on knowledge sharing. Both the policymakers and implementers reported a lack of trust between the groups, supporting Becerra and colleague's suggestion that trust between groups can impact on knowledge sharing. It is clear that different types of knowledge are difficult to share, overcome, and adapt to create a shared implementation vision. However, knowledge is a significant factor in the development and implementation of interventions and, in future, approaches need to consider the barriers to knowledge sharing.

### ***9.3.2 Overcoming 'Shared Passion but Different Visions' to Create a Shared Passion and Vision.***

The findings of this study identified that different knowledge between the groups acted as a barrier to the development and implementation process of Smile4Life. The

knowledge barriers appeared to reflect factors identified in the Diffusion of Innovation Theory. This model was identified in the literature review as a theoretical underpinning of both Oral Health and General Health interventions (Pesaressi et al., 2014; Gussy et al., 2005; Graham et al., 2003). The theory focuses on the dissemination of new ideas and the systematic adoption of the innovation by individuals that were previously unaware of the innovation. Communication is essential to this model as it serves as a link between those that have the know-how and know-why and those yet to adopt this know-how and know-why (Roger, 2003). The implementers talked of their previous way of working with Smiling for Life and claimed that this was similar and more practical than Smile4Life. As identified in the previous section through the Cross-Sector Collaboration Framework, the implementers did not experience sector failure and therefore did not believe that change was needed. According to the Diffusion of Innovation Theory, the implementers did not see any advantages of using Smile4Life over the existing Smiling for Life intervention. The implementers also discussed their issues regarding the lack of piloting of Smile4Life. According to the Diffusion of Innovation Theory the implementers needed to be able to try the programme, pilot it, feedback about their ability to use the programme, and observe Smile4Life's successes before the implementers could decide as a group to adopt the programme (Pesaressi et al., 2014). The previous section discusses that the lack of engagement and the hierarchy prevented the implementers from feeding back to the policymakers. If the policymakers had enabled the implementers to pilot the intervention and made changes as a result of feedback from the pilot, communication and overall relationships may have been improved. Therefore, to increase the chances of successful knowledge sharing communication and engagement are needed from the start to prevent individuals creating in-group and out-group categories and hierarchies developing. Trust and communication is also essential to knowledge-why sharing; piloting and feedback is needed to create shared knowledge-why beliefs and transfer knowledge-how practises.

Research has also supported this claim and found that implementers and staff were more likely to adopt new practices when they were able to test the constructs, to feedback and adapt the constructs, observe others using the intervention, and discuss the outcomes of using the new intervention (Graham et al., 2003; Brink et al., 1995;

McCormick et al., 1995). However, due to the lack of pilot and feedback of Smile4Life, the implementers did not believe that Smile4Life was better than Smiling for Life, or that Smile4Life was easy to use, or that it was relevant to settings, since the implementers believed that it did not contain their practical knowledge.

Essentially the implementers had a very different vision on how Smile4Life should have been developed and delivered. For the implementers to accept this different vision they needed to use Smile4Life to build credibility and belief in the intervention before deciding to adopt and deliver the intervention in settings. This did not occur and the lack of belief in the intervention created barriers of different knowledge and led to distinctive boundaries between the policymakers and implementers developing a shared belief and implementation vision of Smile4Life.

The Diffusion of Innovation Theory highlights the importance of piloting the intervention to enable the implementers to decide whether to adopt the innovation (Gussey et al., 2005), this was also heavily reflected in the results with all of the implementers discussing their issues around the lack of piloting of Smile4Life. Although this study supports the constructs within the Diffusion of Innovation theory, the model fails to acknowledge the importance of considering implementers or 'middle managers' in the conception stage of the intervention. The findings from this study clearly show that boundaries and conflicts can emerge before the diffusion phase, which can be detrimental to the diffusion of the innovation. Therefore, this study builds on the Diffusion of Innovation theory and proposes that the stages of engagement outlined in Figure 9.1 need to occur at the conception of the intervention to then enable the diffusing of knowledge between different groups to avoid conflict and boundaries emerging.

The Oral Health Framework outlined in the literature review also supports the Diffusion of Innovation theory and the study findings by proposing that the implementers must decide whether to adopt and implement Oral Health interventions through deciding that the intervention is compatible with their needs, credible, flexible, and advocates democratic leadership (Simpson 2011).

The Oral Health Framework focuses on the active dissemination of interventions through considering organisational preparedness to change and the maintenance of interventions. The framework also considers the relationships within the group of

implementers and identifies that in order to adopt a new intervention the implementers need to be prepared, motivated, and willing to change their previous ways of working.

The Oral Health Framework identifies that for an organisation to be prepared and ready to change and adopt a new intervention, the intervention must be successfully disseminated to the implementers through piloting, observing success, and being able to feedback their opinions. However, the framework differs from the Diffusion of Innovation as it focuses on active dissemination of the intervention through stages rather than passive diffusion.

The Oral Health Framework builds on the Diffusion of Innovation theory by identifying that passive diffusion of an innovation is seldom effective in achieving long-term adoption of an intervention (Simpson, 2011), instead it is a two-step process of planning through decision making during a pilot, and then secondly, the decision is made to adopt the intervention. This two-step process creates a mechanism for feedback on how well the intervention meets the expectations of the policymakers, implementers, and stakeholders. However, both the Diffusion of Innovation theory and Oral Health Framework assume that knowledge is the 'same' whereas management research literature indicates that the types of knowledge and motivations to share different knowledge must also be included.

The Oral Health Framework offers an explanation to some of the barriers and issues that appeared during the implementation of Smile4Life. Firstly, the implementers were annoyed that Smile4Life was not piloted and it is clear from this framework that due to the lack of piloting the implementers were prevented from trying the programme, witnessing success, being able to feedback, and make the decision to adopt. Due to the lack of pilot, the implementers perceived a hierarchy that prevented them from trying the programme, rather they claimed that Smile4Life was thrust upon them. They were unable to feedback their opinions to the policymakers as they would not listen, therefore the implementers were not given the opportunity to decide whether to adopt Smile4Life. The implementers talked of how they were told that this was the way forward, there was no other option and they just had to deliver Smile4Life.

Although the Oral Health framework offers an explanation to the issues that occurred when the policymakers and implementers needed to work together, the findings also suggest that the Oral Health frameworks constructs are applicable in real-life contexts.

However, it should be noted that the framework still assumes a certain passive nature in the two groups working together. The framework fails to identify that one of the major barriers to the implementation process found in this study regarding the issues of different group beliefs, experiences, and collective knowledge. The framework needs to include knowledge sharing constructs, without considering ways to share knowledge and reach collective agreement the two sharply contrasting groups will be brought together, creating an unfavourable outward consensus. Each group will still inwardly hold onto their knowledge, leading to the practical reality not living up to the strategic plan due to the implementers changing the implementation process (Poland et al., 2000; Whitelaw et al., 1997).

The PARIHS Framework (Promoting Action on Research Implementation in Health Services) (Rycroft-Malone, 2004) was not identified by the literature review search as a framework that had underpinned a real-life General Health or Oral Health promotion programme. However, from the findings of this study it would appear that the constructs of the PARIHS framework could be relevant to the development of health promotion programmes. The framework consists of three constructs: knowledge, context, and facilitation. The framework identifies that for successful collaboration and implementation of an intervention, knowledge must be transferred and agreed upon amongst the different groups. Despite this, the framework assumes that the knowledge between the policymakers and implementers is a passive process, all knowledge is the same, and concentrates more on the transfer of knowledge between the policymakers and the community. The PARIHS framework identifies the need to understand the context of different groups and the role of individuals responsible for facilitating the intervention (Stettler, 2011). However, the framework focuses on the implementers' skills and attributes that lead to their ability to deliver the intervention rather than the impact the implementers may have on the delivery if they resist the intervention. The PARIHS framework has three logical stages but this study identifies that the stages should be refocused to include different types of knowledge sharing amongst organisations, understanding the context and culture of the policymaker and implementer group, and the diffusion of the intervention to the facilitators. This study also proposes that these stages should take place during the conception of the intervention, not during the implementation phase.

The PARIHS framework outlines the importance of feedback and democratic leadership when working with the implementers', this supports the findings of this thesis as tensions arose due to the lack of democracy between the two groups. The findings from this thesis further elaborate on the leadership construct by identifying in real-life contexts, when leadership is perceived as hierarchical it can prevent the implementers from successfully feeding back to the policymakers, which creates implementer resistance towards Smile4Life. Furthermore, according to the Social Identity Theory, hierarchies could create group categories that result in group boundaries.

The findings of the study also identified that piloting Smile4Life may facilitate the facilitation of the intervention by allowing the implementers to demonstrate why changes need to be made and how they would implement the changes. The piloting of interventions may also facilitate the transfer of implicit knowledge across the groups, by allowing experiences to be transferred through observations and trying the intervention (Stettler, Damschroder, Helfrich & Hagedorn, 2011). Consequently, the findings of this study also propose that the PARHIS framework should also consider the importance of piloting within the facilitation stage.

The findings of this study support the management literature on knowledge, the findings illustrated that there are two types of knowledge and individuals are more motivated and willing to share knowledge when they trust other and have regular communication. Also, knowledge-how is more difficult to transfer and requires piloting and observations, this did not happen in Smile4Life and is a probable reason why this type of knowledge was not transferred.

### ***9.3.3 Summary of Shared Passion but Different Visions***

The findings from this study are the first to identify that each group's different knowledge, experiences, and beliefs are strongly held group norms that are difficult to overcome or adapt. The policymakers talked of the implementers' different knowledge being a destructive challenge to the policymakers' knowledge and group beliefs.

Through the development of 'us and them' the two groups united against the perceived challenge of the other group's differing knowledge and despite the shared passion to improve Oral Health, it was not enough to overcome the perceptions of 'us and them', instead it was reinforced due to the different knowledge. The following Figure 9.2 is

a visual representation of the interpretation of the findings and shows the barriers (red box) and facilitating stages (green boxes) that can occur during the transfer of knowledge across two groups.

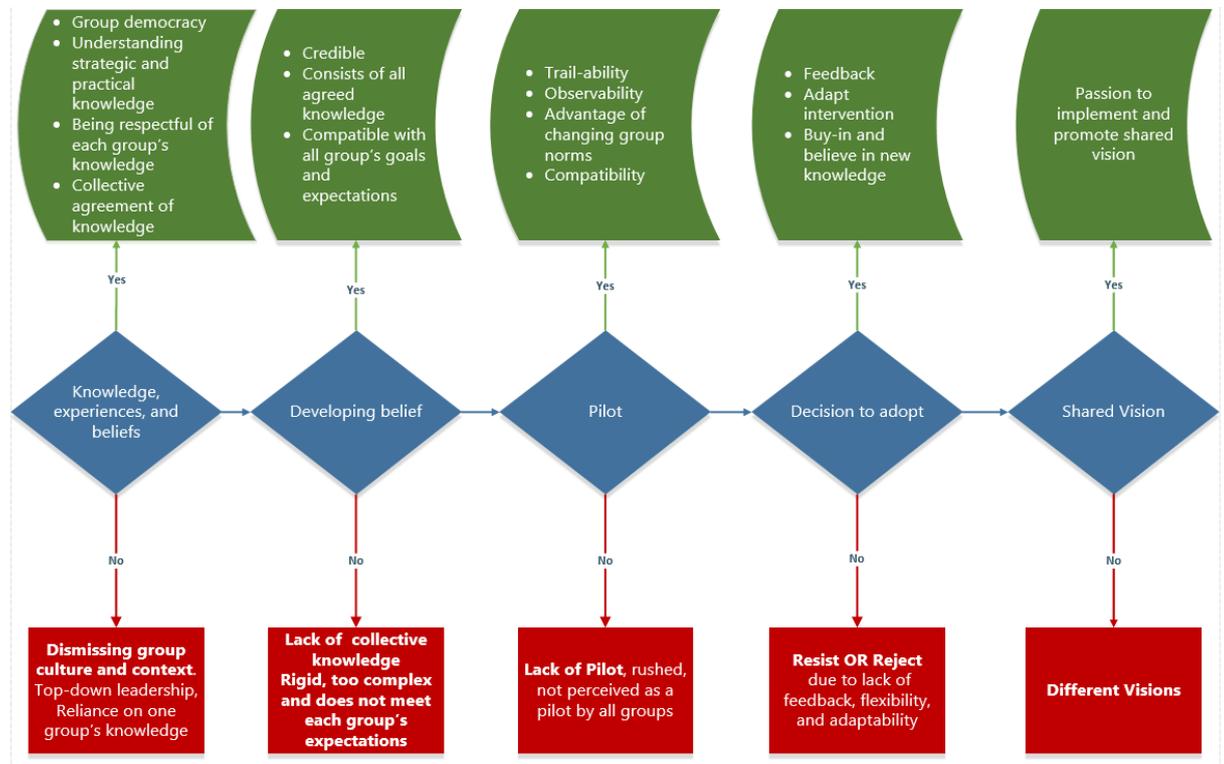


Figure 9.2 *Barriers (red box) and facilitators (green box) to the sharing of knowledge during the development and implementation of interventions*

It is evident that the transfer of different knowledge across organisations needs to be considered by researchers, programme developers, and policymakers. The literature review did not identify any research or theories, models, and frameworks that had identified the importance of knowledge sharing as a potential barrier or facilitators to the implementation process in real-life contexts. When two different groups collaborate the different group norms can be seen as challenging to the other group, rather than adapting their beliefs, each group unites against the other group to defend their group's beliefs, knowledge, and experiences. This is reminiscent of Tajfel's (1986) Social Identity Theory that proposes different groups will exaggerate in-group similarities and out-group differences to strengthen group differences rather than attempting to create one group. The different knowledge and the lack of knowledge sharing across the two groups further adds to the tribalism mentalities initiated through

the lack of engagement at the conception of the intervention and the initial boundaries, (Meir & Scott, 2007).

## **9.4 Standardised or Flexible Implementation**

This section will discuss the implications of the policymakers and implementers having a shared passion to improve Oral Health but different implementation visions through the theme ‘standardised or flexible implementation’. By the end of this section it will be evident that the strongly held but very different beliefs between the policymakers and implementers had an impact on the implementation of Smile4Life. The two groups had different perceptions of the implementation process and this will be discussed, along with relevant approaches to overcome these barriers.

### ***9.4.1 Contributing Factors to ‘Different Implementation Visions’.***

Standardised implementation focuses on the policymakers’ desire for a consistent implementation of Smile4Life’s messages across all settings. Due to previous strategic beliefs and experiences, the policymakers adopted a one-size fits all, population-based approach as a means of trying to achieve the intended outcomes. The Smile4Life implementation criteria were underpinned by the policymakers’ desire to maintain consistency and control over the programme’s implementation. Thus, the policymakers’ perceived that the success of Smile4Life was dependent on the extent to which their criteria were followed.

In contrast, the implementers claimed that tailoring the intervention to the specific needs of the settings would increase the likelihood of a positive response to and hence uptake of, the intervention. Thus, the implementers’ perception of the success of the implementation of Smile4Life focused on the flexible implementation of resources, training, and assessment tools.

The findings of this thesis identify that as a result of the implementers feeling excluded from the development of Smile4Life and the lack of the policymaker group and implementer group coming together to share their different knowledge and create a shared implementation vision, the implementers resisted Smile4Life and changed the implementation of the intervention in order to meet their practical goals and expectations. The review of the literature failed to identify a theory, model, or framework that identified this issue.

Although several frameworks and models have been used to guide the implementation and adoption process in other studies none of them identified exclusion and lack of shared implementation vision as major barriers to the implementation of interventions, they focus on stakeholder engagement and assume that the implementers are passive in the implementation process.

Social Network Theory is an approach that considers the implementation process and ways the intervention can be promoted through a network as a result of peer modelling or role models (Brukiene & Aleksejunienne, 2012; MacKinnon & Luecken, 2011; Reinhardt et al., 2009). The approach was identified in the literature review as an underpinning of both oral and General Health interventions. The identified interventions used individuals with the most social networks or who were perceived as role models within the community to promote the intervention or health messages. The findings from this study highlight a major limitation of the social network theory as not all role models or individuals with the most networks will readily adopt the intervention. If role models resist the implementation this could lead to resistance to the intervention within the entire community.

The findings of this study outlined that implementers claimed that they had strong networks within their settings but as a consequence of them believing that Smile4Life was not relevant to their goals, expectations, or their settings, they resisted the intervention. The implementers acted as a negative network and this was a barrier to the implementation process. Even the policymakers claimed that the implementers would reinforce the settings' negative attitudes and when the settings voiced concerns over Smile4Life the implementers would agree and further reinforce their concerns. This was especially the case with the Smile4Life workbook. The implementers thought the workbook was inappropriate for their way of working and the settings, the implementers felt that the workbook did not contain their knowledge rather the workbook enabled standardisation rather than flexibility.

The policymakers claimed that the implementers promoted the Smile4Life workbook negatively and were reluctant to follow the criteria set out in the workbook. The implementers talked of how they chucked the workbook out of the window or just completed it themselves. Therefore, the findings of this study identify the ways implementers can act as detrimental social networks and when two groups have

passion but very different implementation visions it can lead to the implementers being motivated to change the implementation criteria to enable the intervention to meet their vision as they passionately believe that making the changes are the right thing to do in order for an intervention to work.

The findings identified that the policymakers' had a different implementation vision to the implementers. The policymakers' vision was underpinned from education behaviour change approach that advocates the use of the same standardised messages to all and are delivered from the expert to the individual (Albert et al., 2014). The standardised messages are also advocated in many other behaviour change approaches that the policymakers claimed informed their knowledge such as the HBM, Social Ecological Model and Motivational Interviewing. The findings outlined that the implementers did not have knowledge of behaviour change approaches and did not believe in the standardised approach. It is clear that these findings support the criticisms outlined in the literature review that the standardised approach of messages and focusing on just changing the behaviour of the stakeholders are inappropriate underpinnings of interventions, rather the social context and implementation process needs to be considered (Worthington et al., 2001; Tai et al., 2001; Albert et al., 2013; Yusaf & Jaafer, 2013). Additionally, the findings suggest that one-size does not fit all and that applying the individualistic methods in a standardised way when they were originally developed to account for individual differences is inappropriate and can lead to resistance.

The findings clearly answer the question raised in the literature regarding approaches advocating standardised interventions rather than flexible interventions and explains that the implementers resisted the standardised approach due to perceptions that it was not relevant to all settings and would not be practical. This resistance led to changes in the implementation process.

#### ***9.4.2 Overcoming Different Implementation Visions to Create a Shared Implementation Vision***

To overcome different implementation visions the implementers' vision needed to be included in Smile4Life. The RE-AIM is a framework that aims to guide, conceptualise, and evaluate the implementation and adoption process of interventions (Glasgow et al., 2002). The RE-AIM is similar to the PRECEDE/PROCEED model, which also uses a bottom up approach enabling the stakeholder to have an active role in the

development and implementation of interventions (Hiscock et al., 2012). Both approaches advocate the need for a bottom up approach in order to consult with stakeholders to improve belief in the intervention and ensure that it meets the stakeholders' needs and expectations. The approaches propose that when stakeholders play an active role in the development of interventions then it increases the adoption of the intervention (Howat, 1997). However, these approaches fail to acknowledge the impact that the implementers can have on the implementation process. Although, this study did not look at the stakeholders' experiences with Smile4Life, this study reveals that the constructs of stakeholder engagement identified in the RE-AIM and PRECEDE/PROCEED approaches should be adapted to guide the engagement with the implementers. The implementers could be considered in stage four of the PRECEDE/PROCEED model (educational and ecological assessment) as the implementers need to be identified as enablers and rein-forcers of the intervention, the implementers also have experience with understanding phase three of the model (behavioural and environmental assessment) as they understand the environment and lifestyles of the stakeholders. The implementers' culture, resources, and expectations should also be considered along with the community's culture, needs, and resources.

The RE-AIM focuses more on the implementers' willingness to adopt the programme, however it needs to consider facilitators of knowledge sharing and developing a collective implementation vision as a way to aid the implementers' willingness. It is evident that these approaches assume that the implementers are passive adopters of an intervention and have failed to identify the impact that different implementation visions between groups have on the implementation of the intervention.

The RE-AIM identifies the importance of considering the interventions implementation fidelity. The RE-AIM also acknowledges the importance of the implementers following the implementation plan but it does not identify the barriers to the implementers adhering to the implementation plan. The RE-AIM proposes that implementation fidelity should be measured in two parts; first the implementers' adherence to the implementation strategy, use of resources, and training; and second fidelity is measured through stakeholders use of the intervention. The findings of this study supply an explanation to the barriers of the implementers adhering to the implementation strategy. The implementers make changes to the training and resources due to a lack of belief in the intervention's implementation plan as a result

of the implementers being prevented from piloting the intervention, feeding back their issues and having their practical knowledge considered.

The Oral Health Framework, Cross-Sector Collaboration Framework, TTM, and Diffusion of Innovation outline ways to improve maintenance of the interventions but not the importance of implementation fidelity. Whilst the RE-AIM approach and subsequent research has identified that fidelity can be affected by the implementers (Ross, Malley, Monaghan et al., 2014; Segrott, Rothwell, Murphey et al., 2014), this is the first study to identify that when implementing an Oral Health intervention in real-life context the shared passion but different implementation visions, as a result of the lack of shared knowledge, can lead to the implementers being motivated to change the implementation strategy.

The Attachment, Self-Regulation, and Competency framework (ARC) (Kinniburgh and Blaustein 2005) assumes that the implementers' motivation to adapt their way of working and to flex their knowledge in order to implement the intervention will be more successful in those organisations that consist of implementers who are motivated to deliver interventions (Glissen & Williams, 2015; Glissen et al., 2008; Glissen & Schoenwald, 2005). Conversely, the findings of this study show that a lack of implementer motivation to flex their knowledge and implement the intervention was due to the different knowledge, beliefs, and opinions between the two groups on how to develop and deliver the intervention, and this is also evident in the knowledge management literature (Smith, 2001). The differences in knowledge and the lack of shared vision meant that the implementers were not motivated to implement the intervention as outlined by the policymakers but they were motivated to adopt a new intervention, just not an intervention that they did not believe was relevant to the settings. Therefore, a lack of motivation was not a barrier to the implementation of Smile4Life, rather the lack of shared knowledge and the perceptions of lack of trust and too much cost to share knowledge meant that both the policymakers and implementers were unwilling to share knowledge to create a shared vision. Due to the different implementation visions, the implementers were motivated to they change the intended implementation strategy to match their knowledge, as they truly believed they were making it relevant to the settings.

Therefore, to create a shared implementation vision, knowledge needs to be shared and agreed upon to underpin a shared strategy of implementation and the implementers' passion and vision needs to be considered and incorporated within the implementation resources and overall plan.

### 9.4.3 Summary of 'Different Implementation Visions'

The following Figure 9.3 is a visual representation of the interpretation of the findings and shows the barriers (red boxes) and facilitating stages (green boxes) that can occur when the implementers do not share the same implementation vision as the policymakers during the delivery of an intervention.

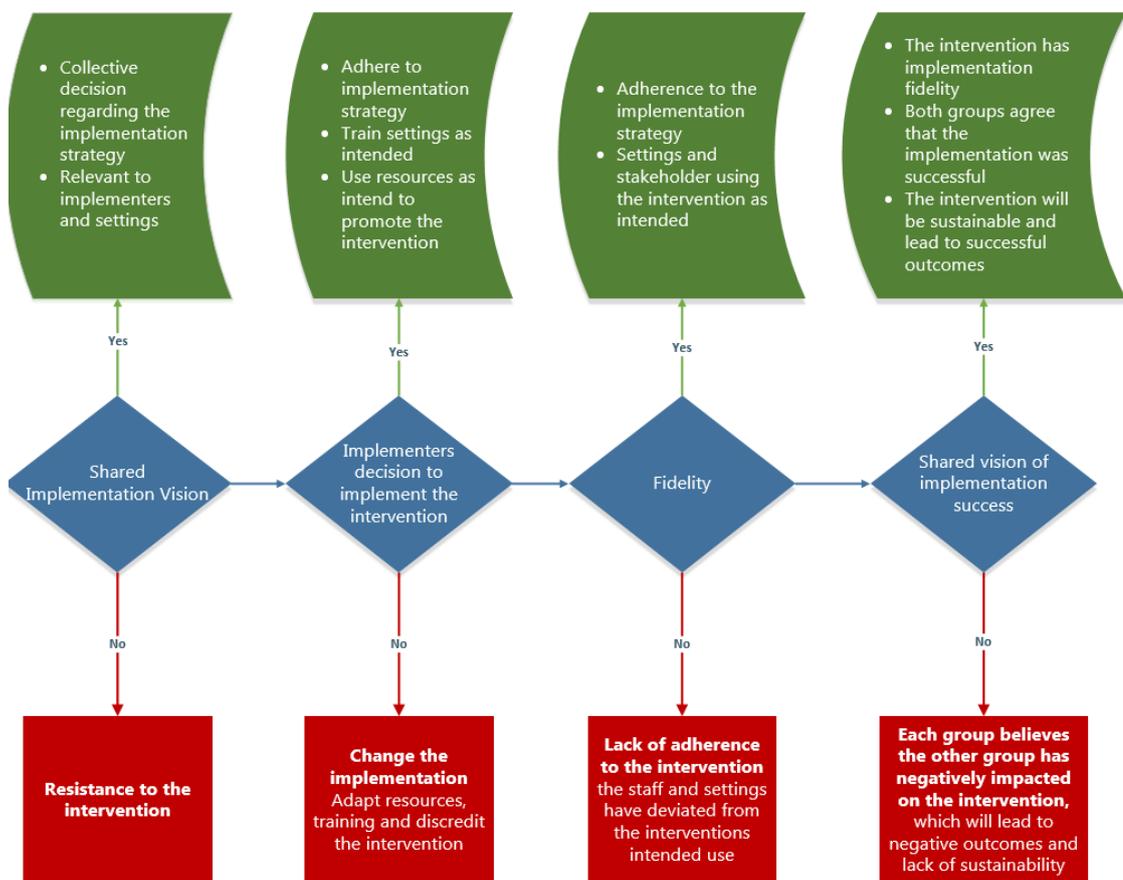


Figure 9.3 The barriers (red box) and facilitators (green box) to the implementation and adoption of interventions in real-life settings

It is evident from the findings of this study that when groups do not collectively agree with the knowledge that has underpinned the intervention and implementation strategy, the implementers will resist the intervention and make changes to the

intended implementation criteria, training, and resources. Unlike previous research that claimed a lack of motivation will result in an unwillingness to adopt interventions (Glissen & Williams, 2015; Glissen et al., 2008; Glissen & Schoenwald, 2005), this research found that an unwillingness from the implementers to implement Smile4Life was due to them passionately believing that the Smile4Life criteria and implementation strategy were wrong. The implementers were motivated to improve Oral Health but due to a lack of belief in Smile4Life this motivation translated into them making changes to the implementation of Smile4Life as they claimed the changes were to make the intervention work in settings. The changes made by the implementers not only affected the fidelity of the implementation of the intervention but led to the policymakers and the implementers having a different vision of the success of the implementation. The implementers claimed that the changes they made led to Smile4Life being successful as they made it work practically in settings, conversely they policymakers claimed that the changes made would lead to negative outcomes and that the implementation of the intervention was not as successful as the development process. It is apparent that due to the lack of knowledge sharing across the two groups, the implementers perceived that Smile4Life did not contain their practical knowledge and therefore were sceptical that it could be implemented in settings without them making changes first. If knowledge sharing had occurred and the two groups collectively agreed with the implementation criteria, then changes may not have been made.

## **9.5 Implementer Engagement Guidelines for the Development and Implementation of Health Interventions.**

The following sections will outline the three phases involved in working across groups to develop and implement an Oral Health intervention. The three phases are: overcoming ‘us and them’ to create collaboration, overcoming shared passion but different visions to create a shared passion and vision, and overcoming different implementation visions to create a shared implementation vision. The phases have been previously discussed but the overall theory underpinning this guide and the applicability to guide future intervention developers is the focus of this section, followed by the overall visual representation of the guidelines.

### ***9.5.1 Social Identity Theory***

The following ways to understand the role of the implementers in the process of implementation and the forthcoming implementer engagement guidelines are underpinned by Tajfel and Turner's social identity theory but with the additional consideration of Carpenter and Hewstone's (1986) theoretical framework which has been tested by Carpenter and Dickinson (2016). The theoretical framework is essentially Tajfel and Turners' social identity theory but it proposes that for organisations to work together positive attitude change is needed, therefore members of each group need to be consulted and feel supported by their organisation. Similarities as well as differences between the groups should also be acknowledged and explored, meetings and situations where both groups meet should emphasise equality between the groups, the atmosphere should be co-operative rather than competitive, the information discussed should be representative of both groups, and positive expectations of the intervention need to be emphasised. Although this theoretical framework has been proposed and tested recently by Carpenter and Dickinson (2016), the implementer engagement guidelines presented from this study will be the first to use this theoretical framework to guide engagement and collaboration between policymakers and middle managers (implementers). Thus the guidelines are not only the first to consider the recent calls for the consideration of the role of the middle managers in the development and implementation of interventions (Birken et al., 2011; Birken, Shou-Yih & Weiner, 2012), it is also the first to use the Social Identity Theory Framework to guide the middle management engagement process in Oral Health interventions.

### ***9.5.2 Phase 1: Collaboration to Overcome 'Us and Them'***

Collaboration is the first phase of the Implementer Engagement Guidelines. According to the theoretical framework being used, both groups will categorise the other group as the out-group and tension can arise. To overcome group tensions this phase focuses on the policymakers' ability to successfully engage with the implementers to acknowledge and reflect on group similarities and differences. To achieve successful collaboration, this phase proposes four stages: engagement, communication, trust, and sharing of goals expectations, experiences, and resources.

*Engagement* recommends that those responsible for the initial idea of the intervention should identify all of the stakeholders who will be responsible for translating strategy into practical implementation. It is proposed that this stage should take place before the conception of the intervention to avoid the implementers feeling excluded. Regular strategic meetings should take place with all members of the groups and separate group meetings should be avoided. Both groups should also be supported by their intuitional structures to encourage and motivate the groups to engage with each other.

The second stage of collaboration is *communication* and this stage recommends regular meetings with all members of the different groups. The meetings should aim to consist of issues that are relevant to all groups and each group should be given an equal opportunity to voice their opinions. All opinions should be valued and discussed. At this stage meetings should try to avoid focusing on one group's agenda or letting one group chair the meetings. The focus of this stage is maintaining equity amongst all group members to build respect.

The third stage is *trust* and it is recommended that trust needs to be established between both groups during the collaboration stage. It is proposed that trust can be facilitated through each group appearing credible, reliable, authentic, and open to the other group's ideas and carrying through agreed actions. Each group should aim to be explicit about their goals, needs, resources, and expectations to prevent misinterpretations between the different groups.

The fourth stage involves the *sharing of goals, expectations, experiences, and resources* between the groups. Once trust has been built, the initial sharing of goals and expectations from each group can be initiated. It is proposed that through regular sharing of ideas and feeling respected, groups will feel at ease to freely share stronger held group expectations and goals that they want to achieve from the intervention. Each group should equally and democratically reflect and agree on ways to incorporate all of the groups' expectations and strategies or collectively agree on which ideas cannot be taken forward. Each group's goals and expectations should be equally shared and weighted, if this does not happen hierarchies could occur, conflicting goals may be perceived as a group challenging the hierarchy and only one group's goals and expectations may be the focus. If a group feels that their expectations are not being met this could create boundaries and initial resistance to the intervention.

### ***9.5.3 Phase 2: Overcoming Different Visions***

The second phase of the Implementer Engagement Guidelines refers to the different and closely held group beliefs, values, knowledge, and experiences. It is proposed that this phase is crucial to the successful implementation of an intervention. If the groups do not agree with the knowledge that has underpinned the intervention they may not believe in the intervention and could resist the implementation of the intervention. This phase, overcoming different visions, consists of five stages: different knowledge, experiences, and beliefs; developing a shared development vision; developing group belief in the project; pilot; implementer decision to adopt; and shared implementation vision. The five stages will now be discussed in more detail.

The *different knowledge, experiences, and beliefs* refers to the two groups coming together to share experiences and knowledge that is not just closely held but also difficult to articulate to individuals that have not shared similar experiences. This stage proposes that the foundations of the previous collaboration phase and through constant communication, liaison, respect, and collaborative reflections the different knowledge could be easier to transfer between the groups. When knowledge is closely held and different to the other groups, it can be seen as challenging and if the groups do not feel sufficiently engaged with each other, the opposing groups could unite against the other group's knowledge. Trust, value, and respect are key to this stage it is recommended that the different knowledge must be acknowledged, discussed, reflected upon, and collectively resolved. If previous stages have not been successful then knowledge may not be transferred as groups could unite against opposing knowledge, beliefs, and experiences.

The development of a *shared development vision* can occur through regular meetings, open communication, trust, and sharing goals, experiences to develop a collective plan of what needs to be included and excluded from the intervention. As a result of democratic discussions and reflections the groups may collectively decide on the development plan and share the same development vision that will meet the overall expectations of the project and achieve all group goals. If one group has felt excluded through separate meetings, a lack of communication, and a dominance of one group's goals, positive relationships may not have been fostered and the groups may not

believe in different development visions. At this stage boundaries can emerge between the groups and resistance to the development of the intervention may occur.

*Developing group belief* in the intervention may also require the successful foundations of the previous phase. The implementers need to believe that they can flexibly adjust the strategic knowledge and transfer it into practical tasks suitable for their settings. The intervention needs to include both groups' expertise, knowledge, and experience and the groups must agree on whose knowledge and expertise should be included or excluded from the project. If there is a hierarchy between the groups or the groups have not developed equal respect for their similarities and differences, then this may prevent equal amounts of group knowledge from underpinning the implementation process. Furthermore, the hierarchy may create a dictatorship.

This phase also proposes that the need to *pilot* the intervention is essential to groups being able to share their implicit knowledge between the groups. Piloting can allow the groups to try the intervention, observe successes with using the new knowledge, believe the intervention is credible and relevant, and feedback their implicit implementation experiences through the success and failings of the pilot. If the intervention pilot is rushed or not done at all, this can prevent the diffusion of the intervention or emphasise negative social categories between those who believe and those that do not believe in the intervention. If the pilot occurs but groups are unable to feedback or a group ignores or does not make changes as a result of the feedback, then this can also lead to a lack of belief in the intervention and resistance to the future implementation.

After the piloting stage it is recommended that the *implementer decision to adopt* is made. The groups need to make a collective decision, as a result of the pilot, that the intervention is credible, easy to implement, and better than their previous way of working. If those responsible for implementing the intervention have issues as a result of the pilot, they need to be explicitly addressed and collectively agreed upon before the implementation of the intervention. If feedback has not been considered and changes have not been made, then the implementers could decide not to adopt the intervention. At this stage a hierarchy may occur between the groups, negative group identities are created with one group taking control of this decision and dictating to the other group or groups to forward the implementation of the intervention.

If both groups agree that the intervention is relevant, credible, practical and flexible to implement and consists of a balance of all of the group's knowledge then a *shared vision* to the implementation of the intervention can be created. However, if the implementers believe that their knowledge and feedback has been ignored, or the intervention has been standardised or dictated to them, then the implementers may disagree with the policymakers' implementation vision and they may be motivated to discredit the intervention to their settings and make changes to the implementation plan.

#### ***9.5.4 Phase 3: Shared Implementation Vision***

The final phase of the Implementer Engagement Guidelines refers to the implementation of the intervention in real-life settings. This phase consists of two stages: fidelity; and shared vision of implementation success, which will now be discussed in more detail.

It is proposed that *Fidelity* requires the intervention to be implemented as intended and this could be achieved through following the recommendation of subsequent phases in terms of groups collaborating and working together to decide and collectively agree on the development and implementation of the intervention. Each group must be clear on all the goals, expectations, knowledge, beliefs, and experiences that are underpinning the intervention. Through successful sharing of development and implementation visions and the diffusion of the intervention through piloting, the implementers could believe in the intervention and it is proposed that the implementers will deliver the training and resources as intended, promote the intervention and encourage their settings to adopt the intervention. If failings have occurred during previous phases the implementers may be resistant to the implementation plan. This resistance may not only emphasise negative group differences but the intervention may not be delivered as intended and unplanned changes may occur.

The final phase refers to the *shared vision of the success of the implementation*, if the previous phases have been successful and both groups shared the same development and implementation visions then it is proposed that the intervention will have been delivered as intended and both groups will report that the implementation process has been successful in terms of the intervention adhering to their shared development and implementation vision. Although, the intervention could still fail or have unsuccessful

outcomes even when the intervention has been developed according to the guidelines, both groups will perceive success in terms of working collaboratively and creating a programme that all groups agreed with. Blame may not be placed with one group and collaborative work may resume to evaluate the programme and try and improve outcomes or failings. Conversely, if the policymakers and implementers have experienced conflict and barriers at previous stages then they will not share the same development and implementation vision. The implementers and policymakers will perceive that the other group has caused negative outcomes. Due to the conflict and perceptions of negative outcomes, the intervention will be difficult to sustain. If outcomes prove to be unsuccessful then the two groups may cease the working relationship, the intervention may be stopped and the money that has gone into this process will have been wasted.

The Figure 9.4 is a visual representation of the guidelines to aid the engagement and collaboration of implementers in the development and implementation of interventions.

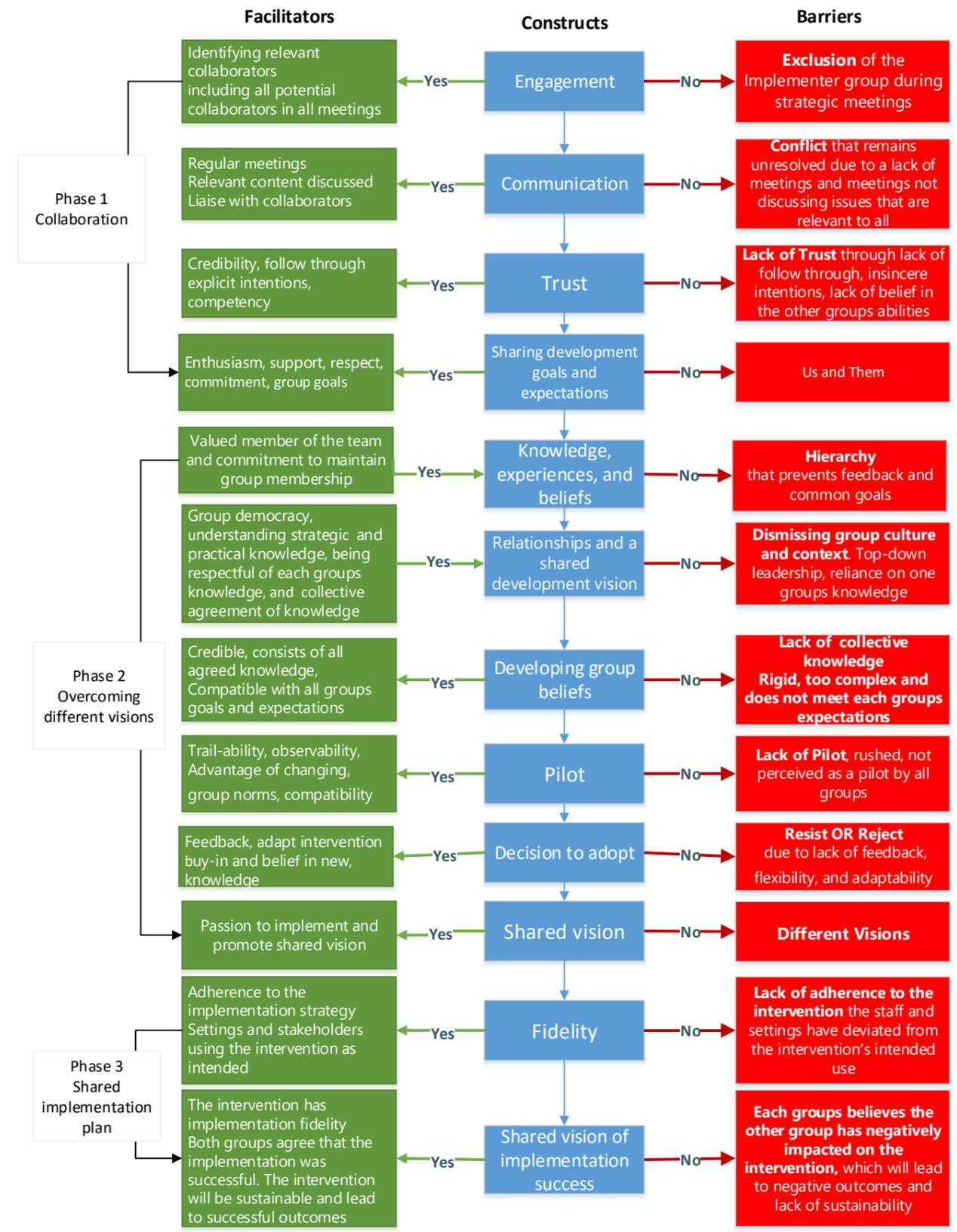


Figure 9.4 Implementer engagement guidelines during the development and implementation of intervention

## **9.6 Implications for the Smile4Life Policymakers and Implementers**

The guidelines have been fed back to the policymakers and the implementers. Changes that each group need to make to the current implementation process have been outlined. Changes in meetings and communication have occurred as a result of the findings and guidelines. The policymakers and implementers are using the feedback to improve the partnerships, enthusiasm to implement Smile4Life, and to create a shared implementation vision. The model will also be used to guide the future implementation of Smile4Life across counties in England.

If the Smile4Life policymakers and implementers use the guidelines from this research they will become the first intervention to attempt to merge the gap between research and practice through the increased attention to, and empowerment of, the implementers.

## **9.7 Implications for Oral Health and General Health Intervention Research, Policy, and Development of Interventions**

The findings clearly demonstrate that when developing and implementing interventions in real-life settings there are far more complex issues than just changing the behaviour of the stakeholder. The behaviour change approaches are creating barriers to the implementation process and more focus is needed on understanding the collaboration process. However, this research has also identified that whilst multi-method approaches may be more appropriate than the individual, interpersonal, and stage behaviour change approaches, they are too complex and difficult to use practically. Policymakers and intervention developers are not usually academics and many interventions are developed under limited budgets and tight deadlines, therefore the policymakers do not have the time or money to train to use these complex approaches, especially when the approach's applicability has not been tested in real-life settings. However, the guidelines outlined in this thesis are clear logical points that do not require training or in-depth tuition, they simply require reading to raise awareness of the complex issues that need to be considered when developing and implementing interventions.

Despite the assumptions from previous intervention theories, models, frameworks, that the implementers are passive agents of interventions (Damschroder et al., 2009),

this research has made it clear that the implementers need to be actively involved in the development of the intervention, have their experience included, and believe in the intervention for it to be delivered successfully. Limited research has proposed that the implementers' commitment is key to the implementation process (Birken et al., 2012; Bostram et al., 2007). This research has delved deeper into the issues of commitment and identified that implementers who fail to implement an intervention may have misplaced commitment due to the lack of belief in the intervention. This misplaced commitment motivates them to change the intervention to meet their own goals and expectations. This research has expanded and developed a more in-depth understanding of the implementers' role than previous research has done.

In addition, this in-depth understanding of the implementers' role has led to the development of guidelines to enable research, policymakers, and intervention developers to understand and consider the role of the implementers in the development and implementation of future interventions. The thesis has added to the previous intervention literature by identifying the facilitating constructs from popular approaches used to underpin the development and implementation of previous interventions, determining their applicability to a real-life context through the mapping of the constructs to the experiences discussed by the policymakers and implementers and then merging these factors into the guidelines developed from this research.

## **9.8 Unique Contributions of the Study**

The study has made a unique contribution to the research by adding to the existing intervention literature and extending what is currently known about policymakers' and implementers' real-life experiences of working in collaboration to develop and deliver a specific Oral Health intervention.

The literature review identified the differences between Oral Health and General Health approaches to developing and implementing interventions; this has not been shown before. The review also searched multiple disciplines and compared behaviour change approaches to multi-level approaches; this approach has not been identified in a published review before. The initial literature review in chapter 3 also identified both General Health and Oral Health's reliance on the traditional behaviour change approaches and in terms of Smile4Life this reliance was due to the policymakers'

previous experiences with: behaviour change approaches and developing previous interventions. The policymakers also favoured a standardised top-down approach to the implementation of interventions and the behaviour change approaches complimented this, rather than the multilevel approaches that focus on collaboration, integration, and bottom-up development. Oral Health policymakers need to consider bottom-up, equitable ways of developing and implementing interventions. The evidence to practice gap may be due to policymakers' or health professionals only using approaches that they are familiar with and match their ways of working. The findings have suggested that the reliance on top-down behaviour change approaches caused tensions and conflict between the policymakers and implementers. Therefore, top-down approaches are inappropriate underpinnings to health interventions.

The research provides in-depth and detailed stages involved in implementer engagement underpinned by the Social Identity Theory and using a theoretical framework to consider group mentalities to create successful collaboration.

An outcome of this study is the first set of guidelines to aid the future development and implementation of interventions through engagement with implementers.

## **9.9 Strengths of the Study**

This is one of the first studies to use qualitative research to explore the policymakers' and implementers' experiences in a real-life context of intervention development and implementation, to present in-depth understanding of the experiences of trying to work in partnerships and the barriers and facilitators to this process. The identification of the patterns across the policymakers' and the implementers' experiences resulted in the development of guidelines.

Although time was spent attending strategic and operational meetings, and shadowing implementers and policymakers at work, it was essential that both the policymakers and the implementers perceived the researcher as an outsider and neutral to the Smile4Life intervention to develop an openness to disclose their experiences. By remaining as an outsider and not getting too involved in the daily workings of the Smile4Life groups, the researcher did not have preconceived ideas of Smile4Life. This allowed each interviewee to be interviewed without the researcher making assumptions. Furthermore, interviews were undertaken away from managers to reduce

pressures of undesirable answers. Additionally, the policymakers and the implementers were interviewed five years into the implementation of Smile4Life, which enabled the true impact of implementation to be discussed and shows the true extent of the ingrained boundaries between the groups and relationships within the groups,

The guidelines developed in this study are the first to focus on the role of the implementers and are developed as a direct result of the identification of intervention barriers and facilitators in a real-life context. Therefore, the external variables should be an accurate reflection of the real-life context and should be more applicable to settings than other theories, models, and frameworks developed through controlled research experiments that are removed from the real-life context. Guidelines were developed over a model or framework as it was thought that multilevel models and frameworks are complex and difficult to understand. Therefore, a three phase set of guidelines may be easier to understand and apply.

The findings of this study were reported back to the implementers and the policymakers as part of a participation verification approach strategy. Both groups claimed that the researcher's interpretations of the interviews were an accurate representation of their experiences during the development and implementation of Smile4Life. Definitions and descriptions of programmes and policies were confirmed and the policymakers and implementers had nothing more to add to the findings. Therefore, the reader should have confidence in the credibility of the analysis and reporting of the policymakers' and implementers' experiences and challenges they faced.

### **9.10 Limitations of the Study**

All studies have limitations and these can impact on the credibility, authenticity, and value of the findings. A key criticism is the limitation of the scope of the literature. The literature review excluded studies were interventions were targeted at supporting people to cope with a diagnosed mental or General Health illness or targeted patient's adherence to medication. It was thought interventions that focused on ill health did not consist of a health promotion message and would not be relevant to Oral Health. Also due to the extensive number of interventions used in ill health it would have made the literature search vast and beyond the capabilities of this PhD. However, whilst the

PARIHS framework has only been used to underpin mental health interventions it does identify the need to consider the role of the implementers; this implies that the literature review may have missed relevant approaches due to the exclusion criteria.

The literature review also outlined many behaviour change approaches that focused on the stakeholders' process of behaviour change, however the study did not interview or survey the stakeholders. Although it was concluded that there are many complex issues involved in improving the health of the community, behaviour change approaches may have been identified as a more appropriate underpinning of interventions if the experiences of the stakeholders had been considered.

One of the obvious limitations of this study is the small sample size. Although qualitative approaches do not attempt to generalise their findings (Benner, 1994), the findings and understanding of the experiences of implementers and policymakers are from only one intervention group. It is difficult to determine if the barriers and facilitators identified reflect the same barriers and facilitators that could occur in other interventions. However, all of the implementers and policymakers involved in Smile4Life were interviewed. This enabled a complete population of the Smile4Life policymakers' and implementers' experiences to be analysed, which is unique as many qualitative studies do not analyse a complete population.

Lastly, the General Health literature search was only intended to be used as a comparison to Oral Health literature and therefore, the General Health search was not an exhaustive search of the literature. Therefore, the review may have missed some papers, however, the researcher is confident that it is an accurate overview and reflection of the theoretical underpinnings of General Health interventions. Consequently, greater numbers of studies may be identified for each theoretical underpinning if a more exhaustive search was undertaken.

Another limitation of the methods is not including stakeholders in the research. Although the original plan had been to conduct focus groups with the selected stakeholders, and undertake a survey focusing on the stakeholders' experiences from a variety of settings, this did not take place. Due to the complex issues identified through the implementer and policymaker partnerships, engaging with the stakeholders did not form part of this PhD research. Therefore, this study does not determine if the changes made to the implementation process by the implementers

were effective. Also, this research assumes that the implementers' practical knowledge is an accurate representation of the settings and that the implementers have the settings' interests in mind when they resisted the intervention.

The population interviewed consisted of eight females and one male policymaker, and ten female implementers. The findings of this study may not be transferable to settings with more mixed gender structure. The gender issues could be further researched through interviews with policymakers and implementers from an intervention with more of a mixed gender balance, and the findings could be compared to the results of this research.

It should also be noted that the distancing of the researcher from the day-to-day workings of Smile4Life to prevent preconceptions and to appear impartial may have hindered the interview process. Having no previous knowledge may have led to the interview schedule or interpretations of the data being surface level, due to a lack of understanding the most suitable questions to ask or the language and references used that indicates deeper meanings. The costs and benefits were considered of being heavily involved in the Smile4Life activity or being an outsider and it was decided that remaining impartial would be likely to facilitate more disclosure.

Lastly, the guidelines have not been validated and it is unclear if the guidelines will lead to increased implementation success. The guidelines were developed from one group of policymakers and implementers and it is unclear if the issues raised here will be replicated in other interventions, if not, the guidelines may be redundant. However, this is the first set of guidelines that focus on the role of the middle managers and through subsequent research the guidelines have the potential to be expanded and adapted. The Smile4Life policymakers and implementers are currently using the guidelines as an attempt to overcome their issues and to use them in the future implementation of Smile4Life.

## **9.11 Directions for Future Research**

There are many potential areas for future research, although two are identified as priorities.

The experiences of the stakeholders should now be considered through focus groups and the subsequent development and implementation of a survey. By identifying the

stakeholders' experiences, it will create an in-depth understanding of the relationships between the implementers and the stakeholders. If the implementers' knowledge truly reflects the stakeholders' needs and resources, then this further emphasises the importance of considering the role of the implementers in the development of future interventions as they are the mediators between the settings needs and the policymakers' strategy. If the findings show that the implementers do not understand the stakeholders and settings, this provides good evidence for the implementers not listening to the stakeholders and the stakeholders' experiences need to be considered in the development of interventions

The external and internal validity of the guidelines needs to be identified through their use in the development and implementation of a General Health or Oral Health intervention. Interviews with other policymakers and implementers could also be conducted to identify if similar themes emerge to the ones identified in this research. This could further emphasise the need for the implementer guidelines developed from the themes identified in this research to be used.

## **9.12 Plan for Dissemination of the Findings**

The findings of this study will be shared with the policymakers and implementers of Smile4Life, professionals from NHS Public Health England, NHS trusts, County Councils, and academics. Feedback meetings and a report have been used to feedback the findings to the Smile4Life professionals. Conference presentations will be used to disseminate the findings more widely to health professionals and academics. The findings of this research will also be disseminated in peer-reviewed academic publications and it is anticipated between three and four articles will be published by 2018. The strategy and timeframe of the dissemination of this study is outlined in table 9.1.

Table 9.1 Dissemination Strategy

Dissemination Method	Intended audience	Date or timeframe
<b>Implementer feedback meeting and verification of findings</b>	The Smile4Life implementers who took part in the study	15 <sup>th</sup> July 2015
<b>Policymaker feedback meeting and verification of findings</b>	The Smile4Life policymakers who took part in the study	9 <sup>th</sup> September 2015
<b>Smile4Life feedback meeting and dissemination of the model</b>	All the policymakers, implementers now working with Smile4Life	21 <sup>st</sup> September 2015
<b>Poster presentation at the National Public Health England Conference</b>	Oral and General Health professionals and academics	14-16 <sup>th</sup> September 2015
<b>Publication of the literature review</b>	Academics and health professionals	Within 6 months of the thesis being submitted
<b>Publication of the findings</b>	Academics and health professionals	Within 12 months of the thesis being submitted
<b>Publication of the model</b>	Academics and health professionals	Within 12 months of the thesis being submitted

Although Table 9.1 illustrates the intended conferences and publications to disseminate the findings of this study, the findings are of key importance to the NHS, Oral Health, and associated professionals. Therefore, appropriate conferences will be continually searched and abstracts will be submitted to present the findings at national and international conferences.

### 9.13 Conclusion

This study aimed to identify the barriers and facilitators to the process of designing and implementing an Oral Health intervention (Smile4Life). More specifically, the objectives were: (1) To understand the policymakers' and implementers' experiences during the development and implementation of Smile4Life; (2) To identify what the

policymakers and implementers reported to be the theoretical underpinnings of Smile4Life; and (3) To determine what the policymakers and the implementers perceived to be the successes of Smile4Life.

This study identified that the policymakers and implementers experienced unexpected challenges when working together to develop and deliver Smile4Life. Exclusion, lack of knowledge sharing, and different implementation visions were the barriers to this process. Inclusion, sharing of knowledge, and developing a shared implementation vision were facilitators to each group working together but these facilitators were not transferred between the groups. One of the major barriers to the development and implementation process was the different beliefs regarding the correct theoretical underpinnings, which should underpin the development and implementation of Smile4Life. The policymakers had a strategic focus and used previous national programmes, behaviour change theories, and clinically focused policies to underpin Smile4Life. This clashed with the implementers' practical knowledge, which was not used to underpin Smile4Life. The difference in knowledge that underpinned Smile4Life lead to the lack of shared vision and the implementers made changes to the implementation process, which they perceived as leading to Smile4Life successes but the policymakers perceived them as leading to negative outcomes.

By achieving these aims and objectives, this study advances the knowledge of the role of the implementers/middle managers in General Health and Oral Health research and the specific factors that contribute to the successful engagement with the middle managers in real-life settings Lastly this study presents practical guidelines for policymakers and intervention developers to use to facilitate the collaboration process and the translation of their strategic goals into the practical and successful implementation of an intervention.

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## **10.1 Appendix 3.1: Oral Health Search terms in full**

### **1. Behaviour change theory terms**

Behaviour change theory OR behaviour change intervention OR behaviour change strategy OR behaviour modification theory OR behaviour change model

### **2. Behaviour theory terms**

Affective events theory OR acculturation theory OR action model of consumption OR affect infusion OR affective events theory OR AIDS risk reduction model OR ASE-model OR attitude-social influence self-efficacy model OR attribution theory OR automotive Model OR behavioural ecological model OR behaviour life cycle theory OR behavioural reasoning theory OR behavioural theory OR belief system theory OR biopsychosocial OR change theory OR change orientated process OR classical conditioning OR cognitive behaviour theory OR COM-B system OR community organisation theory OR communication theory OR comprehensive model of consumer action OR consumer information processing model OR consumption of social practices OR containment theory OR control theory OR behaviour change model OR critical consciousness OR cultural transmission theory OR demand control OR developmental causal model OR differential association theory OR diffusion innovations theory OR disconnected values model OR double-loop learning OR dual process model OR dual process theory OR dynamic systems theory OR ecological model OR ecological systems theory OR elaboration likelihood OR empowerment theory OR enculturation theory OR exchange Theory OR expected utility OR expectancy value OR extended information processing model OR extended parallel process model OR factors influencing smoking model OR family systems OR feedback intervention OR general theory of crime OR general theory of deviant OR goal directed theory OR goal theory OR goal setting OR active living model OR habit theory OR health action process approach OR health belief model OR HBM or health behaviour model OR health capital theory OR health promotion OR health-related model behaviour change OR implementation theory OR Information-motivation behavioural skills model OR information integration theory OR innovation-decision process OR integrated change model OR Ichange OR integrated conceptual model OR integrated theoretical model OR integrated theory of drinking OR integrative theory OR interactionist model OR interactive model of factors influencing health behaviour OR information processing model attitude behaviour change OR integrative

conceptual model OR intrapersonal theory OR interpersonal behaviour OR main determinants of health model OR matrix model Or model human occupation OR model proenvironmental behaviour OR motivation opportunity abilities OR multicomponent stage model OR multi-level model social change OR multi-media model social change OR needs-opportunities-abilities model OR network theory OR norm activation OR normative conduct OR operant conditioning OR operant learning OR practice theory OR precaution adoption process model OR pressure system model OR PRIME theory OR problem behaviour theory OR prospect theory OR protection motivation theory OR prototype willingness model OR rational addiction model OR reciprocal determinism OR reciprocal causality OR reflective impulsive model OR regulatory fit theory OR relapse prevention theory OR risks as feelings model OR salutogenic model OR salutogenic theory OR self-determination theory OR self-efficacy OR self-perception theory OR self-regulation OR six staged model OR social action theory OR social change theory OR social comparison theory OR social cognitive theory OR social cognition model OR social-ecological model OR social learning theory OR social development model OR social consensus OR social ecological model OR social identity model OR social identity theory OR social norms theory OR social structural theory OR socialisation theory OR stage change model OR systems theory OR systems model OR systems thinking OR technology acceptance model OR terror management OR theory of deviant behaviour OR theory of interpersonal behaviour OR theory of normative conduct OR theory of normative social behaviour OR theory reasoned action OR TRA OR Theory planned behaviour OR TPB OR theoretical framework behaviour change OR theory of consumption OR theory rational addiction OR theory of triadic influence OR transcontextual model motivation OR transtheoretical model OR unified theory OR utility theory OR value belief norm.

### **3. Behaviour change terms**

Behaviour change OR behavioural change OR behavioural Or health intervention OR behaviour modification OR behavioural outcome OR behavioural strategy OR change behaviour OR community change OR cultural change OR effect behaviour OR group level effect OR influence behavior OR impact behaviour OR effect behaviour OR normative change OR organisational change OR population change OR social change OR societal change OR Health intervention OR prevent behaviour

**4. Discipline specific terms in relation to behaviour change**

teeth OR caries OR cavity OR carious OR decay OR lesion OR demineralisation OR remineralisation OR dental or enamel OR pulp OR DMF index OR dental plaque index OR oral hygiene index OR dental plaque OR mouthwashes OR dentifrices OR toothpaste OR toothbrush OR mouth rinse OR sugar intake OR sweet OR candy OR candies OR gum OR snack OR diet OR food OR drink OR beverage OR mouth health OR oral health OR dental OR teeth health OR mouth hygiene OR health education OR dental/health promotion OR Health Promotion OR demonstrate OR supervise. economic OR psychology OR sociology OR anthropology AND behaviour change

**Search strategy = (Set 1) OR (Set 4) OR (Set 2 AND Set 3).**

**(restricted to Title and Abstract, English Language and Humans)**

**(Wildcards used to account for differences in US and UK spellings, e.g. behaviour/behavior)**

## 10.2 Appendix 3.2: General Health Search terms in full

### 5. Behaviour change theory terms

Behaviour change theory OR behaviour change intervention OR behaviour change strategy OR behaviour modification theory OR behaviour change model

### 6. Behaviour theory terms

Affective events theory OR acculturation theory OR action model of consumption OR affect infusion OR affective events theory OR AIDS risk reduction model OR ASE-model OR attitude-social influence self-efficacy model OR attribution theory OR automotive Model OR behavioural ecological model OR behaviour life cycle theory OR behavioural reasoning theory OR behavioural theory OR belief system theory OR biopsychosocial OR change theory OR change orientated process OR classical conditioning OR cognitive behaviour theory OR COM-B system OR community organisation theory OR communication theory OR comprehensive model of consumer action OR consumer information processing model OR consumption of social practices OR containment theory OR control theory OR behaviour change model OR critical consciousness OR cultural transmission theory OR demand control OR developmental causal model OR differential association theory OR diffusion innovations theory OR disconnected values model OR double-loop learning OR dual process model OR dual process theory OR dynamic systems theory OR ecological model OR ecological systems theory OR elaboration likelihood OR empowerment theory OR enculturation theory OR exchange Theory OR expected utility OR expectancy value OR extended information processing model OR extended parallel process model OR factors influencing smoking model OR family systems OR feedback intervention OR general theory of crime OR general theory of deviant OR goal directed theory OR goal theory OR goal setting OR active living model OR habit theory OR health action process approach OR health belief model OR HBM or health behaviour model OR health capital theory OR health promotion OR health-related model behaviour change OR implementation theory OR Information-motivation behavioural skills model OR information integration theory OR innovation-decision process OR integrated change model OR Ichange OR integrated conceptual model OR integrated theoretical model OR integrated theory of drinking OR integrative theory OR interactionist model OR interactive model of factors influencing health behaviour OR information processing model attitude behaviour change OR integrative

conceptual model OR intrapersonal theory OR interpersonal behaviour OR main determinants of health model OR matrix model Or model human occupation OR model proenvironmental behaviour OR motivation opportunity abilities OR multicomponent stage model OR multi-level model social change OR multi-media model social change OR needs-opportunities-abilities model OR network theory OR norm activation OR normative conduct OR operant conditioning OR operant learning OR practice theory OR precaution adoption process model OR pressure system model OR PRIME theory OR problem behaviour theory OR prospect theory OR protection motivation theory OR prototype willingness model OR rational addiction model OR reciprocal determinism OR reciprocal causality OR reflective impulsive model OR regulatory fit theory OR relapse prevention theory OR risks as feelings model OR salutogenic model OR salutogenic theory OR self-determination theory OR self-efficacy OR self-perception theory OR self-regulation OR six staged model OR social action theory OR social change theory OR social comparison theory OR social cognitive theory OR social cognition model OR social-ecological model OR social learning theory OR social development model OR social consensus OR social ecological model OR social identity model OR social identity theory OR social norms theory OR social structural theory OR socialisation theory OR stage change model OR systems theory OR systems model OR systems thinking OR technology acceptance model OR terror management OR theory of deviant behaviour OR theory of interpersonal behaviour OR theory of normative conduct OR theory of normative social behaviour OR theory reasoned action OR TRA OR Theory planned behaviour OR TPB OR theoretical framework behaviour change OR theory of consumption OR theory rational addiction OR theory of triadic influence OR transcontextual model motivation OR transtheoretical model OR unified theory OR utility theory OR value belief norm.

## **7. Behaviour change terms**

Behaviour change OR behavioural change OR behavioural Or health intervention OR behaviour modification OR behavioural outcome OR behavioural strategy OR change behaviour OR community change OR cultural change OR effect behaviour OR group level effect OR influence behavior OR impact behaviour OR effect behaviour OR normative change OR organisational change OR population change OR social change OR societal change OR Health intervention OR prevent behaviour

**8. Discipline specific terms in relation to behaviour change**

economic OR psychology OR sociology OR anthropology AND behaviour change  
OR Health Or health promotion OR Health Promotion OR medicine OR Public Health  
OR public health OR Nursing OR organisational OR business Or management OR  
marketing OR media OR sociology

**Search strategy = (Set 1) OR (Set 4) OR (Set 2 AND Set 3).**

**(restricted to Title and Abstract, English Language and Humans)**

**(Wildcards used to account for differences in US and UK spellings, e.g.  
behaviour/behavior)**

### 10.3 Appendix 3.3 Oral Health Individual behaviour change theories, models and frameworks

Summary of the Theory, Model, Framework	Interventions	Description	Behaviour change technique checklist (Abraham & Michie, 2007)	Environment /Setting
<p><b>Oral Health Education Approaches:</b> Education interventions aim to change behaviour and improve health by increasing a person's knowledge and influencing their attitudes to health behaviour. Information in education interventions are aimed at influencing concepts of behaviour change through risk, susceptibility, self-efficacy, subjective norms, and attitudes. The concepts draw upon many constructs of other individual behaviour change theories, e.g. health belief model or social cognitive theory. Essentially behaviour is changed due to increasing knowledge irrespective of social factors.</p>	<p>Building Healthy Smiles (Albert et al., 2013).</p>	<p>The intervention aimed at increasing knowledge of mother/caregivers transmission of dental caries to children. It consisted of a pre-education survey, education training slides and a post-education survey. Planned behaviour to improve Oral Health was shown.</p>	<p>Provide information linking behaviour to health, consequences and intention</p>	<p>Web-based,</p>
	<p>Doktor Muda Programme (Yusof &amp; Jaafar, 2013).</p>	<p>To improve childhood Oral Health and overall quality of life. Child-to-Child teaching where a selected group of school-children were trained and empowered to give Oral Health education to peers. The intervention increased tooth brushing.</p>	<p>Provide information on linking behaviour to health and consequences. Role models</p>	<p>School-based</p>
	<p>Oral Health Education in Schools (Garbin et al., 2009)</p>	<p>Improve cognitive abilities of pre-school children (imitation, imagination, rules, reality changing, and amplification of previous knowledge), emotive abilities (trust), and psychomotor abilities (training and execution of activities).</p>	<p>Instruction, prompts, cues, feedback, general encouragement</p>	<p>School-based</p>
	<p>Short-term Oral Health programme (Yazdani et al., 2009)</p>	<p>Oral Health promotion video-tape and leaflet to 15-year-old public school children. Focus on gains for changing behaviour. Motivation to improve Oral Health was monitored through motivation diaries at weeks 4 and 8.</p>	<p>Contingent rewards, follow-up prompts, instruction, information linking behaviour to health and consequences, self-monitoring behaviour</p>	<p>School-based</p>

		A 3 month intervention study for 9-year-olds delivered either at school or at school and at home.		
	School-based intervention to preadolescents (Saied-Moallemi, 2009)	2 educational sessions per month for 4 months. Participatory descriptive classes using illustrative and educational drawing, mannequins, and competitive games.	Instruction and follow-up prompts	School and home-based
	Program for Brazilian Public School Children (Alves de farias et al., 2009)	1-hour yearly session with children and teachers. Oral Health education involved instructions, use of fluorides, diet, basic concepts of Oral Health. Counselling on Oral Health was also given and intervention information was matched to age related techniques.	Instruction, model/demonstrate behaviour, contingent rewards, feedback on performance	School-based
	Signal-Tandmobiel (Vanobbergen, 2004).	Education lesson delivered by a dental facilitator in schools, with home extension work involving parents and caregivers. The 4 lessons consisted of teeth function and possible problems, diet, tooth-brushing.	Instruction, Information linking behaviour to health and consequences, motivational interviewing,	School-based

	<p>My Mouth Matters. Worthington, 2001)</p> <p>Wuhan School-based Oral Health programme (Tai et al., 2001)</p>	<p>One hour instruction of Oral Health education, one hour instruction for parents, use of posters and books, examination of all children's teeth, access to preventive and curative care.</p>	<p>Instruction, Information linking behaviour to health and consequences, demonstrate behaviour, follow up prompts</p> <p>Instruction, Information linking behaviour to health and consequences, follow up prompts. Barrier identification</p>	<p>School and home-based</p> <p>School-based, clinic-based, home-based</p>
<p><b>Motivational Interviewing:</b> Attempts to increase a person's awareness of potential problem behaviour, consequences, and risks. The aim is to discuss a healthier future, to help a person become motivated to change and to create a plan of action to change. Counselling attempts to make an individual think differently about behaviour and become aware of the potential gains for changing behaviour. Essentially the aim to engage with individuals, elicit discussion of behaviour, and evoke motivation to change</p>	<p>Early Oral Health Promotion Programme (OHPP) (Wagner et al., 2014)</p> <p>Baby Smiles (Weinstein et al., 2014)</p>	<p>Dental Health visitors visited new mothers and counselled them regarding Oral Health. Mothers were given comprehensive oral hygiene instructions and motivational interviewing was used by the Dental Health Professionals to encourage mothers. After a 5 year follow up, the children those mothers that had received the Oral Health information through motivational interviewing counselling had significantly less dental decay compared to children of mothers that had not received the OHPP.</p> <p>Motivational interviewing for pregnant mothers before and after birth of their child. The interviewing utilised open-ended questions and aided problem solving.</p>	<p>Instructions, encouragement and information linking behaviour to health and consequences.</p> <p>Instruction, encouragement, prompt intention formation, and provide information linking behaviour to health and consequences.</p>	<p>Hospital and home-based.</p> <p>Clinic-based</p>

	Dental Hygiene training (Bray et al., 2013)	Motivational Training was used in training session to motivate and stimulate interest in dentists learning about dental hygiene, motivational interviewing was then used in subsequent sessions to encourage professionals to educate their patients in dental hygiene and to also increase the dental professional confidence in their ability to deliver dental hygiene education messages to their patients.	Provide information linking behaviour to health and consequences, instruction, self-assessment, prompt intention formation, prompt identification as a role model.	University-based
	Lift the Lip (Arrow, Raheb & Miller, 2013)	Parent attending a baby clinic with their child aged between 6-12 weeks old completed a questionnaire asking parents Oral Health knowledge, behaviours, self-efficacy, Oral Health fatalism, parenting stress, prenatal and parental health, and socio-demographic information. The parents then received Oral Health information through a computer and tailored Oral Health counselling.	Provide information linking behaviour to health and consequences, instruction, self-assessment, prompt intention formation, prompt identification as a role model.	NHS secondary care services and home-based
	Delivery of Oral Health educational information to caregivers. Ismail et al., 2011)	Oral Health information was recorded onto a DVD and delivered to parents by showing them the DVD with a motivational interviewing component with a parent and professional dialogue to encourage and motivate parents through the DVD showing. Parents also received booster phone calls every 6 months to further encourage and motivate parents. The parents had a higher rate of self-reporting of being more aware of poor Oral Health and checking their child's teeth. However, no differences in dental decay.	Provide instruction, model/demonstrated the behaviour, follow up prompts, goal setting, self-assessment and self-monitoring of behaviour.	Community/home-based

	<p>Women, Infants and Children Programme (WIC) (Freudenthal &amp; Bowen, 2010).</p>	<p>Individualised motivational interviewing approach was used to promote positive change in mothers. 72 mothers were recruited to take part in a motivational interviewing counselling session and follow up telephone calls to promote positive change. However, no significant change was found in Dental Health values, permissiveness, convenience, difficulty in changing, and openness to receive health information</p>	<p>Provide instruction, model/demonstrated the behaviour, follow up prompts, goal setting,</p>	<p>Community workshop and then home-based</p>
<p><b>Health Belief Model (HBM):</b> The HBM was developed to understand and explain why people do or do not use preventative services. The model theorises about a person's beliefs regarding their risk of illness and their preconceptions of the benefits of taking action to prevent ill health. The HBM consists of five constructs: perceived threat, perceived susceptibility, perceived severity, potential benefits and barriers to taking action, cues to action, and self-efficacy.</p>	<p>HBM within Oral Health Education (Solhi et al.,2010)</p> <p>Primary School Oral Health promotion (Yekaninejad et al., 2012)</p>	<p>Educational messages were given in lectures, demonstrations and discussion groups. The lessons were 2 hours a week for students, 1 hour a week for parents and teachers over 6 months. The HBM was used to implement the education message to increase perceptions of susceptibility, severity, benefits, barriers, and cues to action. It was found that the HBM increased uptake of Oral Health messages.</p> <p>Parents, teachers, and students received a 5 page booklet which was designed according to the HBM and addressed issues regarding the susceptibility of children having poor Oral Health, the severe implications of poor Oral Health, the benefits of improving behaviour and the barriers to that process. The HBM was considered as a factor in motivating the students, teachers, and parents to change their behaviour.</p>	<p>Provide information linking behaviour to health and consequences, instruction, intention formation, barrier identification, self-talk.</p> <p>Provide information linking behaviour to health and consequences, instruction, intention formation, barrier identification, self-talk, general encouragement, model/demonstrate the behaviour, provide feedback, provide contingent rewards, set graded tasks, self-monitoring.</p>	<p>School-based</p> <p>School-based</p>

### 10.4 Appendix 3.4 General Health Individual Behaviour Change Theories, Models, and Frameworks

Summary of the Theory, Model, Framework	Interventions	Description	Behaviour change technique checklist (Abraham & Michie, 2007)	Environment /Setting
<p><b>Theory of Planned behaviour/ Integrative model of behaviour prediction/ Theory of Reason Action.</b> The theory of reasoned action (TRA), the theory of planned behaviour (TPB) and the Integrative model of Behaviour Prediction (IBP) are similar theories with the TRB being an adaptation to the early TRA theory and the IBP being an adaptation of the TRA. The theories are still popular intervention underpinnings but due to their similar origins the theories are grouped together. The TRA focuses on a person's behavioural intentions, which are based on personal attitudes</p>	<p><b>TPB:</b> Email intervention to increase fruit and vegetable uptake (Kothe, 2012)</p> <p><b>TPB:</b> Improving teenage condom use (Brown, 2011)</p>	<p>Participants received TPB-based email messages designed to increase fruit and vegetable consumption, messages targeted attitude, subjective norm and perceived behavioural control (PBC). Baseline and post-intervention measures of TPB variables and behaviour were collected. Across the entire study cohort, fruit and vegetable consumption increased by 0.83 servings/day between baseline and follow-up.</p> <p>Five secondary school in the North West of England received the intervention that targeted self-efficacy and anticipated regret. The intervention materials were reading- and writing-based tasks. The intervention to enhance self-efficacy (SE) and anticipated regret (AR) received factual information about condoms and the contraceptive pill, a four-page information booklet designed to enhance feelings of control over pill and condom use (SE condition); and a five-page set of vignettes designed to enhance feelings of anticipated regret over not using contraception</p>	<p>Consequences, barrier identification, Provide information linking behaviour to health and consequences</p> <p>Consequences, barrier identification, Provide information linking behaviour to health and consequences</p>	<p>Online</p> <p>School-based</p>

<p>to health behaviour and the influence of social norms towards performing that behaviour. The TRA assumes that behaviour change is within the individuals control at all times. The TPB builds on TRA and places control on a continuum, starting with the situation that individuals find themselves in, from having complete to no control. The IBP assumes that any given behaviour is most likely to occur if one has a strong intention to perform the behaviour, if the person has the necessary skills to perform the behaviour, and if there are no environmental constraints.</p>	<p><b>TPB:</b> National Suicide prevention guidelines for health professionals (Hanbury, 2011)</p> <p><b>TBP:</b> ProActive (Hardeman, 2009)</p>	<p>properly (AR condition). It was found that intervention underpinned by the TPB did increase intention to use condoms.</p> <p>A behaviour-change intervention delivered to community mental health professionals in one Primary Care Trust, aimed at raising adherence to a national suicide prevention guideline. The intervention consisted of education/knowledge giving session, group discussion, demonstrations, and group evaluations. The mediational analysis indicated that the intervention failed to successfully target the key barrier to adoption of the guidance, and the qualitative process evaluation identified certain intervention components that were well received by the health professionals, and also identified weaknesses in the delivery of the intervention. Future research should seek to further develop the evidence-base for linking specific intervention strategies to specific behavioural barriers, explore the potential of theories that take into account broader social and organisational factors that influence health professionals' practice.</p> <p>A range of health professionals, who received initial training and ongoing supervision, delivered the programme. The TPB informed the hypothesised mediators of intention and physical activity that were targeted in the intervention program: instrumental and affective attitude, subjective norm and perceived behavioural control. Using the TPB as a theoretical framework, facilitators elicited the participant's beliefs about becoming more physically active: advantages and disadvantages, perceived (lack of) encouragement by important others (e.g., family, friends), and facilitating factors and barriers. Facilitators reinforced positive beliefs and applied problem solving in relation to negative beliefs. Participants were taught a range of self-regulatory strategies to alter cognitions and facilitate behavioural change and</p>	<p>Provide information linking behaviour to health and consequences, instruction, intention formation, barrier identification, self-talk, general encouragement, model/demonstrate the behaviour, provide feedback, self-monitoring.</p> <p>Provide information linking behaviour to health and consequences, instruction, intention formation, barrier identification, self-talk, general encouragement, model/demonstrate the behaviour, provide feedback, self-monitoring, goal setting, contingent rewards, provide prompts.</p>	<p>NHS PCT</p> <p>Healthcare, Home and Community-based</p>
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	<p><b>TPB:</b> Project Trek (Keats, 2009)</p> <p><b>TPB:</b> Exercise guidebook for cancer survivors (Vallance, 2008)</p> <p><b>TPB:</b> Antipyretic use in nurses (Edwards 2007)</p>	<p>maintenance, including goal setting, action planning, self-monitoring, goal review, using rewards, using prompts, building support from family and friends, and relapse prevention. Exercise intentions were increased.</p> <p>Project Trek was delivered for 16 weeks to adolescents who had survived cancer. The intervention targeted susceptibility to unhealthy weight and consequence, and discussed protecting behaviours. The intervention was effective in increasing intention to exercise.</p> <p>The guidebook included participant-centered activities designed to enhance attitude (i.e., instrumental and affective attitudes), subjective norm (i.e., injunctive and descriptive norms), perceived behavioural control (i.e., self-efficacy and controllability), and implementation intentions (e.g., goal setting, planning) pertaining to exercise. These written activities are also designed to facilitate participant engagement in the information.</p> <p>This study examined effectiveness of a theoretically based education programme in reducing inappropriate antipyretic use in fever management. The peer education programme, based on TPB initiated and maintained evidenced-based intentions. The programme consisted of four educational sessions which included information giving, peer discussions and session evaluation. The study identified the role of peer support in increasing behaviour intentions.</p>	<p>Consequences, barrier identification, Provide information linking behaviour to health and consequences, provide instruction</p> <p>Consequences, barrier identification, Provide information linking behaviour to health and consequences, provide instruction</p> <p>Provide information linking behaviour to health and consequences, instruction, intention formation, barrier identification, self-talk, general encouragement, model/demonstrate the behaviour,</p>	<p>Community-based</p> <p>Home-based</p> <p>Hospital-based</p>
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	<p><b>TPB/TRA:</b> SAARS prevention campaign (Cheng et al., 2006)</p>	<p>Seventy-five working adults were recruited from each region affected by SAARS. The TPB or the TRA was used to inform the intervention to target attitude, subjective norm, perceived behavioural control (PBC), knowledge of SARS, and SARS-preventive behaviours. The recruited adults were split into 2 groups, one group received the TPB intervention and the other group received the TRA intervention. It was found that the intervention and the use of the TPB was dependent on culture, with more rural areas being less susceptible to change from the intervention. However the TRA intervention was found to culturally relevant to all areas.</p>	<p>provide feedback, self-monitoring.</p> <p>Consequences, barrier identification, Provide information linking behaviour to health and consequences, provide instruction</p>	<p>Community-based</p>
	<p><b>TPB:</b> Whelling Walks (Reger 2002)</p>	<p>Promoting 30 minutes of daily walking through paid media, public relations, the Internet and public health activities at work sites, churches and local organizations, physician “prescriptions for walking”.</p>	<p>Provide information linking behaviour to health and consequences, instruction, intention formation, barrier identification, self-talk, general encouragement, model/demonstrate the behaviour, provide feedback, self-monitoring, goal setting, contingent rewards, provide prompts.</p>	<p>Community-based</p>
		<p>The Intervention, HealthMpowerment.org , was created based on the Institute of Medicine’s integrated model of behaviour change with extensive input from young BMSM. Key interactive Web site features include live chats, quizzes, personalized health and</p>	<p>Provide information linking behaviour to health and consequences, instruction,</p>	<p>Online</p>

	<p><b>IPB:</b> HealthMpowerment.org (Hightow-Weidman, 2011)</p>	<p>"hook-up/sex" journals, and decision support tools for assessing risk behaviours. The IMB improved behavioural intentions.</p>	<p>intention formation, barrier identification, self-talk, general encouragement, model/demonstrate the behaviour, provide feedback, self-monitoring, goal setting, contingent rewards, provide prompts.</p>	
<p><b>Health Belief Model (HBM):</b> The HBM was developed to understand and explain why people do or do not use preventative services. The model theorises about a person's beliefs regarding their risk of illness and their preconceptions of the benefits of taking action to prevent ill health. The HBM consists of five constructs: perceived threat, perceived susceptibility, perceived severity, potential benefits and barriers to taking</p>	<p>HPV vaccine promotion to mothers of teenage girls (Shafer, 2011)</p> <p>Osteoporosis prevention in teenager girls (Hazavehei, 2007)</p>	<p>The intervention used the HBM to create messages that would motivate mothers of preteen girls. Mothers also reacted more positively to text about preventing cervical cancer than about preventing HPV, a sexually transmitted disease. Mothers preferred message concepts with photos of minorities and Caucasian mothers and daughters. The intervention increased susceptibility, knowledge, and motivation to protect their daughters through getting them vaccinated.</p> <p>Young girls from high schools in Iran were given an intervention that used the HBM to promote behaviour to prevent Osteoporosis. The girls took part in 2 one hour education sessions and it was shown that perceived susceptibility and knowledge were increased.</p>	<p>Provide general information linking behaviour to health. Provide information on consequences. Barrier identification</p> <p>Provide general information linking behaviour to health. Provide information on consequences</p>	<p>Community-based</p> <p>School-based</p>

<p>action, cues to action, and self-efficacy.</p>	<p>Safer Sex (Rimberg,1994)</p> <p>Breast examinations (Clarke, 1991)</p>	<p>The intervention delivered safe sex messages using the components of the health belief model. The intervention appeared to increase knowledge, susceptibility, and intention to change in women</p> <p>Educational sessions using the health belief model took place over 2 years. The aim was in increase perceived susceptibility, knowledge on how to examine and the consequences of not examining their breasts. The intervention increased self-breast examinations, knowledge, and perceived susceptibility.</p>	<p>Provide general information linking behaviour to health. Provide information on consequences. Self-monitoring of behaviour.</p> <p>Provide general information linking behaviour to health. Provide information on consequences. Self-monitoring of behaviour.</p>	<p>University-based</p> <p>Community-based</p>
<p><b>Motivational Interviewing/ Self-determination theory/ Goal directed theory/ prospect theory/ Protection motivation theory:</b> Attempts to increase a person’s awareness of potential problem behaviour, consequences, and risks. The aim is to discuss a healthier future, to help a person become motivated to change and to create a plan of action to change. Counselling attempts to make an individual think differently about behaviour and</p>	<p><b>Motivational Interviewing:</b> Motivational enhancement groups (Ingersoll, 1997)</p> <p><b>Motivational Interviewing:</b> Screening</p>	<p>Provided assistance to substance abuse treatment personnel working in community settings that wanted to use motivational techniques in a group treatment modality.</p> <p>Women who had not scheduled a mammogram within 2 months of receiving a mailed invitation from a managed care organization’s centralised breast cancer screening program. A total of 83% of targeted women accepted the counselling calls. Counsellors rated 84% of completed calls as either receptive or neutral in tone. Women with prior mammography experience were more likely to</p>	<p>General information linking behaviour to health, provide information on consequences, social exchange, motivational interviewing.</p> <p>General information linking behaviour to health, provide information on consequences, social exchange, motivational interviewing.</p>	<p>Community-based</p> <p>Home-based</p>

<p>become aware of the potential gains for changing behaviour. Essentially the aim to engage with individuals, elicit discussion of behaviour, and evoke motivation to change</p>	<p>promotion (Ludman, 1999)</p> <p><b>Motivational Interviewing:</b> The Drinkers check-up (Miller, 1988)/ The check-up (Miller, 1989)</p>	<p>be receptive and to schedule a screening appointment during the calls than were women with no prior experience. Topics discussed during the calls also differed between women with and without prior mammography experience.</p> <p>The Drinker's Check-up (DCU) is offered to individual drinkers as a means for discovering what negative effects (if any) alcohol may be having in their lives. The DCU consists of a battery of measures sensitive to alcohol's early effects on health and behaviour. Objective feedback through motivational interviewing is given to the drinker, with the intent of increasing awareness of risk. Increased help seeking behaviour and reduced modest drinker's alcohol consumption. The check-up intervention was adapted from Miller's 1988 The Drinker's Check-up intervention. This time the intervention was targeted at addictive behaviours. Also showed increase in help-seeking behaviours.</p>	<p>Provide information on consequences, social support/exchange, motivational interviewing, goal setting, and general information linking behaviour to health.</p>	<p>Community-based</p>
<p><b>Cognitive Dissonance:</b> The theory proposes that when equilibrium is disrupted an individual will act to restore balance by either changing their beliefs and opinions to support the behaviour that is causing dissonance or by stopping the behaviour. This theory also incorporates self-efficacy, which implies that if an individual feels more confident</p>	<p>The Succeed body image programme (Becker, 2012)</p>	<p>The Succeed Body Image Programme actively engages its participants in a series of verbal, written and behavioural exercises that critique the unrealistic, ultra-thin-ideal standard of female beauty. The counter-attitudinal activities in the programme have been shown to result in decreased internalisation of the thin-ideal and subsequent reductions in body dissatisfaction, negative emotions, dieting, and eating disorder symptoms.</p>	<p>Information about others approval, identification as a role model, prompt self-talk,</p>	<p>Community-based</p>

in their abilities to perform a desired behaviour then they are more likely to engage in that behaviour (Bandura, 1977).				
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## 10.5 Appendix 3.5 Oral Health Interpersonal Behaviour Change Theories, Models, and Frameworks

Summary of the Theory, Model, Framework	Interventions	Description	Behaviour change technique checklist (Abraham & Michie, 2007)	Environment/ Setting
<p><b>Sense of Coherence (SOC):</b> Focus is on the beginnings of health, where health and ill health are a continuum of ‘ease to disease’. Factors such as internal and external stressors and tensions can contribute to the disease end of the continuum. Sense of coherence refers to an individual’s conceptual, perceptual, and social cognitive perceptions of ill health in relation to stress. Interventions that use the sense of coherence theory aim to set goal orientated Oral Health tasks to overcome stressors to develop and improve a person’s sense of coherence.</p>	<p>Oral Health Quality of Life (Nammontri, 2011)</p>	<p>The intervention used the SOC to empower children to set oral health goal orientated behaviour. 12 primary schools across the UK took part in 7 sessions over 2 months. The first 4 sessions were classroom activities and the last 3 involved working on projects to set goals and increase cognitive perceptions of Oral Health.</p>	<p>Self-monitoring of behaviour, barrier identification, intention formation, specific goal setting, encouragement, rewards, general information linking behaviour to health and consequences</p>	<p>School-based</p>
<p><b>Locus of Control:</b> The theory predominately focuses on the extent to which an individual believes they control events affecting them. An individual’s perceived control is conceptualised as internal or external control. Essentially, behaviour is controlled by rewards and punishments. Locus of control is a scale</p>	<p>Determinants of dental caries (Duijster, 2014)</p>	<p>A validated parental questionnaire was administered to parents of 6 year old children. Parental locus of control, social demographics and Oral Health behaviours were mapped to the Decayed Missing or Filled Teeth (DMFT) scores of their 6 year old children. Those parents of children with higher scores of DMFT had an external locus of control and lower dental self-efficacy,</p>	<p>Social support, social comparison and intention formation.</p>	<p>Community-based</p>

designed to measure and assess external and internal control by forcing an individual to choose between two contrasting alternatives.				
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## 10.6 Appendix 3.6 General Health Interpersonal Theories, Models, and Frameworks

Summary of the Theory, Model, Framework	Interventions	Description	Behaviour change technique checklist (Abraham & Michie, 2007)	Environment/setting
<p><b>Social Cognitive Theory(SCT; Bandura, 1991, 1997, 2005):</b> The social cognitive theory (SCT) explains and understands behaviour as a three-way interaction between personal factors, environmental influences, and behaviour. The model combines multiple elements from behaviouristic, cognitive and emotional psychology models. The assumption of SCT is that people not only learn through their own experiences but also by observing actions and outcomes of others behaviour</p>	<p>Physical Activity (PA) for middle aged men (Hightow-Weidman, 2011)</p>	<p>Group-sessions mediated by two trained facilitators were conducted twice per week for 90 min per session for 8 weeks with session format and content included overcoming barriers to being active (e.g. time constraints, lack of social support, low motivation, poor access to PA resources, factors related to chronic conditions and aging), utilizing social support for PA, goal setting, self-monitoring, fitting PA into a daily routine, remaining active during high-risk times and PA maintenance. The intervention was also individually tailored to culture beliefs and male attitudes.</p>	<p>Barrier identification, intention formation, specific goal setting, encouragement, rewards, general information linking behaviour to health and consequences, prompts, stress management, relapse prevention.</p>	<p>Community-setting</p>
	<p>Web-based Guide To Health (WB-GTH) (Smith-Anderson-Bill, 2011)</p>	<p>Improving social support, self-efficacy, outcome expectations, and self-regulation, in varying combinations, led to healthier diet and exercise habits and concomitant weight loss. High initial levels of self-efficacy may be characteristic of Web-health users interested in online interventions and may alter the function of SCT in these programs</p>	<p>Barrier identification, intention formation, specific goal setting, encouragement, rewards, general information linking behaviour to health and consequences, prompts, stress management, relapse prevention.</p>	<p>Community/online-based</p>
	<p>Women's Physical Activity (Backman, 2011)</p>	<p>1-hour PA and nutrition education classes for 1 time per week (culturally appropriate tailored resource materials and handouts).</p>	<p>Techniques to improve confidence and self-efficacy beliefs, nutrition-related knowledge and attitudes.</p>	<p>Community-based</p>

	<p>Guide to Health Trial GHT (Anderson 2010)</p>	<p>The intervention was promoted through churches and was delivered online. The GHT program consisted of 12 weekly SCT-based modules. Modules targeted social support, self-efficacy and outcome expectations. In addition, modules involved continued self-regulation to enhance and maintain nutrition and physical activity behaviour change. The GHT programme was also reinforced and supported in the churches that promoted the GHT.</p>	<p>Barrier identification, intention formation, specific goal setting, encouragement, rewards, general information linking behaviour to health and consequences, prompts</p>	<p>Community-based</p>
	<p>Chew Free (Danaher, 2008)</p>	<p>An Enhanced Web-based behavioral smokeless tobacco cessation intervention delivered program content using text, interactive activities, testimonial videos and an ask-an-expert forum and a peer forum.</p>	<p>Intention formation, specific goal setting, encouragement, general information linking behaviour to health and consequences, prompts</p>	<p>Community-based</p>
	<p>Sun Protection is Fun (Gritz, 2007)</p>	<p>A 2 year intervention aimed at nursery and early settings staff to increase awareness of sun protection and use on children. The staff intervention included training, a video, newsletters, a curriculum, and sunscreen. The intervention improved knowledge, self-efficacy and use of sun screen on children.</p>	<p>Demonstration of behaviour, prompts, reinforcement, general encouragement, provided instructions general information linking behaviour to health and consequences.</p>	<p>Early years' settings</p>
	<p>JEWEL (Jewellery Education for Women Empowering Their Lives) (Sherman, 2006)</p>	<p>The intervention was comprised of six 2-hour sessions that taught HIV prevention risk reduction and the making, marketing and selling of jewellery. The JEWEL (Jewellery Education for Women Empowering Their Lives) pilot study examined the efficacy of an economic empowerment and HIV prevention intervention targeting illicit drug-using women</p>	<p>Provided instructions general information linking behaviour to health and consequences, encouragement and goal setting.</p>	<p>Community-based</p>

	Female condom use (Artz, 2005)	The intervention included a promotional videotape; a skills-oriented counseling session with a nurse clinician; assorted take-home items, including a videotape for men; and free supplies of female and male condoms.	Demonstration of behaviour, prompts, reinforcement, general encouragement, provided instructions	Primary care and home-based
	Raising Healthy Children (Brown, 2005)	The intervention designed to promote positive youth development by targeting developmentally appropriate risk and protective factors. Classroom sessions and one to sessions were given to children to promote motivation, participation, reading, interpersonal, and problem-solving skills. Teachers were given booster sessions as RHC trained professionals would go into the schools to demonstrate delivery techniques to staff. The one to one sessions reinforced information to children.	Demonstration of behaviour, prompts, reinforcement, general encouragement, provided instructions, role model.	School-based
	Children's Healthy Eating Programme (Alud, 1999)	Children were given 16 lessons in school to promote behaviour change and improve healthy eating. The lessons were delivered by teachers trained to deliver the programme and children would prepare food, reinforcement during lunch times, the use of role models and incorporation of messages into other lessons. Children showed significant increases in knowledge, attitudes, and self-efficacy towards healthy eating.	Demonstration of behaviour, prompts, reinforcement, general encouragement, provided instructions, role model.	School-based
	The AIDS Prevention for Paediatric Life Enrichment APPLE (Santelli, 1995)	The AIDS Prevention for Paediatric Life Enrichment (APPLE) project is a community-based program to prevent perinatal HIV infection by preventing infection in women. Media and community outreach programmes were used to deliver APPLE materials	Provided instructions general information linking behaviour to health and consequences.	Community-based

### 10.7 Appendix 3.7 Oral Health Stage theories, models, and Frameworks

Summary of the Theory, Model, Framework	Interventions	Description	Behaviour change technique checklist (Abraham & Michie, 2007)	Environment/setting
<p><b>Transtheoretical Model:</b> The Transtheoretical model (TTM) is an integrative and comprehensive model that combines emotions, cognitions, and behaviours, to explain intentional behaviour change. The model focuses on understating, explaining, and predicting the decision making process of individuals.</p>	<p>Dental Nurses adoption of hygiene promotion programmes (Arpalahti, 2012)</p> <p>Oral Health Hygiene Counselling (Kasila, 2006)</p>	<p>The TTM was used within motivational interviewing to encourage dental nurses involved in the Oral Health promotion of children to use new Oral Health promotion programmes. The TTM targeted individual stages of change and self-efficacy.</p> <p>Using a theoretical framework of the TTM, children aged between 11 and 13 years old were given motivational interviewing techniques as well as information and demonstrations on oral hygiene. The intervention used TTM to target interviewing techniques on individual dynamics of change.</p>	<p>General information linking behaviour to health, provide information on consequences, social exchange, motivational interviewing, encouragement, identification of barriers, prompts.</p> <p>General information linking behaviour to health, provide information on consequences, social exchange, motivational interviewing.</p>	<p>Dental surgeries</p> <p>School-based</p>

## 10.8 Appendix 3.8 General Health Stage theories, models, and Frameworks

Summary of the Theory, Model, Framework	Interventions	Description	Behaviour change technique checklist (Abraham & Michie, 2007)	Environment/setting
<p><b>Transtheoretical Model:</b> The Transtheoretical model (TTM) is an integrative and comprehensive model that combines emotions, cognitions, and behaviours, to explain intentional behaviour change. The model focuses on understating, explaining, and predicting the decision making process of individuals.</p>	<p>Sun Protection Advice (Falk, 2012)</p> <p>Your decision counts (Evers, 2010).</p>	<p>Adults attending GP surgeries during February completed a questionnaire on sun protection habits and were matched to an intervention according to their stage of change.</p> <p>The “Your Decisions Counts: Alcohol, Tobacco and Other Drugs” program for Middle Schools is a multi-component intervention package. The primary component is a TTM-tailored internet-based, computerized tailored intervention program. Students in the intervention condition were given the opportunity to interact with the computer program on three separate occasions, a month apart.</p>	<p>General information linking behaviour to health, provide information on consequences,</p> <p>Encouragement, general information linking behaviour to health, provide information on consequences, social exchange, encouragement, identification of barriers.</p>	<p>GP surgeries</p> <p>Community-based</p> <p>Home-based</p>

	Healthy People (Dishman, 2010)	People were matched on their readiness to change and targeted to stages of change relating to their stage.	Encouragement, general information linking behaviour to health, provide information on consequences, social exchange, encouragement, identification of barriers, prompts.	
	Physically Active Patients (Kanning, 2010)	Patients with Coronary heart disease were mailed to take part in an intervention to improve activity.	General information linking behaviour to health, provide information on consequences, self-reports	Home-based
	Physical Activity (King, 2008)	Instructional session, programmed hand-held computer (PDA), daily and weekly individualized feedback, goal setting and support.	General information linking behaviour to health, provide information on consequences, self-reports, prompts, stage of change targeted	Home-based
	Breast examinations (Smith, 2007)	Writing instructions were tailored to a precontemplative stage of change in accordance with the transtheoretical model proposed by Prochaska and DiClemente (1983)	General information linking behaviour to health, provide information on consequences, self-reports	Community-based
	Wijkgezondheidswerk (King, 2007)	Home-based moderate-intensity PA programs		Home-based

	<p>Web-based decision support systems (Liang, 2006)</p>	<p>delivered via a trained telephone counsellor or an automated, computer-controlled interactive telephone system (10 to 15 minutes structured telephone calls on a bi-weekly, then monthly basis).</p> <p>The WISS was expected to give detailed messages to direct call centre representatives on how to talk with patients based on the principles of the TTM and the motivational interviewing. Therefore, the objectives of software development were: (1) integrate the knowledge in the TTM and motivational interviewing into the software, (2) create motivational messages based on the obtained knowledge, (3) develop procedural structures for patient interventions, and (4) deliver the structure and the messages to call centre representatives so they could provide intervention messages to the patients in a theoretically structured manner</p>	<p>Advice, prompts, encouragement, tailored to stage of change</p> <p>Encouragement, general information linking behaviour to health, provide information on consequences, social exchange, encouragement, identification of barriers.</p>	<p>Home-based</p> <p>Community-based</p>
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	Health Enhancing Physical activity (Kloek 2006)	<p>Specially designed leaflets, reminders of the health benefits of using stairs compared with lifts, local meetings, stands and mass media communication activities, organized walking groups and group sessions for indoor activity at no cost for participants.</p>	<p>General information linking behaviour to health, provide information on consequences, social exchange, encouragement, identification of barriers.</p>	Community-based
	Moms on the Move (Fahrenwald, 2005).	<p>More than 40 intervention activities delivered by neighbourhood coalitions: face-to-face sessions, mass media, special events, directed to increase attention, information, awareness, knowledge, behavioural change</p>	<p>Encouragement, general information linking behaviour to health, provide information on consequences, social exchange, encouragement, identification of barriers, prompts.</p>	Community-based
	Vets without cigarettes (Dent, 2004)	<p>The intervention was derived from the Transtheoretical Model (TTM) of behavior change and promoted moderately intense activities like walking.</p>	<p>General information linking behaviour to health, provide information on consequences, social exchange, encouragement, identification of barriers.</p>	Community-based

	Safer Sex (Butler, 2003)	Three-session program using the Transtheoretical Model of Change, tobacco cessation pharmacotherapy, behavioral strategies, cognitive techniques, documentation, and a follow-up survey	Encouragement, general information linking behaviour to health, provide information on consequences, social exchange, encouragement, identification of barriers, prompts.	Community-based
	INFORUM (Crane, 1998)	Participant's stages of change for safer sex practices were assessed. Then, each participant received feedback appropriate to their current stage, including a summary of their readiness to change and, finally, a plan to help move on to the next stage was discussed.	Encouragement, general information linking behaviour to health, provide information on consequences, social exchange, encouragement, identification of barriers, prompts.	Community-based
	Quit and Win Challenge (Pickett, 1998)	Women were called and delivered information and messages according to the TTM to increase uptake on cancer screening.	Encouragement, general information linking behaviour to health, provide information on consequences, social exchange, encouragement, identification of barriers.	Home-based

		Smokers wanting to quit received a Quit Kit that was influenced to change behaviour through TTM.	Encouragement, general information linking behaviour to health, provide information on consequences	
<p><b>Information-Motivation-Behavioural Skills Models</b></p> <p>This theory focuses on three components that result in behaviour change: information, motivation and behaviour skills. Information relates to the basic knowledge about a medical condition, and is an essential prerequisite for behaviour change but not necessarily sufficient in isolation. A favourable intervention would establish the baseline levels of information, and target information gaps. The second component, motivation, results from personal attitudes towards adherence; perceived social support for the behaviour; and the patients' subjective norm or perception of how others with the condition might behave. Finally, behavioural skills include factors such as ensuring that the patient has the skills, tools and strategies</p>	Girl-time healthy sexuality programme (Rye, 2008)	The programme aimed to give girls information and advice to increase communication and delay the age of sexual intercourse	Encouragement, general information linking behaviour to health, provide information on consequences	School-based

to perform the behaviour as well as a sense of self-efficacy – the belief that they can achieve the behaviour.				
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### 10.9 Appendix 3.9 Oral Health Multi-Level Theories, Models, and Frameworks

Description of Theory, Model, Framework	Interventions	Description	Constructs used to underpin intervention	Environment/ setting
<p><b>Diffusion of innovations:</b> This theory focuses on the dissemination of new ideas and the systematic adoption of the innovation by individuals that were previously unaware of the innovation. Communication is essential to this model as it serves as a link between those that have know-how of the innovation and those yet to adopt this know-how.</p>	Nurses delivery of Oral Health Advice (Pesaressi, 2014)	Nurses were given training and guidance to give Oral Health advice to parents during their child’s routine vaccination appointments. Pesaressi and colleagues also conducted interviews with the nurses to understand the implementation process.	Advice giving, encouragement, information linking behaviour to outcomes, identifying barriers, support from senior staff.	NHS settings
	Oral Health Shared Care (Gussy, 2006).	Multiple health professionals were given information and training sessions giving Oral Health messages. Staff were also interviewed to understand the implementation process.	Advice giving, encouragement, information linking behaviour to outcomes, identifying barriers, support from senior staff	NHS settings

	Oral Health promotion (Graham, 2003)	Multiple health professionals were given information and training sessions giving Oral Health messages. Qualitative research also took place to understand staff opinions regarding the giving out of Oral Health advice.	Advice giving, encouragement, information linking behaviour to outcomes, identifying barriers, support from senior staff	NHS settings
<p><b>Social Ecological Model:</b> This model is based on the assumption that behaviour is influenced by multiple complex factors in reciprocal causation. Therefore individual behaviour shapes and is shaped by the social environment. This model is similar to Social Cognitive Theory, however the social ecological theory considers social networks, public policy and other factors that make up the social system as a whole. Behaviour is not regarded a distinct entity but as a component of a whole social system.</p>	Caregivers Oral Health practices (Vichayanrat, 2012)	The intervention consisted of three components: home visits by lay health workers, enhancing Oral Health education and services at health centres, in the community. The intervention was designed to target intrapersonal, interpersonal, organisational, and community levels of Oral Health, which are all based on the social ecological model.	Information linking behaviour to outcomes, demonstration, identifying barriers, increasing access to services.	Home-based and community-settings
	Healthy Schools (Muiread, 2011)	The programme was delivered in schools through teachers and Oral Health nurses that promoted and demonstrated Oral Health activities as well as lifestyle changes and healthy eating.	Information linking behaviour to outcomes, demonstration, identifying barriers, increasing access to services.	School-based

<p><b>Community-Based Participation Research:</b> Community-based participatory methods are an approach that equitably involves community members, organisational staff, and researchers in all aspects of the intervention development process. The different groups work in partnership to share expertise, decisions, and ownership over the programme. The aim of community-based participation is to increase knowledge and understanding of the community needs and issues to aid policy and research. The knowledge gained through engaging with the community creates an integrative intervention that is tailored to the community in an attempt to increase the success of implementation and adoption of health programmes.</p>	<p>Refugee Oral Health (Nicol, 2014)</p>	<p>Community based participatory qualitative methodology using focus groups of resettled refugee families and community refugee nurse interviews. A community reference group was established and a bi-lingual community research associate was employed. Transcripts were analysed for thematic content using NVivo software. This enabled the development of a targeted Oral Health intervention.</p>	<p>Focus groups, inclusion of targeted population.</p>	<p>Community-setting</p>
	<p>Boost Better Breaks (Freeman, 2001)</p>	<p>To develop a policy to promote and facilitate healthier eating, researchers, practitioners, and the school community formed a partnership, together creating the Boost Better Breaks (BBB) school-based policy</p>	<p>Focus groups, inclusion of targeted population, collective agreement</p>	<p>Community-setting</p>

<p><b>Social Network Theory:</b> The social network theory is actually a set of theories, methods, and techniques used to understand social relationships and how these relationships might influence individual and group behaviour. The basic assumption of social network theory is that: individuals are influenced by the people they have contact with and this behaviour can either be constrained or manipulated by their social positions within different groups.</p>	<p>Tutoring programme, Fones tooth-brushing method (Reinhardt, 2009)</p>	<p>Older children enrolled in a tutoring programme for younger students. The older students received lessons on Oral Health hygiene and promotion. The older students then tutored the younger students by delivering Oral Health messages, filming themselves demonstrating the behaviour and giving tooth-brushing instructions. This resulted in significant changes in the younger peers tooth-brushing habits</p>	<p>Identification of role model, demonstrations, prompts, encouragement, information linking behaviour to outcomes.</p>	<p>School-based, home-based</p>
<p><b>PRECEDE-PROCEED:</b> Predisposing, reinforcing, and enabling constructs of educational diagnosis and evaluation policy, regulatory, organisational constructs in environmental development. Essentially, the model was designed to aid programme planners, policymakers, and organisational staff to understand the needs, goals, and problems of the community. The precede-proceed model uses a bottom up approach enabling the targeted population to have an active</p>	<p>Oral Cancer and Early detection (Gabrielle, 2008)</p> <p>Improving Oral Health of the community (Watson, 2001)</p>	<p>This intervention was aimed at dental health students. The PRECEDE-PROCEED model identified barriers to previous strategies to teach early cancer detection and guided a framework for a new teaching programme. Scores in OSCE exams increased the year of the new teaching programme.</p> <p>The PRECEDE-PROCEED model was used to guide the development and implementation</p>	<p>Knowledge acquisition, encouragement, increased self-efficacy, emphasis and development of skills, examination of new skills and knowledge.</p> <p>Pilot, test ability, confidence in using the programme, feedback and adaptations allowed.</p>	<p>University setting</p> <p>Community setting</p>

role in defining their needs, problems, and developing solutions.		of a culturally relevant Oral Health programme within a diverse community setting. The model identified the need for a pilot stag to enabled cultural barriers to be identified.		
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### 10.10 Appendix 3.10 General Health Multi-level Theories, Models, and Frameworks

Description of Theory, Model, Framework	Interventions	Description	Constructs used to underpin intervention	Environment/ setting
<p><b>Diffusion of innovations:</b> This theory focuses on the dissemination of new ideas and the systematic adoption of the innovation by individuals that were previously unaware of the innovation. Communication is essential to this model as it serves as a link between those that have know-how of the innovation and those yet to adopt this know-how.</p>	<p>Disease Prevention (McCormick, 1998)</p>	<p>The Centre for Disease Control and Prevention's School Guidelines to Prevent Tobacco Use and Addiction were developed, in part, to assist state and local education agencies in adopting and implementing effective school-based tobacco prevention and cessation programs. This project assessed state education agency awareness of and reaction to the Guidelines, and documented efforts to disseminate the Guidelines to local schools. A planned diffusion on the guidelines was taken using the principles from diffusion of innovation theory (communication, trial-ability, and observability).</p>	<p>Advice giving, encouragement, communication, information linking behaviour to outcomes, identifying barriers, piloting/trialling the programme, feedback, demonstrations.</p>	<p>School-based</p>
	<p>Smart Choices (Brink, 1995)</p>	<p>This intervention The project employed a theory-based model to disseminate information about</p>	<p>Advice giving, encouragement, information linking behaviour to</p>	<p>School and community-based.</p>

	<p>Tobacco Prevention Curriculum (McCormick, 1995)</p>	<p>a proven tobacco prevention program to opinion leaders in each district. These opinion leaders were asked to personally communicate the program information within their district using a videotape and printed materials, and advocate for program adoption. In addition to personal communication, a newsletter linked school districts.</p> <p>Teachers responsible for teaching health in school received training and a programme package to teach children about the risks of smoking. The principles of the diffusion on an innovation theory were used to train staff and promote the package.</p>	<p>outcomes, identifying barriers, demonstration and promotion.</p> <p>Advice giving, encouragement, communication, information linking behaviour to outcomes, identifying barriers, piloting/trialling the programme, feedback, demonstrations.</p>	<p>School-based</p>
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<p><b>Social Ecological Model:</b> This model is based on the assumption that behaviour is influenced by multiple complex factors in reciprocal causation. Therefore individual behaviour shapes and is shaped by the social environment. This model is similar to Social Cognitive Theory, however the social ecological theory considers social networks, public policy and other factors that make up the social system as a whole. Behaviour is not regarded a distinct entity but as a component of a whole social system.</p>	<p>Healthy Campus 2020 (American Department of Health 2012)</p>	<p>Healthy Campus 2020 explores these questions by emphasizing an ecological approach to improve student, faculty, and staff health. An ecological approach focuses on both population-level and individual-level determinants of health and interventions. It considers issues that are community-based and not just individually focused</p>	<p>Media campaigns and promotion and individualised approaches linking behaviour to health outcomes.</p>	<p>University-based</p>
	<p>10000 Steps programme (DeCocker, 2011)</p>	<p>Website, sale and loan of pedometers, environmental approaches. Only during 1st year: local media campaign, local PA projects, 10,000 steps/day message, workplace projects, project for older people, dissemination of information at schools, general practitioners and physical therapists.</p>	<p>1 year intensive promotion, continued by local community for further 3 years through media, reinforcement, increase in knowledge, confidence and self-efficacy</p>	<p>Community-based</p>
	<p>Robert Wood Johnson Foundation's Diabetes Initiative (2002-2009)</p>	<p>The initiative was implemented across lots of diverse community and allowed individualised messages, reinforcement through community settings and</p>	<p>Encouragement, community and environmental modelling and reinforcement, individualised</p>	<p>Community-based</p>

	Walking promotion (Bronson, 2005)	healthcare workers, and self-management techniques.  Tailored letters (walking trail graphics, calendar, walking trail events, theory-based messages), PA counselling by physicians and nurses, walking clubs, newspaper articles.	and information linking behaviour to consequences  Information linking behaviour to outcomes, demonstration, identifying barriers, increasing access to services, prompts, encouragement and reinforcement	Community-based
	ASSIST (Stillman, 2003)	Promoting smoke-free environments, limiting access, and increasing tobacco prices through excise taxes—were the focus of the American Stop Smoking Intervention Study (ASSIST) program. ASSIST was implemented in seventeen states through grants to state departments of health and local steering committees. Policies promoting not smoking (for example, proportion of smoke-free workplaces) increased more in ASSIST states than in other states, and smoking prevalence fell from 25.2 percent to 22.2 percent, significantly more than the decline from 24.4 percent	Information linking behaviour to outcomes, demonstration, identifying barriers, increasing access to services.	Community-based

		to 22.3 percent in the non-ASSIST states		
	Active for Life (Hillsdon, 2001)	Used mass media advertising, reinforcement and modelling across community and healthcare settings to educate and increase knowledge on the level of activity needed for adults.	Advertising, reinforcement and increasing knowledge.	Community-based
	Healthy People Project (Department of Health and Human Services, 2000).	An ecological approach focuses on both population-level and individual-level determinants of health and interventions. It considers issues that are community-based and not just individually focused	Media campaigns and promotion and individualised approaches linking behaviour to health outcomes.	Community-based
	Our Healthier Nation (Department of Health, 2000)	Looked at tackling both population and individual level determinants of health inequalities to allow communities and individuals to take control of their own health.	Media campaigns and promotion and individualised approaches linking behaviour to health outcomes.	Community-based

<p><b>Community-Based Participation Research:</b> Community-based participatory methods are an approach that equitably involves community members, organisational staff, and researchers in all aspects of the intervention development process. The different groups work in partnership to share expertise, decisions, and ownership over the programme. The aim of community-based participation is to increase knowledge and understanding of the community needs and issues to aid policy and research. The knowledge gained through engaging with the community creates an integrative intervention that is tailored to the community in an attempt to increase the success of implementation and adoption of health programmes.</p>	<p>Connect to Protect (Alacantara, 2015)</p> <p>The HOLA project (Rhodes, 2013)</p>	<p>Connect to Protect® (C2P) is a multisite research project that aims to reduce HIV/AIDS incidence and prevalence among youth through community mobilization and structural change in 15 urban cities in the United States and Puerto Rico.</p> <p>The community-based participatory research partnership engaged in a multistep process to refine a culturally congruent intervention that builds on existing community strengths to promote sexual health among immigrant Latino men who have sex with men (MSM). The steps were the following: (1) increase Latino MSM participation in the existing partnership, (2) establish an Intervention Team, (3) review the existing sexual health literature, (4) explore needs and priorities of Latino MSM, (5) narrow priorities based on what is important and changeable, (6) blend health behaviour theory with Latino MSM's lived</p>	<p>Engagement with the target population, culturally relevant, feedback and pilot.</p> <p>Engagement with the target population, culturally relevant, feedback and pilot.</p>	<p>Community-based</p> <p>Community-based</p>
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		<p>experiences, (7) design an intervention conceptual model, (8) develop training modules and (9) resource materials, and (10) pre-test and (11) revise the intervention.</p>		
	<p>The Positive Youth Project (Flicker, 2008)</p>	<p>The Positive Youth Project is a CBPR initiative that seeks to improve the conditions of Canadian young people living with HIV. Its pilot venture was a province wide needs assessment that took place between March 2002 and March 2004. Youth workers, service users and policymakers had working groups, created action, disseminated policy, and trialled and then held another working group to make changes.</p>	<p>Engagement with the target population, culturally relevant, feedback and pilot.</p>	<p>Community-based</p>
	<p>Increasing physical activity (Wilcox 2007)</p>	<p>8-week volunteer-led program, Training of church members on how to include PA in church events (e.g., bulletin inserts,</p>	<p>Engagement with the target population, culturally relevant, feedback and pilot.</p>	<p>Community-based</p>

	<p>Community Action Against Asthma (Parker, 2003)</p>	<p>praise aerobics, walking programs).</p> <p>Community Action Against Asthma (CAAA) is a community-based participatory research (CBPR) project that assesses the effects of outdoor and indoor air quality on exacerbation of asthma in children, and tests household- and neighbourhood-level interventions to reduce exposure to environmental asthma triggers. Representatives of community-based organizations, academia, an integrated health system, and the local health department work in partnership on CAAA's Steering Committee (SC) to design and implement the project.</p>	<p>Engagement with the target population, culturally relevant, feedback and pilot.</p>	<p>Community-based</p>
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<p><b>Social Network Theory:</b> The social network theory is actually a set of theories, methods, and techniques used to understand social relationships and how these relationships might influence individual and group behaviour. The basic assumption of social network theory is that: individuals are influenced by the people they have contact with and this behaviour can either be constrained or manipulated by their social positions within different groups.</p>	<p>Peer to Peer health promotion (Beck, 2014)</p>	<p>Teenagers directly communicate with and educate peers via text messages. Public health workers recruit and train peer-distributors among the target population. Peer-distributors receive prevention content from public health workers and text the intervention messages to their peers by leveraging their cell-phone network. Text messages are tailored to the individual characteristics and needs of each peer. Peers can follow-up with the peer-distributor and can in turn forward the received messages to their peers</p>	<p>Identification of role model, demonstrations, prompts, encouragement, information linking behaviour to outcomes, involvement and engagement.</p>	<p>Community-setting</p>
	<p>Shout-out health (Rothpletz-Puglia, 2011)</p>	<p>The Shout-out Health project was designed by an academic community agency team. During 3 months, health promotion topics were chosen, developed, and delivered to community members within informal social networks. The chosen community women participated in in-person or online meetings. The women identified and developed the health topics,</p>	<p>Identification of role model, demonstrations, prompts, encouragement, information linking behaviour to outcomes, involvement and engagement.</p>	<p>Community-setting</p>

		and discussed each topic with professionals and checked it for message accuracy before the women provided health promotion within their informal social networks		
<p><b>PRECEDE-PROCEED:</b> Predisposing, reinforcing, and enabling constructs of educational diagnosis and evaluation policy, regulatory, organisational constructs in environmental development. Essentially, the model was designed to aid programme planners, policymakers, and organisational staff to understand the needs, goals, and problems of the community. The precede-proceed model uses a bottom up approach enabling the targeted population to have an active role in defining their needs, problems, and developing solutions.</p>	Diabetes and Heart disease risk awareness (Kay-Post, 2015)	The Precede-Proceed model (PPM) was used as a framework to design the development, implementation, and evaluation of the programme	Assessment of the environment, resources, staff involvement, active participation.	Community-based
	Smoking cessation and prevention (Aldiabat, 2013)	8 phases of the model were used to guide the development of a smoking cessation and prevention programme to improve the quality of life for elderly adults.	Assessment of the environment, resources, staff involvement, active participation.	Nursing home
	Weight management (Cole, 2008)	A consolidated version of PRECEDE-PROCEED guided demographic, epidemiological, behavioural, organisational, and administrative diagnosis through survey research. Focus groups composed of planning/steering committee members diagnosed environmental, organizational,	Assessment of the environment, resources, staff involvement, active participation.	Community-based

		<p>administrative, and policy considerations. Objectives were set for each phase to assist with program tailoring.</p>		
	AFIX (Luna, 2003)	<p>Social, Epidemiological, Behavioural, and Environmental Diagnoses were conducted, which enabled the development of goals and objectives for AFIX, and of benchmarks for later evaluation. Factors contributing to a change in immunization practices were identified, categorized, and ranked according to importance and changeability. The high-ranking factors would drive the approach to implementation and acceptance of AFIX among Oregon's immunization providers. Process and Impact Evaluations are ongoing.</p>	<p>Identification of barriers, feedback, staff and community involvement</p>	<p>Community-based</p>
	VERB (Nickelson, 2003)	<p>The VERB programme was designed in collaboration with teacher, teenagers, and community members to create a</p>	<p>Community involvement, focus groups, media reinforcement, feedback, collaboration.</p>	<p>School-based</p>

	<p>Child pedestrian injury prevention (Howat, 1997)</p>	<p>mass marketing campaign to reduce obesity for teenagers aged between 13-19 years old.</p> <p>The program was developed, based on extensive needs assessment incorporating formative evaluations. Epidemiological, psychosocial, environmental, educational, and demographic information was gathered, organised, and prioritised. The PRECEDE-PROCEED model was used to identify the relevant behavioural and environmental risk factors associated with child pedestrian injuries in the target areas. Modifiable causes of those behavioural and environmental factors were delineated</p>	<p>Identification of barriers, feedback, staff and community involvement</p>	<p>School-based</p>
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	Farmers Market (King et al., 2010)	<p>identifying areas of potential long-term impact.</p> <p>To ensure that the farmers' market would be approved and would appeal to the target population, the following partners were included in the planning process: the neighbourhood association, the police department, the parent-teacher organisation, local family farmers and the church priest. Maintenance plans were not discussed, although a potential future need to relocate the market was raised as a result of concerns about liability from the church and complaints about increased traffic from some of the neighbours.</p>	<p>Engagement, resource identification, evaluation and feedback, resource allocation.</p>	Community-based
	Smart Streets (King et al., 2010)	<p>The coalition charged with implementing the project assessed fidelity to smart growth principles by evaluating the city's master plan and recommending ways to adapt it to meet land use</p>	<p>Engagement, resource identification, evaluation and feedback, resource allocation.</p>	Community-based

	iPlay (collard, 2010)	<p>guidelines. Maintenance plans included ongoing tracking of perceived barriers and business satisfaction and profitability; this information was collected through town hall meetings hosted by the coalition and the city council. The ultimate goal was to add language to the city's master plan to ensure application of smart growth and complete streets principles to all future land use projects</p> <p>The iPlay programme targeted injuries gained through physical activity, and consisted of a teacher's manual, informative newsletters and posters, a website, and set exercises to be carried out during physical education (PE) classes. In order to evaluate the iPlay programme for translatability and feasibility, teachers, children and parents who participated in the iPlay programme filled out a questionnaire</p>	Collaboration, reach, effectiveness, evaluation of resources	School-based
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<p><b>Oral Health Implementation Framework:</b> This is a multi-level approach that focuses on the active dissemination of interventions through considering the organisational preparedness to change and maintenance of the intervention. The framework has four main constructs: needs of the setting and individual, access to training, decision of staff to uptake the intervention and allowing staff to trial the intervention.</p>	<p>Stop Smoking (Simpson 2011)</p>	<p>An intervention to aid stop smoking was developed and implemented according to the Oral Health implementation framework. Staff were able to trail the programme, training was accessible and ensured that staff could attend, support from managers was also given.</p>	<p>Positive attitudes, encouragement, support, access, knowledge acquisition, resources.</p>	<p>Primary care settings</p>
<p><b>I-MAP Framework:</b> MAP-IT (Mobilize, Assess, Plan, Implement, Track) is a framework that can be used to plan and evaluate public health interventions in a community. Health professionals can utilise the steps in MAP-IT to create a healthy community. This process involves a series of steps to ‘map out’ the path toward the desired change in a community. MAP-IT, a step-by-step, structured plan can be developed by a coalition that is tailored to a specific community’s needs. The steps are mobilise, access, plan, implement and track</p>	<p>Healthy People 2020</p>	<p>Mobilize partners, Assess the needs of your community, Create and implement a plan to reach Healthy People 2020 objectives, Track your community’s progress.</p>	<p>Facilitate community input through meetings, events, or advisory groups, resources and access, clear objectives, implementation plan and evaluation.</p>	<p>Community-setting.</p>

**10.11 Appendix 3.11 The Behaviour Change Technique Coding  
Manual (Abraham and Michie, 2008)**

<i>Author (date)</i>	
<i>Journal, Volume, pages</i>	
<i>Techniques Included</i>	√= <i>Included</i>
<b>1 Provide general information linking behaviour to health</b>	
<b>2 Provide information on consequences</b>	
<b>3 Provide information about others' approval</b>	
<b>4 Prompt intention formation</b>	
<b>5 Prompt barrier identification</b>	
<b>6 Provide general encouragement</b>	
<b>7 Set graded tasks</b>	
<b>8 Provide Instruction</b>	
<b>9 Model/ demonstrate the behaviour</b>	
<b>10 Prompt specific goal setting</b>	
<b>11 Prompt review of behavioural goals</b>	
<b>12 Prompt self-monitoring of behaviour</b>	
<b>13 Provide feedback on performance</b>	
<b>14 Provide contingent rewards</b>	
<b>15 Teach to use prompts/ cues</b>	
<b>16 Agree behavioural contract</b>	
<b>17 Prompt practice</b>	
<b>18 Use follow up prompts</b>	
<b>19 Provide opportunities for social comparison</b>	
<b>20 Plan social support/ social change</b>	
<b>21 Prompt identification as role model</b>	
<b>22 Prompt self-talk</b>	
<b>23 Relapse prevention</b>	
<b>24 Stress management</b>	
<b>25 Motivational interviewing</b>	
<b>26 Time Management</b>	

## 10.12 Appendix 3.1 Transcription Protocol

### Transcription Protocol

#### 1. Text and Formatting

The transcriber shall transcribe all individual interviews using the following format:

- a) Arial 12-point face font
- b) 2.54 cm top and bottom, 5 cm from left margin
- c) Double spacing
- d) Entire document shall be left justified

#### 2. Labelling for interview transcripts

Individual interviews shall include the following labelling information, left justified at the top of the document:

- a) Participant ID
- b) Interview Number
- c) Date of interview
- d) Interviewer ID

The transcriber shall insert a single blank line between the file labelling information and the actual interview transcription. A double hash (##) sign shall precede and follow each participant and interviewer ID. A single return shall be inserted immediately after the source ID. The individuals comment/response shall begin on the next line.

#### 3. End of interview

In addition, the transcriber shall indicate when the interview session has reached completion by typing END OF INTERVIEW in the uppercase letters on the last line of the transcript.

#### 4. Source Labelling

Source IDs shall begin with the alpha character that designates the individuals 2 digit participant ID (e.g. ##01##) or the interviewer's ID (##VCJ##).

## **5. Content**

Audiotapes shall be transcribed verbatim (i.e., recorded word for word, exactly as said), including any non-verbal or background sounds (e.g. laughter, sighs, coughs, claps, snaps, fingers, pen clicking and car horn).

- a) Non-verbal sounds shall be typed in parentheses, for example (short sharp laugh).
- b) All mispronounced words shall be transcribed as said. The transcript shall not be 'cleaned up' by removing slang, grammatical errors, misuse of words or concepts. If an incorrect or unexpected pronunciation results in difficulties with comprehension of the text, the correct word shall be typed in square brackets.
- c) The spelling of key words, blended or compound words, common phrases and identifiers shall be standardised across all transcripts (e.g., betcha, cuz, gimme, gotta, hafta, kinda, lotta, oughta, sorta, wanna, coulda, could've, couldn't, woulda, would've, should've).
- d) Filler words shall be transcribed such as; hum, um, hm, mm, uh, mkay, mhm, yeah, yuhuh, nah, huh, ugh, whoa, oh, ah, ahah, ah.
- e) Word or phrase repetitions shall be transcribed. If a word is cut off or truncated, a hyphen shall be inserted at the end of the last letter or audible sound (e.g., wen – he went and did what I told him).

## **6. Inaudible Information**

The transcriber shall identify portions of audiotape that are inaudible or difficult to decipher. If a relatively small segment of the tape (a word or short sentence) the transcriber shall type 'inaudible segment'. This information shall appear in square brackets.

## **7. Overlapping speech**

If individuals are speaking at the same time and it is possible to distinguish what each person is saying, the transcriber shall place the phrase 'cross talk'

in square brackets immediately after the last identifiable speakers text and pick up the next audible speaker.

#### **8. Sensitive information**

If an individual uses his or her own name, another person's name, location of work or the public sector in which they work for or another area within the public sector (e.g. NHS, Local authority or children's centre) the transcriber shall place 3 crosses XXX in place of the sensitive information.

#### **9. Storage and access to audio data**

- a) The transcriber's shall have access to a shared university drive for the length of time taken to transcribe the data.
- b) Only one individual will be able to access the shared data drive at a time.
- c) The shared drive shall be accessed on campus through the University shared drive by their personal login details, the file is labelled SMILE4LIFE and is in the folder INTERVIEWS WITH POLICYMAKERS. **NO DATA IS TO BE TRANSCRIBED OFF SITE OR TRANSFERRED EXTERNALLY.**
- d) The transcribed data shall be saved in a separate folder on the shared drive labelled TRANSCRIBED INTERVIEW DATA, with each transcription being saved with the title 'interview transcript' followed by the interview number, for example interview transcript 3.
- e) Once transcription is complete the transcriber's will no longer have access to the shared drive.

### 10.13 Appendix 5.2 Example of Data Analysis

Initial Codes	Transcription	Themes
<p>Practical knowledge</p> <p>Strategic knowledge</p> <p>Observed success</p> <p>Resources</p> <p>Observed knowledge</p> <p>Partnership</p> <p>In-group</p>	<p>##VCJ##</p> <p>Um, the challenges you've been faced, the um good points, bad points.</p> <p>##01##</p> <p>Okay, the um let's say I think because we didn't have <b>anything to guide us first off</b> that was the initial challenge, <b>we had Child Smile</b>, child smile which is hugely er a lot of money is thrown at <b>Child Smile in Scotland</b>, it has a massive budget behind it and we, we, you know, as we were going into austerity at the time we knew that we needed to keep it um as <b>cos-cost neutral so we weren't going to create something that was going to er cost money to begin- so I suppose that was the initial, um, initial challenge to look at something that could be delivered out in the community at very little cost.</b> We had to look at um there's the human resources that were available to us for example so <b>utilising what was already out there</b>, um, so again that's been a challenge in itself because</p>	<p>Knowledge-how</p> <p>Knowledge-why</p> <p>Development Vision</p> <p>Knowledge-why</p> <p>Inclusion in the development</p> <p>Standardised implementation</p>

Own way of working	in XXX there was a unitary authority whereas	Implementation vision
Standardised messages	in XXX we were starting to look at several	Implementation vision
Consistent implementation	XXX at the time of trying to bring them together when they've worked in their own, um, almost silos, so there were areas doing their own work so er again that was a challenge. We had um we wanted to get the right information	Implementation vision
Observed success	out, clear very clear consistent messages out to individuals so it didn't matter who was giving	
Current implementation did not match vision	the er the oral health message whether it was another professional, whether it was you know, someone within the children's centre etc. but they were getting the same consistent messages	Standardised vs flexible implementation
Taught knowledge	so we looked at the information that was available to the population at the time, that was a challenge because there was no consistency in the messages so we really had to go back to the er drawing board, get the evidence base, which was delivering better oral health,	Knowledge-why
Development decisions	delivering better oral health as a tool kit for dental teams so it's written very much in a dental language, so we then had to get agreement on how we can make that very much	Inclusion in the development
In-group knowledge		Knowledge-how
In-group vs out group		Knowledge-why

	<p>a patient facing message that could be understood by the community bearing in mind that we all worked within public health, we all work at a certain level within public health er and therefore we all use certain language and you really had to get that language down to the reading ag-age of that population group which in some instances is about 8.</p>	
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Following the initial analysis, codes similar codes were grouped and the extracts representing each code from all of the transcripts were copied onto a document. The codes were read and developed into a theme. The following section illustrates this process with 2 policymaker transcripts.

### Codes

Development of the workforce

Unexpected challenges

Policymaker partnership

Organisational challenges

Overcoming challenges

Lack of understanding

Understanding roles

Sharing knowledge

Policy vs. population change

Method of communication

## **Data extracts for the Theme: Intra-group exclusion vs inter-group exclusion**

### **Participant 1**

we were starting to look at several XXX at the time of trying to bring them together when they've worked in their own, um, almost silos, so there were areas doing their own work so er again that was a challenge (71-73)

I said before we didn't know, people have worked within their own, um, organisations for a long time, um, and has developed up, um, programmes of work and we did take these programmes of work and we, you know, underpinned Smile4Life with the positives of each of those areas to make them feel that they were involved in the development of the programme, however there is always a level of "what's wrong with my piece of work" and "why we not doing that", so why you creating this new and there was a lack of understanding actually that, that there was a common theme from their work, we were just making sure it was evidence based, we were taking it and building a wider, um better, not better package but a wider package to utilise, using the best um things. So there is a level of resistance to um maybe make a change over into the delivery of a programme, um, which you know, it was, that was unexpected, an unexpected challenge the, the level of resistance of, of of taking up, of working with um, um (89-96).

I think there's always going to be a level of um elitism within dentistry. 178

how closely we'd worked across the um XXX, local authority seamlessly, it got to a point where we could of worked for either organisation we've worked that closely, um and that, that, that moment in time was the point where I thought "we've done it, we've created something that's broken down all the organisational ba-barriers, broken down the barriers between the community and ourselves, we have created something that is do able and I suppose that was kind of like the bomb drop moment (230-232)

Not completely convinced we've got there completely but I think the um, the drive and the um, that way of thinking is definitely embedded, we still need to bring other people on to that viewpoint 236-7

challenge each other on the thought process, challenge each other through you know and keep each other grounded through the process, um, and I think that was hugely important to, to be able to do that in a very respectful way. 274-6

Because it's about um, you know yo- your characters and your beliefs and er your commitment and um, then you know on top of that a, you know a willingness to kind of like expose yourself and almost be vulnerable to that person I suppose and that can be quite challenging to actually be exposed you know um, well maybe I'm not right on this um and to al- allow yourself to not be right sometimes. 281-4

see the other persons view and I think that's really how we were er able to, and also from the um, from the partnership of course your bringing a wealth of information from wider organisations as well so you know from the local authority they had um, there intelligence, and structure that's already in place and likewise within the NHS so you can get very channelled into your own system when you've woken up these, this wider organisation and like I say, it got to a point it's almost seamless now, that you know we could of even, you know shared offices and stuff you know what I mean, it's got to that point now where it is like that. 288-292

Yeah, yeah, I think that's probably the biggest partnership that's actually missing of it, actually because I think um as I say now the focus is on how do we really really measure the outcome of this and actually we can only go back to academia on that 392-393

I didn't expect um, so much in house challenge and I think that's been taken up a lot of time, it's taken up a lot of energy, it's taken up a lot of uh 464-465

if your just a small team or even just a couple of you um this is my team, this is you know me doing my work um and then to have somebody come along and say um actually we're going to, to create a different way of working..... even though we talk of many many examples it just wasn't seen that we were using that experience and, and you know well that's not the way I've done it, so why, why you telling me that I need to do it differently now. 504-7

they felt very very challenged. They felt challenged from um perhaps somebody coming in to their domain and trying to make change and even though every effort was made to keep them in the process, 512-513

Um to a point where um, I suppose they have created their own um, alliances amongst themselves to a degree and um, they will as a group challenge 514-15

I think in many ways, they've taken the model, jiggled it about in their head to make it fit into their old way of working 536

My previous role and then coming into this role which they obviously saw as a challenge, I can't change that. Um, I think perhaps we should of got external um people working directly with them going taking them through the change 553

we got um 2 consultants almost informing them and that really didn't work either, they still thought, they thought it was challen-. I think it's the "who are you to tell us what we're doing" 558-9

they felt that they hadn't been part of the consultation process yet they'd been part of the consultation process throughout the whole thing um so I think, um, it would have been, it's a difficult one because I suppose it, we've also tried very hard to understand where they are coming from and I say it comes down to mollycoddling, we did a lot of um, you know, mollycoddling with them and um that didn't work so really, I'm not really quite sure what the answer would have been other than not working with them in the first instance and just starting a fresh 562-566

The person at the centre of this model and work around them.... Rather than ourselves and how are we going to work out to those people. 610-614

It's been very challenging where I didn't expect it would be, 702

## **Participant 2**

so the first sort of experience was about us coming together as a team and to, and to bring in the best of what we'd, we'd experienced and what we knew about it what we needed to put into this one particular programme so the first element was team building. 54-56

there were four of us infact at the beginning who kind of brought smile for life together 63

I think we sort of, were not only experiencing working as a team with each other but also experiencing different concepts as we thought about how we were gonna deliver. Something which we wanted to do but we had to be very pragmatic aswell, so. Er, we then had erm, we moved on to planning and we had sort of, quite in-in-depth plans. 67-69

And then, as we kind of moved into an operational phase erm.... there was lots of problems on the way aswell so we experienced erm many problems and erm so trying to solve those problems aswell, things like conflict management etcetera, have really come in and I've experienced quite alot of erm, behaviour shall we say as we've moved through the kind of, you know and we're still in the operational phase 72-76

the oral health XXX who are the XXX experts, there have been some real challenges with them, they've erm, to be perfectly honest, not got on erm, with erm, other XXX of the team, they've had erm I believe, I believe they've had reasons, been alot of conflict erm, to manage between erm, you know the essentially the XXX and the erm oral health XXX, that's probably been the, the biggest thing. 102-4

**Theme: Intra-group exclusion vs inter-group exclusion**

When Smile4Life was developed it required 2 separate organisations to create a unified structure of people, resources, experiences and knowledge. In order to work together as a Smile4Life team, boundaries needed to be broken and the formulation of one unified team was required, thus creating relationships.

## 10.14 Appendix 6.1 Ethical Approvals for Policymaker and Implementer studies



6 December 2012

Paola Dey / Victoria Appleton  
School of Postgraduate Medicine & Dental Education  
University of Central Lancashire

Dear Paola / Victoria

**Re: STEM Ethics Committee Application**  
**Unique Reference Number: STEM 080 FR**

The STEM ethics committee has granted approval of your proposal application '**Understanding policymakers' experiences of an oral health promotion programme (Smile4Life)**'.

Please note that approval is granted up to the end of project date or for 5 years, whichever is the longer. This is on the assumption that the project does not significantly change, in which case, you should check whether further ethical clearance is required.

We shall e-mail you a copy of the end-of-project report form to complete within a month of the anticipated date of project completion you specified on your application form. This should be completed, within 3 months, to complete the ethics governance procedures or, alternatively, an amended end-of-project date forwarded to [roffice@uclan.ac.uk](mailto:roffice@uclan.ac.uk) quoting your unique reference number.

Yours sincerely

Kevin Butt  
Vice Chair  
**STEM Ethics Committee**

23 April 2014

Paola Dey / Victoria Appleton  
School of Medicine and Dentistry  
University of Central Lancashire

Dear Paola / Victoria

**Re: STEM Ethics Committee Application**  
**Unique Reference Number: STEM 080**

The STEMH Ethics Committee has approved your proposed amendment – re recruitment process - to your application '**Understanding the perspectives of implementers from an early years' settings, regarding the delivery and adoption of an oral health promotion programme**'.

Yours sincerely  
Tal Simmons  
Chair  
**STEMH Ethics Committee**

**Research and Development**  
Clinical Research Centre  
2nd Floor, Area 5, Blackpool Victoria Hospital  
Blackpool Teaching Hospitals NHS Foundation Trust  
Whinney Heys Road  
Blackpool  
Lancashire  
FY3 8NR

**R&D Director: Dr Megan Thomas**  
[dr.thomas@bfwhospitals.nhs.uk](mailto:dr.thomas@bfwhospitals.nhs.uk)

**Associate R&D Director: Dr Peter Isaacs**  
[dr.isaacs@bfwhospitals.nhs.uk](mailto:dr.isaacs@bfwhospitals.nhs.uk)

**R&D Manager: Michelle Stephens**  
[michelle.stephens@bfwh.nhs.uk](mailto:michelle.stephens@bfwh.nhs.uk)

**R&D Officer: Helen Spickett**

[helen.spickett@bfwhospitals.nhs.uk](mailto:helen.spickett@bfwhospitals.nhs.uk)

**R&D Administrator: Maureen Morgan**  
[maureen.morgan@bfwhospitals.nhs.uk](mailto:maureen.morgan@bfwhospitals.nhs.uk)

**RESEARCH**

26th March 2014

Miss Victoria Appleton  
University of Central Lancashire  
School of Medicine & Dentistry  
Greenbank Building  
PR1 2HE

Dear Miss Appleton

**R&D:** RD0 0871

**Lead Researcher:** Miss Victoria Appleton

**Project Title:** Experience of Staff Implementing Smile-4-Life

I am pleased to inform you that the research approval administration process for your project has been completed successfully. The Trust grants approval for this research project to take place and is satisfied it passes site assessment requirements.

Yours sincerely

Michelle Stephens

M.A. Stepanof

Research & Development Manager

Lancashire Care   
NHS Foundation Trust

**Lancashire Care NHS Foundation Trust**  
Research and Development  
The Lantern Centre  
Vicarage Lane  
Fulwood  
Preston  
PR2 8DW  
Tel: 01772 773498/773826  
[R&D@lancashirecare.nhs.uk](mailto:R&D@lancashirecare.nhs.uk)

March 2014

Ref: 14/04

Miss Victoria Appleton

PhD Student

University of Central Lancashire

School of Medicine and Dentistry

Greenbank Building

Preston

PR1 2HE

Dear Miss Appleton,

Letter of access to undertake research on the following study: **Understanding implementers experiences with an oral health promotion programme, Smile4Life**

This letter should be presented to each participating organisation before you commence your research at that site. The participating organisation is Lancashire Care NHS Foundation Trust.

In accepting this letter, Lancashire Care NHS Foundation Trust confirms your right of access to conduct research through their organisation for the purpose and on the terms and conditions set out below. This right of access commences on 10th March 2014 and ends on 10th October 2014 unless terminated earlier in accordance with the clauses below.

You have a right of access to conduct such research as confirmed in writing in the letter of permission for research from this NHS organisation. Please note that you cannot start the research until the Principal Investigator for the research project has received a letter from us giving confirmation of agreement to conduct the research.

No organisation will indemnify you against any liability incurred as a result of any breach of confidentiality or breach of the Data Protection Act 1998. Any breach of the Data Protection Act 1998 may result in legal action against you and/or your substantive employer.

If your current role or involvement in research changes, or any of the information provided in your Research Passport changes, you must inform your employer through their normal procedures. You must also inform your nominated manager in this NHS organisation.

Yours sincerely

Dr Heather Iles-Smith

A handwritten signature in black ink, appearing to read 'H. Iles-Smith', with a stylized, flowing script.

Research & Innovation Lead

Victoria Appleton  
PhD student  
UCLAN

Phone: 07920 098356  
Fax: 01772 531525  
Email: Cath.Topping@lancashire.gov.uk

Your ref: UCLAN/ORAL HEALTH  
Our ref: CT/meeting to agree access  
Date: 31<sup>st</sup> March, 2014

Request: To have access to LCC Children's Centres and NHS staff involved in the Smile4Life award.

Dear Victoria

Thank you for your e-mail informing me of the next stage of your research which requires you to conduct interviews with those involved in implementing Smile4Life.

The first stage involves NHS staff who work with early years settings, you have been granted Ethics approval, approval from managers and NHS governance approval. With this in place we are happy for you to continue with this work.

I have been given permission by my senior manager to agree to you holding interviews to review the partnership working and the work to establish the award.

We wish you all the very best with your PhD and look forward to seeing your conclusions and any recommendations.

I look forward to speaking to you in the near future.

Yours sincerely

Cath Topping  
Health Co-ordinator,

## 10.15 Appendix 6.2 Participant Information Sheet



### Participant Information Sheet

**Title of project: Understanding policymakers' experiences with an Oral Health promotion programme (Smile4Life).**

I would like to invite you to take part in my PhD research. Before you decide, I would like you to understand why the research is being done and what it would involve for you. I am happy to go through the information sheet with you and answer any questions you have. I suggest this should take about 10 minutes.

Talk to others about the study if you wish.

#### **What is the purpose of the study?**

The purpose of the study is to understand the development, implementation and adoption of Smile4Life, from the perspectives of those with first-hand experience of the programme. The aim is to gain a detailed understanding of individual experiences, expectations, barriers, facilitators, successes and failures with the development, delivery and adoption of Smile4Life. It is hoped that your perspective will help in the future development and planning of health promotion programmes.

#### **Why have I been asked to participate?**

You have been asked to consider participating because of your involvement with Smile4Life and your experience with the programme will be important to the study.

#### **Do I have to take part?**

It is up to you to decide to join the study. If you agree to take part, I will then ask you to sign a consent form. Even if you decide to take part then you do not have to answer all the questions and you can stop the interview at any time. You are free to withdraw from the interview at any time, without giving a reason. Withdrawal from the study will only be possible up to one month after the interview has been undertaken.

#### **What will happen to me if I take part?**

The study will involve 10 semi-structured interviews with policymakers (e.g., Local authority staff and dental public health consultants, project managers, and policy and development officers). You will be 1 of the 10 people taking part in the interviews. The interview will last around 45-60 minutes. You will be asked a series of questions that allow for exploration of your personal experiences with Smile4Life. Interviews will be conducted at a time and place

that is convenient for you. The interviews will be audio-recorded. If you do not wish to be audio-recorded then written notes can be taken instead.

**Will what I say in my interview be kept confidential?**

I will sign a declaration to promise not to divulge specific details of the interview except to other researchers working with me on the study and a transcriber who will also sign a declaration to promise not to divulge any information. All information will be kept confidential. Any links between participants and the interviews will be destroyed a month after the interview. Interview data will then be anonymised so you cannot be identified. Only the research team and transcriber will have access to the anonymised transcripts, which will be kept in a locked filing cabinet and password protected computers. In line with university policy, all data is to be stored for a minimum of 5 years.

Only anonymised quotes will be used when presenting the findings of the study and care will be taken that quotes cannot be attributable to any source.

**What are the disadvantages of taking part?**

The research team does not think that there are disadvantages to taking part although the interviews will require 45-60 minutes of your time.

**What are the possible benefits of taking part?**

The research team cannot promise that the study will help you but the information we gain from your interview will be used to help improve our knowledge on the development, implementation and adoption of Oral Health programmes.

**What if there is a problem?**

If you have a concern about any aspect of this study, you should ask to speak to the researchers who will do their best to answer your questions:

Interviewer: Victoria Appleton, email: [vappleton1@uclan.ac.uk](mailto:vappleton1@uclan.ac.uk)

[Director](#) of Studies: Professor Paola Dey, Tel: 01772892782 or email: [MPDey@uclan.ac.uk](mailto:MPDey@uclan.ac.uk)

**What will be done with the information I give?**

It will form the basis of a PhD thesis and published in academic journals. It will be presented at conferences and meetings. The overall findings will be fed back to the Smile4Life team.

**Who is funding the research?**

The research is part of a PhD studentship funded by The University of Central Lancashire.

**Who has reviewed the study?**

This study has been reviewed and given a favourable opinion by The University of Central Lancashire STEM Ethics Committee.

**Contact details of members of the research team**

**Research student:** Victoria Appleton

email: [vappleton1@uclan.ac.uk](mailto:vappleton1@uclan.ac.uk)

**Director of Studies:** Professor Paola Dey

email: [MPDey@uclan.ac.uk](mailto:MPDey@uclan.ac.uk)

**2<sup>nd</sup> Supervisor:** Professor StJohn Crean

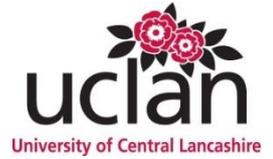
email: [screan@uclan.ac.uk](mailto:screan@uclan.ac.uk)

**3<sup>rd</sup> Supervisor:** Professor Bernie Carter

email: [bcarter@uclan.ac.uk](mailto:bcarter@uclan.ac.uk)

## 10.16 Appendix 6.3 Consent Form

### Understanding policymakers' experiences with an Oral Health promotion programme (Smile4Life).



#### CONSENT FORM – INDIVIDUAL INTERVIEW

**Please insert your initials in the boxes provided to indicate 'YES' to the following statements:**

I have read and understood the information sheet and I have had the opportunity to ask questions	<input type="checkbox"/>
I agree to the interview being audio-recorded and/or written notes being undertaken	<input type="checkbox"/>
I understand that I am free to not answer any questions during the interview and may stop the interview at any point	<input type="checkbox"/>
I understand I will be able to withdraw from the study within one month after the interview	<input type="checkbox"/>
I understand that my participation will be anonymous and any details that might identify me will not be included in reports or other publications produced from the study	<input type="checkbox"/>
I understand that a transcriber will have access to the audio-recording of the interview, for transcription purposes.	<input type="checkbox"/>
I agree to anonymised quotes being used within reports/other publications produced from the study	<input type="checkbox"/>
I understand that the University of Central Lancashire can access the data files for audit purposes	<input type="checkbox"/>
I agree to take part in the interview	<input type="checkbox"/>

Name (PRINT):	Date:
Signature:	
Name of researcher taking consent:	
Signature:	Date:

<p>If you would like a copy of the key themes to emerge from this study please indicate how you would prefer to receive a copy of this document, i.e. through email or by post (home or work address) and give your contact details.</p>	<p>I would like to receive a copy of the key themes Yes/No</p> <p>I would like to receive them by Email/Post</p> <p>Contact details:</p>
--	--

## 10.17 Appendix 6.4 Good Clinical Skills Training Certificate



## 10.18 Appendix 6.5 Research Passport Validation Page

<b>Section 7</b>			
<b>This section should be completed by HR in the Lead NHS organisation, only if additional checks are undertaken</b>			
The following additional checks have been completed:			
Having confirmed that the necessary additional pre-engagement checks have been completed, I am satisfied that the above named researcher is suitable to carry out the duties associated with their research activity outlined in this Research Passport.			
Signed:		Date:	
Name:		Job Title:	
Organisation:		Department:	
Email:			
<b>Section 8 - For Office Use Only</b>			
<i>This section should be completed by the NHS R&amp;D office that received the initial application. The NHS R&amp;D office must countersign and date retained photocopies of the documents. The grey section must be completed before the form is returned to the applicant.</i>			
CV reviewed?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Training?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Evidence of qualifications?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Appendix pages reviewed?	Numbers: <i>n/a</i>
Professional registration details reviewed?	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>	Occupational health clearance reviewed?	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>
Criminal record disclosure reviewed?	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>	Date of disclosure:	Disclosure No: <i>/</i>
For regulated activity as defined in the Safeguarding Vulnerable Groups Act 2006, as amended (in particular by the Protection of Freedoms Act 2012), did the criminal record disclosure confirm a satisfactory check against the appropriate ISA barred list(s)			
Enter Electronic Staff Record Number (if issued): <i>/</i>			
Confirmation of valid Research Passport:			
Project specific <input checked="" type="checkbox"/> Three-year <input type="checkbox"/> Other End date <input type="checkbox"/> Date:			
Signed:		Date: <i>10/3/14</i>	
Name:		<i>BEVERLEY LOWE</i>	
NHS Organisation Name and contact details			
<i>LANCASHIRE CARE NHS FOUNDATION TRUST</i>			
<i>01772 773498</i>			
<i>BEVERLEY.LOWE@LANCASHIRECARE.NHS.UK</i>			
Date Honorary Research Contract/letter of access issued (delete as appropriate)			<i>10/3/14</i>

## 10.19 Appendix 6.6 Policymakers Interview Schedule

### Opening:

**(Establish Rapport)** *[Shake hands]* My name is Victoria Appleton and I am a PhD student at UCLan, I am interested in understanding your experience with Smile4Life. You have been chosen for interview due to your involvement with the programme. It is hoped that your experiences will aid the future facilitation of health programmes.

**(Purpose)** I would like to ask you several questions regarding your background, experience and perspectives with Smile4Life, the ways the programme might be improved, what aspects of the programme worked well and any other comments you might want to make about the programme.

**(Motivation)** I hope to use your comments to understand ways to improve Oral Health through the experiences of people directly involved with Oral Health promotion programmes. It is hoped that this research will guide the development of a model aimed at improving Oral Health.

**(Time Line)** I anticipate that the interview should take around 45-60 minutes. If you have less time available, please let me know and I will adjust the interview to suit you.

### Questions

1. Tell me about the job that you are doing now?
  - How does it fit with Smile4Life?
  - How did you get involved with Smile4Life?
  - How much of your time does Smile4Life take up?

*In the next part of the Interview I am interested in your experiences and opinions of Smile4Life, so I will start generally and then prompt you for some specific examples*

2. Please tell me about how you became involved with Smile4Life?
3. Please tell me about your experiences with Smile4Life?
  - Please tell me about any challenges you have faced with Smile4Life?
  - Out of all your experiences with Smile4Life, What are you most proud of?
  - *Are there any experiences with Smile4Life that you regret or you have found difficult?*

*Smile4Life states that it is an evidenced based Health promotion programme. In the next part of the interview I am interested in the evidence base behind Smile4Life.*

4. Please explain any guiding principles and evidence base that you believe have influenced the development and implementation of the programme?

- Are there any other guiding principles that you used during your involvement in the programme?
- Was it modelled on other health programmes?
- Was it modelled on your previous experiences?

*In the next set of questions I am interested in your expectations of the programme and its success and failings of. Again I will start off with a general question*

5. What did you expect would happen with the programme?

- Where your expectations realised?
- In what way?
- What expectation weren't realised?
- In what way?

6. What impact do you think Smile4Life has had on the staff, parents, dentists, children and anyone else that have been involved in the programme?

- Is there anything you would do differently?
- Is there anything that has worked particularly well?
- Is there anything that hasn't worked well?

7. What do you think are the main measures in determining the impact of Smile4Life?

- Where is the evidence of measures and results?
- When will you know if the programme has been successful?

*I am now interested in getting a summary of your overall experiences, perspectives and opinions of the programme. So I will ask you a couple summary questions.*

8. In just three words, how would you describe your overall experience with Smile4Life?

9. If you were advising someone that was developing a health promotion programme, what advice would you give to them?

*Well it has been a pleasure to find out more about your involvement and experiences with Smile4Life. Is there anything that you would like to add or feel that we have not discussed and should?*

*I would like to thank you for your time, your comments will be very useful for my research and I will be in touch shortly with the emerging themes from the interviews – Do you have any questions? –*

*I should have all the information I need, but would it be ok to contact you on the number or email address provided if I need to clarify any points? –*

*Thanks again and do not hesitate to contact me with any questions that you may have regarding the research.*

## 10.20 Appendix 6.7 Implementers Interview Schedule

### **Opening:**

**(Establish Rapport)** *[Shake hands] My name is Victoria Appleton and I am a PhD student at UCLan, I am interested in understanding your experience with Smile4Life. You have been chosen for interview due to your involvement with the programme. It is hoped that your experiences will aid the future facilitation of health programmes.*

**(Purpose)** *I would like to ask you several questions regarding your background, experience and perspectives with Smile4Life, the ways the programme might be improved, what aspects of the programme worked well and any other comments you might want to make about the programme.*

**(Motivation)** *I hope to use your comments to understand ways to improve oral health through the experiences of people directly involved with oral health promotion programmes. It is hoped that this research will guide the development of a model aimed at improving oral health.*

**(Time Line)** *I anticipate that the interview should take around 45-60 minutes. If you have less time available, please let me know and I will adjust the interview to suit you. You don't have to answer any questions that you don't want to and you can stop the interview at any time.*

### **Questions**

10. *Tell me about the job that you are doing now?*

- *How does it fit with Smile4Life?*
- *How did you get involved with Smile4Life?*
- *How much of your time does Smile4Life take up?*

*In the next part of the Interview I am interested in your experiences and opinions of Smile4Life, so I will start generally and then prompt you for some specific examples*

11. *Please tell me about how you became involved with Smile4Life?*

12. *Please tell me about your experiences with Smile4Life?*

- *Please tell me about any challenges you have faced with Smile4Life?*
- *Out of all your experiences with Smile4Life, What are you most proud of?*
- *Are there any experiences with Smile4Life that you regret or you have found difficult?*

*Smile4Life states that it is an evidenced based Health promotion programme. In the next part of the interview I am interested in understanding if you have come across other evidence based programmes and if so, how they compare to Smile4Life.*

*Please explain any other evidenced based programmes that you have come across?*

- *How does this programme compare to Smile4Life?*
- *Would you make any changes to either programme?*
- *Would you use elements from both programmes?*

*In the next set of questions I am interested in your expectations of the programme and its success and failings of. Again I will start off with a general question*

**13.***Could you discuss the expectations that you had regarding the implementation of the programme?*

- *Where your expectations realised?*
- *In what way?*
- *What expectation weren't realised?*
- *In what way?*

**14.***Could you explain the impact that you think Smile4Life has had on the staff, parents, dentists, children and anyone else that have been involved in the programme?*

- *Is there anything you would do differently?*
- *Is there anything that has worked particularly well?*
- *Is there anything that hasn't worked well?*

**15.***Could you discuss what you consider to be the main measures in determining the impact of Smile4Life?*

- *Where is the evidence of measures and results?*
- *When will you know if the programme has been successful?*

*I am now interested in getting a summary of your overall experiences, perspectives and opinions of the programme. So I will ask you a couple summary questions.*

**16.***In just three words, how would you describe your overall experience with Smile4Life?*

**17.***If you were advising someone that was developing a health promotion programme, what advice would you give to them?*

*Well it has been a pleasure to find out more about your involvement and experiences with Smile4Life. Is there anything that you would like to add or feel that we have not discussed and should?*

*I would like to thank you for your time, your comments will be very useful for my research and I will be in touch shortly with the emerging themes from the interviews – Do you have any questions? –*

*I should have all the information I need, but would it be ok to contact you on the number or email address provided if I need to clarify any points? –*

*Thanks again and do not hesitate to contact me with any questions that you may have regarding the research.*