'Exploring the factors affecting the implementation of tobacco and substance use interventions within the secondary school setting'

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DECLARATION

I hereby declare that the work presented in this thesis is my own and that, to the best of my knowledge and belief, it has never been published or presented for the award of any other degree or diploma of the university or other institute of higher learning

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December 2018

Abstract

Background

The secondary school provides a key opportunity to target health related behaviour change for adolescents. Detrimental behaviours, such as tobacco or substance use, adopted during adolescence, can have a significant impact across the life-course. As the majority of adolescents attend school until at least 16 years of age, research has identified that interventions modifying risky behaviours can be effectively introduced within schools. However, there are currently no defined pathways in the UK around how to implement such school-based interventions.

Aim

The aim of this PhD study was to explore the factors affecting the implementation of tobacco or substance use interventions within the secondary school setting, in order to inform the development of an implementation model.

Methods

In order to explore the above aim the following research methods were chosen:

1) A review of the implementation science literature was undertaken to increase the understanding around the relevant implementation literature.

2) A systematic review synthesised the literature around the implementation of tobacco or substance use interventions in a secondary school.

3) Semi-structured interviews were conducted with school staff and local authority practitioners to explore the factors affecting school-based implementation.

4) These findings informed the development of an implementation process model.

Results

The systematic review synthesised 19 quantitative and qualitative papers, which focused on both tobacco or substance use interventions, delivered by differing providers. Key facilitating factors for implementation were positive organisational climate, adequate training, and

teachers and pupil's motivation. Barriers included heavy workloads, budget cuts, and insufficient resources or support.

Twenty-three interviews with school staff and Local Authority staff were undertaken. Although there was a large degree of heterogeneity apparent across the different schools and local authorities, five overarching themes were identified: provider factors; young people factors; school factors and wider factors, which were proposed to categorise the factors affecting implementation.

These findings were triangulated to inform the development of an implementation process model.

Conclusions

There has been limited previous research focusing on implementation within UK secondary schools. Therefore, the assessment of factors affecting implementation will be useful to both researchers and practitioners undertaking school-based tobacco or substance use implementation. By undertaking this study, the findings informed the development of an implementation model, which aims to be relevant and accessible, and is the first of its kind to offer a practice focused approach to improve school-based implementation.

Keywords: *Implementation Science, Secondary School, Substance Use, Alcohol, Tobacco, Drugs, Intervention, Normalization Process Theory, NPT.*

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Table of Contents

List of Figures

List of Tables

List of Abbreviations and Acronyms

ABI	Alcohol Brief Intervention
ACPO	Association of Chief Police Officers
ANOVA	Analysis of Variable
ASSIST	A Stop Smoking In Schools Trial
AUDIT	Alcohol Use Disorders Identification Test
BI	Brief Intervention
BMJ	British Medical Journal
C4L	Change 4 Life
CASP	Critical Appraisal Skills Programme
CFIR	Consolidated Framework for Implementation Research
CIHR	Canadian Institute of Health Research
CINAHL	Cumulative Index to Nursing and Allied Health Literature
CMO	Chief Medical Officer
CNS	Central Nervous System
COPD	Chronic Obstructive Pulmonary Disorder
c-RCT	Cluster Randomised Controlled Trial
CRUK	Cancer Research United Kingdom
CTC	City Technology College
DARE	Drug Abuse Resistance Education
DfE	Department for Education
DfES	Department for Education and Skills
DoH	Department of Health
DPH	Director of Public Health
EIDM	Evidence Informed Decision Making
EPHPP	Effective Public Health Practice Project
ERIC	Education Resource Information Centre
ESRC	Economic and Social Research Council

HSCIC	Health and Social Care Information Centre
HT	Head Teacher
IAS	Institute of Alcohol Studies
IS	Instructional Strategy
JBI	Joanna Briggs Institute
kiR	Keepin' It REAL
KS3	Key Stage Three
KS4	Key Stage Four
KTA	Knowledge To Action
MeSH	Medical Subject Heading
MRC	Medical Research Council
LA	Local Authority
MSPP	Minnesota Smoking Prevention
NE	North East
NEET	Not in Education, Employment or Training
NHS	National Health Service
NGA	National Governors Association
NICE	National Institute for Health and Care Excellence
N-O-T	Not on Tobacco
NPS	Novel Psychoactive Substances
NPM	Normalisation Process Model
NPT	Normalisation Process Theory
OMRU	Ottawa Model of Research Use
Ofsted	Office for Standards in Education, Children's Services and Skills
PARIHS	Promoting Action on Research Implementation in Health Services
PH	Public Health
PHE	Public Health England
PPI	Patient and Public Involvement
PS	Programme Specialist

PW	Project Worker
PSHE	Personal, Social, Health and Economic Education
RCT	Randomised Controlled Trial
RE-AIM	Reach, Efficacy, Adoption, Implementation and Maintenance
RtI	Response to Intervention
RY	Reconnecting Youth
SBIRT	Screening, Brief Intervention and Referral to Treatment
SDD	Smoking, Drinking and Drug-use
SEN	Special Education Needs
SES	Socioeconomic Status
SHAHRP	School Health and Alcohol Harm Reduction Project
SLT	Senior Leadership Team
SRE	Sex, Relationship Education
SS	School Staff
StaRI	Standards for Reporting Implementation
TCYL	Take Charge of Your Life
TIDieR	Template for Intervention Description and Replication
TDF	Theoretical Domains Framework
TES	Times Educational Supplement
TLFB	Time Line Follow Back
TND	Towards No Drug Use
TUPE	Tobacco Use Prevention Education
TUWYT	Tell Us What You Think
UK	United Kingdom
US	United States
VPISU	Virginia Polytechnic Institute and State University
WHO	World Health Organization

Chapter One

Introduction to the PhD Study

1.1 Background to the Research

The aim of this PhD study was to explore the factors affecting the implementation of a tobacco and substance use intervention within the secondary school setting, in order to inform the development of an implementation model. Due to national governance, the vast majority of adolescents in the UK attend a provider of secondary level education, until at least the age of 16 years (GOV.UK, 2016a). Previous public health research has identified that the school environment can act as an appropriate setting in which to introduce behavioural interventions to address risk-taking behaviour (NICE, 2007, NICE, 2013). Secondary schools specifically, can provide a key opportunity in which to target and proactively encourage behaviour change in adolescents, as adolescence remains to be a fundamental stage for physical and mental development, in regards to risk-taking behaviour (Umberson et al., 2010, Viner et al., 2012). This is due to the fact that adolescence is often identified as a period largely associated with the increased uptake of behaviours that can have potentially dangerous outcomes (Adams et al., 2002). Detrimental, or risk-taking behaviour that is undertaken during adolescence, such as substance misuse or unprotected sexual activity, can significantly impact the health and social outcomes experienced across the life-course (Umberson et al., 2010, Viner et al., 2012).

Interventions aiming to modify risky or unhealthy behaviour in adolescence, which will be defined and discussed in more detail in the upcoming sections, not only to seek to improve these health and social implications in the short term, but they can also seek to improve an adolescent's long-term health and social outcomes. This study focused specifically on one element of adolescence; risky behaviour, namely the use of tobacco and the misuse of other substances, such as alcohol and illegal drugs, hereafter stated as 'substances/substance use'. There currently remains to be a distinct lack of defined and standardised pathways in the UK around how to facilitate and hence implement a novel tobacco or substance use intervention or elicit a change in practice to a previous substance use programme, within secondary school settings. Therefore, the aim of this study was to explore the factors affecting the

1

implementation in this setting, in order to be able to inform the development of an implementation model, which could be used to facilitate the embedding of a new tobacco or substance use intervention into routine school practice.

1.2 Definition of Adolescence

The upcoming sections will focus on defining and discussing the risky behavior of adolescents, and synthesising the types of behavioural interventions that can be delivered specifically within a school setting. However, it can often be difficult to define the umbrella term 'adolescence' as often the literature uses the term heterogeneously. The definition that will be adhered to within this thesis, is the World Health Organization's (WHO) definition, which identifies adolescence as: *'the period in human growth and development that occurs after childhood and before adulthood, from the ages of 10 to 19'* (WHO, 2015).

1.3 Adolescents and Risk Taking Behaviour

As briefly mentioned, the period of adolescence has been identified as a critical determinant of an individual's health throughout their life course (Umberson et al., 2010, Viner et al., 2012, Santelli et al., 2015). Due to their young biological age, adolescents are generally thought to be of 'good health', as the vast majority of adolescents possess a fully functioning immune system, and are less likely to develop chronic, non-communicable diseases (Hurrelmann and Richter, 2006, Santelli et al., 2015). Nevertheless, the age period of 14 years to 22 years has been defined as the greatest window of "*vulnerability for risk consequences across the lifespan*" (Adams et al., 2002, page 1). Furthermore, the risk-taking behavior that is frequently adopted during adolescence can have significant implications across adulthood (Adams et al., 2002, Maes, 2003, Santelli, 2015).

Although risk-taking behaviour can be defined differently in different contexts, it is commonly thought as behaviour which is deeply influenced by a combination of factors such as, an individual's goals, their personal values, the health and life options available to them, and ultimately the resulting outcome or outcomes (Byrnes et al., 1999, Steinberg, 2007, Knoll et al., 2015). Therefore, risk-taking behaviour can be more simply defined as the choice of an option that has the potential to lead to negative consequences (Byrnes et al., 1999). The types of risk-taking behaviours that adolescents frequently engage in can include harmful tobacco

or substance use, unprotected sexual activity, vandalism or criminal activity, or behaviours that can result in accidents or serious injuries, such as reckless driving or violent behaviour (Steinberg, 2008, Newbury-Birch et al., 2009). In addition, risk-taking behaviour in adolescence is often not disparate and can be interlinked, resulting in the clustering of risky behaviours (Jackson et al., 2012, Lazzeri et al., 2018). Adolescents who report engaging in risky substance use for example, are more likely to be involved in risky sexual behaviour or criminal behaviour (Adams et al., 2002, Maxwell, 2002, Carney and Myers, 2012, Ritchwood et al., 2015, Lazzeri et al., 2018).

Although, the WHO definition of adolescence, as presented in Section 1.2, identifies adolescence as being a relatively broad age group, social exploration, and hence the increased uptake of risky behaviours is most frequently observed in the later stages of adolescence (Hurrelmann and Richter, 2006, WHO, 2015). The later stages of adolescence are more specifically defined as being between the ages of 15 and 19 years (Hurrelmann and Richter, 2006, WHO, 2015). This is largely due to the fact that an adolescent, who is within the late adolescence phase, is much more susceptible to social influences, such as peer pressure, experimentation, and rebellion (Steinberg and Cauffman, 1996, Steinberg, 2008, Hoorn et al., 2017). These social influences are associated with an increased tendency to partake in risk-taking behaviours, such as drug taking or risky sexual encounters, which can play a substantial role in influencing their long-term health outcomes (Hurrelmann and Richter, 2006, Steinberg, 2007, Selemon, 2013, Hoorn et al., 2017).

1.3.1 Adolescents and Risky Tobacco or Substance Use Behaviour

This PhD study set out to specifically focus on adolescent's risky behaviour in the form of tobacco or substance use behaviour. The focus of tobacco and substance use, as opposed to other types of adolescent risky behaviours was adopted due to the scale of the issue and the fact that a large proportion of the most prevalent chronic diseases in the UK, such as *cancers, cardiovascular diseases* (atherosclerosis, angina, heart failure), *cerebrovascular disease* (strokes) *lung diseases* (chronic obstructive pulmonary disease (COPD), bronchitis, emphysema) and *liver diseases*, are frequently linked with risky tobacco or substance use behavior (Umberson et al., 2010, Santelli et al., 2015, NHS, 2016). These groups of chronic conditions remain the five leading causes of death in adults the UK, and therefore contribute to a significant proportion of the current healthcare spending (NHS, 2016). However, they are also largely preventable, for example 85% of cases of COPD are attributable to smoking, and

the overall prevalence of liver cancer has increased by 20% in the last 10 years, as a direct result of risky alcohol consumption (NHS, 2016).

As tobacco or substance use habits that are adopted during adolescence are significantly more likely to continue into adulthood, they have the potential to have a long-lasting impact on an individual's health, their wellbeing and also their social outcomes (Umberson et al., 2010, Craigie et al., 2011, WHO, 2015). The long-term exposure to a specific, harmful risk factor, or often the combination of interacting risk factors, can dramatically increase an individual's risk of developing one of the aforementioned chronic conditions or experiencing issues with their mental health (Umberson et al., 2010, WHO, 2015).

Looking specifically at the impact of substance use in adolescence; the risky use of substances by adolescents has been identified as being hazardous, as adolescents have not completed their physical development, and are likely to be continuing with the intricate series of developmental processing (Steinberg, 2007). Even minor changes that are made to their development pathway can result in a major impact to both the developing structures and overall functioning of the brain (Lubman et al., 2007, Hoyt et al., 2012, Selemon, 2013). Internal systems, such as the Central Nervous System (CNS), are extremely vulnerable to harmful chemicals, such as those found in alcohol or drugs, and such chemicals can potentially result in a plethora of changes to the developing structures and processing of fundamental organs, such as the brain (Blakemore and Choudhury, 2006, Lubman et al., 2007, Selemon, 2013). Adolescent substance use has also been linked with the development or exacerbation of mental health disorders, such as depression or anxiety (Steinberg, 2008). In addition, the progression of mental health disorders can act as a gateway to other serious issues, such as the presence of suicidal thoughts, and adolescents engaging in other previously discussed examples of risk taking behaviour, such as criminal activities, violent behaviour, or accidents (Steinberg, 2008).

This highlights that adolescent substance use not only has the potential to negatively impact on health, it can also be linked with negative social outcomes (Steinberg, 2008). Adolescents who regularly use substances often experience difficulties with their educational attainment and can often be involved with crime or other forms of antisocial behaviour (Steinberg, 2008). Therefore, the impact of adolescent tobacco or substance use, and the continued use into adulthood can be monumental when considering the broader societal issues, such as the restricted healthcare spending, crime and unemployment rates (Staff et al., 2010). The upcoming sections will focus on specific adolescent tobacco and substance use behaviours including alcohol consumption, drug use and tobacco use. They will present the legal stance of adolescents using each substance, as although they are all illegal for under 18-year olds,

the conditions and ramifications vary. They will also define what constitutes as risky usage and will present the current prevalence of usage by adolescents in England.

The main source of data used to identify the scale of the issue of adolescent tobacco and substance use, was the most recent *'Smoking, drinking and drug use among young people in England (SDD) survey'* (HSCIC, 2017a). This was because the SDD remains to be the most widespread and reliable data set around adolescents' in England and their tobacco and substance use behaviour (HSCIC, 2017a). The SDD is an annual survey conducted by the NHS partner Health and Social Care Information Centre (HSCIC) with adolescents aged between 11 and 16 years (HSCIC, 2017a). The surveys are conducted within secondary schools, with adolescents from years 7 to 11, from participating schools across England (HSCIC, 2017b, HSCIC, 2017c). The primary function of the survey is to provide national estimates and data around the prevalence of smoking, drinking and drug use behaviours in this population (HSCIC, 2017a).

1.3.1.1 Alcohol Use by Adolescents

Firstly, considering the legal stance around alcohol consumption by adolescents, it currently remains to be illegal in the UK to:

- Give alcohol to children aged below five years of age;

- Purchase alcohol if aged below 18 years of age;

- Sell alcohol to an adolescent who is aged below 18 years of age;

- Consume alcohol in licensed premises (e.g. in a pub or restaurant) if under the age of 18 years, and

- Buy, or try to buy, alcohol for an adolescent who is aged below 18 years of age.

Reproduced from GOV.UK, 2017h.

However, an adolescent aged between 16-17 years, who is accompanied by an adult, is legally permitted to drink, but not purchase, beer, wine, or cider to accompany a meal (GOV.UK, 2017h). Although these laws exist to prevent underage adolescents consuming alcohol, a significant number of adolescents report using alcohol prior to reaching the minimum legal purchase age (IAS, 2016). The recent trends in prevalence have indicated that

a decline in underage drinking has been observed since the early 2000s, with 38% of young people aged between 11 and 15 years in England reporting having tried alcohol in 2014, compared with 64% in 2003 (IAS, 2016). This was slightly increased in the SDD survey as it was reported that of the 12,051 adolescents surveyed in 2016, 44% reported having tried alcohol (n= 5302). Nevertheless, alcohol consumption by adolescents still remains a public health concern, as those adolescents who are consuming alcohol are more likely to be consuming it at risky levels (IAS, 2016).

When quantifying what constitutes as risky drinking levels by adolescents, there remains a distinct lack of standardisation (Giles et al., 2016). In adults, hazardous drinking is often used to define an individual's alcohol consumption which is seen to be at a level or pattern that increases the risk of physical or psychological problems (Saunders et al., 1993). Hazardous drinking often precedes harmful drinking, which can be defined as an individual experiencing the physical or psychological problems as a direct result of their harmful alcohol consumption (Saunders et al., 1993). In relation to the available guidance around the consumption of alcohol by adolescents; the guidelines, developed by the national Chief Medical Officer (CMO) in England, state that adolescents should not consume alcohol at all before the age of fifteen years due to the significant, negative impact it can have on their health and their overall development (DOH, 2016). For adolescents who are aged between 15 and 17 years, the CMO guidelines state that their alcohol consumption should not regularly exceed the current alcohol guidelines which are in place to advise adults on what constitutes as a safe drinking level (DOH, 2016).

The previous alcohol guidelines for England stated that a safe drinking level for adults constituted the consumption of no more than 21 units of alcohol for men, and 14 units of alcohol for women per week (C4L, 2017). One unit of alcohol is the quantitative measurement of 10ml, or 8g of pure alcohol, which is thought to be the approximate volume of alcohol that the average adult can breakdown in their body within an hour's timeframe (NHS, 2015). However following advances in evidence, the alcohol guidelines have since been updated in 2016 to state that there should be no difference in the recommended alcohol unit consumption by sex, and therefore they now state that both men and women should not regularly drink more than 14 units of alcohol per week (GOV.UK, 2016b). In addition, the 14 alcohol units that are consumed should be spread out over three days or more in a week, in order to avoid the risks associated with binge drinking, such as an increased risk of developing liver diseases (C4L, 2017). Binge drinking is another example of risky drinking behaviour and is used to refer to a single occasion or episodic patterns of hazardous, high-intensity alcohol consumption, which is more likely to occur in adolescents (Saunders et al., 1993).

Therefore, adolescents who consume alcohol, and who are aged under 15 years, or adolescents that are aged between 15 and 17 years that consume alcohol at levels which fall outside of the CMO recommendations for adults, can be identified as risky drinkers, due to the potential impact that their alcohol consumption could have on their health and social outcomes (DOH, 2016).

The issue of risky alcohol consumption remains a highly topical issue within the North East of England, which was the primary setting for this study. Risky adolescent drinking is a significant problem in North East England, with an inflated drinking culture, and the heightened presence of social issues, such as low socioeconomic status, family values and intergenerational influences playing a large role in the observed issues (Durham County Council, 2014, Newbury-Birch, 2014). The most recent, regional data from Public Health England (PHE) indicates that specific areas in the North East have some of the highest rates of alcohol related hospital admissions for under 18 year olds in England (PHE, 2017). Sunderland and South Tyneside were found to have the highest rates of under 18 alcohol related admissions in England, with 115.1 admissions and 94.4 admissions respectively, per 100,000 of the population. To put this into context, the Southern Local Authority Thurrock, which was identified as having the lowest rates of under 18 alcohol related admissions, had only 10.8 admissions per 100,000 (PHE, 2017). Consequently, due to the increased harm associated with adolescent alcohol consumption in the region, it was appropriate to determine that the North East of England was a salient setting for this study.

1.3.1.2 Tobacco Use by Adolescents

Like alcohol, it remains illegal for adolescents to both purchase or consume tobacco products if they are under 18 years of age in England (CRUK, 2017). In addition, it is also illegal for an individual to sell or provide an adolescent under the age of 18 years with tobacco or any tobacco related paraphernalia (CRUK, 2017). In a bid to reduce the prevalence of all individuals smoking, in 2007, the UK brought in the smoke-free legislation in order to make it illegal to smoke in all public enclosed, or substantially enclosed areas, and within all public and private workplaces (Fresh, 2017). The smoke-free legislation preceded other stricter smoking restrictions, and recent changes in 2017 saw the implementation of plain packaging to reduce the appeal of tobacco products to adolescents (Fresh, 2017). In addition, smaller packs of tobacco products and those containing menthol have been phased out in order to attempt to decrease the appeal and increase the cost of smoking (Fresh, 2017).

Looking specifically at the prevalence of tobacco smoking in adolescents; the SDD reported that 19% of adolescents had tried smoking (n=2290), with 3% of male adolescents and 4%

of female adolescents, aged between 11 and 15 years, identifying themselves as being regular smokers (n=362 and 482) (HSCIC, 2017c). Regular smoking was defined by the Health and Social Care Information Centre (HSCIC) as smoking at least one cigarette (or equivalent) per week (HSCIC, 2017c). Although this sounds a relatively modest number, Cancer Research UK (CRUK) currently estimate that 40% of regular adult smokers in England adopted the habit during adolescence, before the age of 16 years (CRUK, 2017). In Scotland, this figure is even more inflated with CRUK reporting that 70% of Scottish adults were found to have taken up smoking at 15 years old or earlier (CRUK, 2017).

Even though the overall prevalence of tobacco use has seen a decline in recent years as shown in Figure 1, smoking remains one of the most significant causes of premature death worldwide, and is linked with a large number of cancers and pulmonary diseases (CRUK, 2017). Therefore, the fact that smoking is most likely to be adopted during the period of adolescence was of high importance to this PhD study, as it indicates that adolescence remains to be a pivotal time in which to provide tobacco interventions.
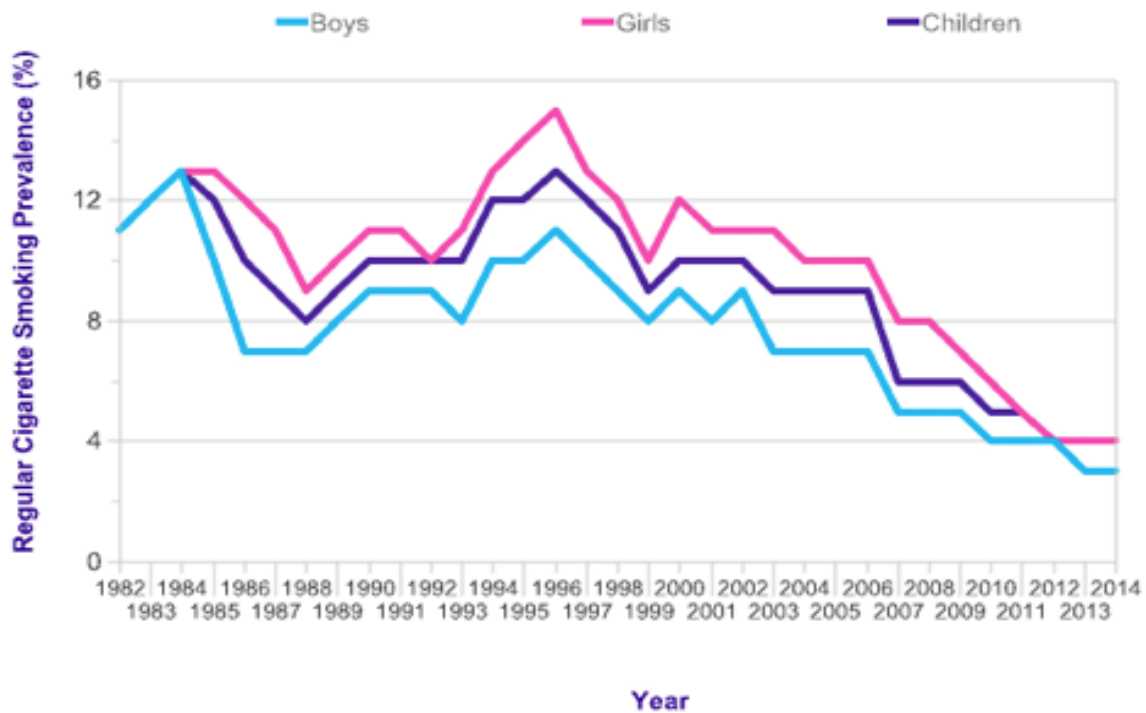
Figure 1: Graph showing Regular Cigarette Smoking Prevalence, in Children Aged 11-15 years in England between 1982- 2014.

Reproduced from CRUK, 2017.

Similarly, to alcohol consumption, adolescent tobacco use has increased relevance within the North East of England. Although the general prevalence of smoking has fallen, as shown in Figure 1, tobacco still remains the highest contributor to the recorded death rates in the North East (Fresh, 2017). Furthermore, some of the reported rates of adolescent smoking across areas in the North East, remain to be among some of the highest nationally ranging from 9-15%, in comparison to the lowest rate of 3% reported in Redbridge in London (HSCIC, 2017c). By targeting adolescents before they start smoking, or reducing the impact of their current smoking by encouraging cessation, it would not only have a significant, long term impact within the North East of England, due to its high smoking rates, but it would have national implications as it would reduce the burden on healthcare that is directly attributable to the treatment and management of smoking related conditions (Fresh, 2017).

1.3.1.3 Illicit Drug Use by Adolescents

Finally, this section concentrates on the use of illegal drugs by adolescents. Table 1 displays the letter classification system of the most commonly used illegal drugs within the UK (GOV.UK, 2017a).

Table 1: The Classification of Illegal Drugs in the UK.

Class	Drugs
A	Crack Cocaine, Cocaine, Ecstasy (MDMA), Heroin, LSD, Magic Mushrooms, Methadone, Methamphetamine (Crystal Meth)
B	Amphetamines, Barbiturates, Cannabis, Codeine, Ketamine, Methylphenidate (Ritalin), Synthetic Cannabinoids, Synthetic Cathinones (e.g. Mephedrone, Methoxetamine)
C	Anabolic Steroids, Benzodiazepines (Diazepam), Gamma Hydroxybutyrate (GHB), Gamma-Butyrolactone (GBL), Piperazines (BZP), Khat.

Reproduced from GOV.UK, 2017a.

Illegal drugs are classified by their severity and hence the penalties that are associated with both the possession and the supply of each classified drug reflect this (GOV.UK, 2017a). Class A is recognised as being the most severe drug type, and can therefore result in an individual serving up to seven years in prison if they are caught in possession of it by Law Enforcement Officials (GOV.UK, 2017a). If an individual is found to be involved with the supply and

production of a Class A drug, they are likely to receive the strictest drug related penalty, and can, in some circumstances, receive a life sentence in prison (GOV.UK, 2017a).

Similarly to alcohol consumption and tobacco use, the prevalence of illegal drug use amongst adolescents aged between 11 and 15 years had seen a steady decline between the years 2001 and 2010 (HSCIC, 2017b). In 2014, it was identified that 15% of adolescents surveyed, reported having ever taken an illegal drug, with 10% of adolescents reporting that they had taken them in the last year, and 6% having taken them within the last month (HSCIC, 2017b). However, unlike alcohol and smoking rates, the most recent SDD survey reported that illegal drug use had increased, with 24% of adolescents reporting having tried drugs (n=2892), with the increase attributed to new psychoactive substances and nitrous oxide (HSCIC, 2017a).

As expected, an increase in prevalence of illegal drug use is associated with increasing age. Eleven percent of 11 year olds reported that they had tried an illegal drug at least once (n=1326), compared with 37% of 15 year olds who reported trying an illegal drug once (n=4458) (HSCIC, 2017a). With regards to the type of illegal drug used by adolescents, the most commonly used drug was identified as being cannabis, and 8% of adolescents surveyed reported regularly using cannabis within the last year (n=964) (HSCIC, 2017a). This was in comparison to 3% of adolescents who were identified as using other illegal substances (n=362) (HSCIC, 2017a).

1.3.1.4 Poly Drug Use by Adolescents

Adolescents frequently report the use of more than one substance, or a combination, such as alcohol consumption, tobacco smoking, and drug use (Kokkevi et al., 2014, Kelly et al., 2015). This phenomena can be known as polydrug use, and specifically refers to the use of more than one drug during a given period (e.g. one day, one month, or one year) and simultaneous, denoting the use of two or more substances on any one occasion (Kokkevi et al., 2014). Figures estimate that around 20% of school-based 15 and 16 year olds, reported the use of both alcohol and cigarettes during the previous month, with 6% reporting the use of cannabis with either alcohol or cigarettes or both (Kokkevi et al., 2014). A further 1% reported the use of ecstasy, cocaine, amphetamines, LSD, or heroin in addition. As polydrug use in adolescence typically increases the health risks that are associated with consuming one substance in isolation, it would be highly advantageous for a school-based intervention to consider the use and the factors associated with multiple substance use (Kokkevi et al., 2014, Kelly et al., 2015).

1.4 The Secondary School as a Setting for Tobacco or Substance Use Interventions

As previously mentioned, the majority of risk-taking behavior occurs within the later stages of adolescence. As the vast majority of adolescents in the UK attend a secondary school, until at least the age of 16 years, the secondary school setting therefore has the potential to be an important and convenient platform to address these health behaviours that are prevalent within the later stages of adolescence (Kratochwill et al., 2004, Botvin and Griffin, 2007, Santelli, 2015). Not all adolescents have the need to regularly access healthcare services such as General Practitioners (GPs), or community health, or social services. In addition, the provision and accessibility of such services in a specific area can often be variable due to a range of factors, such as socioeconomic factors or heterogeneous Local Authorities and resource allocation. Consequently, the secondary school setting can serve as an access point to the majority of adolescents in the UK, including those harder to reach adolescents, such as those of low socioeconomic status or ethnic minority groups (Pearson et al., 2015).

Another argument focusing on why the implementation of tobacco or substance use interventions in this setting is important, and one which was briefly touched upon in Section 1.3.1, is that the use of substances by adolescents has been strongly linked with the decreased potential for academic attainment. Adolescents using substances, such as tobacco, alcohol, illegal drugs and Novel Psychoactive Substances (NPS), are more likely to experience difficulties with retaining information, engaging with education, and ultimately experiencing difficulties achieving the minimum requirements of exams (PHE, 2014). As the long term impact of reduced education and poor exam results can include a lack of opportunities, diminished employment options, and wider social issues, it can be identified as a worthwhile setting in which to deliver substance use interventions, as the impact on educational attainment is likely to be significant over a person's lifetime (PHE, 2014).

Section 1.5 will introduce the difference types of tobacco or substance use interventions that can be employed within a school setting and will present the findings of some of the previously conducted school-based, substance use intervention research. Chapter Two has been used to explore the current, varying secondary school climate within England and Wales, specifically focusing on the different types of secondary school that exist and how that has affected the progression of this work.

1.5 Prevention and Health Behavioural Interventions

Preventative healthcare is the science around providing timely intervention to reduce the potential of an individual developing a particular disease or to reduce their engagement with a specific risk factor (Durlak, 1995, Patterson and Chambers, 1995, Campos-Outcalt, 2015). Generally, preventative healthcare is deemed as being a way in which to extend an individual's disease-free trajectory. This is often thought to be a better use of resources, and a more cost-effective approach in a population with restricted financial resource available for healthcare spending, such as the UK. This is largely due to the fact that total patient treatment costs are more likely to outweigh the cost of any preventative measures (Patterson and Chambers, 1995, Campos-Outcalt, 2015).

The concept of prevention can be subdivided depending on the population group that the intervention is primarily targeting (Campos-Outcalt, 2015). Both primary and secondary prevention have the same objective, of working to increase an individual's life expectancy, and their quality of life (Durlak, 1995, Campos-Outcalt, 2015). Primary prevention specifically relates to the reduction of risk to all members of a defined population, even if they are not currently displaying symptoms, or engaging with the potential risk factors or behaviours (Spaulding and Balch, 1983, Gullotta, 1994, Campos-Outcalt, 2015). In contrast, secondary prevention is a more systematic, or a more focused approach within a defined population (Toumbourou et al., 2007). It concentrates on identifying those individuals who may already be displaying symptoms, or those who are of high risk, due to active engagement with the risk factors at a potentially harmful level (Durlak, 1995, Patterson and Chambers, 1995). The individuals are isolated from a general population, often via a specific screening tool, and hence an intervention is delivered to only the relevant individuals.

Whilst primary prevention is used to prevent uptake of a risk factor or the development of a chronic condition, and secondary prevention is used to encourage cessation or to disrupt the progression of a chronic condition, tertiary prevention focuses around reducing the impact that a chronic condition may have on an individual's health and wellbeing (Patterson and Chambers, 1995, Campos-Outcalt, 2015). The individual is likely to have received a confirmed diagnosis and prognosis of a particular condition, but a tertiary intervention may be used to improve other aspects of their health, or to help manage their chronic condition in order to reduce the impact that it will have on their quality of life, and/or daily functioning.

For example considering an alcohol use intervention; a school based primary preventive intervention would function by focusing on all of the adolescents in a school, without identifying their prior levels of alcohol consumption (Foxcroft and Tsertsvadze, 2011). Whereas a

secondary preventive intervention would only target those adolescents that are already known to be consuming alcohol, or those adolescents that have been identified as drinking at a risky or harmful level (Baer, 1993).

1.5.1 School-based Tobacco or Substance Use Interventions

A school-based, behaviour change intervention which has been developed for adolescents has the potential to significantly improve health outcomes, both in the short term and ultimately in the longer term (Santelli, 2015). By also considering the contribution social factors have on the health and wellbeing of adolescents, interventions can seek to bridge the gap by reducing the health disparities observed across the life course of different socioeconomic groups (Santelli, 2015).

The focus of this PhD study has been to explore the factors affecting the implementation of a tobacco or substance use intervention into school-based practice. Although it can often be difficult to distinguish; in the context of this study, the main focus is on the implementation process, as opposed to the specific intervention components. However, it is important to acknowledge that there is a broad range of disparate school-based tobacco or substance use interventions. Examples of the different types of school-based tobacco or substance use interventions can include; *curriculum based interventions* which focus on delivering tobacco or substance use education in a way that is concurrent to an academic lesson to increase knowledge, such as employing the use of written materials or classroom discussion, *social environment interventions* which focus more specifically on the social or the contextual factors of tobacco or substance use, or *whole school interventions* which encourage the adoption of a whole school approach to tobacco or substance use that is reflective of a school's philosophy and includes a larger body of school staff (Vreeman and Carroll, 2007).

The preventative tobacco or substance use interventions that are likely to be of most use within a secondary school setting, will be either primary: preventing the adolescents from starting to use and misuse tobacco or substances, or secondary: targeting those adolescents who have already started using tobacco or substances, and those who may be using them at a risky level, and therefore already have an increased risk of causing long term harm to their health and their social outcomes.

1.5.2 Examples of Tobacco or Substance Use Primary Prevention within a School Setting

There have been numerous pieces of research on the effectiveness of using primary preventative tobacco or substance use interventions within school settings to improve both the short term, and long-term health and social outcomes of adolescents (Wiehe et al., 2005, Lemstra et al., 2010, Foxcroft and Tsertsvadze, 2011). For reference, substance use has been used to define alcohol consumption, the use of illicit drugs and NPSs. The evidence base does appear disparate, and relies on different measures and outcomes, therefore the findings of existing systematic literature reviews for school-based alcohol, tobacco and drug use interventions will be presented in the upcoming sections. By considering the evidence presented in relevant school-based systematic reviews, it allows the assessment of a wider range of literature and hence a larger dataset to be reflected upon, in contrast to focusing on individual research studies alone (Murad et al., 2016). Systematic reviews have traditionally been recognised as the 'gold standard' when conducting the appraisal, synthesis and application of evidence (Murad et al., 2016). When examining the hierarchy of research evidence, systematic reviews are frequently identified as being at the pinnacle of the evidence pyramid (Murad et al., 2016). Therefore, by focusing on including the most relevant systematic reviews concentrating on school-based tobacco and substance use intervention, it allowed a plethora of literature to be considered.

1.5.2.1 Alcohol Primary Prevention Interventions within the School Setting

First considering alcohol primary interventions within the school setting, Foxcroft and Tsertsvadze conducted a systematic review in 2011. The systematic review aimed to explore the extent of the research literature around the effectiveness of a universal, school-based, primary prevention programme in preventing alcohol misuse in young people below 18 years of age (Foxcroft and Tsertsvasdze, 2011). The results of the review were mixed, as it identified that some of the included studies showed no evidence of a primary preventive intervention being effective, whereas some studies were able to present statistically significant results, indicating the alcohol intervention's effectiveness (Foxcroft and Tsertsvasdze, 2011). The reviewers were unable to identify any discernible patterns present within the included study characteristics that would distinguish any successful elements from studies, which reported positive results, from the studies that were unable to report any effect (Foxcroft and Tsertsvasdze, 2011). Additionally, the reporting quality of the included trials was deemed to be poor, and subsequently it was difficult for the reviewers to be able to draw any definitive

conclusions about the effectiveness of a primary intervention programme, in preventing alcohol misuse in adolescents (Foxcroft and Tsertsvasdze, 2011). Furthermore, it was not deemed to be possible to undertake a meta-analysis of the results from the included studies. This was due to a myriad of differences, such as the heterogeneity in baseline characteristics, the differences in the intervention's target and focus, and also due to the variation observed across the studies in relation to their outcome measures (Foxcroft and Tsertsvasdze, 2011).

Another example of a systematic review exploring school-based primary interventions, can be seen in the review conducted by Lemstra et al in 2010 (Lemstra et al., 2010). Their systematic review was undertaken to determine whether school-based marijuana and alcohol prevention programmes were effective in preventing marijuana and alcohol use by adolescents (Lemstra et al., 2010). The review concentrated on exploring the differences in effectiveness between different types of prevention programmes, such as ones that specifically focused on improving knowledge, in comparison to the more comprehensive prevention programmes (Lemstra et al., 2010). The findings of the review indicated that the most effective primary prevention programmes for reducing marijuana and alcohol use among adolescents, in the long-term, were comprehensive programmes that were focused around presenting anti-drug information and emphasised the importance of developing refusal skills, self-management skills and social-skills training (Lemstra et al., 2010).

1.5.2.2 Tobacco Primary Prevention Interventions in the School Setting

In regards to the evidence around the effectiveness of school-based tobacco primary prevention interventions, again the findings are mixed. A systematic review by Wiehe et al in 2005 evaluated the long-term impact of school-based smoking prevention programmes (Wiehe et al., 2005). The systematic review synthesised the findings of eight articles, which were heterogeneous in their intervention intensity, presence of booster sessions, follow-up periods, and in their student attrition rates. Only one included study reported decreased smoking prevalence in the intervention group following a long-term follow up. Therefore, the review was not able to present conclusive evidence to suggest that a school-based prevention programme provided long-term effectiveness in preventing adolescent smoking (Wiehe et al., 2005).

This was in contrast to the findings of the systematic review by Thomas et al in 2015. This systematic review and meta-analysis sought to assess the effectiveness of school-based smoking prevention interventions at retaining pupils' non-smoking status (Thomas et al., 2015). The review included 136 different trials, with the majority from the US and the UK, that followed pupils in a range from 5 years to 18 years of age (Thomas et al., 2015). The main finding of the meta-analysis was that at the one-year follow-up, there were no significant

effects of school-based smoking prevention curricula on smoking rates (Thomas et al., 2015). However, a 12% reduction in the onset of smoking was reported when participants were followed up over a longer time period (>1 year), which is inconsistent with the findings of the review by Wiehe et al that bar one study, longer term follow ups were not conducive of reducing smoking uptake (Wiehe et al., 2005).

When considering the specific interventions in the review; the school-based interventions that were found to be the most effective at preventing smoking onset were those that focused on adolescents' social competence, or those that combined elements of social competence and social influences (Thomas et al., 2015). Social competence interventions were defined as those that assist adolescents with feeling comfortable to refuse offers to smoke by improving their general social competence and personal and social skills (Thomas et al., 2015). The interventions sought to educate adolescents in problem solving, decision-making, cognitive skills to resist personal or media influences, increase self-control and self-esteem, coping strategies for stress, and assertiveness skills. Whereas social influence interventions were used to overcome adolescents' social influences to use tobacco by teaching them to be aware of social influences that encourage use, teach skills to resist offers of tobacco, and deal with peer pressure and high-risk situations (Thomas et al., 2015). These findings suggest that it is important to identify and address the social factors that can be associated with adolescent tobacco use (Thomas et al., 2015).

1.5.2.3 Drug Primary Prevention Interventions in the School Setting

Tobler et al conducted a meta-analysis, which collated the results of 207 studies focusing on universal school-based drug prevention programmes (Tobler et al., 2000). The meta-analysis sought to determine specific predictors of effectiveness in drug use prevention programmes (Tobler et al., 2000). The findings indicated that the programme type and size of the group were significant predictors of effectiveness of a school-based, drug use intervention (Tobler et al., 2000). For example drug education was found to be most effective when delivered as interactive programmes, which concentrate on the development of adolescent interpersonal skills (Tobler et al., 2000).

Faggiano et al also conducted a systematic review in order to evaluate the effectiveness of school-based interventions in preventing or reducing drug use (Faggiano et al., 2008). The findings of the review indicated that skill-based interventions had the potential to significantly reduce adolescent marijuana use and hard drug use, and ultimately improve adolescents' decision-making skills, self-esteem, peer pressure resistance, and drug knowledge (Faggiano et al., 2008). In addition, in comparison to the usual care condition, skill-based interventions were found to be more effective than affective interventions that focused on improving

adolescents' self-efficacy (Faggiano et al., 2008). Although skill-based programmes were found to significantly deter drug use, the review specifically emphasised the need for well-designed, standardised, long-term randomised trials, and evaluation of intervention components to increase the available evidence base (Faggiano et al., 2008).

1.5.3 An Argument for Employing Secondary Preventive Interventions within Secondary Schools

Following on from the observations made by Faggiano et al, regarding the need for more evidence, and the mixed results of the included systematic reviews focusing on school-based tobacco or substance use primary prevention interventions; there has also been an argument for employing a secondary preventative approach, in order to reduce the tobacco or substance use by adolescents (Faggiano et al., 2008, Newbury-Birch et al., 2009, Giles et al., 2016).

Using a secondary preventative intervention is likely to be an effective approach within a secondary school setting, as it would rely on concentrating on the adolescents who have already been found to partake in risk-taking, substance use behaviours, such as smoking, consuming alcohol, or illegal drug use. A secondary preventive intervention will have an increased relevance within this population, as the adolescents may already have experienced a negative side effect of their behaviour, and hence may engage more or be willing to elicit a change in their behaviour (Newbury-Birch et al., 2009). Secondary prevention can also have economic implications, as it can be a more cost effective approach as it utilises less resources, such as staff capacity and time, in order to target the particular adolescents who would find it beneficial to engage with a substance use intervention (Toumbourou et al., 2007).

A specific example of a secondary preventative substance use intervention, which can be delivered within a secondary school setting, is the brief alcohol intervention that was piloted as part of the SIPS JR-HIGH trial and which will be discussed in the following subsection (Newbury-Birch et al., 2014, Giles et al., 2016).

1.5.3.1 SIPS JR-HIGH Pilot Trial

The aim of the secondary school-based SIPS JR-HIGH pilot trial was to assess the effectiveness, and the cost-effectiveness of delivering alcohol screening and brief interventions in order to reduce the levels of risky drinking in adolescents, aged between 14 and 15 years (Newbury-Birch et al., 2014). The pilot trial, which commenced in 2011, was a mixed method, cluster-randomised controlled trial (cRCT), which compared a control arm consisting of usual school care of providing a pupil with an advice leaflet and feedback, with

two intervention arms: (1) usual care provided with a 30 minute Alcohol Brief Intervention (ABI), combining structured advice and motivational interviewing techniques conducted by a specially trained, school-based learning mentor with the pupil, and (2) usual care combined with the 30 minute brief alcohol intervention and an additional 60-minute session involving the young person's family members, again delivered by a school-based school learning mentor (Newbury-Birch et al., 2014).

As stated, the ABI was delivered by a school-based learning mentor. The primary role of a learning mentor within a secondary school is to complement teachers and other school staff, by addressing the needs of pupils who may require additional academic help, or would benefit from some pastoral support (TES, 2017). Learning mentors can be responsible for covering a plethora of school-based issues, such as punctuality, truancy or unauthorised absences, challenging behaviour, or working with learners experiencing attention or retention difficulties, making them an appropriate choice to deliver ABIs (TES, 2017).

The first stage of the pilot study involved Year 10 pupils, from participating schools, completing a healthy lifestyle questionnaire. The questionnaire responses that were collected were then recorded and analysed. Pupils that were deemed to be 'risky drinkers', defined as screening positive on an alcohol related question of the questionnaire (ASAQ), were then invited to attend an appointment with a learning mentor at their school to discuss their drinking habits in more detail (Newbury-Birch et al., 2014). The unit of randomisation was by school; hence participating schools were randomised to either the control or one of the intervention conditions. The primary outcome of the appointment was identifying the total alcohol consumed by the young person, in the past 28 days using a 28 day Time Line Follow Back (TLFB) calendar (Newbury-Birch et al., 2014). The pupil's scores that were obtained at the baseline were compared with their second set of scores obtained after 12 months and this approach took place in both the control and the intervention arms.

The findings from the pilot c-RCT suggested that the ABI component that was used, was deemed to be both feasible and acceptable to the participating school staff and the pupils. (Newbury-Birch et al., 2014) The learning mentors, delivering the ABIs, were identified as being suitable individuals within a secondary school setting to deliver the intervention to pupils that screened positive for risky drinking. However, the component which involved the pupil's family in the Intervention 2 arm was not well received, and did not appear to be either feasible or acceptable to both the school staff or pupils (Newbury-Birch et al., 2014). The positive results of the pilot trial, allowed the progression of the research into a more widespread, definitive trial, which aimed to assess the effectiveness of the ABI across a greater range of secondary school sites across England, with the results due in 2018.

1.5.4 Linking School-Based Prevention with the Study of Implementation

As previously discussed, the research evidence reported within the various systematic reviews, included in Section 1.5, was largely disparate. Although some of the evidence suggested that school-based tobacco or substance use interventions were not effective, the reasons behind the lack of effectiveness were less widely explored within the included studies. Therefore, as this PhD study proposed the importance of delivering secondary school-based tobacco or substance use interventions; it aimed to explore an avenue of study which could have the potential to affect intervention effectiveness, namely the implementation process. It is to be acknowledged that the complexities around an intervention's effectiveness were not underestimated by solely focusing on implementation, and ultimately it was recognised that there can be a plethora of different factors that have the potential to affect effectiveness. Chapter Two explores some of these further by discussing how the secondary school type, tobacco or substance use education delivery and national guidance can have an impact. However, the main focus of this study has been exploring the school-based implementation processes of a tobacco or substance use intervention. Although various examples have been discussed in this section, this study did not focus on a particular tobacco or substance use intervention and aimed to explore school-based implementation processes more generally in this setting. Therefore, the findings sought to be applicable and valuable to the implementation of a wide range of school-based tobacco or substance use interventions. The following section will introduce the concept of implementation, which was key in this PhD study, and which will be built upon in Chapter Three.

1.6 Implementation Science

Although the concept and the definition of implementation will be explored in greater depth in Chapter Three, in order to contextualise implementation, it can be defined as *"the process of putting a decision or plan into effect"* (Oxford, 2016). Implementation of a change occurs when a new practice, such as a tobacco or substance use intervention, has been adopted and introduced within a specific implementation setting, which in this case of this study is the secondary school setting (Linton, 2002, Fixsen et al., 2005, Eccles and Mittman, 2006, Proctor et al., 2011).

While there has been limited research in the area, poor implementation has been shown to be linked with a loss of intervention effectiveness within the school setting (Dusenbury et al., 2003). This was explored specifically within a review by Dusenbury et al in 2003, which set out to review the literature focusing on the fidelity of implementation of school-based, drug use

prevention interventions (Dusenbury et al., 2003). In this context, implementation fidelity is used to refer to the assessment of whether a drug use programme was implemented as intended or not (Dusenbury et al., 2003). Although the review found that implementation fidelity was not always defined consistently in the included studies, it used the following indicators to measure fidelity: adherence, dose, quality of programme delivery, participant responsiveness, and programme differentiation (Dusenbury et al., 2003). The key findings of the review were that teachers were unlikely to cover everything as required within a drug use programme and they were likely to teach challenging elements of programmes less over time (Dusenbury et al., 2003). High implementation fidelity was seen to consistently correlate with teacher training, programme characteristics, teacher characteristics and organizational characteristics (Dusenbury et al., 2003).

Looking more generally at the implementation science field, the research around implementation processes has been progressive over recent years. The heightened recognition of the importance of implementation, especially by funders, has led to an increase in the research focus around differing implementation processes, supporting theories and approaches (Wandersman et al., 2008). Intervention research continues to be cultivated, and therefore the research field around the implementation of interventions has increased in popularity, in order to be able to bridge the gap between research and practice (Glasgow et al., 2003). This is largely due to the identification that an implementation process of a specific intervention can dramatically affect the effectiveness, and hence the outcomes of an intervention (Glasgow et al., 2003). In addition, for an intervention to achieve long-term sustainability, it is important to consider both the barriers and facilitators to implementation, which may have the potential to affect an implementation process and ultimately increase or reduce the effectiveness of an intervention (Han and Weiss, 2005). As the implementation science field continues to grow, it has seen the development of numerous implementation theories and frameworks, which have been designed to both facilitate the implementation process, consider all of the relevant contextual and organisational factors, and also to evaluate the implementation strategy, following the embedding of a new practice (Nilsen, 2015)

As the implementation science field is rapidly evolving it still possesses a degree of novelty and some areas, such as the terminology and scope, lack a degree of standardisation that can be observed in other research fields (Peters et al., 2014). Therefore, Chapter Three has been dedicated to define the implementation terms and concepts that have been used throughout this thesis. In addition, it will present a literature review of the growing implementation science field, which will aim to discuss both the general factors that can affect an implementation process and also some of the different types of theoretical approaches and guidelines that have been developed as the field has advanced.

1.7 Rationale for Conducting this PhD Research

The rationale for conducting this PhD study centred around the fact that although the effectiveness of school-based tobacco or substance use interventions results varied dependent on the type of intervention; some research was able to show that the secondary school setting can potentially act as an advantageous location in which to deliver tobacco and substance use interventions to adolescents. In addition, as the uptake of risky, substance use behaviour is more likely to occur within the later stages of adolescence, the secondary school setting, as opposed to the primary school setting, is likely to have greater salience (Newbury-Birch, 2014, WHO, 2015). This is especially important when considering the use of a secondary preventative approach, as the prevalence of substance use has been shown to increase proportionately with age, and thus more adolescents will be using tobacco or substances within a secondary school (Newbury-Birch, 2014, WHO, 2015).

Although the previously discussed, school-based research has been focused around developing and trialling specific tobacco and substance use interventions; the existing research has been limited in its focus around how a specific intervention, aiming to reduce tobacco and substance use, which has been found to be useful or effective in a trial setting, can be implemented effectively and sustained in practice within an English secondary school. In addition, as some of the systematic reviews that were discussed presented less encouraging results or results that showed interventions had limited effect, exploring the implementation of such an intervention provides an important area of exploration to improve an intervention's effectiveness, as the negative results may have been a result of poor or ineffective implementation (Damschroder et al., 2009).

This PhD study therefore, was undertaken in order to explore the factors affecting the implementation of an effective substance use intervention within the secondary school setting, in order to be able to maximise the potential of interventions in this setting. It had the goal of providing a valuable contribution to knowledge within the secondary school intervention research field, by determining the factors that can affect the implementation and embedding of a new substance use practice. In addition, it also sought to make a significant contribution to knowledge within the school implementation science field. It builds upon the existing school implementation work in the mental health intervention field (Han and Weiss, 2005), preventative health field (Domitrovich et al., 2008) and the health promotion field (Pearson et al., 2015), all of which will be presented in more detail in Chapter Three, by working to increase the likelihood that tobacco or substance use interventions, identified to be effective within a trial setting, can be implemented and sustained long term within a secondary school.

The final sections of Chapter One will present the specific aims and objectives of this study, a brief overview of the methodology chosen to explore these aims and objectives and concludes by presenting a summary of each chapter of this thesis.

1.8 Aims and Objectives

1.8.1 Aim

The aim of this PhD study was to explore the factors affecting the implementation of a tobacco or substance use intervention within the secondary school setting, in order to inform the development of an implementation model.

1.8.2 Objectives

This PhD study has four research objectives:

1) To establish the extent of the implementation science literature around ways of making behavioural change happen and the use of implementation theory;

2) To explore the extent of previous research around the implementation of substance use interventions in a secondary school setting, by systematically reviewing the literature in the area;

3) To explore the views and experiences of relevant stakeholders (school staff and public health practitioners) around how to effectively introduce a substance use intervention into routine school practice;

4) To utilise research findings to develop an early version of an implementation model, which will be suitable for use in a secondary school setting to facilitate the implementation of a tobacco or substance use intervention.

1.9 Research Questions

To be able to address the overall aim of this PhD study and the supporting research objectives, the following research questions were developed:

1) Which implementation theory is the most appropriate to support and organise the findings of the proposed systematic review, the qualitative fieldwork and to inform the development of a new implementation model?

2) To what extent has previous research focused around exploring the factors affecting the implementation of substance use interventions in a secondary school setting, and how has implementation theory been used to guide this?

3) What are the perceived barriers and facilitators to achieving the effective implementation and sustainability of a substance use intervention within a secondary school setting?

4) Which factors would need to be considered in order to be able to ensure a successful implementation model is operationalised?

1.10 Methods

In order to be able to comprehensively investigate both the aims and objectives and to answer the research questions, the following research components were conducted within this PhD study:

- **Implementation Science Literature Review:** A general literature review was conducted prior to a more specific systematic review, in order to increase the understanding around the existing relevant implementation literature.

- **Systematic Review:** A specific, mixed method, systematic review was then conducted looking specifically at the previous literature around the implementation of substance use interventions in a secondary school setting. The systematic review was written up for this thesis and for publication.

- **Qualitative Fieldwork:** Following the completion of the systematic literature review, a broad range of semi-structured interviews was conducted with a range of different providers and stakeholders. The interviews were subjected to thematic analysis and findings were written up for this thesis and for publication**.**

- **Implementation Model:** The results of the systematic literature review and the qualitative fieldwork were then used to inform the development of the practice-based implementation

model, designed to facilitate the implementation of substance use interventions within the secondary school setting.

The rationale and the choice behind each method, and hence the specific processes that were followed, will be presented in each of the corresponding thesis chapters.

1.11 Thesis Chapter Overviews

This thesis has been designed to present the work that has been carried out over the three years of this doctoral project. It is structured into nine distinct chapters (including this one), which will concentrate on addressing the overall aim of the study, and each of the four objectives. A brief overview of each chapter has been provided below for reference.

Chapter Two- The Secondary School Setting explores the current secondary school system within the UK. It provides an overview of the differing secondary school types, and the regulatory board, Ofsted. It then discusses the current lack of standardised health education across the curriculum in England and the challenges this brings.

Chapter Three- Implementation Science Literature Review presents a broad implementation science literature review, aiming to introduce and define the relevant implementation terminology and the pivotal research in the field. It discusses the benefits of utilising implementation strategy and theoretical approaches and discusses examples of previously developed approaches.

Chapter Four- A Systematic Review of the Implementation of Tobacco and Substance Use Interventions within a Secondary School Setting presents the methods and the findings of the systematic literature review, which was published in Implementation Science in 2017 (Waller et al., 2017). The systematic review aimed to identify and synthesise the factors affecting the implementation of tobacco and substance use interventions in the secondary school setting, using the Normalisation Process Theory (NPT) as a framework and theoretical underpinning. Chapter Four presents the rationale behind undertaking a systematic review, the process followed and the results that were obtained.

Chapter Five- Qualitative Fieldwork- Methods and Rationale introduces the qualitative interview fieldwork, by discussing why a qualitative approach was adopted, and the rationale behind choosing semi-structured interviews as the primary data collection method. The chapter documents the process that was followed, including the development of the interview schedules, the sampling and participant recruitment.

Chapter Six- Qualitative Fieldwork- Results presents the results of the qualitative fieldwork. It reports the final sample of interview participants obtained, and presents the results arranged thematically, using key, illustrative quotes.

Chapter Seven- Qualitative Fieldwork: Discussion of the Results is the final part of the qualitative fieldwork as it discusses why the obtained results were meaningful, and which findings were able to be used to inform the development of the proposed implementation model.

Chapter Eight- Development of the School-Based Tobacco or Substance use Intervention Implementation Model documents the process of triangulating the findings of the systematic review and the qualitative interviews in order to inform the development of the secondary school implementation model. Chapter Eight also discusses the incorporation of previous model development research, the pre-existing school-based implementation models and the stakeholder engagement that was undertaken to facilitate the process.

Chapter Nine- Discussion, Conclusions and Future Implications summarises and discusses the key findings of this study, what original knowledge has been contributed that is unique to the secondary school setting and to tobacco or substance use interventions, and how this knowledge could be used in the future to guide further research.

1.12 Chapter Summary

Chapter One has been used to introduce the topic of exploration of this study, present the aims and objectives and provide a map of this thesis. The key points of Chapter One have been:

- The secondary school setting allows access to and ultimately the targeting of young people in the later stages of adolescence, who have been shown to be the most susceptible to risk-taking behaviour, with the potential to improve long term population health.

- The North East of England remains a salient setting for the study of the implementation of school-based tobacco or substance use interventions as the North East remains to have amongst the highest rates of adolescent smoking and substance use.
- Although the evidence for school-based, primary prevention, tobacco and substance use interventions was shown to be heterogeneous; some systematic reviews reported significant effectiveness in reducing adolescent tobacco or substance use.

- Implementation of a change occurs when a new practice, such as a tobacco or substance use intervention, has been adopted and introduced within a secondary school setting.

- The overall aim of this study was to explore the factors affecting the implementation of a tobacco and substance use intervention within the secondary school setting, in order to inform the development of an implementation model.

- The study aimed to build upon existing implementation research around the facilitators and barriers to implementation processes, whilst being able to add an original contribution to knowledge by focusing specifically on factors unique to the English secondary school setting, and tobacco or substance use interventions.

Chapter Two

The Secondary School Setting

2.1 Overview of the Chapter

This chapter focuses on the secondary school setting and why it can be a profoundly important setting for improving public health and social outcomes beyond adolescence throughout the life course. This PhD study took place during a period of major change in the English school system, with growing academisation, and also against a backdrop of continued austerity. Therefore, Chapter Two was used to characterise the current provision of secondary school education in England. It will first explore the different providers of secondary school education, specifically within England and how the provision has changed over recent years. It will introduce the organisation Ofsted, which refers to the National Government's Office for Standards in Education, Children's Services and Skills, and will discuss how Ofsted is able to influence education provision. In addition, it will conclude by discussing the current lack of standardised health education across the curriculum in England and the challenges this brings.

2.2 The Differing Providers of Secondary School Education

Secondary schools in the United Kingdom (UK) are responsible for providing adolescents with their compulsory academic education from the ages of 11 to 16 years (DfE, 2014). During the later years, from ages 14 to 16 years, adolescents are expected to take their GCSE exams (England and Wales), their Standard Grade exams (in Scotland) or their Junior Certificate (in Ireland) (DfE, 2014). This PhD study was based within England, and therefore the focus around the composition of the English secondary school system and its curriculum was maintained. Due to the heterogeneity of the secondary school setting within Scotland, Wales and Ireland, they have not been reflected upon further within this chapter.

In England, the GCSE exams in Mathematics, English, and Science are compulsory, however pupils are also able to choose additional subjects which appeal to their own strengths and

interests (DfE, 2014). Recently the traditional GCSE examinations were subject to a significant reconstruction within the 2016-17 academic year (GOV.UK, 2017b). The most extensive change saw the previous A*-G standard grading system being replaced by a wholly numerical classification system (GOV.UK, 2017b). For each subject, pupils will now seek to obtain a grade between one to nine, with Grade nine being the highest grade that pupils can achieve (GOV.UK, 2017b). In addition, the GCSE course structures, and their course contents, underwent considerable modifications in order to be able to further challenge pupils, and to phase out the pre-existing coursework components in particular subjects (GOV.UK, 2017b). The new changes were proposed as a commodious way in which to achieve improved recognition of the differing abilities of pupils within secondary schools, specifically recognising higher ability pupils by introducing more demanding content (GOV.UK, 2017b).

Following the completion of pupils' GCSE examinations, some secondary schools may then provide a Sixth Form, in order for adolescents aged between 16 to 18 years to complete further study, which is primarily AS and A-levels examinations (England and Wales), or Higher Grade and Advanced Highers (Scotland). Adolescents can choose to attend a specific Sixth Form College, complete further practical, or vocational training in the form of an apprenticeship, or they can choose to leave education altogether, as compulsory education is completed at 16 years of age. A young person aged between 16-24 years who is classified as not being in further education, employment or training is often referred to as a 'NEET' (ONS, 2017).

In England, the education system is divided into four ascending 'Key Stages'. The Key Stages are the most relevant in this PhD study were Key Stage Four, which consists of adolescents aged between 14 and 16 years of age in school years 10 and 11; and Key Stage Five, which is otherwise known as Sixth Form and consists of adolescents aged between 16 and 18 years in school Years 12 and 13 (DfE, 2014, Visram et al., 2014). As previously mentioned, it remains compulsory for adolescents to engage in some form of academic education until the age of 16 years. Therefore, as Key Stage Four serves a wider adolescent audience, it is a key stage in which to deliver primary or secondary preventative health education and services such as complex interventions, to the majority of adolescents, in order to improve long term public health outcomes (Saab, 2010, Santelli et al., 2015). However, the provision of secondary school level education remains variable across local authorities in England, due to differing local policies, varying borough sizes, and historical governance.

There are generally two main types of secondary schools in England; (i) state schools, which are funded entirely by the government, or (ii) private schools which are financed by the pupils paying an attendance fee (GOV.UK, 2017g). The following sections will briefly discuss the different types of secondary schools currently existing in England and how their structure and

staffing provision can vary, as this can have implications on capacity and the ability to deliver and implement tobacco or substance use education and intervention.

2.2.1 Comprehensive Schools

One of the most commonly provided formats of state secondary education in the UK remains the long-standing comprehensive school format. Looking more closely at the characteristics of a comprehensive secondary school, the key feature is that they continue to be free to attend for all pupils; hence the uptake of a school place is not dependent on receiving a regular attendance fee. Furthermore, they do not seek to examine a pupil's educational ability or aptitude in order to grant pupil admittance. Comprehensive schools function to cater for all of the adolescents in a specific catchment area, which is typically in close proximity to a pupil's home postcode (GOV.UK, 2012). Comprehensive schools are largely managed and governed by their local authority, and the local authority is also likely to own the grounds on which the school is built (Machin and Vernoit, 2011). Comprehensive schools are required to strictly adhere to the National Curriculum across all academic subjects, which has been set out by the Department for Education. The National Curriculum is defined as being a comprehensive framework for the provision of academic subjects and the appropriate standards that should be maintained in order for pupils to receive the delivery of the same educational content, regardless of their school or their location (GOV.UK, 2012). The National Curriculum is exhaustive in covering all of the subjects that can be taught within a secondary school, and also includes the recommendations of the minimum standards that an adolescent should be attaining at each level of their educational pathway (GOV.UK, 2012).

2.2.2 Academies

In contrast to the traditional comprehensive secondary school, academies are now an increasing provider of secondary level education within England, and recent figures show that nearly 65% of secondary schools in England are academies (Machin and Vernoit, 2011, Eyles et al., 2018). The academy system was first introduced in England in March 2000, with the first wave of secondary schools being opened in September 2002 (Machin and Vernoit, 2011). The primary goal of the first set of academies was to be able to facilitate the transformation of poorly performing secondary schools, with the aid of external sponsors acting as driving forces (Machin and Vernoit, 2011). The role of these private co-sponsors is to effectively delegate the general management of an academy to a board of governors, who then possess the responsibility to dictate and oversee the structure of the school, and hence all of the necessary school staff appointments (Machin and Vernoit, 2011). Following the successful roll-out of the

first academies, the academy concept was then extended further following the Academies Act, which was introduced nationally in England in 2010 (GOV.UK, 2012). The Academies Act led to the extension of the academy concept in order to encompass a greater range of schools, including the schools that had been deemed to be of the highest accolade 'outstanding' by Ofsted (GOV.UK, 2012).

Similarly to comprehensive schools, academies still receive public funding and they continue to be non-selective with regards to their pupil intake (Machin and Vernoit, 2011). However, the significant difference between academies and comprehensive schools is that academies remain independent from the local authority governance, and therefore they have a greater level of freedom over their taught curriculum and are not required to follow the National Curriculum. The concept of academies being able to have a greater degree of flexibility in their academic curriculum was initially introduced in order to help innovate and raise the standards of failing school's by enhancing pupil performance (Machin and Vernoit, 2011, GOV.UK, 2012). In addition, having freedom from local authority governance means that academies are ultimately responsible for managing their own finances, which includes managing their resource spending and dictating the staff pay conditions (Machin and Vernoit, 2011). Academies are also able to set their own school day structure and have the freedom to alter their school term lengths if it is advantageous in improving pupil performance.

According to recent statistics, nearly 3.4 million pupils in England now attend academies or free schools. Over 2.2 million of these are in secondary schools, which equates to around 68.9% of all secondary school pupils (GOV.UK, 2017e).

2.2.3 Selective Secondary Schools

Unlike the previously discussed academies and comprehensive secondary schools, some secondary school education providers in England are highly selective in regards to the pupils who are granted admittance. One example of a selective secondary school is a Grammar school. Grammar schools, which although like comprehensive schools, do not usually require an attendance fee and also adhere to the National Curriculum, they do require their pupils to display a certain level of educational ability in order to be admitted a place (GOV.UK, 2017g). Pupils' educational ability and aptitude is generally identified during the sitting of an entrance exam, which was previously known as the Eleven Plus (GOV.UK, 2017g). However, in the case of a grammar school being oversubscribed, it may prove necessary to consider other attendance determining factors, in common with a comprehensive school, such as the pupil's

proximity to the secondary school and also considering whether older siblings already attend the school.

Another type of selective secondary schooling within England are private schools, which as previously discussed and as their name suggests, are privately funded schools. Like academies, private schools are traditionally independent from the control of the local government and hence are governed by their own management board, which exerts control over their general school structure (Machin and Vernoit, 2011). Again like academies, they are not required to adhere to the National Curriculum standards (GOV.UK, 2017g). Private schools, otherwise known as public schools or independent schools, do not receive state funding as pupils pay a regular fee to attend. Private schools typically require a termly or yearly attendance fee, although some offer a small number of bursaries or scholarships to pupils who are able to demonstrate an above average academic ability or a desirable skill set. Private schools can often be restricted by pupils' sex, resulting in an all-girls or an all-boys school, and some choose to offer boarding facilities for pupils to be able to live there during term-time. They seek to justify charging attendance fees by promoting the idea that pupils' will achieve higher academic attainment, due to their offer of individualised teaching, and the more favourable teacher to student ratios.

Finally, another example of selective secondary school providers are special schools, which are designed to cater for those pupils that need extra support or that possess Special Educational Needs (SEN) *(GOV.UK, 2017g).*   These SEN secondary schools tend to accommodate an array of complex pupil needs, and seek to assist with the *"development of communication, interaction, cognition and learning skills, and address pupils' varying social, emotional, mental health, sensory or physical needs" (GOV.UK, 2017g).* The SEN schools are likely to receive a degree of State funding but can also receive additional financial support via the work of charities or external sponsors.

2.2.4 Other Specific Types of Secondary Schools

Other types of secondary schools include: city technology colleges (CTCs) and faith-based secondary schools (Machin and Vernoit, 2011). CTCs are similar to comprehensive secondary schools in the respect that they are non-selective by pupils' ability, and they do not require an attendance fee. Although they adhere to the National Curriculum framework as set by the Department for Education, CTCs are heterogeneous in the fact that they possess more of a primary focus around science and technology and the related practical elements (Machin and

Vernoit, 2011). Similarly, other secondary schools exist that maintain a focus on other disciplines, such as the Arts.

Religious secondary schools, or faith-based schools, are not necessarily a distinct group of secondary schools, for example some academies receive religious backing and are financed by a religious sponsor. Currently 18.8% of the secondary schools in England are classified as faith schools, which equates to 18.9% of the secondary school pupils in England (Long and Bolton, 2017). The majority of schools within England that are identified as having a religious driving force, are dedicated to the different branches of Christian faith, such as Roman Catholic (9.5%) or Church of England (6.3%) (Long and Bolton, 2017). However, there is also a small number of secondary schools that cater for Jewish pupils (0.4%), Muslim pupils (0.4%) and Sikh pupils (0.2%) (Long and Bolton, 2017). Religious secondary schools are generally still obliged to adhere to the National Curriculum (Allen and West, 2009). Nevertheless their religious education provision has a greater degree of flexibility and choice, and religious subjects and values are likely to receive a greater level of prioritisation (GOV.UK, 2017f). However, religious driven academies, in keeping with the standard academy concept, are not required to follow the National Curriculum and again have a greater flexibility when it comes to dictating their secondary school structure (GOV.UK, 2017f). Table 2 has been used to summarise the different secondary schools and their key features.

2.3 The Implications of Differing Secondary School Structures

As discussed in the preceding sections, there is considerable variance in secondary school structures within England. Additionally, this PhD study took place during a period of major change in the English school system (2015-2018), as increasing numbers of secondary schools became academies, and the backdrop of austerity and budget cuts remained ever-present. Therefore, the fact that secondary schools remain extremely heterogeneous had direct implications for this study when aiming to explore the factors affecting implementation processes, specifically in this setting. The significant differences that can be observed across the differing secondary school types, in regards to the governance and the independent management systems ultimately make the setting extremely variable. As discussed, in the case of academies and private schools, each secondary school is altogether responsible for controlling their own staff bodies and dictating the secondary level curriculum that they deliver (GOV.UK, 2012). Consequently, this results in the roles that differential school staff possess and hence their personal expectations and responsibilities, being unique from school to school.

Table 2: Summary Table of the Different Types of Secondary Schools in England.

School Type	Local authority Governed	Attendance Fee	Admittance Requirements	Curriculum
Academies	No	No	Living within a Catchment Area	Set own curriculum and standards
City Technology Colleges	Yes/ No	No	Living within a Catchment Area or interest in science or technology	Adhere to National Curriculum but more focus on science and technology
Comprehensive Schools	Yes	No	Living within a Catchment Area	Adhere to the National Curriculum
Faith Based Schools	Yes/ No	No	Pupil or Family to be of specific religion	Adhere to National Curriculum, but more focus on religious education
Grammar schools	Yes	No	Requires proof of academic ability	Adhere to the National Curriculum
Private schools	No	Yes	Requires fee and may require proof of academic ability	Set own curriculum and standards
Special Educational Needs Schools	Yes/ No	Yes/ No	Pupil with a special educational; physical; or mental need	May adhere to the National Curriculum or set own standards

Reproduced from GOV.UK, 2017a.

Therefore, this was acknowledged from the outset of this PhD study, as the understanding was that school staff were likely to experience different implementation challenges across the differing school types. For example, this specifically influenced the sampling and thereby the

recruitment of school staff participants during the qualitative fieldwork. The sampling and recruitment will be discussed in more detail in Chapter Five.

Following on from this, secondary school staff have varying levels of capacity and resources available when it comes to implementing a new practice, or considering the sustainability of a pre-existing one, with this being directly attributable to the type of school (Marchant and Ellis, 2015, Levin, 2018). When considering this more broadly in relation to this PhD study, the lack of national consistency across the secondary school setting and the differing organisational contexts could affect the implementation of tobacco or substance use interventions in this context.

It was recognised that the priorities, and hence the education provision of schools, can be highly disparate leading to secondary school providers being subjected to regular monitoring by the national organisation Ofsted (Baxter and Clarke, 2013, Politics Online, 2017). A secondary school's Ofsted rating ultimately has the ability to alter and affect a school's priorities. If their academic provision is found to be inadequate or significantly lacking; secondary schools may find it necessary to shift their focus away from their pastoral service provision, in order to focus on their delivery of their core subject education. In addition, this is further complicated by the fact that the provision of health and social education within schools, remains to be non-compulsory, leading to highly variable provision across the differing school types. Ofsted and their role in the varying health and social education provision will be discussed in more detail in this next section.

2.4 Ofsted

As the quality of education provision can vary between different types of schools and their different locations, it was deemed necessary to formulate a standardised system, which sought to quality assess the provision of education. The previous education quality inspections were conducted by in-house local authority employees in the 1980s. These were identified as being inconsistent and not fit for purpose, leading to the formulation of the specialist school inspection, organisation Ofsted (Politics Online, 2017).

Ofsted is the abbreviated name for the National Government's Office for Standards in Education, Children's Services and Skills (Baxter and Clarke, 2013, Politics Online, 2017). The organisation was first introduced in the UK in 1992 as part of a planned education system overhaul, as a result of the Education Reform Act, which was introduced in 1988 (Baxter and Clarke, 2013, Politics Online, 2017). Ofsted's remit was extended in 2005 following the 'Every Child Matters Act', which sought to determine that children and young people were supported

to stay safe, be healthy, enjoy and achieve, make a positive contribution and achieve economic well-being (GOV.UK, 2003). Ofsted remains a highly independent, non-ministerial government department, whose primary function is to inspect and regulate the various services caring for children and young people, and the services that are responsible for the provision of education and skills for learners of any age (GOV.UK, 2017d). Ofsted's primary goal is to achieve excellence in education, and it facilitates this as an organisation by carrying out regular, unplanned inspections of primary and secondary schools, and rating both their education provision and their teaching standards, using an all-encompassing, standardised framework (GOV.UK, 2017d).

Although the goal and the overall purpose of Ofsted is to improve and monitor the education standards in the UK, which was widely recognised as an important role, the employed methods of inspection and the guidance used have not always been as well received (Baxter and Clarke, 2013). Ofsted's use of a checklist driven approach was extensively criticised as being too exiguous an approach to be able to comprehensively evaluate the quality of teaching, and hence a school's overall standards (Baxter and Clarke, 2013). In order to reduce the idea of a 'tick box' Ofsted culture, and driven by the reporting of the White Paper, which was released in 2010 to highlight the reforms to the education system in England, the checklist was reduced from a 29 element list, to a simplified list of four judgements (DfE, 2010, Baxter and Clarke, 2013). The revised judgement list was designed to enhance focus around teaching, learning, and behaviour, and is based around the following four areas: pupil achievement, teaching standards, pupil behaviour, and school leadership (Baxter and Clarke, 2013). The individual ratings that are received for each area are collated in order to generate an overall school grade. A school, which has undergone an Ofsted inspection, can hence be assigned to one of four grades, which are: Outstanding, Good, Requires Improvement, or Inadequate. The characteristics of each of these four ratings are presented in more detail in Table 3.

The Ofsted school rating system was designed to be highly transparent and accessible, and therefore each of the rated schools' results are made available for any interested individuals, such as parents, via an online database (GOV.UK, 2017d). Schools, which are undergoing the Ofsted monitoring process, aim to receive either a Grade 1 (Outstanding), or a Grade 2 (Good) overall rating (GOV.UK, 2015). If a school is deemed to have sufficient inadequacies to warrant receiving a Grade 4 rating; there are two recognised subcategories. A school can be judged to have serious weaknesses that would be indicative of a Grade 4 rating, but if their leadership and management ratings are of a Grade 3 standard or higher, it is likely that the school will be supported to improve the inadequate aspects and will receive regular monitoring by Ofsted inspectors to assess the level of improvement (GOV.UK, 2015).

Table 3: The Ofsted Grade Descriptors used for UK school Inspections.

Grade	Rating	Description of Grade
Grade 1	Outstanding	The school is rated as having an outstanding level of teaching, learning and assessment, with a wide-ranging promotion of pupils' spiritual, moral, social and cultural development and physical well-being
Grade 2	Good	The school is rated as having a good level of teaching, learning and assessment, and deliberate and effective action is able to be identified which promotes pupils' spiritual, moral, social and cultural development and their physical well-being
Grade 3	Requires Improvement	The school is rated as 'Requires Improvement' if any of the core four judgements are deemed to require improvement. There will also be weaknesses observed in the overall promotion of pupils' spiritual, moral, social and cultural development
Grade 4	Inadequate	The school is rated as 'Inadequate if any of the core four judgements are rated as inadequate, and/or the safeguarding processes are ineffective. In addition, there is also likely to be serious weaknesses observed in the overall promotion of pupils' spiritual, moral, social and cultural development

Reproduced from Ofsted's School Inspection Handbook GOV.UK, 2015.

The alternative is that if a school is deemed to be of a Grade 4 standard, but has been judged to have poor ratings for the leadership and management elements, it will likely result in the school being graded as being within the 'Special Measures' category (GOV.UK, 2015). A school identified as being in Special Measures is characterised as one which is *"failing to give its pupils an acceptable standard of education and the school's leaders, managers or governors have not demonstrated that they have the capacity to secure the necessary improvement in the school"* (GOV.UK, 2015, page 34). A school in the Special Measures category will receive regular termly monitoring by the assigned Ofsted inspectors, and is likely to experience significant changes to the school's structure, their management staff and to the Senior Leadership Team (SLT) (GOV.UK, 2015).

2.4.1 Ofsted's Role in Health and Wellbeing

Although Ofsted's main priority is to make an assessment of the academic provision of schools, their use of a multifaceted inspection framework ensures that schools are also assessed on whether they are able to satisfy a range of wider pastoral and holistic criteria (GOV.UK, 2015). A briefing, produced by Public Health England (PHE) in 2014, was commissioned to explore the association between the general health and wellbeing of pupils, and the observed effect on their educational attainment (PHE, 2014). It adopted a rapid review approach, in order to be able to assess and synthesise the available evidence in a summary format, to increase the accessibility of the research findings to both school staff and governors. A key finding was that a pupils' health and wellbeing state has the potential to either *"support or impede pupils' learning, their academic engagement, work ethic, commitment, and ultimate school success"* (PHE, 2014, page 4). It identified that schools which provided comprehensive programmes, aiming to improve both pupils' social and emotional learning, achieve on average 11% higher exam results overall (PHE, 2014). In addition, it also highlighted that the schools with higher attainment rates, tended to have a greater focus on the delivery of their physical education lessons and their provision of extracurricular sports programmes (PHE, 2014).

Following the increased evidence around the link between health and wellbeing and school attainment, Ofsted acknowledged the need for a greater focus around health and wellbeing in their inspection framework. Therefore, one of the criteria that is currently used during the assessment of a school includes the school's provision of personal development, behaviour, and welfare issues. The most recent Ofsted inspection framework, introduced in 2015, prompts Ofsted inspectors to be able to *"make a judgement on the personal development, behaviour and welfare of children and learners by evaluating the extent to which the provision is successfully promoting and supporting children's and other learners"* (GOV.UK, 2015, page 55). Furthermore, one of the subcomponents of this judgement emphasises the importance of assessing whether the pupils are seen to be gaining *"knowledge of how to keep themselves healthy, both emotionally and physically, including through exercising and healthy eating"* (GOV.UK, 2015, page 40).

A school's commitment to maintaining and improving pupils' wellbeing can be a key indicator of how successful a school is in achieving good academic results; and as previously discussed, substance use in adolescence can have a significant effect on a pupil's health and wellbeing (Adams et al., 2002). Therefore, it is of high importance that Ofsted continues to assess the provision of health education within schools (PHE, 2014). Schools are often driven by ensuring that they are able to satisfy the current Ofsted criteria, and hence it is imperative

that Ofsted not only maintains their health and wellbeing priority, but also considers a wider range of issues affecting adolescents' health, such as substance use. Following emphasising the importance of high quality and universal provision of health education on pupils' attainment; the next section will go on to explore the current provision of health and wellbeing education in secondary schools, specifically focusing on tobacco and substance use education, and the national guidance that is provided to schools in England.

2.5 Personal Social and Health Education (PSHE)

Research has frequently been able to show that the secondary school setting can allow adolescents to develop not only the required academic knowledge, but can influence the development of the emotional and behavioural skills which can have a long term impact throughout their adult lives (Willms, 2004, Saab, 2010). In England, education around the factors affecting health, in a biological capacity, are often included as part of the GCSE Science curriculums. However, the more complex social and emotional aspects of public health are most likely to feature as part of the curriculum of Personal Social Health Education (PSHE) lessons. Although most secondary schools provide PSHE, ultimately the content and also the delivery of PSHE varies significantly across the country, and across the differing school types (DfE, 2014). This can be directly attributed to the fact that PSHE is classified as a non-statutory subject, even though the National Curriculum framework states that *"all schools should make provision for Personal, Social, Health and Economic education (PSHE), drawing on good practice"* (DfE, 2014).

In the Department for Education's national curriculum guidance for PSHE provision, they state that in order *"to allow teachers the flexibility to deliver high-quality PSHE, we consider it unnecessary to provide new standardised frameworks or programmes of study"* (DfE, 2013). Therefore, due to the lack of a standardised curriculum, methods of PSHE delivery, and the content delivered across schools, remains heterogeneous. In addition, due to the existence of private schools, and the rapid growth of the independently governed academies not being required to follow the National Curriculum, the provision and the delivery of PSHE in secondary schools is not consistent.

Breaking this down further to concentrate more specifically on the provision of substance use education within secondary schools; the last issued school guidance around substance use in adolescents was published in 2012. In 2012, the Department for Education (DfE) in collaboration with the Association of Chief Police Officers (ACPO), issued '*DfE and ACPO Drug Advice for Schools: Advice for Local Authorities, Head Teachers, School Staff and Governing Bodies'* (DfE and ACPO, 2012). This guidance replaced the previous substance

use guidance issued in 2004 entitled 'Drugs: Guidance for Schools' (DfES, 2004). The 2004 guidance document sought to provide support around the delivery of a school's drug education, however in contrast, the most recent guidance, from 2012, moves away from drug education, and refocuses the concentration around the broader availability of behavioural and pastoral support in schools (DfE and ACPO, 2012). The guidance centres around *'What schools can do'* as a series of advice and recommendations. Key messages include the school staff being able to have *"the access to high quality training",* and the fact that substance use education should be *"supported by the whole school community"* (DfE and ACPO, 2012, pages 10-12). It also emphasises that school based, substance use education is likely to be the most effective when it remains a *"part of a well-planned programme of PSHE education delivered in a supportive environment, where pupils are aware of the school rules, feel able to engage in open discussion and feel confident about asking for help if necessary"* (DfE and ACPO, 2012, page 4).

2.5.1 Barriers to PSHE Delivery and Tobacco and Substance Use Education

Although a comprehensive, well-planned PSHE curriculum is deemed to be the gold standard with regards to delivering substance use education to adolescents in schools, this is not always achieved. PSHE delivery in most schools must contend with a plethora of obstacles, such as academic subject prioritisation, a lack of teaching capacity and staff knowledge, timetable scheduling issues, or a lack of financial resource affecting the provision of training or resource acquirement (Formby and Wolstenholme, 2012, Hayward, 2012).

A mapping study of PSHE provision in England was conducted by Formby and Wolstenholme in 2012 (Formby and Wolstenholme, 2012). The study compared the provision of PSHE in secondary level education, to the provision at primary school level, and also sought to identify some of the perceived barriers to PSHE delivery (Formby and Wolstenholme, 2012). Key findings of the study included that PSHE was seen to be of *"diminished status and priority"* in secondary schools in comparison to how it was viewed in primary schools (Formby and Wolstenholme, 2012, page 20). This was attributed to secondary schools not seeing the value of PSHE and giving more focus to their broader attainment and education targets (Formby and Wolstenholme, 2012). In addition, teachers included in the study, were found to display a level of discomfort or anxiety when it came to teaching specific topics such as Sex and Relationship Education (SRE) (Formby and Wolstenholme, 2012). This led to the modification of teaching, in order to allow teachers to remain within their 'comfort zones' (Formby and Wolstenholme, 2012).

Echoing the barrier associated with the provision of PSHE; there remains to be a lack of recently updated adolescent substance use guidance for schools. The most recent, government driven, supporting material for schools that is publicly available was released over six years ago in 2012 (DfE and ACPO, 2012). An example of a way in which this guidance is now considered to be out-dated is when assessing the increasing evidence base around Novel Psychoactive Substances (NPSs) in the past six years. The changes that have been instated to the legality of the classification of NPSs, which were formerly more commonly known as Legal Highs, has led to this substance use education guidance appearing out-dated. There is also a lack of guidance around how different school types could implement new substance use education or programmes into their varying school systems, which in part, contributed to the focus of this PhD study.

As first touched upon in the work of Formby and Wolstenholme, the provision of school-based, tobacco or substance use education or interventions, can be associated with a degree of teacher discomfort and it can often be viewed unfavourably or can be associated with negative stigma (Stormshak et al., 2005, Luoma et al., 2007, Formby and Wolstenholme, 2012). Therefore, secondary schools may be reluctant to provide a substance use education programme without specific national guidance or prioritisation.

The lack of a national prioritisation of tobacco or substance use education in schools is also likely to have had a negative impact on the education provision (Catalano et al., 2012). A recent national mandate in early 2017, saw the provision of sex and relationship education being made compulsory across all of the different school types in England (Independent, 2017). Sex education was previously only compulsory in local authority governed schools, but the new measures have been extended in order for sex and relationship education to be delivered comprehensively within the existing grammar schools, academies and free schools, indicating the overruling of the independent school's governance (GOV.UK, 2017c, Independent, 2017). The introduced amendment highlighted the importance of a regulated sex education curriculum, stating that: *"for the purposes of safeguarding and promoting the welfare of children, the secretary of state must, by regulations, make relationships education a statutory component of the national curriculum within the meaning of part 6 of the Education Act 2002"* (The Independent, 2017).

As mentioned in Section 1.3, on the risk-taking behavior of adolescents; risky sexual behaviour in adolescence can often be inextricably linked with risky substance use behaviour. Therefore, the delivery of nationally mandated substance use education, particularly within the crucial Key Stage Four phase, warrants further exploration. This is due to the fact that by more schools providing comprehensive tobacco or substance use interventions, it will not only seek

to impact on behaviour during adolescence, but will likely initiate a long-term impact on the physical and mental health of the population (Toumbourou et al., 2007).

2.6 Chapter Summary

Chapter Two has explored the different types of secondary schools that exist and the current provision of health education. The key points of this chapter have been:

- There are several different types of secondary school that exist within England and the difference in governance affects the delivered academic curriculum and the overall school structure and staffing.

- Academies are the most common type of secondary school in England.

- Ofsted is the non-ministerial, regulatory board that is responsible for conducting comprehensive quality assessments of school standards. Ofsted's recognition of the link between pupils' health and wellbeing and attainment, has led to a schools' ability to influence both the physical and emotional health of pupils, becoming an indicator in inspections.

- A briefing by PHE explored the association between the general health and wellbeing of pupils and the effect on their educational attainment. It found that schools providing comprehensive programmes, aiming to improve pupils' social and emotional learning, achieved on average 11% higher exam results.

- PSHE remains to be a non-statutory subject and hence health education in secondary schools still remains variable.

- The provision of substance use education specifically also remains inconsistent across secondary schools, due to a distinct lack of recently updated guidance.

Chapter Three

Implementation Science Literature Review

3.1 Overview of the Chapter

This chapter provides a general overview of the implementation science field, how it underpins this research, and allows the formation of a platform for a more focused, school-based implementation systematic literature review, which follows in Chapter 4. The aim of Chapter Three was therefore to identify and define some of the key terminology used within this thesis with regards to implementation. It discusses the heterogeneous implementation outcomes that can be achieved, and explores the plethora of tools, which can facilitate and evaluate different implementation processes. Although the modest research evidence around school-based implementation is considered, a discussion of the relevance and the applicability of the general implementation research literature has been provided.

3.2 Introducing the Concept of Implementation

This study aimed to develop a comprehensive understanding of how to facilitate implementation processes of tobacco or substance use interventions within secondary schools in England. As implementation terminology is often inconsistent and ambiguous, it was important to start by defining key terminology. There are a number of relevant terms used within implementation science such as: *embedding*, *adoption*, *innovation*, *dissemination,* and *knowledge uptake,* and there is currently a lack of consensus in the field over when and how specific terms are used. This study set out to focus on the term implementation, but where relevant, considers how other concepts relate to this.

The lack of consistent terminology within the implementation field was explored in the work conducted by Tabak et al which sought to develop an inventory of theoretical approaches, and provide guidance around selecting an appropriate approach to use (Tabak et al., 2012). Tabak et al suggested utilising a glossary of terms, in order to encourage the standardisation of

terminology, such as the one compiled by Rabin et al in 2008, but no one glossary of terms has been universally adopted to date (Rabin et al., 2008, Rabin et al., 2012).

By first considering implementation, the dictionary definition states that implementation is *"the process of putting a decision or plan into effect"* (Oxford, 2016). However, the overarching concept of implementation can refer to all of the activities that are undertaken from making an initial change, to arriving at a pre-specified destination and this is the definition that was adhered to within this PhD study (Linton, 2002). Nevertheless, implementation continues to be one of the most under-recognised, but critical stages of intervention delivery, as the likelihood of achieving the desired outcome is reduced when implementation is ineffective, or not sufficiently considered (Linton, 2002, Fixsen et al., 2005, Eccles and Mittman, 2006, Proctor et al., 2011). Implementation of a change occurs when a new practice, for example, a tobacco or substance use intervention, has been introduced and adopted into the implementation setting, which in this case is the secondary school setting (Linton, 2002, Fixsen et al., 2005, Eccles and Mittman, 2006, Proctor et al., 2011). The effectiveness of an implementation process can be assessed in different ways, for example after a fixed duration of time, when the change has been clearly integrated into practice, or when the new practice is abandoned or neglected (Linton, 2002, Fixsen et al., 2005, Eccles and Mittman, 2006, Proctor et al., 2011).

3.2.1 The Origins of Implementation Science

The question of *'how can we implement a new practice?'* remains a complex and multifaceted one, and thus it is inconceivable to expect a one approach fits all answer (Rycroft-Malone et al., 2004, Eccles and Mittman, 2006, Brownson et al., 2012, Greenhalgh, 2017). Implementation science therefore, was originally proposed as a means to study the methods that sought to address the challenges associated with introducing research in practice (Eccles and Mittman, 2006, Nilsen, 2015). By facilitating the implementation of more evidence-based practice, it can have significant implications across a diverse range of implementation settings, such as the healthcare or professional settings, communities, or in the context of this study the secondary school (Sackett et al., 1996, Kitson et al., 1998, Biesta, 2007, Brownson et al., 2009, Nilsen, 2015).

One of the main functions of primary research is to generate novel evidence, or to build upon existing knowledge to address any pre-identified gaps (Weiss, 1977). Research evidence can then be filtered down, or disseminated, with the potential to influence practice when used appropriately (Best et al., 2008, Oliver and de Vocht, 2015). The term dissemination refers to the active and dynamic sharing of existing or novel research findings into the wider context

(Kerner et al., 2005, Rabin et al., 2008, Brownson et al., 2012). Whereas knowledge uptake refers to the use of defined research findings informing and facilitating decision making around a new practice (Graham et al., 2006, Mitton et al., 2007).

Evidence based practice is often viewed as being the gold standard approach when considering health behaviour interventions (Sackett et al., 1996, Kitson et al., 1998, Biesta, 2007, Brownson et al., 2009). Evidence based practice is the incorporation of high quality findings into practice directed activities, in order to increase the success of new, or pre-existing programmes (Sackett et al., 1996, Kitson et al., 1998, Biesta, 2007, Brownson et al., 2009). By implementing evidence based practice, it seeks to improve outcomes, and utilise resources more efficiently (Kitson et al., 1998, Brownson et al., 2009). However, it has been estimated that approximately two thirds of an organisation's efforts to implement change fail in some capacity (Damschroder et al., 2009). The low success rate of implementing change can be associated with plethora of different factors, with examples including flawed implementation processes, sufficient resources, or a lack of population support (Damschroder et al., 2009). Therefore, the next sections discuss the different implementation outcomes that can be assessed, and the benefits of employing implementation strategy and theory to facilitate the process.

3.3 Implementation Outcomes

As the implementation research field advanced, distinguishing between different implementation outcomes was acknowledged as important as it can guide the choice and application of implementation strategies and theory, and also assess the effectiveness of an implementation process (Durlak and DuPre, 2008, Proctor et al., 2011). Proctor and colleagues first set out to address the challenges of conceptualising and evaluating different implementation outcomes (Proctor et al., 2011). Their proposed implementation outcome structure has shaped further developments in the field, and is presented within the guide to implementation research compiled by Peters et al for the World Health Organization (WHO) (Peters et al., 2013). Proctor et al stated the importance of being able to differentiate between the outcomes that are intended to stem from the intervention, for example an improvement in a young person's substance use, and the outcomes that are attributable to the effectiveness of the implementation process (Proctor et al., 2011). Therefore, they presented a schematic classifying the different outcomes that can be observed within implementation work, into three different types: *Implementation Outcomes, Service Outcomes,* and *Client Outcomes* (Proctor et al., 2011). The three distinct groups, as set out by Proctor et al, is shown in Table 4.

Table 4: Table of the Different Implementation Outcomes.

Implementation Outcomes	Service Outcomes	Client Outcomes
Acceptability	Efficiency	Satisfaction
Adoption	Safety	Function
Appropriateness	Effectiveness	Symptomatology
Costs	Equity	
Feasibility	Patient-centeredness	
Fidelity	Timeliness	
Penetration		
Sustainability		

Reproduced from Proctor et al., 2011.

By providing a way to organise, conceptualise and measure the different implementation outcomes, Proctor et al advanced the understanding of implementation processes, and enhanced implementation research efficiency, and hence it remains to be the most valid and reliable model of implementation outcomes in the field (Proctor et al., 2011). As this study was interested in exploring specifically school-based implementation outcomes; the next subsections define and discuss each of the implementation outcomes, as organised by Proctor et al, but situates them within the context of school-based tobacco and substance use interventions.

3.3.1 Acceptability

The implementation outcome *acceptability* refers to the degree in which the implementation intervention, appears to be agreeable to the relevant stakeholders or providers (Peters et al., 2013). In addition, *acceptability* can refer to either the implementation process, or the specific delivery method (Peters et al., 2013). Depending on the implementation strategy, or the delivery method, it may be apparent that the implementation process lacks acceptability within the secondary school staff population. An implementation process, which is perceived as unacceptable, is unlikely to be easily introduced within a secondary school, thus rendering significant challenges when attempting to sustain a novel tobacco or substance use intervention (Audrey et al., 2008).

A specific example of this is found in the study by Mauriello et al who assessed the acceptability of a school-based intervention in preventing adolescent obesity (Mauriello et al., 2006). The student and teacher ratings, obtained qualitatively, were largely positive around school nurses delivering the intervention, which focused around the different stages of change (Mauriello et al., 2006). The intervention was found to be easy to use, with appropriate content, and therefore researchers deemed it as acceptable to implement (Mauriello et al., 2006). *Acceptability* can be somewhat contentious however, as there is a high potential of variability, and it can be individual or setting specific, instigating challenges with generalisability across a population. For example, an implementation process that appears acceptable within one secondary school might be wholly unacceptable in another due to different factors such as a school's capacity, resources or ethos, and thus requires individual consideration.

3.3.2 Adoption

The implementation outcome *adoption* refers to the initial action that is undertaken to implement a novel intervention or practice (Roman and Johnson, 2002, Proctor et al., 2011). For example, when considering the implementation of a school-based tobacco or substance use intervention, *adoption* can be identified as the work needed to introduce the new intervention within the school, such as preparing and delivering the relevant material for an intervention session. If *adoption* is effective, the intervention is more likely to be implemented and sustained in practice. A specific example of a study concentrating on school-based *adoption* is by McCormick et al that assessed the adoption and implementation of a school-based tobacco prevention programme (McCormick et al., 1995a). The study focused on identifying which factors had the potential to affect the adoption of the curricula (McCormick et al., 1995a). It identified that the curricula was more effectively adopted in schools within larger districts and those with trained teachers (McCormick et al., 1995a).

3.3.3 Appropriateness

Appropriateness can be used to measure the perceived fit of an intervention within a particular implementation setting, or participant group (Peters et al., 2013). Similarly, to the outcome *acceptability, appropriateness* can be variable. An example of this is found in a study by Haug et al which looked to determine the appropriateness of a web and text- based intervention to reduce binge drinking in young adults (Haug et al., 2013). Of the young adults in the study, 57.5% deemed the number of text messages to be appropriate, whereas 42.5% did not; indicating that although using a text-based communication method may be appropriate for a proportion of young people, it is difficult to ensure universality. In addition, measuring

acceptability and *appropriateness* can be challenging due to the reliance on self-report methods, and they can be difficult to measure objectively. A*ppropriateness* was identified as an important implementation outcome to explore within the context of this study, as it would be important to identify whether the implementation of a tobacco or substance use intervention was relevant within the secondary school (Peters et al., 2013).

3.3.4 Costs

When considering the implementation of a school-based tobacco or substance use intervention, it is fundamental to consider not only the financial *cost,* but also the *wider costs* that are directly associated with implementation, such as delivery *costs, time, and resources* (Proctor et al., 2011, Brownson et al., 2012, Peters et al., 2013). As discussed in Chapter Two, the increase in the academy school format has seen increased numbers of secondary schools managing their own budget, and often the available monies and hence resources are constricted (Machin and Vernoit, 2011, Bhattacharya, 2013). Therefore, the implementation outcome *cost,* is likely to be a salient consideration when assessing implementation within the secondary school.

3.3.5 Feasibility

By exploring a similar area as *appropriateness*; the outcome *feasibility*, measures the extent to which a new practice can be undertaken and implemented within the proposed setting (Peters et al., 2013). It again looks at determining the practicability of implementation, but is different in scope to *appropriateness* as it assesses the actual fit of implementation, opposed to the perceived fit considered by *appropriateness* (Peters et al., 2013). If the implementation of a tobacco or substance use intervention is identified as *feasible* within a secondary school, it can determine whether an implementation strategy is fit for purpose.

3.3.6 Fidelity

The outcome implementation *fidelity* refers to the degree in which an intervention can be delivered as initially intended within an implementation strategy (Carroll et al., 2007, O'Donnell, 2008). This allows the establishment of whether *high fidelity,* or delivery which is close to the intended delivery, can be identified as a determinant of implementation effectiveness (Carroll et al., 2007, O'Donnell, 2008).

Implementation fidelity has been widely explored within implementation research and hence various methods have been proposed to measure and quantify *fidelity,* including a framework developed by Carroll et al (Carroll et al., 2007). A paper by Keller- Margulis, which explored how to assess the *fidelity* of a school-based, psychological Response to Intervention (RtI) programme, stated that in the context of school implementation work, fidelity data is often neglected, highlighting a missed opportunity (Keller‐Margulis, 2012). Therefore, Keller-Margulis proposed a combination of different methods to successfully collect fidelity data, such as observations, self-reports, and initiating performance feedback (Keller‐Margulis, 2012).

However, there is often a distinction between achieving *high fidelity,* and observing the desired implementation outcome, and they can often be mutually exclusive concepts. Maintaining *high fidelity* is not always advantageous, as for example it can compromise the *acceptability* or the *feasibility* of an intervention. Subsequently, measuring *fidelity* within an implementation process can often be beneficial in order to assess whether it is important to achieve *high fidelity* throughout, maintaining it across the delivery of an intervention's core components or whether it has very little impact. In the implementation setting of this study, it would likely prove useful to determine whether the implementation, of a school-based tobacco or substance use intervention, is consistent with the ideal practice.

3.3.7 Penetration

Penetration, which can be otherwise known as implementation coverage, refers to the identified proportion of end users that appear eligible to benefit from implementing a novel intervention (Peters et al., 2013). Implementation *penetration* can also be used in a more general capacity to explore the degree to which an intervention is integrated in an implementation setting, such as a tobacco or substance use intervention within the secondary school setting (Peters et al., 2013). If an intervention experiences poor *penetration,* it may be due to an ineffective implementation strategy, equally the intervention may not require full *penetration*, and hence *penetration's* relationship with implementation requires adequate exploration.

3.3.8 Sustainability

Finally, the challenges associated with implementing a new intervention do not necessarily culminate when the initial adoption and implementation have been undertaken (Elias et al., 2003, Han and Weiss, 2005). An intervention can be adopted in the first instance; but after a

period of time the new practice may not continue or be sustained resulting in the intervention not being embedded within the organisation (Elias et al., 2003, Han and Weiss, 2005). *Sustainability* can therefore be defined as *"the ability to be maintained at a certain rate or level"* (Oxford, 2017). If an implementation strategy, of a tobacco or substance use intervention for example, does not account for maintenance in practice, the *sustainability* may be poor and the longer-term implementation may lack effectiveness. However, not all interventions need to be sustained, and some are designed as 'one-offs'. Nevertheless, it can be useful to determine whether sustainability is an important implementation outcome, or whether it is the intervention or the intervention outcome that needs to be sustained long term.

3.4 The Use of Implementation Strategy

A contributing factor in the failure to implement a new practice can be the lack of a comprehensive, well-structured implementation strategy (Deschesnes et al., 2003, Proctor et al., 2013, Pinnock et al., 2017, Powell et al., 2017). An implementation strategy considers the fundamental aspects required for implementation, with the overarching goal of improving implementation effectiveness (Eccles et al., 2009, Proctor et al., 2013, Powell et al., 2017). An implementation strategy considers a myriad of interacting factors, such as the context and setting of the new practice, and the implementation outcomes e.g. *acceptability* and *feasibility*, the need for change, the support network and the providers responsible for the delivery and maintenance (Powell et al., 2017). Implementation strategies can consist as single components, however, more commonly they use multiple components, appearing multifaceted, across multiple levels (Powell et al., 2017).

In research, implementation strategies have found to be challenged by the use of inconsistent terminology, poor reporting and a lack of theoretical justification (Proctor et al., 2013). Table 5 highlights the key components of an implementation strategy, which has been adapted from the research by Proctor et al 2013. By considering these components, it has been argued that a comprehensive implementation strategy can be constructed (Proctor et al., 2013). In addition, highlighting the importance of employing an implementation strategy, it leads to the exploration of the use of implementation theory.

Table 5: The Considerations for Developing or Employing an Implementation Strategy.

Consideration	Definition
Actor(s)	The 'actor' refers to the individual delivering the implementation strategy. This could include specific providers, administrative staff, intervention developers, organisation personnel, patients, or community stakeholders
Action(s)	Implementation strategies should include clear definitions of the actions, steps or processes, and sequences of behaviour to be followed
Target(s) of the action	The strategy should also provide clear guidance as to where they should be directed or their conceptual 'target'
Temporality	The order, or the sequence of the implementation strategy use can be important
Dose	Implementation strategies can vary in dosage or intensity and hence studies of effectiveness and comparative effectiveness of implementation strategies should measure dose
Implementation outcome(s) affected	The strategy should identify the specific implementation outcome that will be achieved
Justification	Justification should be provided for the specific use of an implementation strategy, by identifying potential needs, barriers, or facilitators

Reproduced from Proctor et al., 2013.

3.5 Implementation Theories, Frameworks and Models

Implementation theories, frameworks and models can be used to enhance the efforts to disseminate and implement interventions, such as the focus of this PhD study; a school-based tobacco or substance use intervention (Tabak et al., 2013, Grol et al., 2013). Theoretical approaches can be used differently, with some existing as a checklist of factors to consider, whilst others provide a strategy or a series of steps constituting 'implementation'. In addition, theoretical approaches can also be used in an evaluatory capacity, as they can provide a

framework to evaluate the effectiveness of an implementation process and assess how closely the strategy has been adhered to in practice by assessing implementation fidelity.

Before exploring the different categories in more detail, it is important to understand the distinction between the terms; Implementation *theory, models* and *frameworks.* Although models, theories and frameworks can be presented synonymously, they are used to classify heterogeneous concepts, and should be appropriately differentiated (Tabak et al., 2012).

Starting with *model*; a model is most commonly defined as a guide, or a set of instructions that can guide users through a specific process (Chakravorty, 2009, Powell et al., 2009). Implementation models commonly provide a pathway, or a series of steps, to replicate a previously determined implementation plan or strategy (Chakravorty, 2009, Powell et al., 2009).

When considering the definition of *theory*, it has not always been as straightforward, and hence has often been challenged within research (Imenda, 2014). The Oxford Dictionary definition, states that a theory can be described as *"a supposition or a system of ideas intended to explain something"* (Oxford, 2015). Although the Oxford definition is simplistic, it captures the essence that a theory is a set of interrelated concepts, which function together to explain or predict phenomena. However, what the dictionary definition fails to acknowledge is that a theory is dynamic, meaning they have the potential to be altered or disproved (Imenda, 2014). Therefore, in the context of implementation work, a theory can be described as an explanation of the underpinnings of an implementation process, that explains the causal mechanisms existing behind the process (Nilsen, 2015).

A *framework* commonly provides more of a descriptive outlook as they are used to describe the factors affecting the outcome of a specific implementation process, but without addressing the deeper complexities of, for example, the relationships amongst specific factors (Nilsen, 2015). The following subsections will unpack the different approaches in more detail, providing relevant examples using the widely cited taxonomy provided by Per Nilsen (Nilsen, 2015).

But first considering how theory, models and frameworks can be used in implementation research in more detail; a systematic review by Davies et al explored the use of implementation theoretical approaches in guideline dissemination and implementation strategies (Davies et al., 2010). The review emphasised the importance of theory in being able to provide an understanding of the implementation barriers, by facilitating the intervention design process, whilst exploring the mediating pathways and moderators (Davies et al., 2010). In addition, implementation science continues to be a rapidly emerging and evolving field, and advances in knowledge have led to the acknowledgement that implementation studies are

often inadequately reported (Davies et al., 2010, Proctor et al., 2013, Pinnock et al.,2017). Therefore, a way in which to improve the reporting of implementation studies is to use implementation theory to underpin the results, or to act as a structural analytical tool. Although various guidelines have been developed and used to improve implementation reporting, with examples including Standards for Reporting Implementation (StaRI) (Pinnock et al., 2015a, Pinnock et al., 2015b), and intervention reporting- Template for Intervention Description and Replication (TIDieR) (Hoffmann et al., 2014), implementation theory offers another option to improve reporting. By choosing to use an implementation theory, model or framework to not only improve the research reporting, those planning and conducting implementation work within an organisation, can consider the different components with the potential to affect implementation (Eccles et al., 2009, Tabak et al., 2012, Grol et al., 2013).

In practice, although the research literature often reports that it is advantageous to use implementation theory (Glanz and Bishop, 2010, Proctor et al., 2013), it does not guarantee that effective implementation will be achieved or sustained. An example of this can be observed in the study by VanDevanter et al which involved a cluster Randomised Controlled Trial (cRCT) comparing the effectiveness of two different strategies for implementing tobacco use guidelines within health centres (VanDevanter et al., 2017). The preliminary work employed the Consolidated Framework for Implementation Research (CFIR), in order to identify factors that could influence implementation or inform modifications to the intervention (VanDevanter et al., 2017). Implementation facilitators were cited as: seeing the advantage of the intervention compared with current practice (intervention characteristics) and having an awareness of the burden of population tobacco use (outer setting). Implementation barriers were: the intervention was complex (intervention characteristic), and not compatible (inner setting) with practice (VanDevanter et al., 2017). Although using the CFIR didn't improve the effectiveness of the implementation, it allowed the implementation specific characteristics to be determined in order to inform the cRCT (VanDevanter et al., 2017).

However, the choice of which theory, model or framework to use can often be onerous and complex, as there is a plethora of different theoretical options, which will be explored in the upcoming subsections (Birken et al., 2017).

3.5.1 Exploring and Classifying the Different Implementation Theories, Models and Frameworks

The previous subsection highlighted the importance of using theoretical approaches, and how they have the potential to facilitate implementation strategies (Davies et al., 2010). However,

the use of implementation theories, models and frameworks has not always been consistent. The previously discussed review by Davies et al, found there to be poor justification of choice of implementation theory and that a greater use of explicit theory to better understand the barriers and explore the mediating pathways of implementation would be advantageous in future work (Davies et al., 2010).

This has resulted in the introduction, use and development of different models, frameworks and theories, aiming to identify, support and address the potential challenges observed in implementation processes (French et al., 2012, Tabak et al., 2013, Nilsen, 2015). The differing approaches often share and borrow concepts from other approaches, leading to a significant degree of overlap observed across the different theories, models and frameworks (Rabin et al., 2012, Tabak et al., 2013, Nilsen, 2015). As briefly reflected upon in the previous subsection, a common challenge within implementation research, is choosing and identifying the most appropriate approach to use, due to the vast array of models, frameworks and theories (Group, 2006, French et al., 2012). One of the contributing factors behind this is that there is currently a broad range of disciplines sharing implementation best practice, leading to a diverse range of theoretical approaches available (Tabak et al., 2012).

Due to the varying disciplines, finding the right fit between the context and the theoretical approach can often be complex. Existing approaches may not meet all of the needs for a specific context, and hence it may prove appropriate to choose elements of an existing approach, combine a range of approaches, or consider developing a novel approach entirely (Tabak et al., 2012). Adaptation continues to be an important part of using implementation theory, and development is often on-going to ensure and improve overall usability (Tabak et al., 2012). A specific example of this is the Theoretical Domains Framework (TDF), which was modified and additional domains were added in order to improve the overall usability (Huijg et al., 2014).

Per Nilsen built upon the existing implementation theory research in order to collate and classify the range of approaches into five categories (Nilsen, 2015). By classifying them into different categories, it sought to assist the choice of approach by grouping the different models, theories and frameworks, by their primary function. Figure 2 presents the five different categories, that were proposed by Nilsen (Nilsen, 2015).

Process Models	Determinant Frameworks	Classic Theories

Implementation Theories	Evaluation Frameworks
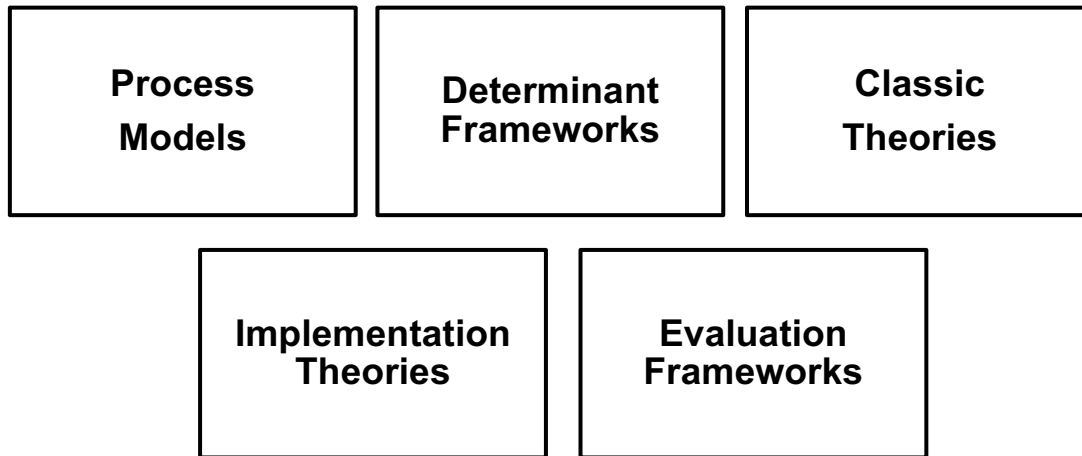
Figure 2: The Five Categories of Models, Theories and Frameworks used in Implementation Research.

Reproduced from Nilsen, 2015.

There is currently an extensive selection of implementation models, theories and frameworks available from different disciplines (Nilsen, 2015). Understanding the context of the desired implementation change and what is needed from the theoretical approach can facilitate the choice of model, theory and/or framework. The following subsections present and discuss some of the most commonly used examples of each of the five approaches and focusing on those most relevant to the focus of this study and school-based implementation processes.

3.5.2 Process Models

Process models delineate the steps of how to implement a novel intervention into practice (Brownson et al., 2012, Nilsen, 2015). They originated from process evaluations, which are commonly used within complex intervention development (Moore et al., 2015). Process models can help achieve specific implementation outcomes, as they describe and guide an implementation process, in order to be able to facilitate the undertaking of implementation activities (Nilsen, 2015). Some specific examples of process models used within implementation research include the Ottawa Model of Research Use (OMRU) (Logan and Graham, 1998), the Canadian Institutes of Health Research (CIHR) model of knowledge translation (CIHR, 2014), and the Knowledge to Action model (Graham et al., 2006, Ward et al., 2009). The upcoming subsections will discuss some examples in more detail.

3.5.2.1 The Knowledge to Action Model

The Knowledge to Action (KTA) model is a process model developed and introduced by Graham et al to assist with the planning and evaluation of knowledge transfer strategies in healthcare (Graham et al., 2006, Ward et al., 2009). The KTA model functions to deliver sustainable evidence-based interventions (Graham et al., 2006, Straus et al., 2009, Field et al., 2014). Figure 3 shows the conceptual model created by Graham et al, which navigates and guides knowledge translation from the primary knowledge producer, to the desired user.

Graham I, et al. *The Journal of Continuing Education in the Health Professions*, Volume 26, pp. 13–24. 2006
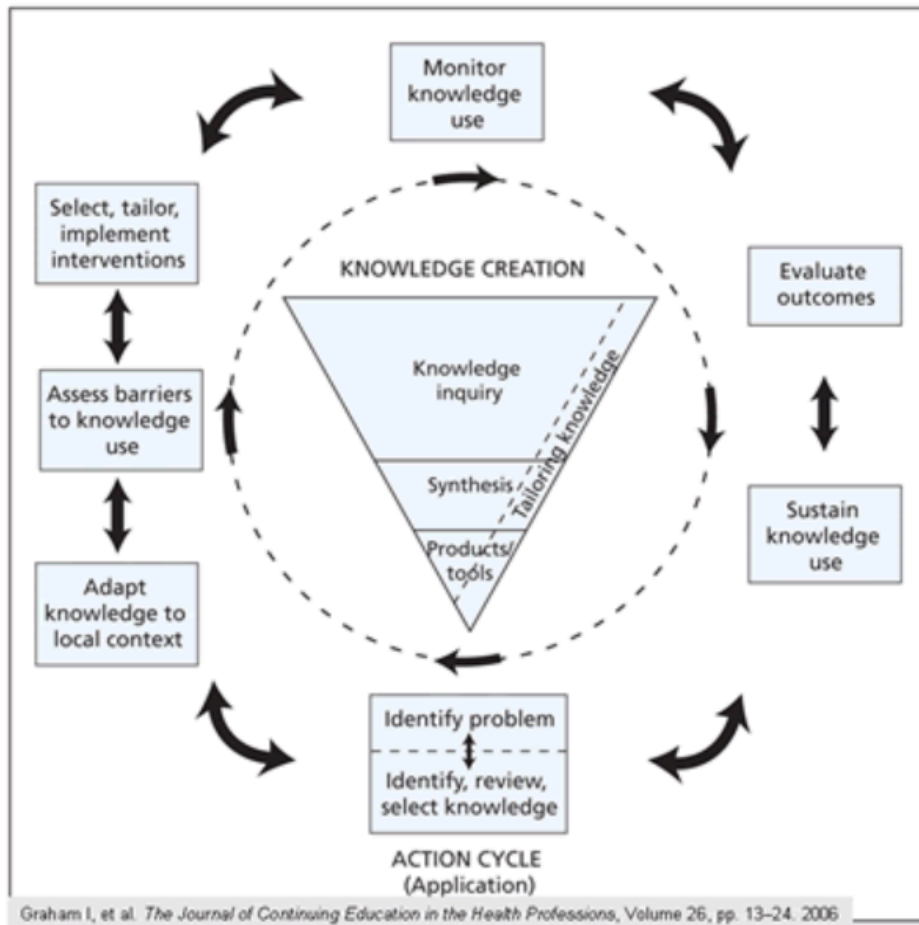
Figure 3: The Knowledge to Action Model.

Diagram from the World Health Organization (WHO, 2016).

An example of the KTA model being used in research is by Straus et al which presents a case study review exploring the role of mentors and their experiences of mentorship initiatives when developing and retaining clinician scientists (Straus et al., 2008). Using the KTA model, Straus et al facilitated the development of mentorship strategy for clinician researchers (Straus et al., 2008). Using KTA ensured it was important to recognise and engage the stakeholders in the

knowledge implementation process. This directly informed the development of strategies that could evaluate the knowledge use, and its impact on outcomes (Straus et al., 2008).

Although the KTA model has been widely used in research, a systematic review by Field et al exploring the application of KTA, established that the use has been largely variable with varying degrees of completeness (Field et al., 2014). In addition, the KTA model has been used less frequently to underpin the change process, and as this is a conventional use of theories and frameworks, it suggests the use may be altogether restricted (Field et al., 2014).

3.5.2.2 The Ottawa Model of Research Use

A second example of an implementation process model is the Ottawa Model of Research Use (OMRU) (Hogan and Logan, 2004). The OMRU was developed as a practical, theoretical model to facilitate the transfer of research knowledge into a clinical practice setting (Hogan and Logan, 2004). Although the OMRU was constructed for use within healthcare, it exists as an interdisciplinary model, consisting of six connected elements that can be applied in a broader implementation context: the practice environment; the potential adopters of the evidence; the evidence-based innovation; the research transfer strategies; the evidence adoption; and, health-related and other outcomes.

The OMRU assumes that the use of research is dynamic, and the actions of different individuals can affect knowledge transfer (Hogan and Logan, 2004). The OMRU adopts a non-linear approach, as it acknowledges that implementation processes can be influenced by a plethora of contributing agents (Hogan and Logan, 2004). Graham and Logan employed the OMRU process model to provide a pathway for the implementation of clinical practice guidelines addressing skin care issues within a surgical programme in hospital (Graham and Logan, 2004). The OMRU was used successfully to allow the implicit skin care strategies to be tailored, whilst functioning to address the barriers to effectively implement the guidelines. The OMRU is however limited by the fact that it cannot provide information on which implementation interventions should be used under various circumstances due to the lack of validation (Graham and Logan, 2004).

3.5.3 Determinant Frameworks

Although a process model can influence and guide an implementation strategy; it is often valuable to acknowledge and understand the interacting factors that can affect an implementation outcome (Nilsen, 2015). Therefore, a range of approaches has been

developed to identify the factors affecting implementation. These different approaches include: Determinant Frameworks, Classic Theories, and Implementation Theories (Nilsen, 2015). Subsequently, the upcoming subsections explore each approach in more detail, starting with Determinant Frameworks.

Determinant Frameworks were named after their ability to describe the determinants of an implementation process. A defining characteristic of a determinant framework is that they seek to explore breadth rather than depth, and they provide explanations about why specific implementation determinants are important (Flottorp et al., 2013, Nilsen, 2015). Determinant Frameworks do not provide a focus around *how* the implementation of a change can occur, but instead concentrate on the numerous factors that can influence the change (Nilsen, 2015).

3.5.3.1 The Consolidated Framework for Implementation Research (CFIR)

A commonly used example of a determinant framework is the Consolidated Framework for Implementation Research, (CFIR) (Damschroder et al., 2009, Nilsen, 2015, Kirk et al., 2016). The CFIR was constructed as a meta-theoretical framework, which assimilates five domains, encompassing 39 different constructs, in order to provide an understanding of an implementation process (Damschroder et al., 2009, Brownson et al., 2012, Ilott et al., 2013). CFIR was initially proposed as a tool to synthesise common constructs from other existing implementation frameworks, due to the large degree of overlap between the similar approaches (Damschroder et al., 2009). The CFIR is flexible however, and hence it remains functional if users choose specific elements of the framework, in order to select the most appropriate and relevant constructs for their context (Damschroder et al., 2009). The five different domains of CFIR are shown in Table 6.

Like the selective use of its constructs, the CFIR was also designed to be fluid, with the expectation that the framework will undergo development and positively evolve as it is used in a range of different implementation settings (Damschroder et al., 2009). This allows the CFIR framework to continue to be fit for purpose (Damschroder et al., 2009).

A specific example of the CFIR being used in research is presented in a study by Varsi et al which sought to identify and compare the barriers and facilitators influencing the implementation of an Internet-based, patient-provider communication (IPPC) service in hospitals (Varsi et al., 2015). The majority of the IPCC constructs were concurrent with the inner setting domain, indicating that institutional factors were important in ensuring effective implementation (Varsi et al., 2015).

Table 6: The Five Domains of the Consolidated Framework for Implementation Research.

Domain	Definition
The Intervention Characteristics	The core components of an intervention and the adaptable elements.
Outer Setting	The overarching economic, social and political context
Inner Setting	The specific structure, culture and climate of an organisation, in which an intervention is to be implemented
The Individuals Involved	The knowledge and attitudes of the individuals involved with the intervention
Implementation Process	The active change process that is employed to implement the intervention

Reproduced from Damschroder et al., 2009 and Ilott et al., 2013.

Other important findings were obtained around the health care providers' being able to identify the intervention as being useful for themselves, and their patients (Varsi et al., 2015).

A critique of a determinant framework, which is largely apparent when using the CFIR, is that although they can provide a general overview of surface level, implementation determinants, their broad and comprehensive nature can limit their usefulness and applicability (Varsi et al., 2015). In addition, CFIR lacks the capability of discriminating between the weighting of the constructs when determining implementation success and therefore the relative importance cannot be assessed (Varsi et al., 2015).

Kirk et al reflect upon this further within their systematic review, which assessed the extent of the breadth of use of CFIR, the depth of application, and also CFIR's contribution to implementation research (Kirk et al., 2016). The results found that as a direct result of CFIR's broad nature, a wide variation in which constructs were used and evaluated was observed, and the reporting of methods or logic for selecting constructs or domains was limited within the included studies (Kirk et al., 2016). Kirk et al proposed that CFIR's use in investigating outcomes was limited and future work should be focused around this to increase the robustness of comparisons across studies (Kirk et al., 2016).

3.5.3.2 The Promoting Action on Research Implementation in Health Services (PARIHS) and The Theoretical Domains Framework (TDF)

Some other examples of determinant frameworks include: The Promoting Action on Research Implementation in Health Services (PARIHS) (Rycroft-Malone, 2004), and the Theoretical Domains Framework (TDF) (Michie et al., 2005). The PARIHS framework can be used to influence evidence based practice by considering three elements: evidence, context, and facilitation, and their dynamic, simultaneous relationship (Rycroft-Malone, 2004, Kitson et al., 2008). The guiding principle of PARIHS is that in order to achieve effective implementation, there needs to be an assessment of the nature of the evidence, the quality of the context, and the type of facilitation needed to ensure successful implementation (Rycroft-Malone, 2004). An example of its use is Brown and McCormack, who used PARIHS to explore the factors affecting the uptake of research evidence around Acute Pain Services (APS) (Brown and McCormack, 2005). PARIHS acted as a guide in which to improve the current pain practices and was recommended for future work in the field (Brown and McCormack, 2005).

Finally, the TDF is a determinant framework that was originally developed for the use of health practitioner clinical behaviour change within the healthcare setting, but its wide, potential applicability has allowed it to be employed in an extended range of intervention settings (Michie et al., 2005). The TDF was initially constructed with 12 domains including: knowledge, skills, social/professional role and identity, beliefs about capabilities, beliefs about consequences, motivation and goals, memory, attention and decision processes, environmental context and resources, social influences, emotions, behavioural regulation, and the nature of the behaviours (French et al., 2012). Modifications of the TDF have seen it evolve to include two additional domains around optimism and reinforcement, whilst some of the existing domains were modified, with the nature of behaviours domain being omitted entirely (Huijg et al., 2014). The TDF can be used within implementation work by identifying the perceived barriers to implementation, whilst also assessing the modifiable factors arising during novel intervention development (Cane et al., 2012). An example of this is found within the study by Murphy et al which explored GPs' practice in diagnosing and implementing dementia management, whilst considering the variations from the evidence-based guidelines (Murphy et al., 2014). The TDF identified key factors enabling the dementia care, such as having an awareness to conduct a cognitive assessment (Knowledge domain); possessing the relevant skills and confidence (Skills, and Beliefs about capabilities domains); and the required time and resources (Environmental context and resources domain) (Murphy et al., 2014). However, similarly to other determinant frameworks, the TDF does not facilitate exploration of the relevant importance of factors, or how they can be used to inform practical strategies (Little et al., 2015a).

3.5.4 Classic Theories

Classic theories are different in nature to determinant frameworks as they most commonly originate from the traditional theoretical driven fields, such as psychology or social sciences (Nilsen, 2015). The name 'classic' differentiates these theories from the practice-centred theories which have been primarily developed for an implementation science context (Nilsen, 2015). Classic theories are also different to determinant frameworks as they provide a greater focus on describing an implementation process, such as the required mechanisms, and how implementation occurs (Nilsen, 2015). The primary aim of a Classic Theory is unlikely to be focused around implementation, as these theories often lack the driving mechanism to be applicable in this context, as they more commonly seek to describe a change (Nilsen, 2015). Examples of classic theories used within implementation work include: Theory of Diffusion, Organisational Theories, and Social Cognitive Theories (Nilsen, 2015).

3.5.5 Implementation Theories

Implementation theory is the final type of approach, which enables the identification of factors affecting implementation processes. Implementation theories are highly specific to implementation science, in order to understand, and explain the different components of implementation. Similarly, to other approaches, implementation theories commonly experience a degree of evolution and development, and they may be subject to adaptations to ensure they are fit for purpose. An example of this is the Normalization Process Theory (NPT), which was originally presented as the Normalization Process Model (NPM) (May et al., 2007). However, the NPM underwent further developments in 2009, to formulate a comprehensive theory, which sought to overcome the shortcomings of NPM by providing more explanation of the wider process of implementation (May et al., 2009a, May and Finch, 2009). The following subsection explores NPT in more detail.

3.5.5.1 Normalization Process Theory (NPT)

Normalization Process Theory was constructed to bridge the gap between research and practice, as it facilitates the understanding around the factors affecting whether an intervention can be incorporated into professional practice, and the context in which the work of the new intervention happens (May et al., 2009a). The theory does not seek to address intentions or predict behaviour (May et al., 2015). However, it aims to understand the different, wider reasons for problems arising during the embedding of a new practice, that can be separate to

implementation, but which if understood can be addressed within an implementation strategy, in order to implement new knowledge into practice (May et al., 2009a, McEvoy et al., 2014).

The theory concentrates on the implementation, embedding and the integration of new technologies and organisational innovations, by considering four theoretical constructs:

- Coherence
- Cognitive Participation
- Collective Action
- Reflexive Monitoring.

Reproduced from May et al., 2009a, May and Finch, 2009.

The four constructs are defined and explored in more detail in the systematic review Chapter Four, and the qualitative methods Chapter Five. The NPT lends itself well to qualitative research methods and ethnographies, which means that it was identified as a salient choice within this PhD study, as the primary method of data collection was via qualitative interview methods (Gallacher et al., 2011). However, recent work has seen NPT being applied within quantitative disciplines, such as informing questionnaires around factors affecting implementation, highlighting its broad applicability within the implementation field (May et al., 2015).

More work employing a critical lens in regards to NPT would be beneficial for future development (McEvoy et al., 2014). As NPT was developed for use within a healthcare setting, some examples within the research literature have cited it as being too narrow in scope to accommodate all of their findings (McEvoy et al., 2014). Nevertheless, NPT is a middle-range theory and it does not seek to be exhaustive (May et al., 2015). Due to the NPT's primary health focus, it was believed that it would be highly relevant when exploring the implementation of tobacco and substance use interventions. Therefore, it appeared conducive to use the NPT to structure the systematic review synthesis, and during the qualitative data collection, and the justification for such is presented within the methodology sections of the respective chapters.

Other examples of implementation theories, include Organisational Readiness (Weiner et al., 2008) and Absorptive Capacity (Nilsen, 2015).

3.5.6 Evaluation Frameworks

The final classification of implementation theoretical approaches is evaluation frameworks. In

a research setting, it is often valuable to undertake an evaluation or an assessment of a novel process. By reflecting on which aspects of an implementation process appeared effective, or which aspects proved less successful, it can provide an insight into how to improve implementation in similar work in the future, or how to ensure successful implementation can be replicated in different settings (Nilsen, 2015).

Evaluation frameworks are commonly qualitative in nature, as qualitative methods are associated with obtaining richer and more insightful viewpoints with a greater degree of flexibility (Brownson et al., 2012). In addition, it is not uncommon to use a qualitative evaluation framework to evaluate quantitative data, as they may be able to offer a greater level of evaluatory detail and provide context to quantitative findings (Brownson et al., 2012). In addition, mixed method approaches are commonly advocated, in order to provide both a qualitative and quantitative insight. There have been multiple, intervention evaluation frameworks constructed, which can be used to evaluate implementation processes, as different implementation settings pose distinct challenges (Glasgow et al., 1999). Specific examples of implementation evaluation frameworks include RE-AIM and PRECEDE-PROCEED (Nilsen, 2015), and this final subsection will conclude the implementation theory section by presenting the widely used RE-AIM framework in more detail.

3.5.6.1 The RE-AIM Framework

RE-AIM was originally developed by Glasgow et al and sought to facilitate the evaluation of public health interventions and achieve a greater degree of consistency when reporting research results (Glasgow et al., 1999, Glasgow et al., 2003, Gaglio et al., 2013). RE-AIM was later identified as being a useful tool in which to aid the organization of health promotion and disease management literature reviews, and the rapid growth in popularity of RE-AIM has seen it being applied in a wider context to access a diverse range of topic areas (Brownson et al., 2012, VPISU, 2015).

RE-AIM, which is presented in Table 7, is the acronym for the components: Reach, Efficacy, Adoption, Implementation and Maintenance. By using RE-AIM, or a similar implementation evaluation framework, a logical sequence can be followed to determine the probability that a change can be implemented, and sustained in practice (Brownson et al., 2012).

Table 7: Breakdown of the Components of the RE-AIM Framework.

Reach	**E**fficacy	**A**doption	**I**mplementation	**M**aintenance
A measure of participation of the targeted population	The positive and negative outcomes of the intervention programme	The degree in which the intervention is taken up by staff, the setting or an institution	How near the delivery of the intervention is to the intended delivery i.e. consistency or fidelity	The longevity of the intervention programme

Reproduced from Glasgow et al., 1999 and Brownson et al., 2012.

RE-AIM has been used broadly to evaluate the outcome of interventions, but more recent work has seen it applied to understand the impact of implementation interventions, and it was operationalised for use in the work of Sweet et al (Sweet et al., 2014). Sweet et al focused on the evaluation of a community-university partnership aiming to promote physical activity among adults with spinal cord injury (Sweet et al., 2014). They found that the RE-AIM framework was highly usable within larger multi-sectoral partnerships and hence demonstrating its wide applicability (Sweet et al., 2014).

3.5.7 Selecting an Implementation Theoretical Approach

As previously mentioned, selecting which implementation theory to employ in practice can be problematic, and limited school-based implementation research has to date employed a theoretical approach. Recent work by Birken et al has focused on assessing the criteria that is used by researchers to facilitate their choice of approach, in order to develop and refine a set of universal criteria, which could aid the choice of implementation theory in future research (Birken et al., 2017). Birken et al reported that implementation theory was most commonly used *"to identify key constructs that may serve as barriers and facilitators"* (Birken et al., 2017, page 2). This was largely concurrent with this study, as the primary aim of the study was to conduct an exploration of the factors affecting the school-based implementation of tobacco or substance use interventions. The most commonly used criteria by researchers to select an implementation theory reported by Birken et al, was around assessing the analytic level, such as the individual, the organisation or the system, with the importance of empirical support, logical consistency and description of change process also emphasised as key theory selection criteria (Birken et al., 2017). As the choice of implementation theory has been shown

to be inconsistent, this study focused around ensuring that high-quality reporting of the theoretical selection was achieved with adequate justification in the upcoming chapters.

It is however important to acknowledge the fact that theory selection can be highly contentious and subjective. Whilst one research group may view a particular implementation theory as being the most suitable, another may disagree. Therefore, maintaining transparency when reporting theory choice can ameliorate this, and hence focus should be placed on providing appropriate justification for theory choice, which using guidelines can assist with (Birken et al., 2017). Following the exploration of the different theories, models and frameworks; this chapter concludes by presenting some of the school-based implementation research in the field and discusses how reviewing the general implementation science literature informed the next stages of this PhD study, specifically focusing on how the systematic review protocol was enhanced.

3.6 Previous School-based Implementation Research

Although the upcoming systematic literature review specifically synthesises the secondary school-based tobacco or substance use intervention implementation literature; there have been various other pieces of school-based implementation research, that fell outside the scope of the review, and have therefore been considered in this section for additional background and context.

Looking at the implementation of school-based evidence-based interventions generally; Forman et al explored the factors affecting the implementation and sustainability of evidence-based interventions in the school setting, using qualitative methods (Forman et al., 2009). Their findings from the interviews indicated that school implementers, introducing evidence-based interventions, needed to consider these specific areas: (1) Development of principal and administrator support; (2) Development of teacher support; (3) Development of financial resources; (4) Provision of high-quality training and consultation; (5) Alignment of the intervention with school philosophy, goals, policies and programmes; (6) Ensuring that programme outcomes and impact are visible to stakeholders; and (7) Development of methods to address staff turnover (Forman et al., 2009). As the implementation of evidence-based tobacco or substance use interventions were likely to be influenced by these seven areas, they presented areas to explore in more detail and specificity within the systematic review and the qualitative work. Similar findings were found in the study by Boot and De Vries, which explored the factors affecting the implementation of school-based health promotion programmes (Boot and De Vries, 2012). They also reported the importance of collaborative

support and effective planning and project management as important facilitating factors to implementation (Boot and De Vries, 2012).

Buston et al, explored the implementation of a school-based sex education programme in Scotland (Buston et al., 2002). Although the sex education intervention would be largely heterogenous to a tobacco or substance use intervention; the focus on implementing school-based adolescent risky behaviour programmes meant that it would be likely to share similar implementation barriers and facilitators. Some of the significant barriers to implementation reported by Buston et al were cited as the brevity of lessons, staff having limited experience and understanding, and the programme having low priority within the curriculum (Buston et al., 2002). An important series of work within the school implementation field is the research by Domitrovich et al, which explored the implementation of school-based preventative health interventions in the US (Domitrovich and Greenberg, 2000, Greenberg et al., 2005, Domitrovich et al., 2008, Domitrovich et al., 2010). Domitrovich et al initially set out to explore ways to facilitate the prevention of mental health disorders in school-aged children, but this was further developed into a conceptual framework to maximise the implementation of evidence-based, preventive interventions. As tobacco or substance use interventions can be classified as preventive interventions, the conceptual framework by Domitrovich et al was considered as a key point of reference for the final component of this PhD study, the implementation model development.

Finally, Pearson et al undertook a realist review to identify the conditions and actions associated with successful implementation of school-based health promotion programmes (Pearson et al., 2015). They developed four programme theories: *"preparing for implementation, initial implementation, embedding into routine practice, adaptation and evolution"* (Pearson et al., 2015, page 1)*,* which allowed exploration of contextual differences and whether common, transferable mechanisms could be identified. Using the findings from the included papers Pearson et al defined a set of steps, which should be taken when *preparing for implementation*, revolving around negotiating the programme delivery, and *initial implementation*, with facilitation, support, and reciprocity being identified as important elements (Pearson et al., 2015).

3.7 Informing the PhD Study Design

The idea of adopting a more general approach to assess the implementation science literature was based upon the assumption that the insights, that could be gained around the use of implementation terminology and theory, would act as a starting point of considerations for the

study, and more specifically the proposed systematic literature review, by facilitating the enrichment of the review's protocol and process. Therefore, Chapter Three concludes by discussing what insights were taken from the implementation literature, and hence what gaps were identified that could be addressed within the different components of this study.

3.7.1 Key Observations

The first part of this chapter sought to define the relevant implementation terminology, as it would be important to ensure the correct terms were selected and understood for the database searches for the systematic review. A similar example of this from the implementation research field can be found within the widely cited primary healthcare review by Greenhalgh et al, as their first step was to formally define the terms to be used in the literature searches (Greenhalgh et al., 2004). By defining the relevant implementation terminology in this chapter, it ensures that the decisions that were made around the inclusion and exclusion of papers, to be consistent and replicable (Greenhalgh et al., 2004). In addition, as the implementation science field is largely dynamic, its extensive menu of inconsistent terminology presents added complications when deciding which search terms to employ for conducting searches, and it was important to be mindful of the differences in terminology when synthesising the research evidence. As previously discussed, different papers conceptualise approaches and constructs differently, and due to the limited research evidence within the school implementation field it was anticipated that there would be heterogeneity in the presentation of results across the included papers. The rationale behind the literature searches, that were conducted for the systematic review, are discussed in more detail within Chapter Four, but it was important to recognise the contribution of reviewing the implementation literature on the choice of terminology.

This chapter has also highlighted the importance of employing implementation strategy and theory in implementation research and ensured that each component of work within this study adopted a theoretical underpinning, whilst providing a comprehensive justification. By exploring the different theoretical options, it informed the idea that an implementation theory could act as an analytical framework to structure the systematic review's narrative synthesis. A similar approach was adopted in regards to the qualitative work, as the same implementation theory was employed during the coding process of the interview data to ensure consistency.

3.7.2 Gaps that will be Addressed

In this chapter, the existing secondary school-based implementation literature focusing on tobacco and substance use interventions was shown to be limited, and there have been no systematic reviews assessing the existing research to date. Therefore, it emphasised the gap in the evidence to undertake an extensive synthesis.

Only an extremely small number of existing papers have employed the use of implementation theory in the context of secondary school implementation research. This led to the preposition that it would be advantageous to inform and shape the systematic review using implementation theory, in order to be able to offer a novel perspective. As this study was an iterative process; the qualitative work was proposed to address the gaps in the knowledge that were identified during the systematic review. However, there appeared to be no previous examples of qualitative work with secondary school staff and Local Authority staff around the factors affecting the implementation of tobacco or substance use interventions, which used implementation theory identifying a novel piece of primary research to conduct.

Finally, although previous work has focused on developing a school-based implementation model, which is explored in greater depth in Chapter Eight, there were no examples of their use that could be reflected upon within this chapter. This presented an opportunity to develop a novel implementation model, which could facilitate school-based implementation processes, by considering not only the factors identified as important when constructing an implementation strategy (Table 5), but the factors affecting implementation as identified in the findings of the systematic review and qualitative fieldwork. By considering the different theoretical approaches and their limitations it provided a platform for exploring what type of theoretical model would be the most useful and relevant to a secondary school setting and this is reflected upon within Chapter Eight.

3.8 Chapter Summary

Chapter Three has been used to provide a spotlight to the implementation science field, which has underpinned this study. The key points of Chapter Three have been:

- It is important to achieve consistency when using specific implementation terminology and the definitions presented in this chapter will be used throughout this thesis.

- Implementing a novel intervention is unlikely to be a simple, linear process and is often laced with complexity and contextual influences. Distinguishing between different implementation outcomes was acknowledged as important as it can guide the choice and the application of implementation strategies and theory.

- A contributing factor in the failure to implement a new practice can be the lack of a comprehensive, well-structured implementation strategy. An implementation strategy considers the fundamental aspects required for implementation, with the overarching goal of improving implementation effectiveness.

- Implementation theoretical approaches can be used to guide an implementation process, they can facilitate the consideration of the different factors affecting implementation, or they can be used to evaluate implementation.

- The choice of theoretical approaches can often be difficult, and it is important to explore different approaches, even though there is a large degree of overlap between the terminology, and the distinct constructs.

- By reviewing the implementation science field, and by constructing and developing Chapter Three, it informed the systematic review presented in Chapter Four.

Chapter Four

A Systematic Review of the Implementation of Tobacco and Substance Use Interventions within a Secondary School Setting

4.1 Overview of the Chapter

Following the completion of a narrative literature review of the implementation science field, which was discussed in Chapter Three, a focused systematic review was conducted which sought to explore the available literature focusing specifically around the implementation of tobacco and substance use interventions or programmes, within a secondary school setting.

Therefore, this chapter will discuss the rationale behind why a systematic review methodology was adopted, whilst reflecting upon why systematic reviews are highly regarded, and deemed to be useful pieces of evidence when considering policymaking and new practices. It will document the systematic review process that was followed, which was first proposed within a comprehensive review protocol that was produced prior to commencement of the process. Chapter Four will then discuss the findings of the systematic review, and how they were able to inform the next stage of the PhD study, which was the primary qualitative data collection. The systematic review was written up as a journal article and following peer-review, was published in the journal Implementation Science in November 2017 (Waller et al., 2017). For reference, the final published article has been included in Appendix A.5. The searches were updated in 2018 and hence this chapter presents the most recent version of this review.

4.2 Rationale for Conducting a Systematic Review

Carrying out a systematic literature review is often identified as being a pivotal starting point when conducting health research. Reviews continue to be widely used in order to be able to inform a plethora of different practitioners of the best practice according to the available evidence (Cook et al., 1997, Lavis et al., 2005, Whittemore and Knafl, 2005, Moher et al., 2010, Smith et al., 2011,). The use of evidence to underpin decision-making can often be challenging, and can be attributed to limited accessibility or understanding (Dobrow et al., 2004). Therefore, a systematic review can be used as a tool in which to inform a new practice

or future research, by exploring the most relevant questions, and producing a synthesis of the available evidence, in a transparent and reproducible fashion (Tranfield et al., 2003, Thomas and Harden, 2008).

A traditional, narrative literature review, also employs the use of searches to explore the literature and can act as a useful way in which to obtain a general idea of the available evidence base. However, the crude literature search methods that are used are often narrow in scope and can lead to relevant material being overlooked, which can affect the overall conclusions (Tranfield et al., 2003, Lichtenstein et al., 2008). A systematic review is characterised by its 'systematic' approach to searching and the screening of the available literature. The searches, often conducted by multiple reviewers, seek to obtain all relevant literature on a topic by searching a broad range of literature sources (Dixon-Woods et al., 2006, Lichtenstein et al., 2008). The most commonly utilised sources of literature for systematic reviews are electronic databases. Although electronic databases are likely to have overlapping content, the advantage of choosing to use multiple databases is that the literature searches can cover a wider reach as the contents can vary by discipline. By developing a comprehensive search strategy, that employs the use of multiple literature sources, it reduces the potential of overlooking important material (Khan et al., 2003, Lichtenstein et al., 2008).

Although not formally defined, grey literature can also be thought of as literature that has not been published or may not have been previously peer-reviewed before becoming publicly available. However, grey literature can often present relevant findings, and some typical examples include reports, commentaries, blogs, or doctoral theses (Hopewell et al., 2005). There are specific databases that can be employed to assist with the identification of grey literature, or electronic search engines can be hand searched, such as Google.

A systematic review was chosen as they can have a high level of value by delivering a synthesis of all relevant literature. As they are often considered at the top of the evidence hierarchy spectrum, a myriad of tools and frameworks have been developed over recent years in order to be able to facilitate the process of undertaking a systematic review, and to objectify the reporting of the review write up (Khan et al., 2003, Moher et al., 2010). A well-conducted systematic review should aim to present an unbiased overview of all of the literature around a particular topic and hence should include a critical assessment of the quality of the included literature (Lichtenstein et al., 2008, Thomas and Harden, 2008). A quality appraisal of included papers often focuses on assessing the chosen study design, the sample population, and the quality of the reporting. These factors can then be used to assess whether the results obtained can be used to make a contribution to the overall consensus of the systematic review (Khan et al., 2003, Lichtenstein et al., 2008).

The systematic review that was proposed within this PhD study aimed to review the available literature around the implementation of tobacco and substance use interventions. In order to be of the most use, it was important to be able to identify all of the relevant literature in the field, and therefore a systematic review methodology was deemed to be the most appropriate review method, over a narrative literature review method. By preparing a comprehensive search strategy, it ensured the review's specificity, and reduced the likelihood of overlooking any relevant literature.

4.2.1 Mixed-Method Systematic Reviews

In order to be able to establish whether it would be both suitable and appropriate to conduct a systematic literature review as part of this study, it was imperative to conduct a series of literature scoping searches. By conducting scoping searches, it allows confirmation that there have been no identical systematic reviews published previously. The scoping review was also extended to include searches of electronic search engines, such as Google Scholar and the Centre for Reviews and Dissemination (CRD) website, in order to identify potentially key papers and to ascertain whether there would be sufficient literature to conduct a systematic review.

As the initial scoping searches, conducted by GLW, identified that there was relevant literature specific to implementation within a secondary school setting, and included both qualitative and quantitative methodologies, it was necessary to define the proposed systematic review as being a mixed-method review. Mixed-method reviews have grown in popularity as a result of increased academic engagement with policy makers and professionals, with the aim of producing more relevant research, which has the potential to be used in practice (Harden, 2010). It has been argued that when exploring topic areas with limited available evidence, single method systematic reviews can be too narrow to facilitate the development of actionable findings. A systematic review that lacks actionable findings can ultimately result in the review having limited applicability and use (Harden, 2010, JBI, 2014). Mixed-method systematic reviews were therefore proposed as a way in which to enhance the utility and the impact of a systematic review, by allowing the integration of a wider body of evidence (Harden, 2010). By including both quantitative and qualitative evidence, they seek to maximise the depth of the findings, bridge research gaps, and to increase their applicability to inform policy and practice (Harden, 2010)

The integrative approaches to qualitative and quantitative evidence review produced by Dixon-Woods et al, and a later published paper by the same authors, highlights some of the fundamental considerations when attempting to synthesise qualitative and quantitative data

(Dixon-Woods et al., 2004, Dixon-Woods et al., 2005). It is critical to understand the appropriateness of combining methodologically diverse knowledge, and at what point this should occur (Dixon-Woods et al., 2004). The process of integrating qualitative and quantitative methods should not be haphazard, and therefore was considered from the outset of the systematic review.

The systematic review involved the compilation of a narrative synthesis. Narrative syntheses are a way of integrating qualitative and quantitative evidence as they are able to present the diverse findings side by side, with the potential to be able to discuss both types of data in an interpretative and reflexive manner (Dixon-Woods et al., 2005). Although the resulting syntheses can be rich in explanation, providing a level of detail which a quantitative meta-analysis lacks, narrative syntheses can be open to criticism due to a lack of transparency and objectivity (Dixon-Woods et al., 2005). The construction of the narrative synthesis in this systematic review will be discussed in more detail in the subsection 4.6.6 within the methods section, where it will discuss the steps that were undertaken to overcome some of the weaknesses that can be associated with developing a narrative synthesis.

One issue with conducting a mixed-method review is the difficulty of appraising the different literature (Dixon-Woods et al., 2004). Quantitative methods are commonly considered in a hierarchal fashion due to the differences observed in robustness; with the top of the scale often being quantitative systematic reviews or Randomised Controlled Trials (RCTs). As qualitative methods are extremely diverse, they lack the ability to be compared in a hierarchal way and can often be more difficult to assess their quality. Therefore, when proposing the assessment of the quality of the included studies, it was identified that it would be important to appraise the qualitative and quantitative data differently using disparate quality appraisal tools. Again, the process and the specific tool that was employed will be discussed in more detail in subsection 4.6.7, within the review methods section.

In summation, proposing to conduct a mixed-method systematic review as part of this study allowed the synthesis of a more diverse range of evidence in order to be able to maximise the potential findings.

4.2.2 Limitations of Conducting a Systematic Review

Although as previously discussed, systematic reviews are extremely valuable in providing an overview of existing literature, it was important to recognise their limitations in order to minimise the impact of them during this systematic review process.

By first considering the search strategy that was employed, even though the literature searches are designed to be as inclusive as possible, it cannot be completely guaranteed that all relevant papers have been obtained and included. Therefore, effective search strategies should be developed using the expertise of information specialists, in order to ensure that the chosen search terms can generate all of the relevant, required literature. To avoid publication bias, it remains important to include additional searches for grey literature, as unpublished material, dissertations or reports can add value to the findings in a review (Hopewell et al., 2005).

When conducting searches, databases collate the available literature that has been published up until the date the searches are being executed (Dickersin et al., 1994). However, a systematic review may take a significant amount of time to complete, which can result in the literature searches being out of date. This is especially critical in emerging research areas, as newly published work may be missed. Therefore, it may prove useful to update or rerun database searches to ensure that all of the relevant literature can be assessed for inclusion in the review. In addition, as commonly there are high volumes of papers generated during database searches, it can be possible to overlook or miss relevant literature in the quest to exclude papers during sifting. This is a limitation, as a robust systematic review should be seen to assess and synthesise all of the relevant topical literature (Dickersin et al., 1994, Liberati et al., 2009). The potential of overlooking literature is reduced by employing a second reviewer during sifting. A second reviewer can double sift all, or a proportion of the papers at each stage of the selection process, and this can reduce the prevalence of accidental exclusion or overlooking relevant material.

Following the completion of the literature searches and the paper selection process, an issue that is commonly observed during data extraction is the disparate level of detail and reporting quality within a paper. Specific restrictions on a journal article's word count can result in not all of the relevant information being presented, or papers can lack coherence and detail. Therefore, in order to address the issue of limited reporting; it may prove appropriate to contact a corresponding author of a paper to obtain additional information.

The synthesis of the included paper's findings can also prove challenging. For example, it may be problematic to decide how to weight each paper, if it is not possible to conduct a quantitative meta-analysis, or if the included papers are of a qualitative methodology. It is generally deemed to be appropriate to weight larger studies more heavily. However, quality can also be an effective way to weight papers. Quality assessment tools allow an appraisal of a paper's quality to be obtained, allowing good quality papers to be provided with more weight within the synthesis (CASP, 2014, EPHPP, 2016). In addition, the construction of a narrative synthesis

can be aided by employing methodological guidelines, in order to ensure that the synthesis is as robust as possible (Popay et al., 2006b).

The upcoming sections have been used to clearly define the aim and objectives for the systematic review and the process that was undertaken.

4.3 Aim

The aim of this mixed-method, systematic literature review was to develop an understanding of the factors affecting the implementation of tobacco and substance use intervention programmes in the secondary school setting using the Normalisation Process Theory as an analytical framework.

4.4 Objectives

The systematic review component had the following, specific objectives:

- To establish the extent of previously conducted research around the implementation of tobacco or substance use interventions in a secondary school setting;

- To explore the organisational and contextual factors affecting the implementation of tobacco or substance use interventions;

- To be able to inform the next stage of the PhD study, the qualitative interviews and the development of a secondary school implementation model.

4.5 Research Question

The PhD study's research question that this systematic review sought to answer was:

- Research question 2: To what extent has previous research focused around exploring the factors affecting the implementation of substance use interventions in a secondary school setting, and how has implementation theory been used to guide this?

The PICOS systematic review tool, was used to unpack the research question to consider the respective components:

- Population
- Intervention
- Comparator
- Outcome and
- Study Design.

Reproduced from Stone, 2002, CRD, 2009.

Table 8 has been used to present the Population, Intervention, Comparator, Outcome and Study Design for this systematic review. By using PICOS as a reference point, it ensured that the research question had been constructed effectively, and that all important components had been adequately considered (Stone, 2002, CRD, 2009).

Table 8: Breakdown of the Research Question Using the PICOS Framework

P	I	C	O	S
External implementers, policy makers or secondary school staff specifically working within a secondary school. School students where relevant.	The implementation of a specific tobacco or substance use intervention.	N/A	The implementation outcome or factors affecting the implementation	All study designs.

Produced with reference to Stone, 2002 and CRD, 2009.

The included population refers to the population that the systematic review findings can be applied to (CRD, 2009). The population of this systematic review were external service providers or school-based practitioners, who were responsible for implementing a tobacco or substance use intervention. The population also referred to the policy makers that have introduced a programme into a secondary school, and students themselves, who were the end recipients of the intervention, but only if they were directly involved with assessing the implementation process.

The intervention component of PICOS was the exploration of how a tobacco or substance use intervention has been implemented, and the factors that were seen to directly affect implementation. The aim of the implemented intervention was to prevent the uptake or reduce the prevalence of substance use such as smoking, alcohol consumption or drug use, and was wide-reaching to be able to include primary, secondary or tertiary prevention interventions.

A comparator variable was not included within this systematic review, as implementation was not being compared with standard practice. In the context of this review, the PICOS outcome referred to the outcome of the implementation process, and not the outcome of the tobacco or substance use intervention. As previously discussed, it can be somewhat difficult to define and distinguish implementation outcomes, and the challenges associated with this are reflected upon in the paper by Proctor et al, which was explored in more detail in the previous chapter (Proctor et al., 2011). Proctor et al was used as a source of reference when considering the included paper's implementation outcomes (Proctor et al., 2011).

Study designs included data in the form of commentaries or discussion papers, as well as primary research papers. Therefore, primary research papers were not restricted by their study design alone; hence qualitative, quantitative and mixed method studies were all considered for inclusion in the review.

4.6 Review Methodology

As PROSPERO acted as a useful tool for identifying on-going reviews, it was important to register the protocol on the database for this systematic review. The published protocol for this review can therefore be found on the Centre for Reviews and Dissemination website (http://www.crd.york.ac.uk/PROSPERO/display_record.asp?ID=CRD42016039354).   This section will document the process that was adhered to including the database searches, the sifting process, the resulting data extraction, and the quality appraisal.

4.6.1 Literature Searches

Eight electronic literature databases were searched using specific key words and search terms. The databases that were selected were: Medline, EMBASE, PSYCHINFO, SCOPUS, ERIC, CINAHL, Web of Science, and the Cochrane library. In addition, PROSPERO, the international prospective register of systematic reviews, was searched to identify whether there were any similar systematic reviews in production, and to ensure that the same review had not already been published.

The PROSPERO database search yielded a realist review entitled 'Implementing health promotion in schools; protocol for a realist systematic review of research and experience in the United Kingdom' (Pearson et al., 2012). The protocol was published in 2012, and the full review was published in Implementation Science in 2015 and was discussed in more detail in the preceding chapter (Pearson et al., 2012). Although it was acknowledged that Pearson's review focused on a similar topic area, this PhD study's systematic review was argued as being sufficiently different, as it did not employ the use of realist methodology, and it also focused exclusively around implementation within the secondary school setting, which Pearson's did not (Pearson et al., 2015). In addition, this systematic review focused specifically around the implementation of tobacco and substance use interventions, compared to adopting general school-based health intervention as Pearson et al did (Pearson et al., 2015). Therefore, it sought to possess a greater degree of specificity than the review by Pearson et al. This review also included international findings, in order to be able to create a broader collation of the available knowledge, compared to Pearson's which only included papers from the UK.

Following the literature review of the implementation science field, presented in Chapter Three, a table of search terms was constructed. Information specialists from the library at Teesside University were able to assist in ensuring that all of the chosen databases were appropriate to search, and that no pertinent information sources had been overlooked. They also provided help when formulating the search strategies, in order to ensure that the proposed search terms would generate all of the relevant literature.

The databases chosen were identified as being the most suitable sources to search relevant literature. Looking at the specific databases, Medline is often considered as being the primary source of biomedical literature, as it encompasses 4,600 journals, spanning a considerable timeframe (Fagen et al., 2014). Therefore, as it hosts a comprehensive range of research literature it was included in the list of databases to search. The Education Resource Information Centre (ERIC) also holds specifically education-related research. Due to its primary education focus, it was also chosen as a database to search within this review (Fagen et al., 2014). Additionally, SCOPUS was chosen as it is one of the largest digital libraries, including a broad range of citable material from over 20,500 journals (Fagen et al., 2014). Furthermore, PSYCHINFO is dedicated to hosting psychology literature, and its related disciplines, such as physiology and psychiatry (Fagen et al., 2014). It was selected as a database to search, as it is a source of sociological and theoretical literature. Also included was Embase as it hosts a wide array of journals, including a plethora of public health and health policy journals (Fagen et al., 2014). The Cochrane Library is a highly regarded source for accessing evidence-based healthcare resources (Fagen et al., 2014). One of its major

databases, the Cochrane Database of Systematic Reviews (CDSR), is home to the full collection of the Cochrane Collaboration systematic reviews and the ongoing protocols. This was an imperative resource to search, as it would again confirm if a similar systematic review had been published previously or if the same review was currently underway. The Cumulative Index to Nursing and Allied Health Literature (CINAHL) database is a collection of nursing and allied health journals (Fagen et al., 2014). It was identified as being useful to search relevant health-related literature, including literature on health policies. Finally, Web of Science hosts an array of sociological literature including articles and conference proceedings via the Social Sciences Citation Index, and so was deemed relevant to search (Fagen et al., 2014).

The Medical Subject Headings (MeSH), and key words that were used for searching the different databases are displayed in Table 9 and a specific example of the search that was conducted in Medline (and adapted for other databases) has been included in Appendix A.1. The MeSH terms are headings that are used by electronic databases to index journals. They function as tools to facilitate the identification of related literature mapped to a specific topic (Lowe and Barnett, 1994, Doig and Simpson, 2003, Chapman et al., 2010). The search strategy that was developed was split into three distinct components: 'School', 'Implementation', and 'Intervention', in order to ensure each element was adequately searched. A fourth field was added to refine the health literature from the education implementation literature, following a large volume of irrelevant literature generated in the initial scoping.

A truncation symbol, displayed in Table 9 as an asterisk (*) for consistency, ensures that all variations of a word or search term were searched for. For example, when considering the term health*, an asterisk ensures that all terms such as health improvement, health promotion and health protection were searched. Boolean searches were carried out by employing the operators 'AND' and 'OR'. The 'OR' term allowed a broader range of terminology to be searched for simultaneously, by including different variations of the same term; whereas 'AND' combined the keywords from the four different components in the overall search (Cronin et al., 2008). Where appropriate, search terms were 'exploded' to ensure all branches of a thesaurus tree were searched for (Mair et al., 2012).

Table 9: Table of the Search Terms Used for Each of the Selected Databases.

Database	Search Terms			
	School	**Implementation Terms**	**Intervention/ Change Terms**	**Health**
Medline Via EBSCO host	school*	implement* OR adopt* OR integrate* OR normali*	improvement* OR innovation OR knowledge* OR organizational change* OR program* OR quality improvement OR readiness to change* OR behaviour change* OR intervention* OR school-based intervention*	health*
EMBASE Via OVID	school*	implement* OR adopt* OR integrate* OR normali*	improvement* OR innovation OR knowledge* OR organizational change* OR program* OR quality improvement OR readiness to change* OR behaviour change* OR intervention* OR school-based intervention*	health*
PSYCHINFO Via EBSCO host	school*	implement* OR adopt* OR integrate* OR normali*	MeSH Terms: Behaviour Change OR Health Education OR School Based Intervention Key Words: improvement* OR innovation* OR knowledge* OR organizational change* OR program* OR quality improvement OR readiness to change* OR behaviour change* OR intervention* OR school-based intervention*	health*
SCOPUS	school*	implement* OR adopt* OR integrate* OR normali*	improvement* OR innovation OR knowledge* OR organizational change* OR program* OR quality improvement OR readiness to change* OR behaviour change* OR intervention* OR school-based intervention*	health*

ERIC Via EBSCO host	school*	implement* OR adopt* OR integrate* OR normali*	improvement* OR innovation OR knowledge* OR organizational change* OR program* OR quality improvement OR readiness to change* OR behaviour change* OR intervention* OR school-based intervention*	health*
CINAHL Via EBSCO host	school*	implement* OR adopt* OR integrate* OR normali*	CINAHL Search Terms: Health Behaviour exp OR Behavioural Changes OR Behaviour Modification exp OR Health Education Key Words: improvement* OR innovation OR knowledge* OR organizational change* OR program* OR quality improvement OR readiness to change* OR behaviour change* OR intervention* OR school-based intervention*	health*
Cochrane Library	school*	implement* OR adopt* OR integrate* OR normali*	improvement* OR innovation OR knowledge* OR organizational change* OR program* OR quality improvement OR readiness to change* OR behaviour change* OR intervention* OR school-based intervention*	health*
Web of Science Via Thomson Reuters	school*	implement* OR adopt* OR integrate* OR normali*	improvement* OR innovation OR knowledge* OR organizational change* OR program* OR quality improvement OR readiness to change* OR behaviour change* OR intervention* OR school-based intervention*	health*

Searches were filtered by the date of publication whereby papers published prior to 1980 were excluded from the systematic review in order to avoid the inclusion of any out-dated material. Search terms were also modified to accommodate the differences in the searching tools across the databases. Different databases use differing headings and often employ varying symbols for the same functionality, such as the truncation symbol (Doig and Simpson, 2003).

It was determined, during the preliminary scoping searches, that the most appropriate way to search the electronic databases was to conduct title and abstract searches. Searches conducted using keywords found anywhere in the article generated large volumes of irrelevant material. By conducting title and abstract searching, the volume of material was vastly reduced and there was a greater proportion of relevant literature. Two papers were used as reference papers in order to confirm whether the search terms were generating the required literature. These were the realist review by Pearson et al (Pearson et al., 2015) and a tobacco intervention implementation paper by McCormick et al (McCormick et al., 1995). Both papers were identified during the initial scoping searches; the Pearson et al paper was used as it covers a similar topic area in regards to the factors affecting school-based implementation, and McCormick et al was used as it would be an included paper within the review (McCormick et al., 1995, Pearson et al., 2015). Both papers were searched for within the search results from the databases to ensure they had been acquired by using the proposed search terms.

The initial literature searches were conducted during the week of the 8th February 2016, and all conducted searches were saved in each database account. Following the completion of searches in all of the databases, references were imported into an EndNote library. After a process of de-duplication, references were sifted accordingly using the inclusion and exclusion criteria. Following the completion of the database searches it was advantageous to screen the references of the two key papers, in order to obtain any additional background papers. Again this functioned to ensure that complete coverage of the literature had been achieved, and avoided overlooking relevant studies (Chapman et al., 2010, Pearson et al., 2015).

As previously discussed, grey literature can add further depth to a systematic review and it minimises the potential of publication bias (Hopewell et al., 2005). Grey literature searches were therefore conducted as part of the search strategy by searching appropriate websites, such as national and local government sources, and by carrying out Google searches with the defined key words. Any relevant grey literature was subjected to the same predefined inclusion and exclusion criteria listed above. The full range of searches was completed by the end of February 2016.

4.6.2 Assessing the Eligibility of Studies for Inclusion

In order to be able to identify the relevant literature from the database search results, specific inclusion and exclusion criteria were developed.

Inclusion Criteria

➢ Studies that were based within a secondary school setting, with the end users of the intervention being adolescents aged between 11 to 16 years of age;

➢ Studies which assessed the implementation of a tobacco or substance use intervention within a secondary school;

➢ Editorials, reviews, and commentaries were considered for inclusion, but only if they meet the other inclusion criteria.

The obtained papers' title and abstract were first screened to assess whether they were conducted within a secondary school setting. In the initial stages of the systematic review, the age of the end recipients, the adolescents, was proposed as being within the age range of 14 to 16 years. This was proposed as, as discussed in Chapter One, research has frequently highlighted that the later stages of adolescence are associated with increased risky behaviour and social influences and 11 to 16 years is the age range for compulsory education (Santelli et al., 2015). However, when conducting the early scoping searches, it was acknowledged that this was too narrow an age range, and relevant papers did not always specify the age ranges of adolescents, often preferring to refer to them as 'secondary school age' adolescents. Therefore, it was deemed appropriate to expand this age range to include all ages of adolescents within the compulsory secondary school setting (11 to 16 years).

Similarly, the original focus of this systematic review set out to collate papers discussing the factors affecting the implementation of any secondary school-based health intervention. Following the completion of the first sift, it was found that the numbers of eligible papers remained large, with over 200 papers meeting the inclusion criteria. They also lacked specificity, with a wide range of heterogeneous interventions appearing eligible. Consequently, by restricting the focus to only include papers focusing solely on the implementation of school-based tobacco or substance use interventions, it retained the focus of the study and it significantly reduced the number of potentially eligible papers. Therefore, the second inclusion criterion was modified to identify whether a paper focused on the implementation of a secondary school-based tobacco or substance use intervention.

As it was anticipated that the study methodology would be varied, studies were not excluded by their methodology alone, and it was acknowledged that editorials, other systematic reviews and commentary papers had the potential to provide a useful insight into the factors affecting

implementation. Consequently, their inclusion was assessed on a paper-by-paper basis, if they satisfied the other inclusion criteria.

Exclusion Criteria

➢ Studies published prior to 1980;

➢ Studies that were based outside of a secondary school setting e.g. a primary school, a college, a university or any community locations;

➢ Studies that included a population outside of the secondary school (0-10 years and 18years+).

Any studies that were conducted outside of a secondary school setting, or the equivalent when assessing the eligibility of an international paper, were excluded. It was also decided that by placing a restriction on the inclusion of pre-1980s papers, it prevented the inclusion of out-dated material. This was largely due to the multiple reforms affecting the modern secondary school system, with the most recent ones, in relation to the influx of Academies, being discussed within Chapter Two (Bhattacharya, 2013). In order to minimise the risk of bias, it was proposed that papers would not be excluded by their participant ethnicity or language alone. If non-English papers were deemed to meet the inclusion criteria, either corresponding authors were contacted, or full paper translations were sought, using tools such as Google Translate.

4.6.3 Sifting of Papers

Once the initial searches had been completed, the sifting of the papers commenced. The first stage involved the screening of each paper's title and abstract and established whether a paper concentrated on a secondary school setting, and whether it had a primarily implementation focus. Papers deemed to meet the inclusion criteria were included into the next stage of the sifting process. At this stage, the excluded papers were organised into groups by reason for inclusion, within the sifting Endnote library, in order to ensure that the numbers of excluded papers, and the reasons for their exclusion were transparent throughout the sifting process. By recording the number of papers sifted at each stage, a PRISMA diagram was able to be formulated, which is shown in Figure 4, in Section 4.7. A PRISMA diagram is a specific

flowchart, which displays the numbers of excluded papers at each stage of the paper selection process (Liberati et al., 2009, Moher et al., 2010).

The PhD's Director of Studies, Professor Dorothy Newbury-Birch (DNB) acted as a second reviewer, by assessing 20% of the papers generated from the initial database searches. Using a second reviewer in the systematic review process is considered as good practice, as it can be determined if the same decision is made in regards to the inclusion or exclusion of papers (Dickersin et al., 1994). As there was a large number of papers to be screened, it was agreed that double sifting 20% of the search results would be an appropriate amount to ensure validity. It was anticipated that if an unresolved disagreement between GLW and DNB arose, then further discussion within the wider supervisory team (TF and ELG) would take place to ensure a final decision on a paper could be made (Liberati et al., 2009). However, no unresolved disagreements between GLW and DNB occurred in practice.

Once all papers had been title and abstract screened, the full texts of the remaining papers were obtained and assessed against the inclusion criteria. Again, DNB acted as a second reviewer, and assessed the full texts of all papers to ascertain whether the decisions on inclusion and exclusion of the papers matched GLW's. Following discussions there were no unresolved disagreements. The full text screening of the potential inclusion papers was completed by the end of April 2016.

4.6.4 Updating Searches

Following the successful publication of this systematic review in Implementation Science (Waller et al., 2017), Chapter Four presents the most up to date version of the review as the literature searches were re-ran at the end of May 2018 to ensure all of the most recent literature had been included. The same search terms, which were presented in Table 9, were used, however a search filter was applied in order to only collate the papers that had been published in 2016 onwards. Similarly, to the first set of searches, DNB acted as a second reviewer and sifted 20% of the title and abstract first sift papers, and 100% of the full paper second sift results. The second search was ran in May 2018, with the review fully updated by the end of June 2018.

4.6.5 Data Extraction

After determining the final number of papers eligible for inclusion in the review, the relevant information could be extracted into a data extraction worksheet using excel, see Appendix A.2. The information extracted from each paper included: the paper reference and location, title,

author information, the country the study had been conducted in, whether the paper focused on an alcohol, drug, or substance use intervention or a combination of some or all and the name of the specific programme, the study population, study design, outcomes, data analysis method, and the key results. The data extraction form was developed and piloted on five studies and minor modifications were made to the wording to allow the form to be fit for purpose.

4.6.6 Data Synthesis

Due to the expected heterogeneity of the included studies, and the differing methodologies, a qualitative narrative approach to data synthesis was undertaken. In the paper by Popay el al, they identify that narrative syntheses can often be viewed as a 'second best' approach, in comparison to quantitative analyses (Popay et al., 2006). However, they also report that if they are conducted comprehensively they can prove highly valuable to both policy and practice evaluations (Popay et al., 2006). Therefore, the Economic and Social Research Council's (ESRC) guidelines were used when constructing the qualitative narrative synthesis, in order to increase the robustness of the synthesis, and maintain the validity of the systematic review that was conducted (Popay et al., 2006).

Normalization Process Theory (NPT), which was discussed in the preceding Chapter Three (May et al., 2011, May et al., 2015), was used as a way to structure the narrative synthesis, and to guide the assessment of established implementation factors reported in the included studies. Normalization Process Theory was chosen as the implementation theory to use as it has previously been used to synthesise research findings to identify knowledge consistencies and gaps regarding implementation determinants (Mair et al., 2012, O'Reilly et al., 2017). Although NPT was designed for implementation and integration problems in healthcare, the constructs are transferable and thus can be applied fluidly to consider the systematic review's focus of factors affecting implementation in the school setting (May et al., 2015). As this field is currently small and studies of implementation are heterogeneous, NPT offered an advantage as a theoretical framework for integrating both qualitative and quantitative findings to develop an assessment of the factors which can affect implementation in this context (May et al., 2015). In addition, NPT has not previously been used to synthesise findings in the context of secondary school implementation research, therefore it increased the original contribution of this review to the field.

Initial NPT-based analyses of the study findings were conducted by GLW and were later discussed within the supervisory team to further situate the results within NPT. Table 10 is the

reference table that was used to guide the NPT interpretations when assessing the results of the included papers.

Table 10: The Normalization Process Theory (NPT) Reference Table Presenting the Key Constructs.

NPT Construct	Definition	Sub Constructs
Coherence	The sense-making work that people do individually and collectively when they are faced with the problem of operationalizing some set of practices.	Differentiation Communal specification Individual specification Internalization
Cognitive Participation	The relational work that people do to build and sustain a community of practice around a new technology or complex intervention.	Initiation Enrolment Legitimation Activation
Collective Action	The operational work that people do to enact a set of practices, whether these represent a new technology or complex healthcare intervention.	Interactional Workability Relational Integration Skill set Workability Contextual Integration
Reflexive Monitoring	The appraisal work that people do to assess and understand the ways that a new set of practices affect them and others around them.	Systematization Communal appraisal Individual appraisal Reconfiguration

Reproduced from May et al., 2015.

4.6.7 Quality Assessment

It was fundamental to ensure that the systematic review that was produced was as robust as possible, with high quality reporting. By seeking to minimise the unidentified risk of bias, it functioned to increase the review's reproducibility (Sanderson et al., 2007, Wright et al., 2007). A systematic review's bias is commonly attributable to the type and quality of studies that are included, hence once the literature searches were completed, it was possible to gain a more informed understanding of the potential bias apparent (Wright et al., 2007). In order to avoid researcher bias during paper selection, papers were not stratified and excluded due to authors

or location alone, and as discussed, papers were double sifted by a second reviewer. Papers were also not limited to English language papers, which avoided unnecessary language bias, and thus papers from various countries were included in the final review.

Following data extraction, the included papers were examined for a risk of bias that could affect the results, and were subject to a rigorous quality appraisal, using quality appraisal tools, chosen to suit the different methodologies of the included studies. It is important to conduct a quality appraisal of included papers, as poor quality papers may be poorly reported, or poorly designed, or may present results which are not representative or truly reflective, thus introducing reporting bias (Sanderson et al., 2007).

Studies can display a wide range of methodological biases, some specific examples include the sampling of participants can be ineffective, hence introducing selection bias, or in the case of qualitative research there may be biased questioning, or issues with self-report measurements in quantitative research. Therefore, in order to assess the quality of each included paper; formal quality assessment tools were employed, to maintain the validity of the review. Papers were not excluded on the basis of quality alone due to the low volume of available evidence, but it was important to acknowledge poor-quality papers.

The quality appraisal tools used were:

- **EPHPP-** Quality Assessment Tool for Quantitative Studies (EPHPP, 2016).
- **CASP-** Tool for Qualitative Research (CASP, 2014).

For reference, full versions of both quality appraisal tools are supplied in Appendix A2 and A3. The Effective Public Health Practice Project (EPHPP), refers to a tool that was developed to appraise quantitative studies (EPHPP, 2016). In the context of this review, each component of the quantitative papers were considered under the following categories: selection bias, study design, confounders, blinding, data collection methods, withdrawals and dropouts, intervention integrity, and analysis appropriate to question (EPHPP, 2016). During the appraisal process, each section was given a rating of 'strong', 'moderate' or 'weak', using the accompanying dictionary provided with the tool. All of the individual ratings were then combined to create an overall, global rating of: 'strong' (no weak ratings), 'moderate' (Only one weak rating), or 'weak' (two or more weak ratings).

The second tool, the Critical Appraisal Skills Programme (CASP) uses critical appraisal skills to enable users to reach their own judgment about the quality of qualitative papers (CASP, 2014). The CASP tool was used to assess the included qualitative research, by considering three main areas: 1) Is the study valid?, 2) What are the results? and 3) Are the results useful?

(CASP, 2014). Similar to the EPHPP tool, the qualitative studies were assessed and rated 'strong', 'moderate', or 'weak'. The results of the quality appraisal using both tools will be presented in subsection 4.7.3 in Tables 12 and 13.

4.7 Results

The total numbers of papers excluded at each stage from both searches (2016 and 2018), is combined in the PRISMA diagram provided in Figure 4. Following the completion of the first set of searches; a total of 19,677 papers were obtained. After de-duplication, this left a total of 12,402 papers to undergo title and abstract sifting. The completion of this first sift resulted in a total of 58 papers remaining eligible for full text sifting. It was possible to obtain the English full texts of 55 of these 58 papers; two papers were excluded as they were unobtainable via the Teesside or Newcastle University holdings, via contacting the authors, or the British Library via an Inter Library Loan request. The third paper had an English abstract; however, the full text was in Spanish. As the abstract appeared relevant, a translation was obtained before a decision was made with regards to the inclusion or exclusion, using a Google Translation tool. In total, 40 papers were excluded due to three different reasons: not focusing specifically on tobacco or substance use interventions (n=18), a lack of an implementation focus (n=15), and not specially within a secondary school setting or secondary school age range (n=7). Therefore, following the completion of the second sift, 15 papers were included in the systematic review (Sussman et al., 1993, Basen-Engquist et al., 1994, Garrahan, 1995, McCormick et al., 1995, MacDonald and Green, 2001, Barr et al., 2002, McBride et al., 2002, Skara et al., 2005, Rohrbach et al., 2007, Stead et al., 2007, Audrey et al., 2008, Thaker et al., 2008, Jarrett et al., 2009, Sloboda et al., 2009, Pettigrew et al., 2013), and one paper was excluded at the data extraction due to its lack of a subgroup analysis on young people of secondary school age.

As previously discussed, all of the database searches were re-ran using a filter to obtain any further papers that had been published in 2016 onwards. The second set of searches identified a further 3,794 papers that were potentially relevant for inclusion, leaving 3184 following de-duplication. After the title and abstract sift, 44 papers remained eligible to progress to the full text sift.

Figure 4: PRISMA Flow Chart Showing the Total Number of Papers Identified in the Literature Searches and the Study Selection Process.
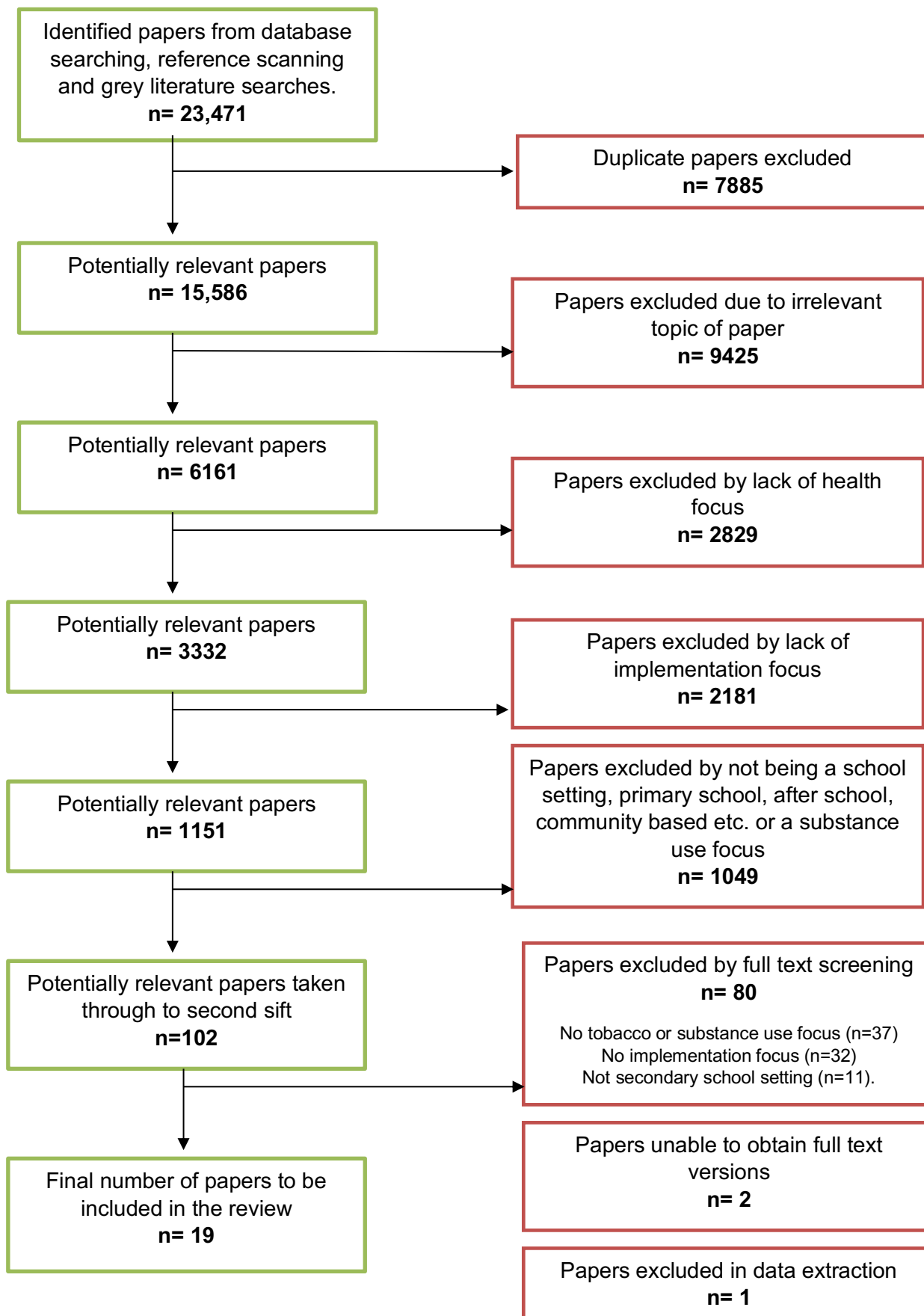
Following the completion of the full paper sift 40 papers were excluded due to: not focusing specifically on tobacco or substance use interventions (n=19), a lack of implementation focus (n=17), and not specifically within a secondary school or secondary school age range (n=4). In total, four additional papers met the review's inclusion criteria, and have therefore been included in this write up (Bast et al., 2016, Bast et al., 2017, Hodder et al., 2017, Maslowsky et al., 2017). The PRISMA diagram, that has been included in Figure 4, collates the numbers of papers included and excluded at each stage of the review process. The synthesis that follows collates the results of the 15 original papers as included in the published article, with the addition of the four papers identified in the second searches, therefore 19 included papers in total.

As expected, the 19 included papers were heterogeneous and hence did not appear to have any comparable quantitative outputs. Therefore, it would have been infeasible to conduct a meta-analysis to synthesise the quantitative data. Consequently, a narrative synthesis was undertaken, but where possible, quantitative data has been included and summarised in order to represent the results of all 19 papers. The results section will first discuss the specific study characteristics of the included papers, it will then present the results of the quality appraisal, and then will frame the results using NPT.

4.7.1 Study Characteristics

As shown in the PRISMA diagram in Figure 4, a total of 19 papers met the specific inclusion criteria and were therefore eligible for inclusion in the systematic review. All 19 papers were published in English and were carried out in a range of locations. Twelve of the studies were conducted within the United States (US) (Sussman et al., 1993, Basen-Engquist et al., 1994, Garrahan, 1995, McCormick et al., 1995, Barr et al., 2002, Rohrbach et al., 2007, Skara et al., 2005, Thaker et al., 2008, Jarrett et al., 2009, Sloboda et al., 2009, Pettigrew et al., 2013, Maslowsky et al., 2017), two studies were based in the UK (Stead et al., 2007, Audrey et al., 2008), two studies were conducted in Denmark (Bast et al., 2016, Bast et al., 2017), two studies were conducted in Australia (McBride et al., 2002, Hodder et al., 2017), and one study was conducted in Canada (MacDonald and Green, 2001).

The publication date range of studies was 1993 to 2017, spanning 24 years. Eight of the papers focused on implementing tobacco control programmes (Sussman et al., 1993, Basen-Engquist et al., 1994, McCormick et al., 1995, Barr et al., 2002, Audrey

et al., 2008, Jarrett et al., 2009, Bast et al., 2016, Bast et al., 2017), four of the papers concentrated on implementing drug use programmes (Skara et al., 2005, Rohrbach et al., 2007, Stead et al., 2007, Sloboda et al., 2009), three of the papers adopted a more general approach as they concentrated on the implementation of a 'substance use' programme (Garrahan, 1995, Thaker et al., 2008, Pettigrew et al., 2013), two papers focused on an alcohol, drug and tobacco programme (Hodder et al., 2017, Maslowsky et al., 2017), one paper focused on implementing an alcohol reduction programme (McBride et al., 2002), and the final paper focused on the implementation of a dual alcohol and drug prevention programme (MacDonald and Green, 2001).

Across the 19 studies, they utilised a range of different methods. Just over half (n=12) of the studies employed the use of a quantitative method, such as a randomised controlled trial, a closed questionnaire, or a survey (Sussman et al., 1993, Basen-Engquist et al., 1994, McCormick et al., 1995, Barr et al., 2002, Skara et al., 2005, Rohrbach et al., 2007, Jarrett et al., 2009, Sloboda et al., 2009, Bast et al., 2016, Bast et al., 2017, Hodder et al., 2017, Maslowsky et al., 2017). Two studies employed the sole use of a qualitative method, such as semi-structured interviews (MacDonald and Green, 2001, Pettigrew et al., 2013). Four studies used a combination of both qualitative and quantitative methods and were therefore mixed-method studies (McBride et al., 2002, Stead et al., 2007, Audrey et al., 2008, Thaker et al., 2008). The remaining study was a discussion paper, which largely presented quantitative results (Garrahan, 1995).

All but one of the included papers were classed as atheoretical papers or did not identify themselves as using an implementation theory or a supporting model. The one paper that did report using theory, employed the use of Grounded Theory methodology to study the implementation of a school-based alcohol and drug prevention programme (MacDonald and Green, 2001).

The studies included a diverse range of age groups of secondary school students. Three studies focused on implementing interventions to students aged between 12 and 13 years (Sussman et al., 1993, Basen-Engquist et al., 1994, Pettigrew et al., 2013). However, the other included papers stated varying age ranges including: 11 to 13 years (Stead et al., 2007), mean age of 12.5 years (Bast et al., 2016, Bast et al., 2017), 12 to 15 years (Audrey et al., 2008, Sloboda et al., 2009), 12 to 16 years (Hodder et al., 2017), 13 to 15 years (McBride et al., 2002), 13 to 18 years (MacDonald and Green, 2001), 13 to 19 years (Skara et al., 2005, Rohrbach et al., 2007), 14 to 16 years (Maslowsky et al., 2017), 14 to 18 years (Thaker et al., 2008), 14 to 19 years

(Jarrett et al., 2009) and Garrahan which focuses on all ages within a particular high school (Garrahan, 1995). In addition, no age information was provided in two of the included papers (McCormick et al., 1995, Barr et al., 2002).

4.7.2 Results of Individual Studies

Table 11 presents a summary table of the key findings of the 19 papers included in the systematic review. As the study designs were different, the extracted information also varied. The results that are presented in Table 11 are the results that specifically relate to the factors affecting implementation.

Table 11: Summary Table of the Nineteen Included Papers.

Study	Country	Program Type	Study Design	Population	Implementation Measurement	Data Analysis	Key Results- Factors affecting Implementation
Audrey et al., 2008 'Commitment and compatibility: Teachers' perspectives on the implementation of an effective school-based, peer-led smoking intervention'	UK	Tobacco A Stop Smoking In Schools Trial (ASSIST)	Cluster Randomised Controlled Trial (cRCT). Questionnaire and interviews	30 ASSIST schools & 29 control.	Process evaluation to examine the context, implementation and receipt of the intervention	Framework method of data management. (reading, coding & identifying themes, & sorting material according to key issues)	Teachers welcomed external training- it interested pupils, prevented difficulties of discussing smoking with teachers and relieved staff burden. Implementation appeared compatible with the school ethos and timetable. Smoking was perceived as a difficult issue and staff welcomed a new initiative. Disruption to the timetable was inevitable, and the importance of communication between ASSIST staff and teachers was important.
Barr et al., 2002 'Amenability and implementation in secondary school	US	Tobacco	Telephone Survey	296 middle school teachers & 282 high	Relations between TUPE teachers' receptivity or	Cluster analyses for amenability to implementation.	Indicators of staff amenability were variable. The most amenable staff reported

anti-tobacco programmes'		Tobacco Use Prevention Education (TUPE)		school teachers	amenability to implement TUPE programmes and features of implementation settings	A 1-way ANOVA for associations between amenability and implementation. A hierarchal multiple-regression for staff effectiveness perceptions	consistently covering each activity with few barriers. For staff perceptions of effectiveness to prevent smoking initiation: Tobacco related norms accounted for 9.9% of variance, staff training & TUPE support or barriers- 4.2%, and class activities- 4.0%. For staff perceptions of TUPE for cessation: Tobacco norms-6.6% of variance, staff training & TUPE support- 6.3%, class activities- 5.5%.
Basen-Engquist et al., 1994 'The effect of two types of teacher training on implementation of Smart Choices: a tobacco prevention curriculum'	US	Tobacco Minnesota Smoking Prevention (MSPP)	Questionnaire	39 districts in live training & 33 in video training. Mean number of pupils was 41, 2.8 teachers	Assessing how the type of teacher training affects implementation via a live workshop or video training	Fisher exact test & Mann-Whitney U for differences in teacher implementation Two group t-tests tested differences between students in the	The relationship between type of training and use of the curriculum was significant. Districts who were assigned to the video training condition were less likely to teach the curriculum. However, implementing teachers from both groups reported high levels of implementation.

							live and video districts	Students in live workshops were more likely to recall activities.
Bast et al 2016 'High impact of implementation on school-based smoking prevention: The X:IT study—a cluster randomized smoking prevention trial'	Denmark	Tobacco X:IT intervention	cRCT	51 intervention, 43 control schools. 4161 Year 7 pupils (12.5 yrs.) at baseline, 3764 at 1st follow-up, and 3269 at 2nd. 50 coordinators at intervention schools at the 1st and 39 at 2nd follow-up	An implementation index was calculated for intervention schools: high, medium, or low fidelity. Items were combined within each of the 3 components, for pupils and coordinators, and across the implementation concepts (adherence, dose, quality of delivery, and participant responsiveness)	The outcome measure was a summarized binomial response variable derived by aggregating current smoking at school level. Effect of implementation fidelity on smoking was examined through logistic regression analyses	One fourth of the schools was characterized as high implementers of the programme (all three components) at 1st (12 schools, 24.0 %) and 2nd follow-up (11 schools, 28.2 %). Implementation fidelity was strongly associated with smoking at the first and second follow-up, e.g., the odds for smoking at schools with high implementation both years were OR = 0.44 (95 % CI 0.32 to 0.68).
Bast et al 2017	Denmark	Tobacco	cRCT	51 intervention, 43 control schools.	Implementation was assessed through a	School was the unit of analysis. Fisher's exact test tested for differences in	Schools implementing X:IT to a medium or high degree had higher levels of administrative leadership (77.3% and

| | | X:IT intervention | | 4161 Year 7 pupils (12.5 yrs.) at baseline, 3764 at 1st follow-up, and 3269 at 2nd. 50 coordinators at intervention schools at the 1st and 39 at 2nd follow-up | quantitative evaluation of implementation fidelity based on adherence, dose, quality of delivery, and participant responsiveness. Measures of implementation fidelity were combined into an overall school-wise implementation index. | implementation by decision structure, mission-policy alignment, school climate, organizational health, staff expertise, administrative leadership, positive climate, school culture & size, pupil composition, and area affluence. | 83.3% vs. 42.9%), school climate/ organizational health (95.5% and 91.7% vs. 66.7%), mission-policy alignment (90.9% and 100.0% vs. 71.4%), personnel expertise (81.8% and 75.0% vs. 46.7%), school culture (77.3% and 91.7% vs.53.3%), positive classroom climate (91.4% and 96.2% vs. 82.9%) compared with low implementation schools. |
| **Garrahan 1995** 'The application of a systems approach to substance use prevention: Linking interventions to the infrastructure' | US | Substance Use | Systems approach model | 800 students | Not Stated | Baseline substance use data was collected via a survey & analysed | Involving school personnel in a building-wide manner and monitoring efforts and outcomes was important. All implemented intervention aspects were linked to existing components of the school, and this gave the impression that what was implemented was based on common |

							sense or self-evident reasoning.
Hodder et al., 2017 'Effectiveness of a pragmatic school-based universal resilience intervention in reducing tobacco, alcohol and illicit substance use in a population of adolescents: cluster-randomised controlled trial'	Australia	Tobacco, alcohol and illicit substance use Universal resilience intervention	c-RCT	20 intervention schools, 12 control. All students in grade 7 (12-13 years) and followed up in year 10 (15-16 years)	To assess implementation by intervention schools staff reviewed school documents and recorded the intervention strategy delivery. Also structured interviews were conducted with staff around implementation of intervention strategies and engagement with the intervention during the final year	Descriptive statistics summarised the number of intervention schools implementing each of the 16 intervention strategies. Chi-square and t-test analyses examined whether implementation differed across intervention and control schools.	The intervention relied on schools and staff selecting resources around resilience and implementing them well. However, schools adapting programmes wasn't consistent with the intended substance use reduction. 12 of 20 intervention schools implemented all 16 areas. HTs at intervention schools reported using more resilience resources and the mean number implemented was higher. There was no difference between intervention and control in the other 15 areas. 73%-84% of the intervention staff were moderately or very engaged.
Jarrett et al., 2009	US	Tobacco	Survey	769 pupils who reported	Perceptions of facilitator characteristics &	Descriptive analyses used to determine	88.7% of pupils rated facilitators as favourable. No nagging

'Teen Perceptions of Facilitator Characteristics in a School-Based Smoking Cessation Programme'		Not-On-Tobacco (NOT)		regular smoking.	the relationship between perceptions & outcomes	overall ranking of facilitator characteristics. Chi-square test to determine if facilitator ratings differed by race or sex	or preaching, non-judgmental, trustworthy, caring, & confidentiality were scored highly. There were few differences in ratings by race. Favourability scores were associated with changes in smoking (quit or reduce). Pupils who perceived facilitators favourably showed significant smoking reduction and cessation rates, regardless of sex or race.
MacDonald and Green 2001 'Reconciling concept and context: The dilemma of implementation in school-based health promotion'	Canada	Substance Misuse	Interviews and observations with Project Workers (PWs)	100 interviews in 6 sites with school admins, teachers, pupils, parents, & agency staff	Participants were probed around the level of understanding and support for prevention, implementation experiences, implementation barriers & facilitators, support for PWs and the school's problem with	Constant comparative method of grounded theory Field notes were recorded and used to support analysis	PWs needed to establish legitimacy and familiarity within schools, by overcoming staff opposition. They had to address conflicting expectations, resulting from poor preparation. Schools had to be ready and willing to implement, and PWs faced issues selling the model, and facilitating participation. Training sought to

					drug and alcohol issues		teach PWs to understand the model, but this didn't occur and PWs realised they didn't understand it enough to implement to others and few achieved it as intended. Some tried but were discouraged by school barriers. Some retained key features, but omitted elements due to admin pressure or context demands.
Maslowsky et al., 2017 'Universal school-based implementation of screening brief intervention and referral to treatment (SBIRT) to reduce and prevent alcohol, marijuana, tobacco and other drug use:	US	Tobacco, alcohol, marijuana and other drug use SBIRT	An implementation and evaluation model	10 high schools in 6 school districts (3 suburban, 2 urban, and 1 rural) participated in the programme	3 data sources: student substance use data, a student survey completed after SBIRT to give feedback on the process and to indicate future substance use intentions, and a health educator survey	Descriptive Statistics	Students rated the SBIRT implementation process positively. The mean comfort with the health coach and the mean trust in confidentiality was high, indicating para-professionals were effective implementers of SBIRT. Using non–school personnel eased students' worries around revealing substance use affecting

Process and feasibility'							their extracurricular activities or college applications.
McBride et al., 2002 'Implementing a school drug education programme: reflections on fidelity'	Australia	Alcohol The School Health & Alcohol Harm Reduction Project (SHAHRP)	Longitudinal study	41 classes 28 teachers 6 schools	Series of methods to optimise and assess implementation fidelity including training, critical assessment and self-report	Spearman's rank measured fidelity Theme matrices described qualitative responses	SHAHRP was taught 80.7% as intended, with fidelity ranging from 78.9 to 83.4%. Implementation was optimized by: training, staff and pupil motivation and timing. Teachers found too much work in some lessons, interruptions reduced classroom time and implementation effectiveness was pupil dependent. Expectations needed to be lowered for difficult pupils and some activities were not implemented as intended.
McCormick et al., 1995 'Diffusion of Innovations in Schools: A Study of Adoption and	US	Tobacco	RCT	21 districts, 50 schools, and 3000 pupils Districts were	Use of 'Level of use' tool and implementation check-sheets	Population means, median, frequencies & correlations used for summary. Non-	Overall implementation completeness was low, with the mean % implemented being 70% and 23% implemented ≥90%.

Implementation of School- Based Tobacco Prevention Curriculum'				assigned to control or intervention		parametric tests tested for differences between control and intervention	Larger districts were more likely to implement than small ones. Districts with favourable climates were more likely to implement and reported higher usage. Trained teachers were more likely to implement curricula and more likely to implement higher proportions.
Pettigrew et al., 2013

'Describing Teacher-Student Interactions: A Qualitative Assessment of Teacher Implementation of the 7th Grade keepin' it REAL Substance Use Intervention' | US | Substance use

keepin' it Real (kiR) | Ethnography | 39 schools; 14 Control, 14 Rural: Mean number of pupils per school= 99, with a range from 27 to 226 | An assessment of teacher implementation using the indicators; delivery methods, consistency of delivery, teaching standards | Coding provided; quantitative implementation ratings- quality adherence, adaptation, delivery and engagement, whilst qualitative codes identified adaptation and engagement | Analysis identified teacher control as passive, coordinated, or strict, and pupil participation as disconnected, attentive, or participatory; serving as a classroom typology for kiR implementation. Passive teachers were linked with passive pupils, strict teachers had attentive pupils, whilst classes with participatory pupils were taught by coordinated teachers. Teachers who taught |

							kiR frequently tended to display similar control and pupils participated consistently.
Rohrbach et al., 2007 'Fidelity of implementation in Project Towards No Drug Abuse (TND): a comparison of classroom teachers and programme specialists'	US	Substance Use Project Towards No Drug Abuse (TND)	RCT	18 schools- 6 in each different condition. Pupils ranged from 13- 19 years of age	Study compared teachers with Programme Specialists (PSs). Questionnaire assessed implementation fidelity of TND via adherence, classroom process and perceived pupil acceptance	Inter-rater reliability was calculated for each item. To test the effect of implementer on fidelity and outcomes, a mixed- linear model was used	Of the 4 indexes of fidelity, only delivery quality differed between PSs and teachers. Both teachers and PSs achieved effects on 3 of the 5 immediate outcome measures, including programme knowledge, addiction concern, and self-control. Pupils' post-test ratings of the programme and the quality of delivery showed no difference between teacher and specialist-led classrooms.
Skara et al., 2005 'An evaluation of the fidelity of implementation of a school-based drug	US	Substance Use Project Towards No Drug Abuse (TND).	Questionnaire	18 schools- 6 in each different condition. 2735 students completed pre-test	Questionnaire assessed implementation fidelity of TND via questions open and closed questions	Data was analyzed using a generalized mixed-linear model using SAS	The curriculum was implemented as intended, received favourable ratings, and significantly improved knowledge. Providers reported high adherence to lesson

abuse prevention programme: project toward no drug abuse (TND)'				questionnai-res: 85% completed post-programme			plans and lessons were not difficult to teach. Adherence and delivery quality didn't differ by curriculum or school. Individual ratings of delivery quality were favourable, including providers' perceptions of pupil participation, pupil interest, provider's maintenance of class control & providers' perceptions of effectiveness.
Sloboda et al., 2009 'Implementation fidelity: The experience of the Adolescent Substance Abuse Prevention Study'	US	Substance Use Take Charge of Your Life (TCYL)	Observation and surveys	TCYL was delivered by 140 Drug Abuse Resistance Education (DARE) officer instructors	Implementation fidelity measured using instructional strategy (IS)	Descriptive statistics & analyses between content coverage and IS & scores from targeted lessons were conducted using hierarchical linear modelling to gain 2-level random intercept models	Higher content was correlated with IS. There was no correlation between age, sex, race, education, content coverage or use of IS. Pupils with higher coverage scored higher on the consequences measure. Results indicated pupils with a higher proportion of the content had greater perceptions of negative consequences. Greater exposure and greater

							content coverage was related to negative alcohol expectancies.
Stead et al., 2007 'Implementation evaluation of the Blueprint multi-component drug prevention programme: Fidelity of school component delivery'	UK	Substance Use Blueprint	Observations and interviews	30 Schools in 4 Local Authority areas: 24 intervention & 6 control. Year 7 (11-12 yrs.) & Year 8 (12-13 yrs.)	Implementation fidelity measured via adherence, exposure, participant responsiveness, quality of delivery and programme differentiation	Observation schedule used to generate descriptive statistics	The mean content fidelity was 72%. As teachers got familiar with lessons, they were likely to modify or omit elements. Fidelity was highest in teacher-pupil lessons & lowest for pupil-pupil. Resource use was variable and teachers found timing and completing content difficult. Teachers were unsure of interactive sessions due to disruption & unpredictable outcomes. Some teachers expressed concern about answering questions, but there was no difference in delivery quality of teachers with and without experience.

Sussman et al., 1993 'Project Towards No Tobacco Use: implementation, process and post-test knowledge evaluation'	US	Tobacco Project Towards No Tobacco Use	Questionnaire	4852 7th grade pupils. 9 Health Educators. 76 observers collected teacher data	Key implementation measures were around programme completion and delivery (fidelity-adherence, exposure, reinvention)	Pupils& educators gave ratings of implementation. Post hoc comparisons were used between pairs of means and 1-way ANOVAs predicted response means	Adherence did not vary by condition and high levels of implementation were observed in all conditions. Pupils preferred physical consequences and enthusiasm was rated the lowest. Health educators' enthusiasm, effort and class enthusiasm differed by condition. Teachers did not differ in their ratings of class control or understandability.
Thaker et al 2008 'Programme characteristics and organisational factors affecting the implementation of a school-based indicated prevention programme'	US	Substance Use Re-connecting Youth (RY) programme	Organisational diffusion study	At risk of drop out students from grades 9-12. 5 schools from each district took part	Three diffusion of innovation indicators used: perceived advantage, complexity and compatibility. Capacity, school turbulence and leadership/ admin support were also explored to assess how they	Survey data was analysed using SPSS whereas interview data was transcribed and analysed using qualitative content analysis	Teachers reported learning RY difficult, as they weren't prepared & needed to plan. RY was rigid, complex and difficult to implement the timelines & content. School capacity (skills and resources) varied. Other issues were; budget shortfalls, funding cuts, difficulties finding rooms and school turbulence (transient pupil

					could affect implementation		populations, school reorganisation, schedule changes, & staff turnover). RY lacked leadership and admin support. Only 50% of staff reported principles being supportive. Whilst only 1/3 of district admins considered RY important.

Key:

ANOVA: Analysis of Variable

ASSIST: A Stop Smoking In Schools Trial

c-RCT: Cluster Randomised Controlled Trial

DARE: Drug Abuse Resistance Education

HT: Head Teacher

IS: Instructional Strategy

kiR: Keepin' It REAL

MSPP: Minnesota Smoking Prevention

N-O-T: Not on Tobacco

PS: Programme Specialist

PW: Project Worker

RY: Reconnecting Youth

SBIRT: Screening, Brief Intervention and Referral to Treatment

SHAHRP: School Health and Alcohol Harm Reduction Project

TCYL: Take Charge of Your Life

TND: Towards No Drug Use

TUPE: Tobacco Use Prevention Education

TUWYT: Tell Us What You Think

4.7.3 Quality Appraisal of Included Papers

Tables 12 and 13 present the results of the CASP and the EPHPP quality appraisal. For the mixed method papers, the most appropriate tool was chosen, by considering the quality of the results most relevant to the focus of the systematic review. However, in the paper by McBride et al it was appropriate for both of the tools to be applied as all results were highly relevant.

As previously discussed, the CASP tool presents a qualitative checklist and, although there is not an official rating system, the five papers that were assessed with the CASP tool were rated from strongest to weakest by how many 'Yes', 'No' or 'Can't tell' outcomes they were scored. All of the qualitative papers were deemed to have a clear statement of the aims of the research, and the use of qualitative methodology was identified as being appropriate. MacDonald and Green's paper was rated as the highest quality qualitative paper as it only received one 'Can't Tell' rating when determining whether all ethical issues had been considered (MacDonald and Green, 2001).

The papers by Stead et al and McBride et al were identified as being between a strong/moderate rating as two 'can't tells' were recorded around the rigour of the data analysis (Stead et al., 2007), and the relationship between the researcher and participant (McBride et al., 2002) and ethical considerations (McBride et al., 2002, Stead, 2007). The papers by Pettigrew et al and Audrey et al were rated as moderate as there were six 'yes' ratings and three 'can't tells'. Although the recruitment strategy appeared to be appropriate and the data collection addressed the research issue, the paper by Audrey et al lacked detail around the research design, and did not report the exploration of the participants and researcher relationship (Audrey et al., 2008). However, the data analysis was deemed to be rigorous and there was a clear statement of the study's findings. In the paper by Pettigrew et al, the relationship between the participants and the researcher was not explored, and it lacked detail on the recruitment strategy. All five of the qualitative papers made no reference to ethical considerations or whether they have obtained ethical approval.

Table 12: Results of the CASP Quality Assessment.

Quality Appraisal Questions	Studies				
	Audrey et al., 2008	MacDonald and Green, 2001	McBride, et al., 2002	Pettigrew et al., 2013	Stead et al., 2007
Screening Questions					
Was there a clear statement of the aims of the research?	YES	YES	YES	YES	YES
Is a qualitative methodology appropriate?	YES	YES	YES	YES	YES
Detailed Questions					
Was the research design appropriate to address the aims of the research?	CAN'T TELL	YES	YES	YES	YES
Was the recruitment strategy appropriate to the aims of the research?	YES	YES	YES	CAN'T TELL	YES
Was the data collected in a way that addressed the research issue?	YES	YES	YES	YES	YES

Has the relationship between researcher and participants been adequately considered?	CAN'T TELL	YES	CAN'T TELL	CAN'T TELL	YES
Have ethical issues been taken into consideration?	CAN'T TELL	CAN'T TELL	CAN'T TELL	CAN'T TELL	CAN'T TELL
Was the data analysis sufficiently rigorous?	YES	YES	YES	YES	CAN'T TELL
Is there a clear statement of findings?	YES	YES	YES	YES	YES
Global Rating	**Weak/ Moderate**	**Strong**	**Moderate**	**Weak/ Moderate**	**Moderate/ Strong**

Table 13: Results of the EPHPP Quality Assessment.

Quality Appraisal Questions	Studies							
	Barr et al	**Basen-Engquist et al**	**Bast et al (a)**	**Bast et al (b)**	**Garrahan**	**Hodder et al**	**Jarrett et al**	**Maslowsky et al**
Selection Bias								
Are the individuals selected to participate in the study likely to be representative of the target population?	SOMEWHAT LIKELY	CAN'T TELL	VERY LIKELY	VERY LIKELY	NOT LIKELY	VERY LIKELY	SOMEWHAT LIKELY	CAN'T TELL
What percentage of selected individuals agreed to participate?	80-100%	60-79%	80-100%	80-100%	CAN'T TELL	80-100% (Teachers)	CAN'T TELL	60-79%
Rating	MODERATE	MODERATE	STRONG	STRONG	WEAK	STRONG	MODERATE	MODERATE
Study Design								
Was the study described as randomized? If NO, go to Component C.	NO	YES	YES	YES	NO	YES	NO	NO

If Yes, was the method of randomization described?	N/A	YES	YES	NO	N/A	YES	N/A	N/A
If Yes, was the method appropriate?	N/A	YES	YES	YES	N/A	YES	N/A	N/A
Rating	MODERATE	STRONG	STRONG	STRONG	WEAK	STRONG	MODERATE	MODERATE
Confounders								
Were there important differences between groups prior to the intervention?	CAN'T TELL	CAN'T TELL	CAN'T TELL	CAN'T TELL	NO	NO	NO	N/A
If yes, indicate the percentage of relevant confounders that were controlled- either in the design (e.g. stratification, matching) or analysis?	CAN'T TELL	CAN'T TELL	CAN'T TELL	CAN'T TELL	N/A	N/A	N/A	N/A
Rating	WEAK	WEAK	WEAK	WEAK	STRONG	STRONG	STRONG	N/A
Blinding								
Was (were) the outcome assessor(s) aware of the intervention or	YES	YES	CAN'T TELL	CAN'T TELL	CAN'T TELL	CAN'T TELL	YES	YES

exposure status of participants?								
Were the study participants aware of the research question?	CAN'T TELL	CAN'T TELL	CAN'T TELL	CAN'T TELL	CAN'T TELL	CAN'T TELL	CAN'T TELL	CAN'T TELL
Rating	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE
Data Collection Methods								
Were data collection tools shown to be valid?	YES	CAN'T TELL	YES	YES	CAN'T TELL	YES	YES	CAN'T TELL
Were data collection tools shown to be reliable?	YES	CAN'T TELL	YES	YES	CAN'T TELL	YES	YES	CAN'T TELL
Rating	STRONG	WEAK	STRONG	STRONG	WEAK	STRONG	STRONG	WEAK
Withdrawals and Drop Outs								
Were withdrawals and drop-outs reported in terms of numbers and/or reasons per group?	NO	NO	YES	NO	NO	YES	NO	NO

Indicate the percentage of participants completing the study. (If the percentage differs by groups, record the lowest).	80-90%	60-79% less than 60% (2 conditions)	80-100%	80-100%	CAN'T TELL	80-100% (Teachers) 60-79% (Students)	CAN'T TELL	60-79%
Rating	STRONG	WEAK	STRONG	STRONG	WEAK	MODERATE	WEAK	WEAK
Total	**Moderate**	**Weak**	**Moderate**	**Moderate**	**Weak**	**Strong**	**Moderate**	**Weak**

Quality Appraisal Questions	Studies						
	McBride et al	**McCormick et al**	**Rohrbach et al**	**Skara et al**	**Sloboda et al**	**Sussman et al**	**Thaker et al**
Selection Bias							
Are the individuals selected to participate in the study likely to be representative of the target population?	CAN'T TELL	CAN'T TELL	SOMEWHAT LIKELY	SOMEWHAT LIKELY	SOMEWHAT LIKELY	SOMEWHAT LIKELY	SOMEWHAT LIKELY
What percentage of selected individuals agreed to participate?	80-100%	60-79%	80-100%	80-100%	60-79%	CAN'T TELL	Less than 60%
Rating	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	WEAK
Study Design							

Was the study described as randomized? If NO, go to Component C.	NO	YES	YES	NO	NO	NO	YES
If Yes, was the method of randomization described?	N/A	YES	YES	N/A	N/A	N/A	YES
If Yes, was the method appropriate?	N/A	YES	NO	N/A	N/A	N/A	YES
Rating	WEAK	STRONG	STRONG	MODERATE	MODERATE	MODERATE	STRONG
Confounders							
Were there important differences between groups prior to the intervention?	CAN'T TELL	CAN'T TELL	CAN'T TELL	YES	CAN'T TELL	CAN'T TELL	CAN'T TELL
If yes, indicate the percentage of relevant confounders that were controlled (either in the design (e.g. stratification, matching) or analysis)?	CAN'T TELL	CAN'T TELL	CAN'T TELL	80-100%	CAN'T TELL	CAN'T TELL	CAN'T TELL
Rating	WEAK	WEAK	WEAK	STRONG	WEAK	WEAK	WEAK
Blinding							
Was (were) the outcome assessor(s) aware of the	YES	CAN'T TELL	YES	YES	NO	YES	Yes

intervention or exposure status of participants?							
Were the study participants aware of the research question?	CAN'T TELL	CAN'T TELL	CAN'T TELL	CAN'T TELL	CAN'T TELL	CAN'T TELL	CAN'T TELL
Rating	MODERATE	MODERATE	MODERATE	MODERATE	WEAK	MODERATE	MODERATE
Data Collection Methods							
Were data collection tools shown to be valid?	CAN'T TELL	YES	YES	YES	NO	CAN'T TELL	YES
Were data collection tools shown to be reliable?	CAN'T TELL	YES	YES	YES	NO	CAN'T TELL	YES
Rating	WEAK	STRONG	STRONG	STRONG	WEAK	WEAK	STRONG
Withdrawals and Drop Outs							
Were withdrawals and drop-outs reported in terms of numbers and/or reasons per group?	YES	NO	YES	YES	NO	YES	CAN'T TELL
Indicate the percentage of participants completing the study. (If the percentage differs by groups, record the lowest).	80-100%	60-79%	80-100%	CAN'T TELL	60-79%	80-100%	Less than 60%
Rating	STRONG	MODERATE	STRONG	MODERATE	MODERATE	STRONG	WEAK
Global Rating	**Weak**	**Moderate**	**Moderate**	**Moderate**	**Weak**	**Weak**	**Weak**

The results of the EPHPP quality appraisal identified that one paper was of strong quality (Hodder et al., 2017), six of the quantitative papers were of moderate quality (McCormick et al., 1995, Barr et al., 2002, Skara et al., 2005, Rohrbach et al., 2007, Bast et al., 2016, Bast et al., 2017) and eight were classed as weak papers (Sussman et al., 1993, Basen-Engquist et al., 1994, Garrahan, 1995, McBride et al., 2002, Thaker et al., 2008, Jarrett et al., 2009, Sloboda et al., 2009, Maslowsky et al., 2017). The strongest quantitative papers were the recently published papers by Hodder et al which received no weak ratings and Bast et al, as they scored four 'strong', one 'moderate', and only one 'weak' rating for the reporting of confounding factors (Bast et al., 2016, Bast et al., 2017, Hodder et al., 2017). The other papers rated moderate most commonly scored two 'strong', three 'moderate' and one 'weak' rating, with the most common strong area being the data collection methods, and the most common weak areas being the reporting of confounding factors, and the study design. The weakest quantitative paper was the paper by Garrahan, as it achieved no strong ratings, and received one 'moderate' and five 'weak' ratings. To be classified as weak, overall papers had to have at least two weak ratings, and common weak areas included the validity and reliability of the data collection, the number or reporting of participant withdrawals, and confounding factors.

4.7.4 Synthesis of Results

During the data extraction process, the factors found to affect the implementation of a tobacco or substance use intervention within a secondary school, were identified, coded and organised using the four NPT constructs; Coherence, Cognitive Participation, Collective Action and Reflexive Monitoring (May and Finch, 2009). As previously discussed, NPT was used to provide an organising framework for the included results. Table 14 was used to highlight the key results from the included papers, and hence how they were characterised according to the constructs of NPT. The following subsections will discuss the key results organised by each NPT construct.

Table 14: Summary of the Key Results Organised by their Corresponding NPT Construct.

Factors Affecting Implementation	Papers	NPT Construct
Distinguishing from Current Practice	(Garrahan, 1995, Audrey et al., 2008)	**Coherence**
Fitting with School Ethos	(Audrey et al., 2008, Bast et al., 2017)	**Coherence**
Providers Seeing the Value or Benefit of an Intervention	(MacDonald and Green, 2001, Skara et al., 2005, Stead et al., 2007, Audrey et al., 2008)	**Coherence**
Providers not Delivering or not Understanding how to Deliver (Use of Specialist Knowledge)	(MacDonald and Green, 2001, Stead et al., 2007, Thaker et al., 2008, Pettigrew et al., 2013, Bast et al., 2017)	**Coherence** **Collective Action**
Training	(McCormick et al., 1995, Audrey et al., 2008, Thaker et al., 2008, Pettigrew et al., 2013, Bast et al., 2017, Hodder et al., 2017)	**Coherence** **Collective Action**
Implementation Driving Force	(MacDonald and Green, 2001, McBride et al., 2002, Rohrbach et al., 2007, Audrey et al., 2008, Pettigrew et al., 2013)	**Cognitive Participation**
Choice of provider/ Role Identity- Provider 'agreeing' it should be part of their role	(Sussman et al., 1993, Garrahan, 1995, MacDonald and Green, 2001, McBride et al., 2002, Audrey et al., 2008, Maslowsky et al., 2017)	**Cognitive Participation**
Provider Supporting Intervention	(Sussman et al., 1993, Barr et al., 2002, Audrey et al., 2008, Thaker et al., 2008, Sloboda et al., 2009, Hodder et al., 2017)	**Cognitive Participation**
Provider Motivation	(McBride et al., 2002, Hodder et al., 2017)	**Cognitive Participation**
Sustainability	(Sussman et al., 1993)	**Cognitive Participation**
Young People Behaviour	(Pettigrew et al., 2013, Bast et al., 2017, Maslowsky et al., 2017)	**Cognitive Participation**

Providers Feeling Uncomfortable with Delivery	(Stead et al., 2007)	**Cognitive Participation** **Collective Action**
Budget Cuts or Limited Resources	(Thaker et al., 2008, Bast et al., 2017)	**Collective Action**
Disruption to School Timetable	(Audrey et al., 2008)	**Collective Action**
Favourable Organizational Climate/ Host Support	(Garrahan, 1995, McCormick et al., 1995, MacDonald and Green, 2001, Audrey et al., 2008, Thaker et al., 2008, Bast et al., 2017, Hodder et al., 2017)	**Collective Action**
Fidelity	(Sussman et al., 1993, Basen-Engquist et al., 1994, MacDonald and Green, 2001, Barr et al., 2002, McBride et al., 2002, Skara et al., 2005, Rohrbach et al., 2007, Stead et al., 2007, Thaker et al., 2008, Sloboda et al., 2009, Colby et al., 2013, Pettigrew et al., 2013, Bast et al., 2017, Hodder et al., 2017)	**Collective Action**
Importance of Staff Skills, Knowledge or Characteristics	(Jarrett et al., 2009, Pettigrew et al., 2013, Bast et al., 2017)	**Collective Action**
Involving Schools; Monitoring Outcomes	(Garrahan, 1995)	**Collective Action**
Schools Prepared for Implementation	(MacDonald and Green, 2001)	**Collective Action**
Staff Turnover	(Thaker et al., 2008)	**Collective Action**
Modifying Practice (From Feedback)	(Stead et al., 2007)	**Reflexive Monitoring**

Negative Implementation Experience	(Thaker et al., 2008)	**Reflexive Monitoring**
Positive Feedback	(Skara et al., 2005)	**Reflexive Monitoring**

4.7.4.1 Coherence

Starting with the coherence construct of the Normalization Process Theory; coherence is used to refer to the sense-making work that individuals can participate in either individually or collectively when operationalising a new intervention or practice, in this context a school-based tobacco or substance use intervention (May et al., 2015). A key feature of the coherence construct is being able to understand and make sense of a specific intervention. This was largely apparent within the included papers, as it was frequently reported that the intervention providers struggled to understand or make sense of what a tobacco or substance use intervention required, in order to implement it successfully (MacDonald and Green, 2001, Stead et al., 2007, Thaker et al., 2008, Pettigrew et al., 2013).

A specific example of this could be seen in MacDonald and Green, as the Project Workers (PWs), responsible for implementing their substance use intervention, were reported as not being able to *"understand the model enough to implement it or to sell it to others"* (MacDonald and Green, 2001, page 761). The primary role of the PWs was to introduce and implement the intervention within the school setting, and their lack of understanding significantly affected this (MacDonald and Green, 2001). The challenges with comprehension was also reported within the included paper by Thaker et al; as the staff responsible for learning the Reconnecting Youth (RY) intervention found it to be demanding (Thaker et al., 2008). Even following the completion of the training, teachers found the RY intervention to be overly complex and hence difficult to implement (Thaker et al., 2008).

Training is typically a key component of NPT's coherence construct, and hence was identified in a large proportion of the included papers as a factor with the potential to facilitate implementation within the secondary school setting (McCormick et al., 1995, Audrey et al., 2008, Thaker et al., 2008, Pettigrew et al., 2013, Hodder et al., 2017). A specific example of this could be observed within McCormick et al as they identified that teachers who were adequately trained to deliver their tobacco intervention, were more likely to implement curricula, and also increased the amount of curricula implemented (McCormick et al., 1995). Another example was presented in the paper by Pettigrew et al, which reported that the

training provided for the implementation of their substance use intervention, was insufficient for maintaining implementation fidelity and improving outcomes, and thus emphasised the importance of investment in delivery personnel, and delivery support (Pettigrew et al., 2013). Basen- Engquist sought to investigate the effect on implementation of a school-based tobacco intervention when providers were trained via a live, interactive session in comparison to a video training option (Basen-Engquist et al., 1994). The results of the study indicated that the providers assigned to the video training condition were less likely to teach the curriculum as intended, indicating that the pre-recorded training affected the implementation fidelity (Basen-Engquist et al., 1994). In the paper by Sloboda et al, it was shown that higher content coverage of their substance abuse intervention was directly correlated with the level of instructional strategy (r = 0.93, P < 0.001) indicating that the training could improve implementation fidelity. Finally, the paper by Stead et al reported that some of the teachers that took part in the study were new, and had concerns with implementing the school-based substance use intervention, as they felt unfamiliar with the teaching methods required (Stead et al., 2007). Furthermore, although the training was designed to emphasise that teachers did not require previous drug education or teaching experience; in practice some staff felt uncomfortable about being unable to engage the pupils and answer their questions and concerns (Stead et al., 2007).

Another key aspect of NPT's coherence construct is the ability of participants to distinguish the specific intervention from their current ways of working (May et al., 2015), and this was identified as being a factor affecting the school-based implementation processes within some of the included papers (Garrahan, 1995, Audrey et al., 2008). In the paper by Audrey et al, it was reported that tobacco smoking was seen as problematic within the schools included in the study (Audrey et al., 2008). Therefore, as the school staff believed they needed to try a different approach to combat it, they welcomed the implementation of a tobacco intervention, that was different from their current practices (Audrey et al., 2008). This was not observed in the included paper by Garrahan however, which indicated that it can be problematic to stray considerably from the existing school practice (Garrahan, 1995). Garrahan reported that their substance use intervention components were linked to existing school practices as *"it gave the impression that much of what was done was based on common sense or derived by reasoning from self-evident conditions"* (Garrahan, 1995, page 80).

Included papers reported that it was often important for tobacco or substance use interventions to fit with a secondary school's philosophy and ethos, as it shaped the perceptions around the value of a specific intervention (MacDonald and Green, 2001, Skara et al., 2005, Stead et al., 2007, Audrey et al., 2008, Bast et al., 2016, Bast et al., 2017). An example to highlight this was again found in the paper by Audrey et al, which reported the importance of using peer pupils (Audrey et al., 2008). By using peer pupils as part of the intervention, it facilitated the

recruitment of pupils that were largely representative of their year group, and staff also found this to be valuable in building trust and confidence (Audrey et al., 2008). The importance of recognising value was also observed in the work by Bast et al, as they identified that the secondary schools which were reported as having medium and high implementation, were more likely to share an alignment in their mission and policies (Bast et al., 2016, Bast et al., 2017).

4.7.4.2 Cognitive Participation

The second construct, cognitive participation, was used to refer to the relational work that individuals were seen to do to build and sustain a community of practice around a new tobacco or substance use intervention within a secondary school (May et al., 2015).

The importance of having an implementation driving force is emphasised within the cognitive participation construct (May et al., 2015), and it was apparent in several of the included papers that having a designated individual or a group of individuals to act as implementation driving forces had the potential to facilitate implementation (MacDonald and Green, 2001, McBride et al., 2002, Rohrbach et al., 2007, Audrey et al., 2008, Pettigrew et al., 2013,).

As previously mentioned, Audrey et al reported the importance of the peer pupils in facilitating implementation by engaging their peers to be involved with the smoking intervention (Audrey et al., 2008). This could also be linked with the school provider's motivation and buy-in. An example of this can be observed in the paper by McBride et al, which focused on the teachers' motivation, and their perception of pupils' motivation towards their alcohol intervention, the School Health and Alcohol Harm Reduction Project (SHAHRP). Motivation was found to be a factor positively influencing implementation as teachers' willingness and commitment to implement as intended was correlated with the pupils' attitudes and behaviour (McBride et al., 2002, Hodder et al., 2017). Therefore, motivated teachers were characterised as implementation driving forces as they had the potential to motivate students (McBride et al., 2002). Another example of this was within the included paper by Rohrbach et al, which stated that *"motivated, trained classroom teachers can implement evidence-based prevention programmes with fidelity and produce immediate effects"* (Rohrbach et al., 2007, page 131). The paper by Sussman et al focused on the implementation of a school-based tobacco intervention (Sussman et al., 1993). Similar to the other examples, Sussman et al reported that health educators' enthusiasm, effort and class enthusiasm differed when it came to implementation and the levels of willingness were highly variable (Sussman et al., 1993).

Pettigrew et al focused on the implementation of the keepin' it Real (kiR) substance use intervention (Pettigrew et al., 2013). The results of the study reported that whilst teachers played a central role in driving the intervention implementation, the behaviour of the young

people was fundamental as not all of the pupils appeared equally engaged, with some displaying disconnected behaviour, whilst others were attentive or participatory (Pettigrew et al., 2013). Furthermore, the included paper Jarrett et al, reported an association between pupils' perceptions of facilitator characteristics, and how important the Not on Tobacco (N-O-T) intervention was in quitting smoking (Jarrett et al., 2009). This was also observed in Maslowsky et al where they were able to determine that pupils were largely supportive of the implementation of the School-based Brief Intervention and Referral to Treatment (SBIRT) programme (Maslowsky et al., 2017). This was in contrast to the findings of Bast et al, as by calculating their implementation indexes, they were able to identify that there was no significant difference observed when 'at-risk' pupils were present within school and implementation was not affected by the school area's affluence (Bast et al., 2016, Bast et al., 2017)

Another area of cognitive participation is around the perceptions of school-based providers agreeing that a tobacco or substance use intervention should be part of their work and this could be observed in several of the included papers (Sussman et al., 1993, Garrahan, 1995, MacDonald and Green, 2001, McBride et al., 2002, Audrey et al., 2008).

The paper by Barr et al sought to determine the amenability of school staff towards a tobacco intervention (Barr et al., 2002). The teacher's perceptions of the implementation setting significantly influenced their observed practice and this affected both the implementation and the long- term sustainability of the intervention (Barr et al., 2002). Macdonald and Green also discussed the importance of intervention sustainability, as their PWs were required to sustain their willingness to introduce and implement new practices, and this was often seen to be challenging (MacDonald and Green, 2001). Stead et al, which explored the implementation of the Blueprint drug intervention, reported tension with teachers feeling uncomfortable with aspects of the intervention (Stead et al., 2007). The interactive sessions in particular were not well received, and thus were less likely to be delivered as intended (Stead et al., 2007). It indicated that school-based providers were less likely to agree that a tobacco or substance use intervention should be part of their work if they were uncomfortable with the delivery method (Stead et al., 2007).

4.7.4.3 Collective Action

Collective action concentrates on identifying the operational work that individuals are required to do in order to implement a new intervention or practice (May et al., 2015). A key component of collective action is implementation fidelity, or the exploration of how closely an intervention can be implemented as intended. Implementation fidelity was widely discussed within the

included papers with varying results (Sussman et al., 1993, Basen-Engquist et al., 1994, MacDonald and Green, 2001, Barr et al., 2002, McBride et al., 2002, Skara et al., 2005, Rohrbach et al., 2007, Stead et al., 2007, Thaker et al., 2008, Sloboda et al., 2009, Pettigrew et al., 2013, Bast et al., 2016, Bast et al., 2017, Hodder et al., 2017).

When considering implementation fidelity generally, within the included papers, it appeared relatively high. Specific examples of this include both Sloboda et al and Skara et al reported that interventions were able to be implemented as intended, McBride et al reported that 80.7% of SHAHRP was taught as intended, Thaker et al reported that high fidelity was reported in all schools and Rohrbach et al, reported that only one of four implementation indexes, showed differences in delivery between programme specialists and teachers (McBride et al., 2002, Skara et al., 2005, Rohrbach et al., 2007, Thaker et al., 2008, Sloboda et al., 2009). Other examples of included papers reporting high implementation fidelity were Basen- Engquist et al which showed teachers from both groups reported high fidelity, Sussman et al, where high fidelity was observed in all conditions and Pettigrew et al which found that teachers who taught kiR more than once tended to exert similar levels of control in delivering curriculum (Sussman et al., 1993, Basen-Engquist et al., 1994, Pettigrew et al., 2013).

However, due to the heterogeneity in the included papers, high fidelity was not able to be observed across the board. Barr et al reported substantial variation in the teachers' amenability and tasks, leading to lower implementation fidelity (Barr et al., 2002). Again, the fidelity was variable in Bast et al and often appeared high in the first year but was seen to drop after the second year (Bast et al., 2016, Bast et al., 2017). Although Stead et al reported the mean lesson content fidelity to be high at around 72%, as teachers became more familiar with the lessons they were more likely to modify or leave out content (Stead et al., 2007). School staff were also seen to adapt and modify intervention content in Hodder et al (Hodder et al., 2017). When exploring the implementation of a resilience-based intervention concentrating on tobacco, alcohol and illicit drug use, Hodder et al reported that only just over half (12 of 20 schools) implemented all 16 areas of the intervention, and that the adapting and selecting of intervention components reduced the anticipated substance use reduction effect (Hodder et al., 2017). Only a small number of PWs, within the study by MacDonald and Green, were able to implement their intervention as intended (MacDonald and Green, 2001). Furthermore, PWs did report attempting to implement the intervention with high fidelity but were discouraged by a range of factors including school specific barriers and administrative pressures, which negatively affected implementation (MacDonald and Green, 2001).

This links to the several included papers that identified organizational climate as a factor affecting implementation (Garrahan, 1995, McCormick et al., 1995, MacDonald and Green,

2001, Audrey et al., 2008, Thaker et al., 2008, Bast et al., 2016, Bast et al., 2017). MacDonald and Green reported challenges with the intervention buy-in, being able to facilitate wide-spread participation, and also around steering the intervention committee, due to the limited school support present (MacDonald and Green, 2001). This was similar in the papers by Bast et al, as they identified that maintaining a positive classroom climate was associated with schools displaying effective implementation (Bast et al., 2016, Bast et al., 2017). Thaker et al observed similar limitations with school support, with only 50% of intervention staff reporting that they had head teacher support, with teachers in one school reporting that both the assistant principal and counsellors did not support the RY intervention (Thaker et al., 2008). In addition, the capacity of skilled staff and resources varied significantly, and budget shortfalls, funding cuts, and inadequate resources, such as classroom space, were all cited as factors negatively affecting implementation (Thaker et al., 2008). The paper by Garrahan also emphasised the importance of involving school personnel in a building-wide manner, and ensuring monitoring efforts were in place to achieve outcomes proved to be advantageous (Garrahan, 1995).

Timing and staff capacity were reported as factors that could negatively affect school-based implementation processes. The paper by McBride et al reported that teachers often found it difficult to complete the designated activities in the time allocated, which was also observed in the paper by Thaker et al (McBride et al., 2002, Thaker et al., 2008). Stead et al found that teachers frequently overran on lessons, and lacked the capacity to dedicate sufficient preparation time (Stead et al., 2007). Furthermore, Audrey et al also reported findings around the allocation of activities; teachers were seen to welcome training by external trainers, as it created interest amongst pupils, and reduced the difficulties of discussing their smoking with a teacher (Audrey et al., 2008).

Finally, other staffing related issues were reported within Thaker et al, as they observed a high level of staff turnover (Thaker et al., 2008). The intervention staff reported that staff turnover made implementation more difficult, and reduced the level of trust in each other's work (Thaker et al., 2008). Audrey et al also identified trust and communication as being factors facilitating implementation (Audrey et al., 2008). A specific example of this was that the ASSIST implementation caused disruption to the school timetable, with students needing to leave classes (Audrey et al., 2008). This was ameliorated by facilitating communication channels between the research team and the teachers within the school (Audrey et al., 2008).

4.7.4.4 Reflexive Monitoring

The final NPT construct is reflexive monitoring, which refers to the appraisal work that individuals participate in to assess and understand the ways that a new intervention or practice

can affect them and the others around them (May et al., 2015). Following the assessment of the included papers; very few papers reported results indicative of the reflexive monitoring construct. Furthermore, only one paper was able to report participants modifying their work in response to intervention appraisal (Stead et al., 2007). In addition, there was also a general lack of evaluatory components or reporting of how participants appraised implementation and how to improve the process.

An example of a way in which implementation was appraised within the included papers was found within Skara et al. Providers were asked to give delivery quality ratings, which included their perception of student participation (Skara et al., 2005). As the ratings were high (M=6.2 on 7-point scale), delivery quality was able to be rated as 'very favourable' (Skara et al., 2005).

Another example was found in Stead et al, where the amount of activities in the implementation of the Blueprint drug use intervention, were modified as a result of teacher feedback (Stead et al., 2007). The feedback indicated there was insufficient time to cover all components as intended; and even though developers reduced the content, the lessons still remained content rich and hence time constraints continued to be reported (Stead et al., 2007). Finally, during the evaluation of the implementation of the RY programme, reported by Thaker et one school rated the implementation extremely negatively and stated they would be unlikely to implement RY again (Thaker et al., 2008). This was quoted as being due *to "a lack of flexibility, high preparation and a bad implementation experience"* (Thaker et al., 2008, page 245).

4.8 Discussion

Although the 19 included papers were largely disparate; common factors affecting the implementation of secondary school-based tobacco and substance use interventions were identified, which will be discussed in more detail within the following subsections.

4.8.1 Quality Appraisal

Starting with the quality appraisal of the included papers; the majority of papers were classified as weak or moderate quality. The discussion of confounding and contextual factors was identified as being one of the most commonly reported weak areas across the papers. By exploring the heterogeneous confounding factors, which have the potential to affect implementation, it is likely to provide additional value by offering a richer understanding of the context in order to facilitate a school-based implementation process. The lack of discussion

around confounding factors was also identified in the widely cited review of healthcare innovation by Greenhalgh et al (Greenhalgh et al., 2004). The meta-narrative review sought to consider the diffusion of innovations in the health service by assessing how to *"spread and sustain"* novel practices (Greenhalgh et al., 2004, page 1). Similar to the systematic review in this PhD study, the included literature base was extremely heterogenous; however common factors could be identified with the lack of exploration around the confounding factors being reported (Greenhalgh et al., 2004).

This continues to be a reoccurring theme within implementation science, and recent advances within the field has led to the identification that implementation studies are frequently hampered by insufficient and inadequate reporting (Davies et al., 2010, Proctor et al., 2013, Pinnock et al., 2017). One of the strategies proposed to ameliorate this has included the recent development of the Standards for Reporting Implementation Studies (StaRI) Statement (Pinnock et al., 2017), which was briefly touched upon in Chapter Three. The StaRI Statement was developed by Pinnock et al as a set of guidelines to increase the transparency and accuracy of implementation study reporting (Pinnock et al., 2017). The statement consists of a checklist of 27 items, which seeks to act as a tool to ensure that implementation researchers and practitioners can display good practice and improve study reporting (Pinnock et al., 2017). The StaRI statement would be particularly be of use within school-based implementation research, as one of the findings of the systematic review was that the reporting was frequently heterogenous and inconsistent. By using a tool, such as the StaRI, within future school-based implementation research, it has the potential to improve the structuring and reporting of implementation outcomes. In addition, it would facilitate the conduction of high-quality systematic reviews, as the potential for comparability and the quality of included papers would likely be vastly improved (Pinnock et al., 2017).

Furthermore, it was encouraging to ascertain that the most recently published papers by Hodder et al and Bast et al, that were obtained when updating the search results, were both identified as the strongest quality papers due to their robust methodology and high-quality reporting (Bast et al., 2016, Bast et al., 2017, Hodder et al., 2017). This suggests that the school-based implementation research field may be moving in more of a positive direction towards achieving higher quality reporting.

4.8.2 Key Findings and Links to Literature

Although this systematic review highlighted factors unique to the secondary school, such as provider factors and pupil engagement, contextualising this review into the wider implementation literature, the findings around organisational host support, adequate

resources and the need for appropriate feedback, echo the findings of previously conducted implementation work (Walker, 2004, Kilbourne et al., 2007, Domitrovich et al., 2008, Durlak and DuPre, 2008). Therefore, this section focuses on the key findings that were made in regards to the factors affecting the implementation of tobacco or substance use interventions within the secondary school, making links to relevant literature.

Starting with the use of NPT; the NPT was able to be used successfully to provide a common interpretative framework to apply across the 19 included papers and ensured that a comprehensive assessment of the factors affecting implementation could be made. To date, no examples of previous research have extended the use of NPT to consider implementation within a school setting, and hence this sought to be a key novel element of this PhD study's systematic review. By this review demonstrating the usability of NPT, it has broad implications for the implementation research field, and highlights the transferability of NPT in settings outside of healthcare.

Few of the included papers reported findings around providers being able to distinguish the intervention from their current practice. This may have the potential to decrease staff engagement, especially if there are no clear benefits to changing the existing practice, and low staff engagement was reported to be a factor negatively affecting school-based implementation processes. Equally, if a tobacco or substance use intervention was highly removed from the current practice, it can create conflicted role identities, if school staff perceive the practice to be outside of their typical role. This is highly relevant within a secondary school setting, as the included papers commonly cited heavy workloads and restricted time as factors negatively affecting implementation.

A factor affecting implementation, that can be deemed as specific to the school setting is student engagement. Pettigrew et al reported how varying student engagement had the potential to affect a school-based implementation process (Pettigrew et al., 2013). However, the secondary school setting was shown to be highly heterogeneous, as other papers reported pupil engagement having little to no impact on the implementation observed (Bast et al., 2016, Bast et al., 2017). Therefore, it can be ascertained that a pupil's engagement level is likely to be an inconsistent factor affecting implementation and may be a result of individual differences.

Student engagement can be linked with staff behaviour and confidence, and hence another factor seen to influence implementation within a secondary school was the perceived level of comfort with a specific delivery method and topic. Previous research focusing on tobacco or substance use interventions confirms that low staff confidence can negatively affect an intervention implementation (Stormshak et al., 2005, Luoma et al., 2007), however it has not

been observed when considering general health promotion implementation studies in schools (Pearson et al., 2015). Consequently, the implementation of school-based tobacco and substance interventions and the association with negative stigma, is another area that warrants consideration in future implementation research (Stormshak et al., 2005, Luoma et al., 2007).

Often providers were cited as feeling like they needed to have specialist knowledge to implement tobacco or substance use interventions within their classroom, or that they felt uncomfortable or unprepared during delivery (MacDonald and Green, 2001). This can be linked back to the findings around conflicted role identity in school staff and emphasises the importance of training within an implementation process (McCormick et al., 1995, Audrey et al., 2008, Thaker et al., 2008, Pettigrew et al., 2013). Having the access to adequate training was commonly cited as an important implementation strategy as it can facilitate implementation, if it supports school-based providers and is designed to cover how to deliver controversial topics.

Organizational support has frequently been identified as a key factor positively affecting implementation (Durlak and DuPre, 2008, Weiner, 2009, Chaudoir et al., 2013) and this was commonly reported within the 19 included papers. The most effective implementation support was deemed to be consistent, gained prior to implementation and able to be maintained long-term (McCormick et al., 1995, Bast et al., 2017). In addition, having a dedicated implementation driving force was also identified as a factor that could facilitate school-based implementation processes (Sussman et al., 1993). The implementation driving forces reported within the included papers were largely heterogenous; but pupils, teachers, project workers and outsider providers were all cited as successful implementation drivers. This emphasises another potential area of exploration for future research, in order to determine what kind of staff member is the most effective implementation driver, or if specific characteristics are more important.

Another factor that appeared variable across the included papers was implementation fidelity and intervention characteristics. Implementation fidelity is a widely explored area within implementation science and is often identified as being a key source of variability (Gingiss et al., 2006, Carroll et al., 2007, Rohrbach et al., 2007). Implementation fidelity within the school setting was first explored within the review of school-based drug use interventions by Dusenbury et al, which was explored in more detail in Chapter One (Dusenbury et al., 2003). When considering the results in the included papers; some providers were reported as modifying intervention components, leading to emphasising the importance of establishing which components are essential for implementation and which components can possess

flexibility. In some papers a tobacco or substance use intervention that possessed flexibility was deemed to be advantageous, as interventions that were too rigid experienced low implementation fidelity, due to limited staff capacity and time constraints (McBride et al., 2002, Thaker et al., 2008, Audrey et al., 2008). It is likely to be intervention specific; however, the idea that school-based providers can modify or reduce components, but ultimately increase the 'implementability', introduces a valuable area of investigation. The idea of having intervention specific factors acting as barriers to implementation was also reported in the paper by Long et al (Long et al., 2016). Long et al sought to explore the heterogeneity across teachers' evidence based intervention planning and their perceived implementation barriers (Long et al., 2016). More than half of the implementation barriers were reported as being directly attributable to the intervention's components (Long et al., 2016).

Subsequently, in order to be able to facilitate the implementation of tobacco or substance use interventions in the school setting in the future; it is important to identify core intervention elements, that can work alongside more flexible components to suit differing secondary school contexts. By doing so, it ensures that any modifications made to an intervention programme during implementation, do not affect the intervention's overall effectiveness. As implementation fidelity was largely seen to be affected by the capacity and time taken by school-based providers; it may prove beneficial, if feasible, to source training or delivery to outside providers. Therefore, an important area of investigation within the qualitative fieldwork was identified to be exploring the advantages and disadvantages of employing external providers over internal providers, to implement a school-based tobacco or substance use intervention.

4.8.3 Gaps in the Literature and Future Directions

NPT was important to not only structure the results from the included papers, but it was fundamental in highlighting the knowledge gaps and areas that warranted future research.

One of the most apparent gaps was the relatively small number of papers that reported results within NPT's Reflexive Monitoring construct. Reflexive Monitoring concentrates on how implementation process can be modified or evaluated. The lack of results indicative of Reflexive Monitoring could have resulted from methodological reasons, such as participants not being asked or the intervention effects were not known or could simply be a result of the previously discussed limited reporting. Therefore, this presented an area worthy of investigation within the qualitative fieldwork and was used to develop the interview schedule.

Another gap that could be identified was that almost all of the included papers, including the most recently published work, lacked a theoretical driving mechanism. Chapter Three discussed the importance and the role of implementation theory, and there is an argument that future school implementation work would significantly benefit from being theoretically driven. The importance of employing theory in implementation research has frequently been raised when considering existing implementation studies (Eccles et al., 2009, French et al., 2012, McEvoy et al., 2014, Pinnock et al., 2017). Implementation theory has the potential to facilitate implementation strategies, increase the reproducibility and highlight specific areas of improvement for future sustainability (Pinnock et al., 2017). By proposing to explore the use of implementation theory within the secondary school; it opened another area of future research with broad implications for the development of the school-based implementation model.

Another gap that could be identified was that there was no exploration around the cost effectiveness of school-based implementation processes in included papers, and hence what the impact of varying the cost may have. When considering the obtained results, small budgets and cuts to school funding were commonly reported to be factors negatively affecting the implementation of a tobacco or substance use intervention (Thaker et al., 2008). This has salience particularly within the context of secondary schools in England, as shown in Chapter Two which explored the challenges associated with school budgets and the increasing autonomy. Therefore, cost effectiveness presents a novel area of investigation for school-based intervention implementation research.

4.8.4 Strengths and Limitations of this Systematic Review

This systematic review aimed to adopt a systematic approach to literature searching, in order to collate all of the relevant literature in the field. However, a weakness could be the fact that it was impossible to guarantee that all of the relevant literature has been obtained and any recent additions to the literature may have been overlooked. The likelihood of this was minimised by searching for papers referenced in the included papers, ensuring papers were double sifted at each stage, and that references of included papers were screened for additional relevant material. In addition, all of the database searches were re-ran in May 2018, to ensure that no new papers had been overlooked that had been published since February 2016.

Following the completion of the literature searches, there was found to be only a small number of papers that were conducted in the UK secondary school setting. Therefore, it was acknowledged that this limited the applicability of the results to an English secondary school

setting, especially as the majority of papers that were identified were conducted in the US. Nevertheless, the aim of conducting this PhD study was to add to the body of evidence in the school implementation field in England in order to address the identified gaps in the evidence base and have direct implications for policy and practice.

Additionally, the papers included in the systematic review were heterogeneous when considering their diversity of methods and content areas. The lack of standardised implementation outcomes meant it was difficult to draw definite conclusions, and hence the findings in relation to policy and practice were deemed as tentative. As the results were extremely disparate, the only feasible way to synthesise them was via a narrative synthesis; and as discussed in the introductory sections, narrative syntheses can lack objectivity when compared to a meta-analysis. This was further complicated by the qualitative scoping of concepts in the included papers, in order to make links to the NPT. That said, best practice guidelines were used when developing the narrative synthesis, and NPT ameliorated the process by functioning as a discussion aid to structure the thinking, allowing the consideration of the results as factors affecting implementation (May et al., 2015).

Although NPT provided a common interpretative framework to apply across the full set of studies, ensuring a comprehensive assessment of the factors affecting implementation; it is acknowledged that other implementation theories or frameworks could have been employed differently to further classify and interpret the results. Other implementation theories, such as the guide compiled by Flottorp et al could have been used to map existing theories by their corresponding constructs. This is likely to be a useful practice in future work in this field, in order to be able to sufficiently address the limitations of NPT (Flottorp et al., 2013).

By achieving publication of this systematic review in 2017, it created a final strength as the process required a peer review by two implementation science reviewers. By undertaking and revising the manuscript, it proved imperative in improving and developing content of the review.

4.9 Conclusions

This systematic review was able to address the overall aims and objectives by identifying and synthesising the specific factors affecting the implementation of school-based tobacco and substance use interventions. Key factors that were identified, such as the impact of organisational climate, staff support and training and the provider perceptions, were able to be taken forward to use as starting points to compile the interview schedule for the qualitative fieldwork with school staff and Local Authority staff. Although the question development will

be discussed in more detail in the following Chapter Five; an increased focus was provided to NPT's reflexive monitoring construct, as the review's findings around which aspects could benefit from modifications were limited and are likely to add value in facilitating implementation in the future, and hence were useful when informing the model development.

As there was not a wealth of papers specifically focusing on the implementation tobacco or substance use interventions in the secondary school, and even fewer conducted in the last five years and within the UK; it demonstrated that the school health field has a place for more work in this area and should follow the lead and build upon the findings from the existing school implementation work. As discussed, only one paper employed the use of theory, identifying another avenue for future research. By working collaboratively to develop implementation strategies, using implementation theory and which comprehensively consider the implementation outcomes, it would likely result in a positive contribution when considering the effectiveness of tobacco and substance use interventions within a secondary school setting.

4.10 Chapter Summary

Chapter Four has been able to present the rationale around why a systematic review was chosen as a component of this PhD study. The overall aim of the systematic review was to develop an understanding of the factors affecting the implementation of tobacco and substance use intervention programmes in the secondary school setting, using NPT as an analytical framework. Following the completion of the literature searches, 19 papers met the predefined inclusion criteria. The included papers were both quantitative and qualitative and focused on a range of tobacco and substance use interventions, delivered by differing providers.

The key findings and contribution to knowledge of Chapter Four have been:

- Key facilitating factors for school-based implementation appeared to be positive organisational climate, adequate training and teachers and pupil's motivation.

- Barriers to school-based implementation included heavy workloads, budget cuts and lack of resources or support.

- The quality appraisal identified that most of the included papers tended to be of moderate to weak quality, and they generally lacked detail and lack of information around confounding factors. The most recent papers were of higher quality suggesting improvements are being made in regards to quality of reporting.

- The mapping of results to NPT highlighted the need for future studies to extend their focus to include reflexive monitoring around appraisal, and the evaluation processes of implementing new tobacco or substance use programmes.

- Future research should also focus on employing implementation theory as a tool to facilitate bridging the gap between school health research and practice, and this informed the use of theory in the qualitative fieldwork.

Chapter Five

Qualitative Fieldwork- Methods and Rationale

5.1 Overview of the Chapter

Chapter Five presents the methodology of the qualitative interviews. It will first present the aims and objectives of the qualitative work, it will go on to discuss the qualitative methods used in this PhD study and will present the rationale behind using semi-structured interviews as the primary data collection method. It will then document the process that was followed, including specific details around the recruitment processes, and the sampling methods that were used. It will finish by outlining the limitations that can be associated with employing a qualitative approach and how these were addressed.

5.2 Aims and Objectives

The aim of the qualitative fieldwork was to explore the perceptions and the previous experiences, of both school staff and local authority staff, around the implementation of substance use interventions or education within the secondary school setting.

5.2.1 Research Questions

The PhD study's research questions that this qualitative fieldwork sought to answer are:

- Research Question 3: 'What are the perceived barriers and facilitators to achieving successful implementation of a substance use intervention within a secondary school setting?'; and
- Research Question 4: 'Which factors would need to be considered in order to ensure a successful implementation model is operationalised?'.

5.2.2 Objectives

The semi-structured interviews had the following specific objectives:

1) To obtain an understanding of the secondary school setting, as a setting in which the short term and long-term health outcomes of adolescents can be influenced;

2) To explore the experiences and insights of secondary school staff and local authority staff, in regards to the implementation of tobacco or substance use programmes in the secondary school setting;

3) To develop an understanding of the perceived facilitators to implementation of a tobacco or substance use intervention within a secondary school setting;

4) To develop an understanding of the perceived barriers to implementation, which can negatively affect the implementation of a tobacco or substance use intervention within the secondary school setting; and

5) To be able to inform the development of the proposed, tobacco or substance use implementation model.

5.3 Research Philosophy

Section 5.3 will unpack the specific research philosophy that has been adhered to during this fieldwork. It will discuss the specific epistemological and ontological stance and will present the particular qualitative research method that was chosen, and the reasons behind this. It will introduce the use of qualitative methods and discuss the rationale around why it was deemed appropriate to adopt a qualitative approach to address this PhD study's aims and objectives.

5.3.1 Epistemology, Ontology and Theoretical Perspectives

Epistemology is most simply defined as the theory of knowledge, and is largely concerned with assessing what counts as knowledge and how we can obtain the desired knowledge (Crotty, 1998, Denzin and Lincoln, 2000, Cassell and Symon, 2004). Meanwhile, ontology is used to refer to the exploration of what constitutes as reality, and how the existence in reality

can be understood (Crotty, 1998, Denzin and Lincoln, 2000, Cassell and Symon, 2004). Adopting a specific epistemological or ontological stance is fundamental in the shaping of a research process, including informing the construction of the research questions and consequently the methods that are chosen to explore them (Holloway and Wheeler, 2002). A subjective epistemological standpoint, which has been adopted in this PhD study, tends to establish a view of social functioning through the unique interpretations by its participants (Bryman, 2015). Additionally, a relativist ontological position has been taken in order to be able to ascertain that, although the differing nature of social reality may not be explicitly evident, it is of value to pursue to explore the differences in experiences (Denzin and Lincoln, 2000, May, 2011).

By acknowledging the relative epistemological or ontological position, it also governs the theoretical perspective that is adhered to. Qualitative research is most frequently identified as being within the theoretical perspective of interpretivism. Interpretivism primarily focuses on exploring human experiences within their social contexts and is highly subjective (Holloway and Wheeler, 2002, May, 2011). It relies on the assumption that individuals are likely to display significant differences from the material world, and therefore the research methods that are adopted should seek to assess and break these down further (Holloway and Wheeler, 2002, May, 2011). This is in direct juxtaposition with the theoretical concept positivism, which is used to refer to the use of more objective or quantitative approaches that have been adopted from the natural science field (Holloway and Wheeler, 2002, Cassell and Symon, 2004). As positivism relies on the assumption that knowledge is based on natural phenomena, it is unlikely to be a useful theoretical perspective to adopt, in the context of this PhD study, as it neglects the focus on social processes (May, 2011), hence an interpretivist stance was chosen.

The underlying aim of this qualitative fieldwork was to focus on exploring the implementation experiences of different participants within their school-based or local authority contexts. Therefore, it was deemed appropriate for the fieldwork to be situated within the interpretivist paradigm, as the findings would be highly subjective and be influenced by the demands of the context and the existing social processes surrounding participants.

5.3.2 The Use of a Qualitative Approach

Qualitative research is defined as an approach which uses words, rather than numbers in the collection and the analysis of data (Green and Thorogood, 2011, Flick, 2014, Bryman, 2015).

It seeks to analyse and explore the subjective meaning, or the social production of specific areas of interest, by generating non-standardised data (Green and Thorogood, 2011, Flick, 2014, Bryman, 2015). The use of qualitative research methods has experienced a growth in popularity over the past few decades, and such methods can now be observed within a multifarious range of disciplines, from Sociology to Geography (Taylor et al., 2015). Historically, the use of qualitative methods was exclusively restricted to the well-established, social science research arena (Pope and Mays, 1995, Sofaer, 1999). The use of qualitative approaches specifically within public health research was born as a result of being able to borrow the previously defined concepts and approaches from the social and behavioural sciences fields, and translating them to exist as functional tools to be employed within the health research field (Sofaer, 1999). In addition, the increase in the recognition of the complexities that are associated with conducting health research, such as varying patient perspectives and individual differences, has expedited the use of qualitative methods in health services and health policy research (Pope and Mays, 1995, Sofaer, 1999).

By recognising the need to address the gap that using quantitative methods alone may bring; qualitative methods have fast become an indispensable way in which to add a greater level of detail within data collection (Pope and Mays, 1995, Denzin and Lincoln, 2000). The following subsections will present some of the main factors, which influenced the choice of employing a qualitative approach, opposed to a quantitative approach, to explore this PhD study fieldwork's aims and objectives.

5.3.2.1 Qualitative versus Quantitative

The primary goal of qualitative research is to employ the use of a largely naturalistic approach, in order to be able to conduct an investigation around establishing what are the 'how's' and the 'why's' of a particular phenomenon (Golafshani, 2003, Green and Thorogood, 2011). This feature made a qualitative approach an ideal choice to be used within this study in order to be able to sufficiently explore the insights and experiences of secondary school staff and local authority staff, and the factors affecting implementation processes. It was believed that the desired level of contextual and organisational information would not be obtained if a quantitative method alone was employed (Bryman, 2015).

Quantitative research methods are traditionally associated with the generation of objective, standardised data sets (Balnaves and Caputi, 2001). Instead of providing a focus to the reasons behind how or why an event or practice occurs; quantitative data collection is instead

restricted to determining the frequency of an event, or the specific patterns present in the distributions (Balnaves and Caputi, 2001, Flick, 2014, Bryman, 2015). However, there is not always as clear-cut a distinction, and there is the potential for a degree of overlap between the two approaches (Bryman, 2015). For example, a piece of qualitative research may require the use of a frequency count, or a quantitative study may require a qualitative synthesis in order to be able to present and explain a data set of numerical findings adequately (Balnaves and Caputi, 2001, Flick, 2014, Bryman, 2015). In addition, it may also prove necessary to combine qualitative and quantitative disciplines, in what is referred to as a mixed-method study, when employing one approach would not be sufficient to address research objectives (Morgan, 1998, Bryman, 2006).

When considering the specific area of interest within this PhD study, employing a quantitative approach to explore the implementation of substance use interventions in a secondary school setting would likely provide a relatively superficial assessment of the factors affecting implementation. A quantitative approach would be limited to providing a numerical overview of practice, such as how many factors affecting implementation could be identified, and how often the participants cited them. In contrast, the data generated whilst employing a qualitative research method, is frequently described as being highly descriptive, or as being able to provide a level of contextual detail to a specific phenomenon (Green and Thorogood, 2011). In terms of this research, a qualitative method would allow the complex secondary school setting to be explored (Objective 1), participants' experiences of implementing a substance use intervention to be discussed (Objective 2) and the factors affecting implementation to be identified and unpacked further (Objectives 3 and 4) (Pope et al., 2000, Taylor et al., 2015).

Although a quantitative research method, such as a survey for example, would unlikely be able to address the research objectives in a similar level of detail; it would allow for a bigger sample of participants to be included (May, 2011). This is in comparison to the smaller sample, which would be used whilst qualitatively collecting data, such as the typical sample size used during a focus group (May, 2011). In this instance, having a smaller sample of participants was identified as being an acceptable trade-off to make as the level of insight, which would be gained from conducting qualitative fieldwork, would not be achieved by using a quantitative method in isolation. Therefore, it was thought a quantitative approach would not be as successful in satisfying and facilitating the exploration of the PhD study's aims and objectives, and hence a larger sample size was not made a priority.

The secondary school setting in the United Kingdom (UK), remains a complex and a highly independent setting. As discussed in Chapter Two, Section 2.5, the provision of health

education remains substantially variable across the different providers of secondary level education, as PSHE currently lacks a standardised curriculum (DfE, 2013). Therefore, by increasing the size of the sample, it would not necessarily address the extent of variance that could be experienced across secondary schools, unless every secondary school in the UK was included. This would have been highly infeasible within the timescales proposed for this PhD's data collection period and recruiting all of the secondary schools would have been extremely challenging. Consequently, it was judged that a qualitative approach would be best suited and concentrating on a smaller sample in more detail, would allow an adequate exploration of the aims and objectives of the PhD study, whilst allowing data saturation to be reached.

5.3.2.2 Highly Detailed Data

As previously mentioned, the overall aim of this PhD study was to gain an understanding and conduct an exploration of the barriers and facilitators that can affect an implementation process of a tobacco or substance use intervention within a secondary school setting. It was deemed that adopting a qualitative approach would be the most appropriate way in which to explore this, due to the fact that qualitative research methods have the potential to generate rich, in-depth data, that allows a participant's insights and experiences to be shared and explored further (Flick, 2014, Bryman, 2015).

The methods that are used in qualitative research have the potential to generate significantly large volumes of data, which can exist in a range of different formats (Denzin and Lincoln, 2000). These formats extend from an audio recording of an interview or a focus group, resulting in a verbatim transcript, written field notes that are made by a researcher at the point of data collection, a chronological account, or observational data, that is collected whilst employing an ethnographical method (Pope et al., 2000, Taylor et al., 2015). By employing a research method that has the ability to generate large amounts of rich, insightful data, it can build a comprehensive exploration that can develop the understanding of the factors affecting implementation and the contextual information behind why things operate or exist in a school setting as they do. The level of detail that can be obtained from just one interview participant, lends itself well to this study, in order to be able to obtain an in-depth account of a participant's experience of the implementation of tobacco or substance use education.

5.3.2.3 A Flexible and Iterative Approach

A key advantage of employing a qualitative research method, over a quantitative approach, is

that qualitative methods tend to possess a higher degree of flexibility, when it comes to the direction of the research and this often results in a highly iterative process that is unique to the specific research project (Rapley and Silverman, 2011, Taylor et al., 2015). Having flexibility indicates the ability of the data collection process to be fluid, and reactive to the particular context or participant responses (May, 2011). Although there has been an expansion of various methodological guidelines that have been designed in order to facilitate the best qualitative method practice, the idea of having a degree of flexibility is particularly useful when it comes to the selection of an appropriate method to be used in the context of health research, specifically when exploring implementation processes. This is due to the fact that the data collected in the early stages of data collection has the potential to be able to inform and develop the understanding around the context of implementation, by considering the contributions of a participant's knowledge, and their own experiences (Rapley and Silverman, 2011).

Choosing an iterative research method with a high potential of flexibility was deemed to be advantageous as it was anticipated that, due to the lack of current, existing knowledge of implementation in the secondary school setting, the findings from the early interviews could be used to inform and shape the subsequent interviews (Flick, 2014, Bryman, 2015). As the systematic literature review was able to identify that the existing evidence, specifically around the implementation of tobacco or substance use interventions, was extremely limited, with a distinct lack of any common outcome measures, using the early data to be able to inform later interviews ensured that the data collection was as well informed as possible. It also allowed participants the freedom to initiate discussions around heterogeneous topic areas, which had not previously been considered, and could therefore act as prompts in the later interviews.

5.3.2.4 The Use of Theory

Qualitative research methods are largely underpinned with the use of theoretical approaches, and the generation of qualitative data has been long associated with the ability to explore existing theory and inform the development of new theory (Bryman, 2015). The idea that qualitative research findings have the potential to inform theory development is again an important factor to why it was appropriate to choose a qualitative method as the primary method of data collection.

Looking specifically at Objective 5, which was around being able to inform the development of the planned implementation model; the qualitative findings, along with the findings from the

systematic review, were designed to be able to inform the development of the model, to be used in practice to facilitate the implementation of substance use interventions. The developed implementation model would therefore be theoretically driven, and considering elements of existing implementation theories and the previous evidence in the field, for example the conceptual framework developed to implement preventative interventions in the school setting in the US (Domitrovich et al., 2008). Therefore, employing a data collection methodology, which is highly synonymous with the use of and informing of novel theory, was fundamental when considering the selection of a qualitative research method over a specifically quantitative approach.

5.4 Choosing a Specific Qualitative Method: One to One Interviews

Following the establishment in previous sections that a qualitative research method was the best option to address the PhD study's aims and objectives; the following subsections will discuss the choice of one to one interviews as the primary research method to collect verbal data, and why semi-structured interviews were employed, over the other available interview formats.

The one to one interview remains one of the most common form of data collection methods within the qualitative research field (Cassell and Symon, 2004, Flick, 2014). They act as a verbal exchange, in which an interviewer, or the researcher, aims to elicit specific information from a participant, or the interviewee, by guiding them through a predetermined pathway of questions (Longhurst, 2003). One to one interviews generally seek to collect verbal data by relying on the use of an interview schedule, which consists of a series of relevant questions, which has been prepared in advance of an interview's commencement (Flick, 2014, Bryman, 2015). However, depending on the type of interview being conducted, it may prove appropriate to use an interview guide instead, which is a less formal, list of prompts that should be covered within an interview (Bryman, 2015).

Verbal data can be pivotal in exploring professional experiences and discovering expert knowledge (Flick, 2014). By collecting verbal data via a one to one interview, it ensures that a specific participant's responses are not dismissed or encompassed by the responses of their peers, or other participants at the time of data collection (Denzin and Lincoln, 2000). It also allows a level of participant confidentiality to be maintained during the interview, which is fundamental in ensuring participants feel they are able to share honest and open accounts without the fear of judgement or feeling a sense of accountability (Denzin and Lincoln, 2000).

This was a significant factor influencing the choice of a qualitative method for this study, as the issue of tobacco or substance use can, in some contexts, be deemed as being a taboo or controversial topic. This was supported by the systematic review findings, where school providers report perceived stigma associated with substance use interventions (MacDonald and Green, 2001, Stead et al., 2007).

Therefore, by employing the use of a one to one approach, it sought to minimise the level of discomfort experienced by participants when disclosing sensitive tobacco or substance use information during data collection. In addition, although group-based qualitative methods, such as focus groups, can be useful to observe social exchange; they may prove difficult to formulate distinct patterns in individuals, and also may be heavily influenced or directed by particular participants, when it is largely advantageous to obtain a range of different responses (Flick, 2014). Subsequently, it was deemed to be most appropriate to use a one to one approach in this study, in order to be able to obtain the most valuable findings (Flick, 2014).

One to one interview methods can vary significantly, and consequently the choice of interview that is made is likely to be dependent on the nature of the research, the context, and the type of participants that are interviewed. The following subsection will briefly discuss the different types of one to one interview that are currently available, and why the choice was made to adopt a semi-structured interview approach within this PhD study.

5.4.1 Semi-structured Interviews

The interview format that was identified as being the most suitable method for data collection was the semi-structured interview, as they allow a relatively flexible approach to be adopted (Green and Thorogood, 2011). Flexibility, in this context, indicates the ability of an interviewer to not require strict adherence to the predefined interview schedule, which allows the questioning to take direction from the participants' responses (May, 2011, Flick, 2014). Although it was imperative to ask participants specific questions around implementation, it was also important to ensure that the participants could talk freely and informally about their own experiences within the secondary school setting. Therefore, by developing a semi-structured interview schedule, it allowed a pathway of questioning to be formulated, which also had an element of flexibility depending on the responses provided by the participants.

Semi-structured interviews act as an alternative approach to the structured interview, as they possess a greater degree of informality (Flick, 2014). A structured interview is an interview that is largely driven by a highly standardised schedule of questions (May, 2011). They have

a greater degree of rigidity as all of the questions tend to be delivered in the exact same order and format, to all of the participants, as far as possible (Longhurst, 2003, May, 2011). Conducting structured interviews was thought to be inappropriate in the context of this study, as the rigid structure would be unlikely to facilitate the collection of detailed data, in order to adequately explore the individual participants' experiences of implementing a substance use intervention within a school setting.

At the other end of the interview spectrum, is the unstructured interview or narrative interview. They do initially set out to follow one question or an overarching theme, but the responses that are provided by the participants are responsible for dictating the direction of the interview and hence the narratives of the participant are obtained around a specific topic (Longhurst, 2003, May, 2011, Flick, 2014). The questioning schedule that is developed tends to be more of an interview guide, and is often devoid of the use of closed questioning and seeks to challenge the preconceptions and the assumptions of the interviewer (May, 2011). Closed questioning, or the use of fixed choice questions, refers to the practice of asking interview questions, in which participants would only have the ability to answer with a fixed response, such as a yes or no answer (Bryman, 2015). Unstructured interviews therefore favour a questioning technique, such as open ended questioning, which as their name suggests, elicit open ended-responses, allowing participants to direct their own narratives, and ultimately enables the provision of a greater level of detail about their own experiences (Bryman, 2015). Similarly, to the structured interviews, unstructured interviews were thought to be an unbefitting choice of method for this study, as it was thought that participants would need a certain degree of direction in order to be able to understand and provide the level of responses required to explore the aims and objectives.

Semi-structured interviews therefore, act as a halfway point between the unstructured and the structured interview. They are often auspicious as they are able to be employed within a diverse range of settings, and can be easily adapted in order to be able to suit different contexts, and the differing capabilities of the potential participants (Longhurst, 2003). They were identified as being the most suitable method for this PhD study as, although they allow a flexible approach to be adopted, they still maintain a level of structure by employing the predefined interview schedule (May, 2011, Bryman, 2015). This stems from the idea that relevant information is more likely to be expressed whilst using an openly designed interview schedule (Green and Thorogood, 2011, May, 2011, Flick, 2014). Semi-structured interviews do not always reject the use of closed questioning, like unstructured interviews. However, rather than completely relying on the researcher having to dictate the direction of the interview,

which is a key feature of the structured interview method; a well-designed, semi-structured interview schedule will open up the topic to allow the interview to flow in a conversational format, and the interviewee can then provide their own ideas and recommendations (May, 2011). This element of built-in flexibility, also discussed in Section 5.3.2.3, facilitates the collection of richer, more insightful data, than the structured interview approach, and allows a participant to relay their insights and experiences, which goes towards addressing Objective 1.

5.4.2 Developing the Semi-structured Interview Schedules

As previously discussed, an interview schedule, consisting of a series of relevant questions, is commonly prepared in advance of an interview and is often developed with the use of appropriate theoretical concepts, and by considering the currently available knowledge in the field (Bryman, 2015). The two semi-structured interview schedules that were developed for the school staff and local authority participants were almost identical and followed the same questioning pathway. However, they were modified to either be appropriate for a school setting (SS) participant or a local authority (LA) participant, for example; (SS) *'What do you believe the main health issues to be within your school?'* compared to (LA) '*What do you believe the main health issues to be within secondary schools in your area?'*.

The interview schedules were developed as a direct result of identifying the aims and objectives to be explored, and by utilising the findings of the previously completed systematic literature review (Bryman, 2015). The systematic review, which was discussed in Chapter Four, used the implementation theory Normalization Process Theory (NPT), in order to be able to organise the collated findings, and also to highlight the gaps in the secondary school setting implementation science field. The key factors affecting implementation identified in the systematic review, were implementation fidelity, the effects and characteristics of differing providers and implementation driving forces, the organisational climate and availability of resources, and staff support. The review was also able to identify the lack of available knowledge around NPT's reflexive monitoring construct or being able to provide a meaningful level of feedback or evaluation. These key factors helped develop and shape the interview schedule questions.

Therefore, both of the qualitative interview schedules that were designed sought to further develop the knowledge around the commonly cited factors affecting implementation, whilst also addressing the specific gaps that were identified. This resulted in the construction of schedules consisting of fifteen questions that were guided and underpinned by NPT (Flick,

2014). Table 15 has been used to list the key factors affecting implementation, as identified in the review, and hence which questions, on the two interview schedules, were informed and developed as a result.

Table 15: The Development of the Interview Schedule Questions as informed by the Systematic Review

Factors Affecting Implementation	Areas Explored	Corresponding Interview Question
Providers	• Feeling comfortable • Time • Training • Workload	Which individuals inside/outside of the school do you think should deliver the programmes to students, and why?
Fidelity	• 'Implementability' • Time	Was the substance use programme able to be implemented as intended, and if so why/how?
Implementation Driving Force	• Head Teacher (HT) Support • Motivated Staff • Senior Leadership Team (SLT) Support • Young People Behaviour	Which individuals inside/outside of the school do you think should be involved in driving the substance use programme implementation forward, and why?
Lack of evaluation/ feedback	• Gap in evidence relating to NPTs reflexive monitoring construct	What has been the outcome of this/these programme/s? *If on-going-* How is this current programme going? What kind of feedback do/did you get about the implementation of the programme?
Organisational Climate	• Budget • Resource Availability • Support	How do you think individuals can be supported to implement new substance use programmes in the future?
Staff Support	• Time • Training	How well do you feel school staff are supporting the programme?

The remaining interview questions were:

- **Background questions:** Asking a participant to discuss their role within the secondary school or local authority, the perceived health issues within their school/ schools in their area, and how the school responds to these, or their own experiences of implementation. These questions sought to address Objective 1 (obtaining a detailed understanding of the secondary school setting) and Objective 2 (exploring implementation experiences)- **Five questions.**

- **Questions around the barriers and facilitators to implementation:** Asking a participant what they believed the main facilitators and barriers to implementation to be, in order to address the objectives around facilitators and barriers to implementation. These questions sought to address Objective 3 (facilitators to implementation) and Objective 4 (barriers to implementation)- **Two questions.**

- **A question around the proposed implementation model:** Asking a participant whether they thought an implementation model would be useful, and how it could be used. This question sought to address Objective 5 (informing the development of the school based, substance use intervention implementation model)- **One question.**

The interview schedules were developed as so to not require strict adherence, for example in some interviews, questions would be altered due to a participants' level of experience and their ability to answer questions. An example of this is the question *"What kind of feedback do/did you get about the implementation of the programme?"* could be altered to ask *"What kind of feedback, around the implementation of the programme, do you think would be the most useful?* A pilot interview was undertaken with the first interview participant, to test the early versions of the questions. Conducting a pilot interview allows assessment of whether the proposed interview questions are acceptable, easy for participants to understand, and whether they will elicit the responses, which are sufficient to research the aims and objectives (Bryman, 2015). Following the pilot interview and feedback from supervisor ELG, minor modifications were made in order to improve clarity before the interview schedules were deemed fully fit for purpose.

It is deemed to be good practice for an interview schedule to be populated with response prompts (Flick, 2014, Bryman, 2015). These response prompts can be used in the instance of a participant struggling to answer a particular question, or if a participant needs further

direction or clarification around what the question is aiming to elicit (Flick, 2014, Bryman, 2015). The interview schedules therefore were developed to include prompts to facilitate the direction of the interview and help and guide the participants if it proved necessary. For reference, copies of the full interview schedules for both the local authority staff and the secondary school staff have been included as part of Appendices B9 and B10, respectively.

5.5 Research Design

Section 5.5 has been used to present the primary setting of the data collection, the population of interest and the sampling method employed to facilitate recruitment. Figure 5 has been used to summarise the process.

5.5.1 Setting

As previously discussed, the aim of the qualitative fieldwork was to explore the perceptions and experiences of secondary school staff and local authority staff around school-based implementation of tobacco or substance use interventions. Therefore, the primary setting for the interviews were secondary schools within the North East of England, as this was the location of the PhD study. The local authority interviews were held within public health teams or within services directly responsible for tobacco or substance use education for young people in secondary schools, within the North East of England. Due to the variable provision of public health services across different local authorities, the interview locations ranged from council offices, community venues, and police headquarters.

Figure 5: Summary of the Qualitative Fieldwork Process.

Preparation

Production of the fieldwork protocol and the development of the required supporting materials

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Ethics

Submit application and gain approval from Teesside University ethics committee

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Recruitment

Contact schools and local authorities for consent to take part in the research. The gatekeepers Head Teachers (HTs) and Director of Public Health (DPHs) approached by email and provided with a Participant Information Sheet

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Participants and Gaining Consent

Potential participants identified by their HT or DPH and provided with Participant Information Sheets Version 2.1 and consent forms

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Methods

One to one, semi-structured interviews conducted in a suitable location once consent from each participant is obtained

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Analysis of Results

Data transcribed verbatim following each interview with thematic analysis via coding occuring simultaneously with the later data collection

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Write Up

The methods, findings and conclusions written up for both the PhD thesis and a journal article

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5.5.2 Population

The initial interview sample that was proposed consisted of 20 participants from a range of different local authorities and their related service providers, such as young people's drug and alcohol services and local charities, (herein referred to as local authority participants) and school staff working directly within the secondary school setting. It was envisaged that ten participants directly from a secondary school setting, and ten from a local authority setting would be an appropriate starting sample size to explore the study's aims and objectives and would be highly achievable within the study time frame. It was acknowledged that if, following data collection, this sample size was either identified as being too large, with no new information being provided in later interviews, or if it was not of sufficient size to reach a state of data saturation, then the sample would be reduced or expanded as necessary (Ando et al., 2014). A sampling framework was developed in order to be able to guide the sampling process, and this can be viewed in Table 16.

Due to the nature of qualitative recruitment it was acknowledged, prior to the recruitment process, that it would be difficult to rigidly adhere to the proposed sampling framework. This was due to the fact that the participant's demographics were largely unknown, for example it was not previously determined how many females held public health positions within local authorities, in the North East, in comparison to their male counterparts. Online records were searched but no public records were found presenting this breakdown of demographic information. Therefore, the sampling framework was designed more as a point of reference, opposed to being a strict set of criteria that must be followed, and this was clearly stated in the PhD fieldwork protocol that was submitted for ethical approval.

Looking specifically at the roles of the secondary school staff that were deemed to be suitable participants, it was fundamental that the secondary school staff had either been involved in delivering substance use education, interventions, or advice in some capacity, or that they had a strong interest or insight into the factors that can affect the implementation of substance use education or pastoral care. This did not lead to the restriction of specific job roles within a secondary school, and hence prospective participants ranged from academic subject teachers, Heads of subjects or years, pastoral staff, safeguarding leads, or members of the school's Senior Leadership Team (SLT).

Table 16: The Proposed Participant Sampling Framework for the Qualitative Fieldwork.

Potential Participant Demographics	Number of School Staff Participants	Number of Local Authority Staff Participants
Gender		
Male	5	5
Female	5	5
Job Role		
Teaching *-Head Teacher* *-Head of Subject/Year* *-Subject Teacher* *-Teaching Assistant*	7	N/A
Pastoral	3	N/A
Public Health Practitioner *-Director of PH* *-PH Consultant* *-PH Specialist* *-PH Project Worker*	N/A	6
Commissioner or Specific Service Provider	N/A	4
North East Local Authority		
Darlington	0-1*	0-1*
Durham	0-1*	0-1*
Gateshead	0-1*	0-1*
Hartlepool	0-1*	0-1*
Middlesbrough	0-1*	0-1*
Newcastle	0-1*	0-1*
North Tyneside	0-1*	0-1*
Northumberland	0-1*	0-1*
Redcar and Cleveland	0-1*	0-1*
South Tyneside	0-1*	0-1*
Stockton on Tees	0-1*	0-1*

Sunderland	0-1*	0-1*
Total Number of Interviews	**10**	**10**

* As there are more local authorities than the initial proposed sample, it was acknowledged that some may have 0 participants and it was largely dependent on recruitment and participant's willingness to interview.

In regards to the prospective local authority participants, it was deemed to be advantageous to obtain as wide a range of participants as feasible, in order to be able to explore a broad range of views and experiences of differing public health practitioners and related providers. Looking specifically at the job roles within a public health team, relevant roles included public health practitioners, such as health improvement practitioners, public health specialists, or public health consultants. Again, due to the focus of the study, it was important to interview practitioners who had specific experience of working with either young people, or within a secondary school health field. Directors of Public Health (DPHs), are primarily responsible for managing a public health team, and may have a role in overseeing the public health spending. However, in order to be able to reach that level of public sector seniority, they are likely to have amassed a wealth of public health experience, hence they were also identified as being suitable participants and relevant to invite to take part in an interview.

Outside of a public health team, but still within local authority governance, it was identified to be beneficial to interview public health commissioners, as they are largely responsible for commissioning and introducing new policies and services within their defined local area. Again, it was important to focus on interviewing commissioners who had a specific remit around young people or secondary school health. Due to the diminishing role of some local authorities in influencing secondary school health provision, it was prudent to also interview participants working directly within services or independent organisations. This sought to include individuals working within local tobacco or substance use services, independent charities, or individuals who were directly involved with going into secondary schools to deliver tobacco or substance use education to young people. Similarly, these participants were accessed via their links with the local authorities. The specific participant inclusion and exclusion criteria that were developed, and hence adhered to during the recruitment process are presented in the following subsections.

5.5.2.1 Participant Inclusion Criteria

➢ Individuals who are aged 18 years or over.

➢ Individuals that are employed within a local authority setting in the North East of England, who possess a specific knowledge or a particular interest in a tobacco or substance use programme implementation; individuals who may have been involved with the designing or the commissioning of a tobacco or substance use programme for a secondary school setting; or outside providers or independent organisations who are or have been directly responsible for delivering a tobacco or substance use programme to young people within a secondary school.

<div align="center">OR</div>

➢ Individuals that are employed within a secondary school setting in the North East of England, that have current or previous experience of implementing or delivering tobacco or substance use education or interventions, or school staff that are responsible for making decisions, or ensuring other school staff members consistently deliver and implement tobacco or substance use education e.g. Head teacher, Head of Year etc.

5.5.2.2 Participant Exclusion Criteria

➢ Individuals who are younger than 18 years.

➢ Any individual who is unable to display sufficient mental capacity in order to provide informed consent to taking part in a research project.

➢ A participant who does not work within, or who lacks previous experience or insight around, working within a local authority or specifically a secondary school setting, e.g. a school staff member at a primary school, with no previous secondary school experience.

5.5.3 Sampling

Participants were sampled to take part in an interview using a purposive approach. Purposive sampling, specifically refers to a non-probability method of sampling participants (May, 2011, Bryman, 2015). Research participants are not randomly recruited; they are sampled in a

strategic way, so that those individuals who appear relevant to the research questions are invited to take part in the research (Bryman, 2015). Although it can be argued that purposive sampling lacks a degree of generalisability to a wider population, for this research generalisability was not prioritised given the focus on qualitative individual experiences rather than experiences which could be generalised outwith of the North East (May, 2011).

The specific method of purposive sampling that was employed was snowball sampling. Snowball sampling refers to the sampling of a relatively small group of individuals, who appear to be relevant to the research question, and those sampled participants are then asked to propose other potential participants, who they know to have the relevant experience or specific characteristics of interest (Biernacki and Waldorf, 1981, Browne, 2005, Bryman, 2015). The second wave of participants may also be used to suggest a third wave of participants, and this snowballing process can continue until the desired sample size has been achieved (Biernacki and Waldorf, 1981, Browne, 2005, Bryman, 2015). Snowball sampling was deemed to be the most useful way to recruit participants to take part in the interviews, as individuals working specifically in the secondary school health field will have a greater awareness of their colleagues' responsibilities and experience. Similarly, the structure of public health teams and the commissioning of young people's tobacco or substance use services across the local authorities in the North East, remain to be heterogeneous. Therefore, by asking public health practitioners who work directly with the commissioned services to suggest additional participants, it ensured that those individuals with the most knowledge and experience of the topic could be invited to take part in an interview.

All of the secondary schools were contacted in the North East by email and following a low response rate (n= 3), direct links were offered by local authority participants, in order to be able to recruit from a larger sampling pool of secondary school staff participants. With regards to the local authority sampling process, it was deemed appropriate to contact each of the 12 Directors of Public Health (DPH) within the 12 North Eastern local authorities via email. The directors were asked to either take part in the research project themselves, or if they suggest appropriate members of staff within their public health team or any relevant service providers.

5.5.4 Participant Recruitment

The initial recruitment of interview participants commenced in October 2016. Using the sampling method identified above, members of staff from appropriate job roles were eligible to take part if they were able to provide their informed consent to take part in an interview, and

if they were able to satisfy the participant inclusion criteria, and not match any of the participant exclusion criteria (subsection 5.5.2.1 and 5.5.2.2 respectively). Prospective recruitment sources were obtained via the searching of both local directories and websites of local authorities and secondary schools in the North East of England. In addition, local contacts were also useful in linking to relevant individuals within both secondary schools and local authorities.

Initial recruitment was facilitated by either the Head Teacher (HT) of a secondary school, or by a Director of Public Health (DPH). These individuals acted as gatekeepers as they were asked to identify eligible secondary school staff, and local authority participants to take part in an interview. In the context of this recruitment, the term 'gatekeeper' was used to refer to an individual who was able to facilitate access to the contact information of prospective participants (May, 2011). However, the final decision to take part in an interview was the decision of the individual participant. It was made implicit that even if a gatekeeper had suggested a specific participant, they were not obliged to take part in an interview, unless they were happy to do so. The process of obtaining participant consent is discussed in more detail in the upcoming ethics section.

Initial recruitment emails were sent to schools and local authority gatekeepers in mid-October 2016. In the email, the DPH or the HT were asked whether they would provide their consent for either their local authority or their secondary school staff to take part in an interview. Copies of the recruitment emails that were sent out to DPHs and HTs are included for reference in Appendices B1 and B2 respectively.

The initial recruitment email that was sent also included an electronic attachment of the participant information sheet, Version 2.1, which was primarily directed at either the Head Teacher or the Director of Public Health. The participant information sheets were assessed using an online readability tool to establish whether they had been pitched at an appropriate level and that they provided clear and concise information for participants. The final version (version 2.1) was then converted into PDF and sent to participants. The participant information sheets that were sent to the DPHs and the HTs are provided in Appendices B3 and B5 respectively.

If, following the receipt of the recruitment email, the gatekeeper was willing to assist with recruitment of staff from secondary schools or their local authority, they were asked to either:

(i) Contact GW to obtain any further information, clarification, or to voice any concerns or queries; or

(ii) Consent to take part in an interview; or

(iii) Pass the initial recruitment email on to any relevant staff members who they believed would match the inclusion criteria.

Prospective participants emailed in return if they were interested in taking part in an interview. Participants were then provided with a participant information sheet which explained to the participant what the process would involve and what they would be required to do if they agreed to take part in an interview. The participant information sheets that were sent to the local authority staff and the secondary school staff are provided in Appendices B4 and B6 respectively.

Following the receipt of the participant information sheet, if participants remained happy to take part in an interview they were contacted in order to schedule an interview time, date and location that was convenient and acceptable to them. If no response was received to the initial recruitment email that was sent out, a reminder email was then sent to either the HT or the DPH, again with the relevant participant information sheet as an electronic attachment. The reminder emails were sent exactly one month after the initial email had been sent, from mid-November 2016. The reminder emails are also presented for reference in Appendices B1 and B2. A second non-response was classified as a 'decline to participate', and no further emails were sent. Figure 6 summarises the recruitment process that was followed for this qualitative fieldwork.

5.6 Ethics

This element of the study required ethical approval to be sought before any semi-structured interviews could be conducted with participants. Therefore, an application for ethical approval was submitted to the Teesside University School of Health and Social Care Ethics and Research Governance Committee and was approved in October 2016 (reference number 130/16). The ethics application and the approval letter that was received from the ethics committee are included in Appendix B11 and B12. As interview participants were not recruited from within the National Health Service (NHS), NHS ethical approval was not required. The following sections outlines the main ethical considerations.

Figure 6: Summary of the Participant Recruitment Process.

1a- Initial Invitation- Head Teacher	*1b- Initial Invitation- Director of Public Health*
- Introductory email sent by GLW to HT.	-Introductory email sent by GLW to DPH.
Documents sent:	**Documents sent:**
Participant Information Sheet- HT Version 2.1.	Participant Information Sheet- DPH Version 2.1
-No response- follow up email sent 4 weeks later.	*-No response-* follow up email sent 4 weeks later.
2a- Initial Invitation- School Staff	*2b- Initial Invitation- Local Authority Staff*
- If HT consents to research they will be asked to forward email to appropriate staff.	- If DPH consents to research they will be asked to forward email to appropriate staff.
Documents sent:	**Documents sent:**
Information Sheet- Version 2.1 School Staff	Information Sheet- Version 2.1 Local Authority Staff
3a- Willing to Participate	*3b- Willing to Participate*
GLW corresponds with secondary school staff participant by email and arranges a suitable interview time, date and location.	GLW corresponds with Local Authority participant by email and arranges a suitable interview time, date and location.

AT ANY STAGE OF THE PROCESS- Potential Participant Not Willing to Participate.
GLW to make no further contact with the Individual, School, or Local Authority.

5.6.1 Consent

Participants who indicated they would be willing to participate in an interview were asked to provide formal consent by completing a participant consent form immediately prior to an interview being conducted. The participant was required to complete two copies of the consent

form. The participant was then able to retain one copy of the completed consent form, and the second copy was kept in a secure locked filing cabinet at Teesside University.

For reference, a blank copy of both the local authority staff and the secondary school staff participant consent forms are included in Appendices B7 and B8 respectively.

It was important to ensure that all individuals who took part in an interview were fully informed around what the data they provided would be used for. This extended to include participants being made aware of the fact that some unidentifiable quotes would be used within this thesis, may be disseminated via peer-reviewed journals, or as part of a conference presentation. Participants were also asked if they would be interested in viewing a summary of the research findings at the end of the project. If participants expressed that they would be interested in being informed of the outcomes they were added to a list to receive a research briefing, which will be compiled following the completion of the study. It was made clear to all of the participants that they had the right to withdraw their consent to take part in this research up to two weeks following the completion of their interview.

5.6.2 Confidentiality

It was acknowledged that due to the interviews exploring the topic of tobacco or substance use in young people and the level of seniority of some of the included participants, it was important to reassure all participants that any of their responses would remain completely confidential. Although the questions asked in the interviews were unlikely to result in the generation of highly sensitive responses, reaffirming that responses would stay confidential ensured that no participants were left to feel uncomfortable about any of the information they chose to disclose during the interview.

In order to maintain a strict level of confidentiality all transcripts were anonymised, resulting in any names (including the names of participants, school names, or the name of a service), and all locations being removed. Participants were then coded as either local authority (LA), or school staff (SS), and they were further distinguished numerically in chronological order, e.g. LA1, LA2, LA3 etc. For data analysis purposes participant's job roles have not been omitted, and their primary role has been provided e.g. PSHE Teacher or Public Health Commissioner. This was deemed to be important in order to allow for the comparison between the local authority, and the secondary school staff participants, and to highlight the varying job roles that have been included in the sample. However, when considering specific job roles, for example a Director of Public Health (DPH), as there is only a small amount of DPH roles within

the North East, any directly identifiable information was omitted from the transcript to protect participants' identity.

During the interviews no safeguarding issues were presented that required confidentiality to be broken. However, contingency procedures had been put in place to be able to deal with the disclosure of any sensitive material should it arise, and this was communicated to participants in advance.

5.6.3 Data Storage and Management

The storage of all collected data strictly adhered to requirements of the Data Protection Act 1998. Any email or telephone correspondence, which was received by GLW in response to the initial recruitment or reminder emails, remained confidential. In addition, any information that was received electronically, which contained either the participants' locations, or their specific addresses were securely deleted, following the completion of their interview. The audio recordings of the interviews and the resulting transcripts and field notes were encrypted and are currently stored in a password-protected folder on a work laptop, and also on the Teesside University password protected server. Paper copies of completed consent forms and transcripts have been stored in a secure locked filing cabinet at Teesside University. All of the electronic copies and hard copies of interview data and the supporting documents will be securely destroyed following the completion of dissemination of this study.

5.7 Data Collection

As previously discussed, the semi-structured interview schedules that were developed resulted from the utilisation of the findings of the previously completed systematic literature review. GLW was initially responsible for drafting the two semi-structured interview schedules, but they were subjected to a process of further refinement as part of a qualitative fieldwork session that was held by GLW and supervisor TF. TF was able to encourage the use of a wider range of literature and a broadened use of appropriate theoretical approaches, in order to be able to structure and justify the thinking around the specific interview questions that were chosen.

Interviews were conducted between November 2016 and May 2017, with a month-long break between mid-January to mid-February, whilst GLW was attending a training course in the USA. Participants were provided with a hard copy of a consent form on the day of the interview,

in order be able to formally provide their consent to take part. Following consent being obtained from participants, all interviews were recorded with the use of a Dictaphone. All interviews were conducted and recorded by GLW. By recording all of the interviews it allowed them to be able to be transcribed verbatim, and GLW was responsible for transcribing all of the interviews that were conducted. ELG listened to audio recordings of early interviews and was able to offer constructive feedback around the structure of some of the interview questions, GLW's interview technique, and the use of the prompts.

In order to ensure any important details were not missed, and to remember early points that were raised in the interview to refer back to, GLW made additional field notes during each of the interviews. These field notes were used alongside the transcripts for reference, during the data analysis that followed. For reference, an anonymised example of a set of field notes has been included in the Appendix B13. It was identified as being advantageous to be able to conduct the one to one interview face-to-face with a participant, if there was a convenient and a suitable location available to do so. This was largely due to the fact that face-to-face interviews allow non-verbal communication to be observed and reduce the level of formality, with the aim to make participants feel more at ease (Bryman, 2015). In addition, it minimised the issue of technical faults affecting the data collection, or participants being unable to adequately hear and respond to questions (Bryman, 2015). However, the option of conducting an interview via video conferencing software, such as Skype, or over the telephone, was provided to each of the participants who consented to take part. This was offered to minimise the level of disruption to prospective participants, and in case participants felt disproportionately anxious at the thought of a face to face interview (Bryman, 2015). In practice, all of the participants were happy to consent to the interviews taking place face to face.

5.8 Qualitative Data Analysis

Due to the nature of qualitative data, the analysis of qualitative data is often deemed to be complex and heterogeneous, and it has been argued that it can lack the level of standardisation that is typically found in quantitative data analysis (Golafshani, 2003). However, this can also act as a significant advantage of qualitative data analysis. This is largely due to the fact that there remains a great deal of diversity when it comes to assessing the disciplinary and theoretical orientation, the methods, and the findings of qualitative research. Therefore, it would be inappropriate to assume that a 'one size fits all' approach

would be altogether feasible when it comes to conducting the analysis of qualitative data (Bradley et al., 2007). The qualitative data analysis approach that was adopted for the analysis of these interviews was thematic analysis. Thematic analysis is used to refer to the process of coding qualitative data, and then grouping the generated codes in order to identify key areas or themes (Bradley et al., 2007). The coding and the development of themes can be informed and developed further by employing the use of specific theoretical concepts, which can act as analytical frameworks (Bradley et al., 2007).

The first part of the process of thematic analysis involves undertaking data familiarisation (Grbich, 1998, Rapley and Silverman, 2011). This involves the thorough examination of the qualitative data in order to be able to identify any relevant or interesting pieces of data, and to make any initial comments (Grbich, 1998, Rapley and Silverman, 2011, Clarke and Braun, 2014). These comments and statements are then used in the generation of a series of data codes. The data codes that are generated undergo a process of refinement and development, whilst the analysis of subsequent interview data is on-going (Grbich, 1998, Rapley and Silverman, 2011). The resulting codes are then assessed for general similarities, and can be organised and grouped together by relevance, in order to be able to create an overarching category of codes, known as a theme (Grbich, 1998, Rapley and Silverman, 2011). A theme can be defined as being a *"recurrent unifying concept or statement about the subject of inquiry"* (Bradley et al., 2007, page 1760)*.* Thematic analysis approach was chosen in this study as the generated themes seek to characterise and make sense of a participant's responses by highlighting their commonalities, and making general insights which would seek to answer the study's objectives (Bradley et al., 2007).

Qualitative analysis processes can often be described as 'messy', due to its highly fluid and iterative nature that is largely guided by the research question and also the subjective preconceptions of the researcher (Grbich, 1998, Rapley and Silverman, 2011). In general it is preferable to commence the initial data analysis during the early data collection phase as the generated codes and the resulting themes that arise often have the potential to be able to direct the later stages of data collection (Rapley and Silverman, 2011). For example, they can shape the data collection by being able to refine either the research objectives, or by facilitating the opening of novel areas to explore, with other participants. Therefore, themes were continually reviewed and refined throughout the analysis process (Grbich, 1998, Rapley and Silverman, 2011). In addition, the use of sub-themes was used to breakdown and organise larger themes when appropriate (Grbich, 1998, Rapley and Silverman, 2011).

Qualitative data analysis is also often heavily reliant on the use of theory in order to be able to facilitate the explanation, prediction and the interpretation of the phenomena of interest (Bradley et al., 2007). By exploring and employing the use of a specific theory, it can often allow the understanding of causal links to be developed, and can provide a framework to be used to guide future research (Bradley et al., 2007). This was thought to be particularly salient to this project's qualitative research as implementation theories, such as NPT, were likely to be hold significant value and would be useful in guiding the process of implementation model, which relates to Objective 5. Therefore, NPT was employed to act as an organising framework for the obtained data.

5.8.1 The Data Analysis Process

All of the verbatim transcripts of the conducted interviews were analysed using a thematic analysis approach.

Firstly, all of the interview data was read in order to increase familiarity with it, and to observe any general comments or similarities that were appearing in the data by hand. Using the implementation theory NPT, initial codes were identified and developed (May et al., 2015). In an approach homogenous to the construction of the narrative synthesis in the systematic review chapter; NPT acted as an organising framework in which to sit within the interpretivist paradigm by identifying and framing the key results around the implementation of school-based tobacco and substance use interventions (May et al., 2015). As NPT was used in the construction of the interview questions, the NPT toolkit was useful within in the data familiarisation stage in order to be able to identify areas of the implementation process that were widely discussed by participants, whilst identifying the areas which received less attention or lacked a certain degree of participant experience or understanding (May et al., 2015).

The NPT toolkit, as shown in Figure 7, consists of 16 sub-constructs reflecting the most detailed level of the previously discussed four NPT constructs: Coherence, Cognitive Participation, Collective Action, and Reflexive Monitoring (May et al., 2015). By considering the interview data using the NPT toolkit it allowed the initial data codes to be developed and organised using the four NPT constructs, which enabled a more structured analysis to be conducted.

Coherence

1. Participants distinguish the intervention from current ways of working.
2. Participants collectively agree about the purpose of the intervention.
3. Participants individually understand what the intervention requires of them.
4. Participants construct potential value of the intervention for their work.

Cognitive Participation

5. Key Individuals drive the intervention forward.
6. Participants agree that the intervention should be part of their work.
7. Participants buy into the intervention.
8. Participants continue to support the intervention.

NPT Toolkit

Collective Action

9. Participants perform the tasks required by the intervention.
10. Participants maintain their trust in each other's work and expertise through the intervention.
11. The work of the intervention is appropriately allocated to participants.
12. The intervention is adequately supported by its host organization.

Reflexive Monitoring

13. Participants access information about the effects of the intervention
14. Participants collectively assess the intervention as worthwhile.
15. Participants individually assess the intervention as worthwhile.
16. Participants modify their work in response to their appraisal of the intervention

Figure 7: The Normalization Process Theory Toolkit

Reproduced from May et al., 2015.

Although the use of the NPT toolkit was useful to commence and structure the early codes, it did not appear comprehensive and open to all emergent issues that were being raised by participants within all of the interviews (May et al., 2015). This was acknowledged as not being a flaw of the theory itself, but more as a result of the fact that NPT is a theory, which was primarily designed to explore implementation within a healthcare setting, as opposed to the focus of this study; a school setting. Therefore, as it would be inappropriate to force data to fit the premise of the theory, some of the wider, secondary school specific factors that were deemed to affect the implementation processes of a substance use intervention could not be specifically explored and considered using the NPT toolkit (May et al., 2015). However, NPT was able to act as a valuable theoretical starting point, in which to be able to develop and refine the open data coding (May et al., 2015). Open coding refers to the labelling of concepts, in order to be able to develop specific categories based on their properties and was used to code data which could not be coded into one of the NPT constructs (Thomas, 2006).

The data codes that were generated were then organised into overarching themes, which had the function of elucidating any complementary insights present in the data (Grbich, 1998, Rapley and Silverman, 2011). By starting to group together analogous codes, it was clear to see that specific areas, or themes were emerging from the collected data. This led to the formulation of coding grids, around the factors affecting implementation, which sought to organise the codes by their respective themes. The coding grids were formulated to tabulate the specific key quotes that led to the development of each code, and a column was added to reference the NPT sub-construct, if used during the code's development. An example of the general layout of the two coding grids is shown below in Table 17.

Table 17: An Example of a Coding Grid used to Organise Results.

Theme 1		
Code	**Reference to Transcript**	**NPT Reference**
Code 1	T1 T2	NPT 1
Code 2	T3	NPT 2
Code 3	T1 T4 T5	NPT 3

The completed coding grids have been included in the Appendix B14 for reference. It was important that the data analysis process commenced as soon as the first interviews were conducted, as it led to the adoption of a comparative style of analysis, as any emerging themes from the early data were utilised when coding the later interview transcripts. The data analysis process continued and occurred in parallel alongside the later stages of data collection in May 2017. Until it was recognised that data saturation had been reached, open coding continued and these were used in order to be able to develop and expand the obtained results (Grbich, 1998, Rapley and Silverman, 2011). Data saturation is most commonly defined as the point at which no additional themes are identified during data analysis (Ando et al., 2014). However, more recent papers have argued that saturation should refer to the point at which there are no additional codes informing the theme development (Ando et al., 2014). The study by Ando et al proposed that by conducting 12 interviews it should be a sufficient sample size when undertaking thematic analysis, as 12 interviews in their work provided all the themes and

92.2% of codes (Ando et al., 2014). Therefore, as the proposed sample was larger than 12, it was recognised as important to only continue with data collection past this point if new codes were being identified.

As part of the results interpretation and presentation, thematic analysis maps were constructed in order to display the interview data codes, sub-codes and themes diagrammatically. In addition, constructing the maps facilitated the identification of the links and overlapping results between the heterogenous factors affecting implementation. A map was constructed for each theme by referring to the corresponding coding grids and making flexible links between related codes and sub-codes. The thematic analysis maps are presented in Chapter Six in Figures 9 to 13.

GLW was responsible for undertaking all of the data coding and the development of the initial themes emerging from the full qualitative data set. PhD supervisor ELG was involved in assessing GLW's initial coding and thematic development and was able to provide her expertise in assisting with the refinement and the structuring of the coding grids that were produced. Supervisors ELG and TF also participated in a series of data sessions with GLW, which were held to discuss the data that had been collected, and hence facilitated the process of double coding 20% of the interview transcripts, to act as a way in which to increase the objectiveness of the data coding.

5.9 Strengths and Limitations of Employing a Qualitative Research Method

Although it was deemed most appropriate to adopt a qualitative research method in order to be able to answer the aims and objectives, as set out in Section 5.2; it was important to recognise the challenges and limitations associated with employing a qualitative approach in this study.

A key strength of employing the qualitative approach in this study is the fact that it is an ideal way to gather in-depth, high-quality data from a small number of participants (Flick, 2014, Bryman, 2015). However, qualitative data collection and analysis is often considered to be time consuming and labour intensive, and as previously discussed, often generates a large amount of data (Denzin and Lincoln, 2000). In the instance of this study; all interviews were recorded and transcribed verbatim by GLW. The transcripts were accompanied with field

notes; therefore, the amount of data obtained was high. This was largely managed by preparing a Gantt chart in advance of the fieldwork commencement and ensuring that sufficient time to execute each component was allocated. The Gantt chart that was compiled was regularly referred to and adjusted accordingly if it proved necessary. In addition, the ability of qualitative data to describe complex phenomena, and facilitate the examination of multifaceted questions in a flexible manner is highly advantageous, and would be impossible to achieve the same level of detail using a quantitative method in isolation (Denzin and Lincoln, 2000, Flick, 2014).

Although a qualitative method results in detailed and insightful data, with the potential to inform theoretical development; it has been acknowledged that due to the nature of the methods, the data can lack generalisability (Guba and Lincoln, 1994, Morse, 1999, Collingridge and Gantt, 2008). This overall lack of generalisability has been argued as being one of the most important weaknesses of a qualitative approach, especially in the context of health research (Patton, 1999). This is due to the fact that health research that is characterised by challenges, such as the restricted capacity and resources, often requires a degree of generalisability to ensure that the findings are applicable to as wide a proportion of the population as possible. Generally the number of participants involved with qualitative research tends to be significantly smaller than the ones that are used in quantitative research (Flick, 2014). This is largely a result of the increased time and resources that are associated with collecting data from a participant using a qualitative approach, and therefore it can also be argued that qualitative data can lack a degree of representativeness (Flick, 2014). This was not identified as being a significant obstacle to this qualitative fieldwork data collection, as due to the varying secondary school settings and the area of investigation, namely the facilitators and barriers to implementation, it was thought to be important to obtain highly detailed data in order to be able to address the research objectives.

The lack of generalisability is also correlated with the degree of fidelity, and hence the reproducibility of the results obtained can often be difficult to achieve in practice. However, this is highly concurrent with this study's epistemological and ontological stance that was adopted. Qualitative research is centred around obtaining an individual's views and experiences (Bryman, 2015). The experiences reported by school staff and local authority staff were likely to be unique to the interview participant, and consequently similarities may or may not be apparent in other participant's responses. Due to the fact that this qualitative research captures a particular snapshot in time, even if the same participant was re-interviewed, it is unlikely that the exact same response will be replicated (Bryman, 2015). This could be due to

various different factors, such as the secondary school environment changing, or the varying service provision, which is likely to be beyond the researcher or the participant's control (Golafshani, 2003).

In recent times, the use of qualitative research methods has been subjected to criticism. This has resulted in some contexts; the methods being presented as having a lower degree of credibility in contrast with quantitative data collection methods. A specific example of this, is in 2015, the high impact factor journal, the British Medical Journal (BMJ) introduced a policy surrounding the immediate rejection of qualitative research papers submissions. The rejection of qualitative papers was on the grounds of them being of *"low priority"* to the journal, and also their seemingly *"lack of practicality"* (Greenhalgh et al., 2016, page 2). This policy received a significant amount of attention within the health research community, and hence a collaborative editorial, fronted by Greenhalgh along with a group of esteemed academics, was submitted to the editors of the BMJ. The editorial argued that although *"some qualitative research is of poor quality, badly written, inaccessible, or irrelevant to the journal's readership"* (Greenhalgh et al., 2016, page 2), this is not unique to qualitative research in general. They suggested that the BMJ should instead focus on developing a set of criteria, which could be used in order to judge submissions on their methodological quality. This was thought to be a more effective stance to adopt, than the blanket rejection of a specific research discipline altogether, as the insights that qualitative research can bring can be highly valuable (Greenhalgh et al., 2016). The criteria that were implemented present the questions that should be considered when appraising qualitative research for potential inclusion within the BMJ. They largely focus around the methodological quality, the reliability of the research and the overall clarity of the reporting (BMJ, 2017). Therefore, it was important to refer to these criteria when planning and executing the fieldwork.

Consequently, it can be argued that qualitative research methods, should maintain a key role in health research, as they can provide highly detailed data that quantitative methods alone, simply cannot (Mays and Pope, 1995). By ensuring that both the strengths and the weaknesses associated with employing a qualitative research method are acknowledged, then the qualitative data that has been collected will be extremely valuable in identifying and understanding the barriers and facilitators to the implementation of substance use interventions in the secondary school setting.

As discussed, the interview participants were recruited using snowball sampling. Although this was identified as being the most appropriate sampling method for this fieldwork, it could also be argued that the recruited sample lacked representativeness, as participants were solely

invited to take part by willing gatekeepers. However, as it was highly important for school staff or local authority staff to have some level of experience of implementing tobacco or substance use programmes within a secondary school in order to be able to answer the research objectives, it was acknowledged to be an acceptable compromise to conduct purposive sampling.

In addition, as the sample was recruited entirely from within the North East of England, there is an acknowledgement that regional differences that may be apparent across different areas within the UK cannot be explored. Although exploring regional differences was not a primary goal of this fieldwork, it is also important to acknowledge that there were participants interviewed from across the whole of the North East region. This is important to note as each of the twelve local authority boroughs are different, and they each have their own local health priorities and challenges depending on the status of the population residing there. Social disparities in health can be observed across any one single borough due to multiple factors, such as the differing socioeconomic status and ethnic groups and the differing availability of health services across the locality. Therefore, even within this sample recruited solely from the North East of England, regional differences were observed within the different schools governed by different local authorities, and also the commissioning and the provision of tobacco, drug or alcohol services for young people will be variable.

5.10 Chapter Summary

Chapter Five has presented an overview of the qualitative method that was adopted for this qualitative fieldwork. The key points of Chapter Five have been:

- Conducting interviews with both secondary school staff and those involved with the commissioning, planning or delivering tobacco or substance use interventions within the local authority, sought to obtain a broad range of in-depth responses, in order to be able to answer the PhD study's aims and objectives.

- Semi-structured interviews were chosen as the primary data collection method due to their ability to generate highly detailed data using a flexible and iterative approach, whilst still maintaining the overall focus of the interview.

- The purposive sampling method that was employed, snowball sampling, was chosen to be able to obtain the most relevant sample of participants from within the North East of England.

- NPT acted as an organising framework in which to sit within the interpretivist paradigm by identifying and framing the key results around the implementation of school-based tobacco and substance use interventions.

Chapter Six will go on to discuss the sample of participants that was achieved, and will present the results.

Chapter Six

Qualitative Fieldwork- Results

6.1 Overview of the Chapter

Chapter Six presents and synthesises the results that were obtained from the qualitative interviews. The aim of the interviews was to explore the perceptions and the previous experiences of both secondary school staff and local authority staff, around the implementation of tobacco or substance use interventions or education within the secondary school setting. Chapter Six starts by describing the final sample of interview participants that were recruited and then moves on to the results that are presented thematically, using the most illustrative quotes. For reference, the full coding tables that were constructed have been included in Appendix B14.

6.2 Participant Characteristics

6.2.1 Local Authority Participants

In total, 13 local authority participants were interviewed. These participants (11 female, 2 male) expressed having previous experience of engaging and working within secondary schools in the North East, with many job roles represented. The majority of participants (n=8) were public health practitioners, working within a public health team in the North East of England. Two of the interview participants held job roles directly relating to young people's health within schools, but outside the remit of public health. Two participants were from local authority commissioned services, and held roles requiring on-going engagement with secondary schools in order to deliver substance use intervention within schools. Lastly, one participant worked within Public Health England. Table 18 provides the full breakdown of the participants by their specific job role and sex, together with their unidentifiable codes referred to within the interview quotations.

Table 18: The 13 Local Authority Participants' Demographic Information.

Interview	Coding	Sex	Job Title
1	LA1	Female	Health Improvement Specialist
2	LA2	Male	Health and Wellbeing Manager (Children and Young People)
3	LA3	Female	Young Person Relationship, Education and Sexual Health Co-ordinator
4	LA4	Female	Health Improvement Practitioner
5	LA5	Female	Drug and Alcohol Service Provider (in Schools)
6	LA6	Female	Health Improvement Practitioner
7	LA7	Male	Drug and Alcohol Project Manager (in Schools)
8	LA8	Female	Director of Public Health
9	LA9	Female	Senior Commissioning Specialist
10	LA10	Female	Acting Consultant in Public Health
11	LA11	Female	Consultant in Public Health (Children and Young People)
12	LA12	Female	Wellbeing and Safeguarding Advisor (Education Services)
13	LA13	Female	Health Improvement Practitioner (Children and Young People)

In relation to the sampling frame, although the gender split was largely female; 11 females and 2 males, it was possible to over achieve the desired range of job roles with 8 public health practitioners being recruited and 5 commissioners or specific service providers.

6.2.2 Secondary School Staff Participants

Ten of the 23 interview participants were recruited from secondary schools in the North East of England. All of the interview participants (8 female, 2 male) worked directly within a secondary school, but occupied different roles. Five participants held a specific subject teaching role, such as being an English or a Science teacher. Three participants held either a Head of Year role or a Head of Subject role. The remaining participants (n=2), held senior roles within a secondary school within the Senior Leadership Team (SLT), such as an assistant Head Teacher. Aside from their primary roles, some participants held specific

pastoral responsibilities within the secondary school, or operated safeguarding duties. Secondary school participants were recruited from five of the twelve local authorities. Two of the secondary school interview participants were recruited from different boroughs to the local authority participants, indicating that in total, eight of the twelve North East boroughs were represented. Table 19 presents the demographic breakdown of the school staff participants by job title, sex, and their unidentifiable SS interview code.

Table 19: The 10 School Staff Participants' Demographic Information.

Interview	Coding	Sex	Job Title
1	SS1	Female	Assistant Head Teacher (Pastoral Care and Safeguarding)
2	SS2	Female	Form Tutor
3	SS3	Female	Head of Year Eleven
4	SS4	Female	Head of PSHE
5	SS5	Female	Science Teacher
6	SS6	Female	English Teacher
7	SS7	Female	P.E Teacher and Head of PSHE
8	SS8	Male	Science and Citizenship Teacher
9	SS9	Male	Senior Lead for Safeguarding
10	SS10	Female	PE Teacher

Again, in relation to the sampling frame, the gender split was largely female; 8 females and 2 males. In addition, the desired range of job roles was slightly favoured towards teaching participants; with 8 teaching staff and 2 pastoral members of staff being recruited.

6.2.3 Anonymisation of Participants

To maintain the anonymity of individuals, the local authority borough that each participant worked within has been removed. However, it can be stated that participants from eight of the twelve North East local authorities were interviewed. Additionally, the names of the drug and

alcohol services, and hence any identifiable service information was omitted, as the commissioned services were highly specific to a particular local authority.

6.3 Map of the Results

The results in this chapter are presented by how they address each of the qualitative fieldwork objectives. Section 6.4, will briefly present the results of the introductory questions, which focused on identifying the specific health issues young people were most likely to face within a secondary school and how the disparate secondary schools responded to the identified health issues. These questions set up the pathway to explore a participant's previous experience of implementing a school-based tobacco or substance use programme, which progressed to the identification of the contributing factors affecting an implementation process, which is presented in Section 6.5.

6.4 The Secondary School Setting Results

The first two objectives of the qualitative fieldwork to explore were:

- To obtain an understanding of the secondary school setting, as a setting in which the short term and long-term health outcomes of adolescents can be influenced; and

- To explore the experiences and insights of secondary school staff and local authority staff, in regards to the implementation of substance use programmes in the secondary school setting.

Therefore, in both participant groups, the early interview questions explored and addressed these objectives. The questions sought to identify which specific health issues young people were most likely to face, within the interview participant's secondary school (school staff), or within a secondary school in their local area (local authority participant). This was followed by identifying how the disparate secondary schools then responded to the health issues that were identified.

6.4.1 Health Issues Observed within Secondary Schools

Interview participants were first asked to reflect upon what they perceived the most commonly occurring public health issues to be within their secondary school, or the secondary schools within their local authority. The most commonly cited health issue was young people facing issues with their mental health:

"From my experience I would say mental health always comes out as a, key thing that young people would say"

[LA13, Female, Health Improvement Practitioner]

"I, think there's a lot at the moment, a lot of mental health issues"

[SS7, Female, P.E Teacher and Head of PSHE]

The next most commonly cited public health issue was the use of substances, such as alcohol or drugs, or tobacco smoking:

"I think, the main health issues are, drinking. And smoking. I would say, underage drinking and smoking"

[SS8, Male, Science and Citizenship Teacher]

Within substance use, interview participants most commonly reflected upon young people consuming alcohol, and the risks associated with it, including the increased rate of under-18 alcohol related hospital admissions, and the link with other risk-taking behaviour.

"obviously we have a, huge issue around alcohol […] with a, (NUMBER) highest hospital admissions in the country"

[LA10, Female, Acting Public Health Consultant]

"I think, a lot of it, is to do with, sort of risky behaviour and, sort of, with regards to alcohol, predominantly"

[SS2, Female, Form Tutor]

The most commonly identified illegal drug causing issues to young people's health was reported as cannabis.

"I also think in terms of health of the current time, we have an issue with cannabis use"

[SS1, Female, Assistant Head Teacher]

Other public health issues that were discussed included a lack of physical activity, obesity, unbalanced diets, and young people engaging in risky sexual behaviour and the transmission of sexually transmitted infections.

6.4.2 How Secondary Schools Respond to the Identified Health Issues

Interview participants were asked to reflect upon how secondary schools responded to public health issues, and what support they offered their pupils. The view was that secondary schools responded to pupils' health issues differently, but that this was highly dependent on the pupil and the specific behaviour identified. Some secondary schools were seen to focus on supporting pupils via initiating conversations with the young person and involving safeguarding or child protection members of staff.

"And, that would then be brought forward with our child protection, people, within the school. I think from our, my perspective, now within lessons obviously, we'd want to think that, maybe the lessons might make them aware of certain things […] and they might get them to then, seek help and advice from, the either the, helplines that we give them to, or actually come and speak to staff within school, to, to get support with that"

[SS4, Female, Head of PSHE]

One of the interview participants talked about conversing with a pupil themselves, if it felt appropriate or comfortable to do so, or liaising with an appropriate member of staff, to ensure that the young person could be sufficiently supported.

"I think if it was a pupil, in, just a normal class, it would be a very, picking the right conversation. Again it would be, whether I had that relationship […] or whether I would pass it on to […] someone who did have a better relationship with them […] And if I, if I felt like, I don't know, that child well enough, I'd go to probably, their Head of House, or

maybe, if it seemed like a big one, to maybe, the safeguarding leads as well"

[SS6, Female, English Teacher]

Another interview participant talked about referring pupils to school-based intervention services, if this proved appropriate.

"First, if they're, if they're caught smoking on school premises […] which there's CCTV, monitoring for, they are referred to, the health and wellbeing co-ordinator for smoking cessation courses […] If they're drinking, within school, or suspected drinking outside of school, that would also be referred as well"

[SS8, Male, Science and Citizenship Teacher]

Most of the interview participants talked about the Heads of Years or the SLT having a role in supporting pupils, and the number of staff members increased proportionately with the severity of the issue. Although the specific job titles varied across different schools, the majority of secondary schools relied upon staff with senior safeguarding roles, such as a safeguarding lead, a child protection officer, or a culture and wellbeing co-ordinator, to address and support young people with the public health issues identified.

6.4.3 Participants' Experiences of Tobacco and Substance Use Education Implementation

As the focus of this study was to explore the implementation of tobacco and substance use programmes within the secondary school setting, interview participants were asked about their previous experiences of tobacco and substance use implementation in this capacity. Participants reported varying experiences of implementing tobacco or substance use interventions, with some participants having substantial experience.

"Yeah. So I've got quite a bit of experience […] So certainly for the, early part of my career you know, that was one of my focuses, both in and I've both, I've been part of a delivery team in schools doing work around- […] you know risk taking behaviour and decision making with young people. And then also been, you know, I've done work, you know, to actually develop the programmes"

[LA8, Female, Director of Public Health]

However, some participants were relatively new to their roles, and had limited previous experience of implementing tobacco or substance use interventions.

"No, the […] only thing where it, when I very first started teaching"

[SS10, Female, PE Teacher]

6.5 Factors Affecting Implementation Results by Theme

Figure 8 has been used to display the five different themes that were identified from the interview data around the factors affecting the implementation of school-based tobacco or substance interventions. In addition, the intervention and the provider themes were unpacked to elucidate subthemes, which focused specifically on the intervention characteristics and the interview provider characteristics respectively.
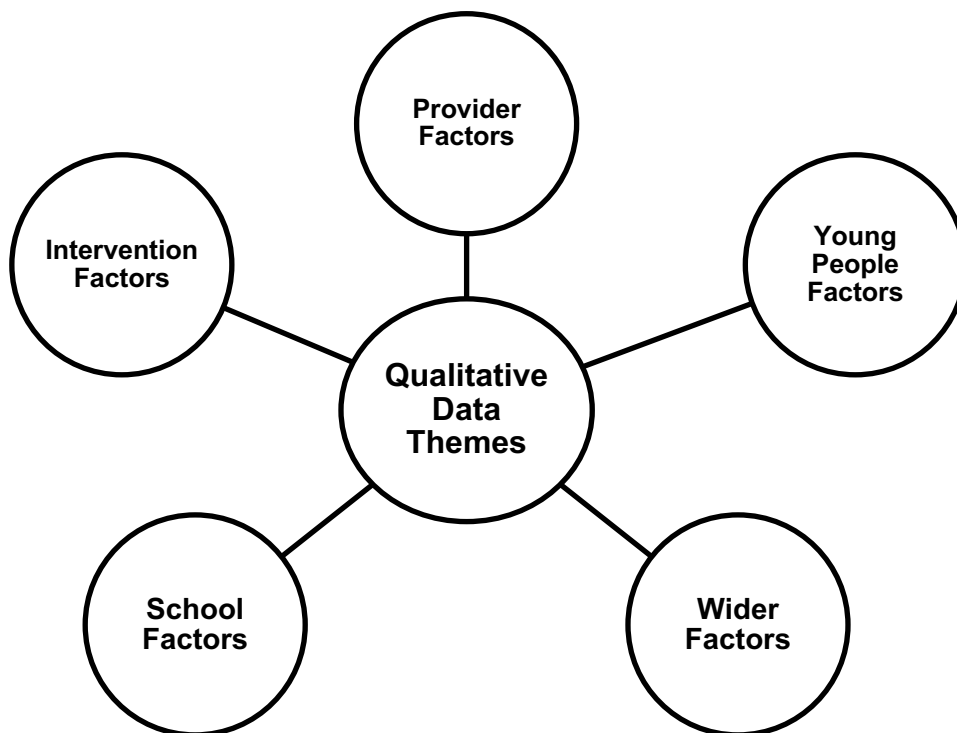
Figure 8: The Five Themes Associated with the Factors affecting the Implementation of Tobacco or Substance Use Interventions.

The findings within the five themes and subthemes will be presented in the upcoming subsections, by using a selection of illustrative quotes from the interview data.

6.5.1 Intervention Factors

Intervention factors were identified as factors specific to the tobacco or substance use intervention that directly affected the implementation within a secondary school. Figure 9 displays the first thematic analysis map which presents the intervention specific codes that were generated, and how they were linked.

As discussed in Chapter Five (Section 5.8.1), thematic analysis maps were used to display the codes, sub codes and themes diagrammatically. In these maps the grey bubbles represent the codes that were developed from the interview data, whilst the white and blue bubbles represent the smaller, sub-codes that were seen to exist within the overarching code (white) and within the respective sub code (blue). Dashed lines have been used to represent how the separate codes and sub-codes could be linked or how they could affect discrete factors affecting implementation.

6.5.1.1 Specific Characteristics of the Intervention

A frequently occurring series of codes within the intervention theme were the particular characteristics of the tobacco or substance use intervention, and how they could affect implementation. Rigidity was identified as an important characteristic and participants commonly talked about experiencing issues with implementing substance use programmes that appeared to be too rigid in practice.

> *"there'd be a wide, a sort of resource […] pack of information, and depending on what sort of, we felt was appropriate for that year, we could dip in to the programme […] and pick out certain lessons"*
>
> **[SS2, Female, Form Tutor]**

> *"We generally deliver what's been, suggested […] Because that's based on evidence […] and it's based on research […] But we do have the ability to, and the flexibility to adapt that […] And I think that's really important"*
>
> **[SS9, Male, Senior Safeguarding Lead]**
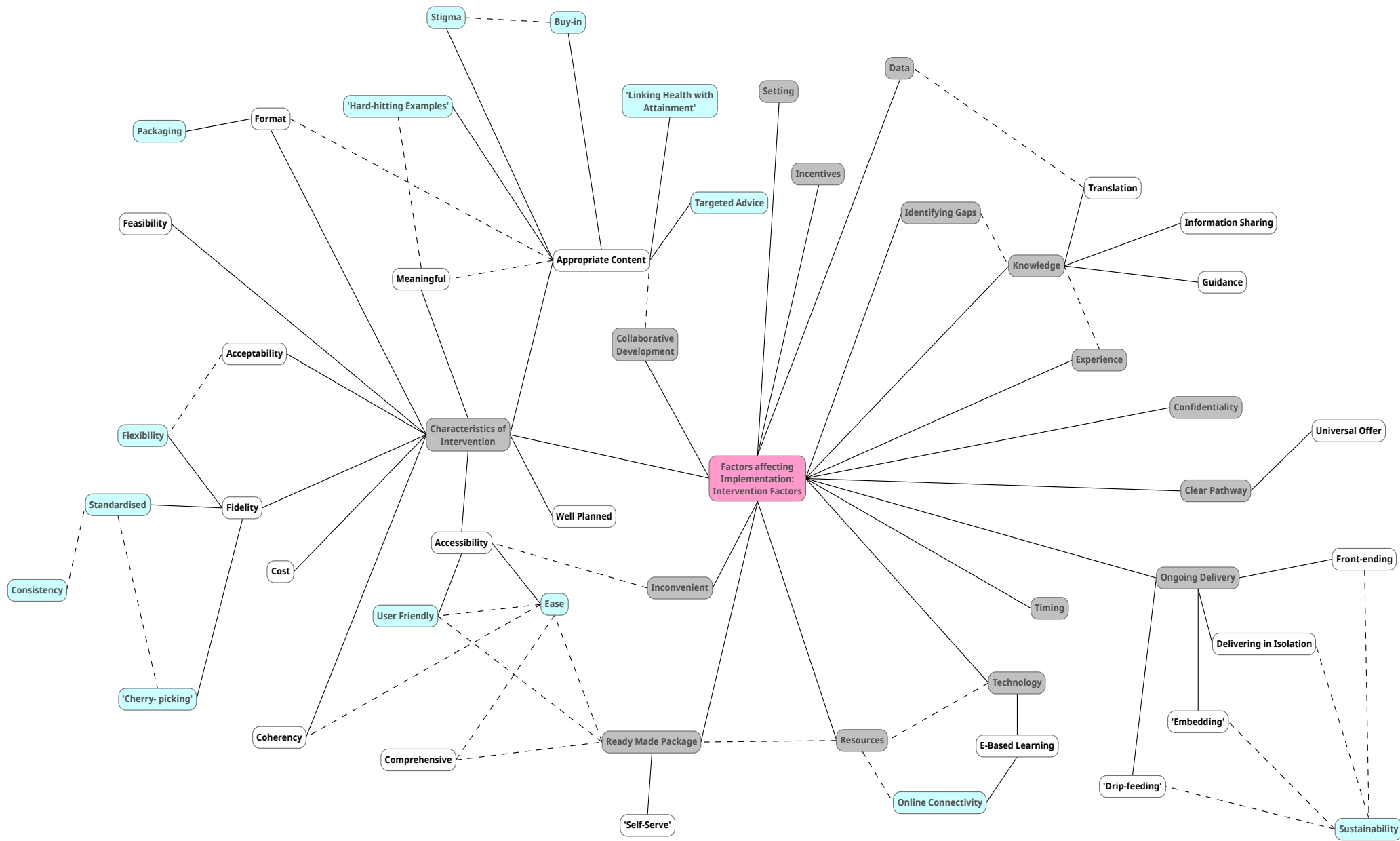
Figure 9: Map of the Codes within the Intervention Theme

Flexibility of the intervention was therefore viewed as an important implementation facilitator as it allowed secondary school staff to 'cherry-pick' relevant and meaningful elements to encompass both the needs of their school and the specific needs of their pupils. However, interview participants also talked about appreciating having a standardised intervention package, as teachers, or other school staff were often limited in time and capacity. This is highly concurrent with the NPT Collective Action construct as it explores whether participants are able to perform the tasks as required by the intervention. Consequently, a facilitator of implementation was when there was a secondary school-appropriate, ready-made, substance use intervention package, requiring little sourcing, that offered a clear and easy to follow pathway.

> *"like really detailed lessons what you can use, resources that you can use […] all I'm doing is, just obviously following the plan and obviously tweaking a few of the resources, for like specific kids, that I've got, in terms of their needs"*

> **[SS5, Female, Science Teacher]**

Accessibility of a tobacco or a substance use intervention was a key intervention factor affecting implementation. Interview participants believed that if an intervention appeared to be too complex or intellectually challenging, it negatively affected implementation as providers found it too difficult to follow and to implement in practice.

> *"in a way that's accessible, easy to be delivered, flexible for schools to be able to deliver, and for other people that you know, c- cos some, some areas do, still have services that will go in […] that they could use it as well, so I suppose a bit of a flexible model that schools could pick it up and run with it"*

> **[LA11, Female, Consultant in Public Health]**

This is highly supportive of NPT's Coherence construct, which focuses on participants being able to make sense of and understand an intervention enough to be able to implement it.

6.5.1.2 Cost

Another intervention factor found to affect implementation was the cost associated with the intervention. Several of the interview participants emphasised the need for a low, or no-cost intervention.

"in terms of effectiveness if the intervention being offered, needs to be very little cost associated with it"

[LA2, Male, Health and Wellbeing Manager]

A specific example of the cost of an intervention having the potential to negatively affect implementation was identified when a participant talked about how they were unable to implement an appropriate substance use education programme in their school, due to the high cost.

"I think that's probably the biggest factor […] because, there's so many, things out there that I look at and that would be fantastic to implement […] and it's the money of it, and it's about picking, to some extent the cheapest things that hopefully will have […] the most impact as well"

[SS7, Female, P.E Teacher and Head of PSHE]

6.5.1.3 Resources

Several of the interview participants reported the use of high quality visual resources as an implementation facilitator**.**

"We have, I think it's, I suppose it's again thinking carefully about your physical resources, cos we've got a health promotion library, which has like a range of […] you know, your baby bottles with tar in, and your beer goggles […] those resources are useful"

[LA1, Female, Health Improvement Specialist]

Interview participants reflected upon the use of appropriate resources, such as props and teaching aids as a way in which to increase the engagement of young people. Good quality resources were seen to improve the content of the intervention and made a programme easier and more accessible to deliver. When exploring the type and the format of the resources, participants talked about the negative impact that technology can have on implementation. Issues with specific technology, or problems with a secondary school's online connectivity, were both cited as barriers to implementation.

"Basic stuff like the technology not working, when you wanna deliver a lesson and can't get the links to work […] it can be, it can be an issue"

[SS1, Female, Assistant Head Teacher]

6.5.1.4 On-going Delivery

On-going delivery of a tobacco or substance use programme was seen to have the potential to affect the long-term implementation and sustainability within a secondary school setting. Several participants reflected on the challenges associated with maintaining and achieving long-term sustainability in practice.

> *"And whilst we had that resource […] we got a lot of schools to sign up, but that's front ending. And, I mean ten years later, I don't, I would, pretty much guarantee, nobody's still using that"*

> **[LA12, Female, Wellbeing and Safeguarding Advisor]**

Therefore, a facilitator of long-term sustainability, discussed by several participants, was the idea of being able to 'drip-feed' substance use education, in order to avoid delivering interventions/education in isolation.

> *"I think if we, you go in, in silo, and you try to deliver things, say standing in an assembly talking, a lot of the pupils say, they don't work when they come in to assemblies, we just sit and we, switch off anyway, because you're only in for a short period of time […] So, they want things that are, obviously, drip-fed to them over a longer period and access to things and information"*

> **[LA13, Female, Health Improvement Practitioner]**

By consistently 'drip-feeding', or ensuring that delivery is on-going, it was perceived to facilitate the embedding of a programme within the school curriculum, allowing consistent reinforcement. In addition, the interview participants saw regularly reinforcing tobacco or substance use education as being a facilitator to long-term implementation.

6.5.2 Provider Factors

The theme 'Provider factors' included factors that related to the delivery of the intervention by either school-based staff or an external service. Looking specifically at the different providers, an internal provider was used to refer to those members of staff who are based directly within a secondary school, such as a teacher or a pastoral member of staff. External providers were

identified as those who were outside of a secondary school but had been commissioned by the local authority to provide tobacco, drug, or alcohol services within secondary schools, or independent organisations or charities, who can deliver school-based education and interventions. Figure 10 displays a map of the specific provider codes, and their links.

6.5.2.1 Specific Provider Characteristics

In general, the interview participants did not favour a specific type of provider to deliver the tobacco or substance use intervention. Participants appeared equally positive about internal or external providers and reflected upon the implementation challenges associated with both. However, several interview participants talked about the importance of employing providers with specific characteristics, opposed to the intervention implementation being designated to a particular staff member.

"I think it's about the right people […] so I think we, open the doors, as to who, would like to […] I'd rather have a motivated individual […] than you know somebody who is sort of corralled into it because of their position"

[LA2, Male, Health and Wellbeing Manager]

This links in with the Collective Action construct of NPT, which assesses whether the work of an intervention has been appropriately allocated to staff who possess the desired characteristics. Interview participants reflected upon the importance of providers being both compassionate and sensitive to a young person's needs, and a lack of this had the potential to negatively affect implementation. This was also linked with a provider feeling comfortable delivering a tobacco or substance use programme, whilst having the knowledge and experience of knowing how to work with young people effectively.

"I just think you've got to have, the right skills, so it's like […] compassion and, you know, being sensitive to needs, and doing it in a way that, young people understand"

[LA10, Female, Acting Public Health Consultant]

A provider feeling comfortable delivering tobacco or substance use education was seen to be directly associated with confidence levels. Lack of confidence was frequently cited as a barrier to implementation, as interview participants believed that if providers did not feel comfortable with the topic or delivery method, they were more likely to change or omit elements, reducing implementation fidelity, which may alter the effectiveness of intervention.
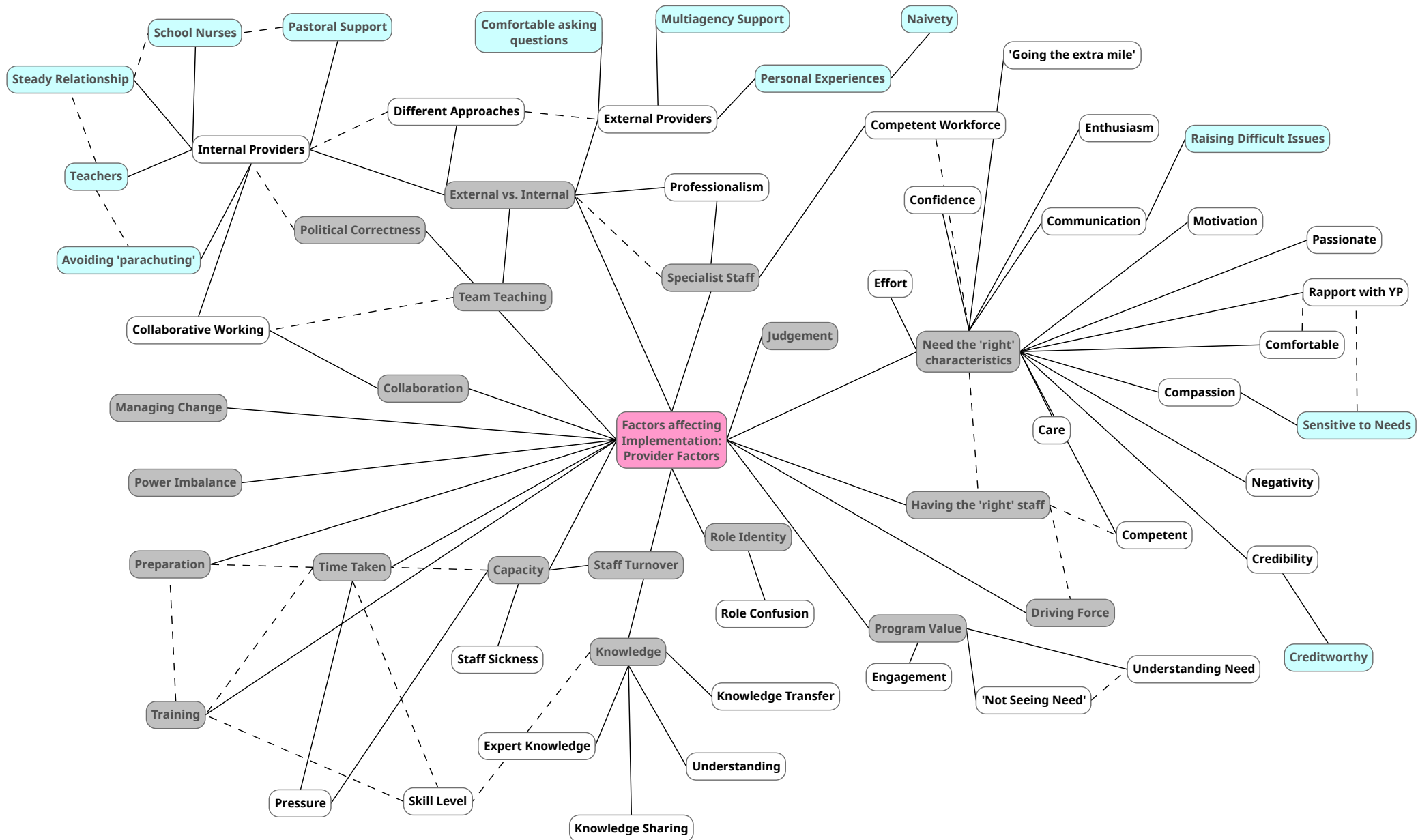
Figure 10: Map of the Codes within the Provider Theme.

"I think there's certain topics, that staff are, sort of not confident with, or get really worried about delivering, especially upper school, and it's like with anything, I think, some staff will deliver it, to the letter […] Other staff because of, maybe the content […] then, there's, the sort of […] it depends how confident they are, with it"

[SS2, Female, Form Tutor]

Positive attitude, in terms of demonstrating enthusiasm and motivation for intervention delivery was also key.

"the pupils, are obviously motivated by her (Head Teacher) *because she's […] enthusiastic, about it"*

[LA13, Female, Health Improvement Practitioner]

"the (School Staff Roles) *within this school, we're very lucky, are extremely good at their job […] great relationships with the kids, really well trained, and are fantastic at what they do, so the kids enjoy being with them"*

[SS9, Male, Senior Safeguarding Lead]

This was recognised as being an implementation facilitator as providers who were on board with the tobacco or substance use programme worked to ensure that the young people continued to appear to be receptive and engaged, which is indicative of the NPT Cognitive Participation construct.

6.5.2.2 Internal vs. External Providers

Interview participants discussed the advantages and the disadvantages of internal providers compared with external providers. Some participants stressed that tobacco or substance use programmes should be delivered by secondary school staff, such as form tutors, due to their long-standing rapport with the pupils in their class. By using internal providers, it avoided 'parachuting' an external provider in, out of context, who had no prior relationship with a young person. This again is highly reflective of the Collective Action construct of NPT, by exploring whether the work of an intervention has been appropriately allocated to internal staff over external staff.

"rather than say like (Service Name*) going in and talking about alcohol and legal highs, and drugs […] Actually it should be, incorporated in to a whole school, like programme […] So, and the evidence is that, they don't, young people don't, it, doesn't change the behaviours, to go in and like, parachute somebody in to talk about alcohol […] because it should be, throughout"*

[LA10, Female, Acting Public Health Consultant]

"But then tutors, across the board, and teachers, it's a different relationship because, it's much more discussion based, you get much more from pupils, you should, have a steady relationship, because you're with them for five years"

[SS7, Female, P.E Teacher and Head of PSHE]

However, the benefits of employing an external provider were also highly discussed by participants. Interview participants reflected on the fact that external staff utilise their own personal experiences, especially in the context of being recovered substance users, and did not need to maintain the level of political correctness that a teacher or internal school provider would need to. External providers also offered a level of anonymity and confidentiality to pupils that school staff could not, as pupils often found it difficult to relay concerns to internal school staff. External staff were also highly regarded as they could reduce the burden on secondary school staff to learn new knowledge and skills around delivery, and could alleviate issues with confidence, which were often cited as factors affecting implementation fidelity.

"secondary schools do very much, like, somebody, to fly in, an expert […] and deliver the education programmes […] Which, it does have benefits, because the experts tend to have real confidence and enthusiasm around […] a topic"

[LA6, Female, Health Improvement Practitioner]

"I do think there is value though in, getting sort of guest speakers in, because it's somebody different and […] and they get a lot from, from hearing from different, perspectives"

[SS4, Female, lines Head of PSHE]

A potential solution to the difficulties in selecting between an internal or an external provider, was the idea of employing a 'team-teaching' style approach. Team-teaching was presented

as a way to encompass the use of both internal and external providers working in collaboration to deliver tobacco or substance use education. This finding is largely concurrent with NPT's collective action construct, as it signifies the importance of relational integration.

"I think for delivering programmes in school, the best way to do it is team teaching […] So I think it's, your teacher, and a, another whether or not that is somebody, who, works in drug and alcohol service, is a school nurse, is a learning mentor […] delivering. But I definitely think, it definitely works with a team-teach approach. I know that there aren't as many, resources outside, as there used to be, when, when we were delivering, and it's a lot harder to coordinate, but you just get, you just get, a real good skill base there, so you've got a teacher who knows that class […] Knows what those, young people are like, knows what they, relationships are like […] Has got the behaviour management skills, and who can, you know, right you sit there with that, really good at that, because they know the classroom, and then you've got the experts in there, who is talking about the issues"

[LA4, Female, Health Improvement Practitioner]

"I just think, it's, good to hear, the, like sort of, the same message, but from other people, supporting […] what we're saying, sometimes cos you teach them one lesson and then, we're, then teaching them something else, it's […] it's not cross purposes, or we're not telling them, we're not mixing things up, but it's just, it's good to, get the same information and be backed up by, by somebody else"

[SS2, Female, Form Tutor]

"Yeah, a mix, like I say, like, it could come from, staff in school, but it would need outside agencies, to give that level of support"

[SS10, Female, PE Teacher]

The idea of using external providers to support and confirm internal messages was seen to be advantageous and worked to ameliorate the issues associated with employing an internal or an external provider in isolation. Despite this, the overall choice of provider was also seen to be dependent on the young person, and whether they had previously been engaging in the use of tobacco or substances, prior to the intervention.

"Children, who we suspect have, who are involved in drugs and alcohol, prefer people external to the school […] And those children, who, we probably suspect aren't, involved in using drugs or alcohol, they prefer to have class teachers who actually know them, and […] and, they don't like new faces, for example, so […] those kids who are already, involved in taking substances, they quite enjoy, somebody external coming in […] because it's not their teacher, there's no power imbalance […] But then actually kids, who, aren't in that circle yet, they prefer their classroom teachers to do it, because, they like being taught by classroom teachers"

[SS9, Male, lines Senior Safeguarding Lead]

6.5.2.3 Capacity

Interview participants reflected upon the lack of secondary school staff capacity as a barrier to implementation. Secondary school staff were identified as having heavy workloads, and limited time to offer a new intervention or develop any required knowledge or skills.

"If you've got, to trust some body within a school to do it, whose, teaching whatever in, some other time […] then it's going to be tricky"

[LA7, Male, Drug and Alcohol Project Manager]

"I just don't, I think, [teachers] *have the time for, to have certain conversations, with them* [pupils]*, it's quite, it's more rushed, we're rushing through the topics so there's […] less time for, some discussion, to take place, that would be beneficial, for the pupils"*

[SS2, Female, Form Tutor]

This was linked with the impossibility of secondary school staff being able to dedicate large amounts of time for preparation of tobacco or substance use education. Secondary school staff preferred having access to ready-made resources, and hence this was viewed as a facilitator to implementation.

"if it's a resource, like a lesson plans for example, that would require additional resources to deliver it […] then having it as a whole package, so people don't have to go out and find […] whatever it is"

[LA6, Female, Health Improvement Practitioner]

However, interview participants also discussed the issues associated with employing a self-serve substance use model within a secondary school. Self-serve models were articulated as being ready made intervention programmes that were provided to, or obtained by providers, that were delivered without receiving any additional support or making any modifications to the programme. Participants talked about self-serve models needing an enthusiastic facilitator to be implemented effectively, and as staff capacity was limited, this often appeared insurmountable.

> *"I think some of the challenges that we've found is, you can have a good programme […] you can have a programme, but then you leave it to the schools […] and they're not implementing it"*

[LA13, Female, Health Improvement Practitioner]

The capacity of intervention staff was further limited by factors such as wider national budget cuts, staff turnover and staff sickness. Therefore, these were all identified as factors within capacity that could negatively affect implementation.

> *"Well, I think going forward, the, they, there's much less, there's less staff, a lot of the experienced staff have gone […] You know, in terms of that skills and knowledge to actually deliver that and deliver it, in a quality way […] And, the capacity issues, I've mentioned, with some of our other universal services, like school nursing, who should be doing some health promotion, prevention work, that's also a challenge, so […] I think going forward, that's really difficult, you know, and what, what you don't want is, well I don't, you know, you don't want a bit of pot luck that kids in this school get something and the kids in that school don't, just because there's no-one there to do it"*

[LA11, Female, Consultant in Public Health]

> *"there isn't necessarily the capacity, within the roles, in schools, with shrinking budgets, to give that person that piece of work to do"*

[LA12, Female, Wellbeing and Safeguarding Advisor]

> *"staff sickness can be an issue"*

[SS1, Female, Assistant Head Teacher]

Finally, interview participants discussed the idea of the role identity of secondary school staff being challenged. Exploring this further, conflicting role identity was associated with the increasing demands on school staff to deliver new practices, and aspiring to reach changing academic targets, left school staff questioning whether delivering certain elements of an intervention should be part of their role. This is highly reflective of NPT's Cognitive Participation as it focuses on the idea of legitimation, by collectively or individually assessing whether the right person is actually delivering and implementing the intervention.

> *"because, there was, I certainly know other, the leads within schools said, they were sometimes fighting a losing battle with staff because their, few would be, I'm the Geography teacher, I did not train to deliver substance use education […] I'm the English teacher, that is not my, role"*

> **[LA6, Female, Health Improvement Practitioner]**

One of the local authority interview participants, with significant school-based experience, suggested that this could be ameliorated by ensuring that adequate training around how to implement and deliver substance use programmes was part of the initial teacher training. By introducing an aspect of training early in the teacher training process, school staff would anticipate it being part of their global role within the secondary school.

> *"I think it needs to be embedded across the workforce, I think it should be part of teacher training"*

> **[LA8, Female, Director of Public Health]**

6.5.2.4 Provider Knowledge

Provider knowledge was seen to be a key factor affecting implementation within the provider theme, and also links with the results identified within the intervention theme and the NPT construct Coherence. If an internal or an external provider was not confident in delivering specific material, or felt they lacked the specific knowledge for delivery, it negatively affected implementation, and more specifically reduced implementation fidelity.

"I, in my experience again, teachers don't have the confidence, to deliver, stuff around drugs and alcohol, so again […] even if they are given a lesson plan, they feel like they then don't have the, or a lot of teachers, it's not all obviously, they don't have the confidence or the knowledge to then, answer children's questions about stuff that, that […] develops"

[LA7, Male, Drug and Alcohol Project Manager]

Interview participants reported that the most far-reaching way in which to improve provider knowledge was to engage in comprehensive training and gain relevant experience.

"Just the training, just training for us really […] You know, any updates on like legal highs maybe, or any new drugs what've come out […] we need to be going on training, so we can then deliver it […] so more education for us really, before we go out there, and do it"

[LA5, Female, Drug and Alcohol Service Provider]

6.5.2.5 Programme Value

The final factor affecting implementation within the provider theme was the notability of the providers' perceptions around the value of a tobacco or substance use programme. If a provider believed that an intervention programme was of high value and conducive to their work, providers were more likely to implement the tobacco or substance use intervention as intended, increasing the implementation fidelity.

"I think our staff, because they are aware of our kids, and our catchment area, would be […] very, very supportive of it […] in the need for the students, to be aware about it. Yeah they'd be very supportive"

[SS4, Female, Head of PSHE]

This is reflective of the NPT construct coherence, in that if individuals are seen to understand the intervention and are able to recognise the importance of delivery, in general terms they are more likely to engage, and facilitate the implementation process.

6.5.3 Young People Factors

A third theme from the data represents the factors that are directly attributed to young people participating in school-based tobacco or substance use interventions. Figure 11 displays a map of the young people codes that were generated and how they are connected. Interview participants highlighted particular aspects of young people's behaviour that had the potential to affect implementation processes, and these will be explored in the following subsections.

6.5.3.1 Young People Characteristics

Codes that were commonly identified as being within the wider young people theme were related to the specific characteristics of young people, and how these characteristics were seen to affect implementation. One of the most commonly discussed factors was young people's engagement with the content delivered within a substance use intervention programme. Young people who chose to exhibit disengagement, or disruptive behaviour, were seen as a significant barrier to the effectiveness of the overall delivery to all.

"So some children will hijack, the lesson […] And that kind of is, the biggest, the main upset of delivering that content"

[SS9, Male, Senior Safeguarding Lead]

This is directly linked with the findings around motivation, as interview participants also talked about the fact that young people who were seen to be highly motivated were the ones who appeared to be engaged in the classes. Therefore, achieving increased engagement from young people, and exploring ways in which to maintain their engagement, appeared to be a fundamental facilitator to implementation.

"I think it's looking, creatively, around how we can, engage young people better"

[LA9, Female, Senior Commissioning Specialist]

It was also found to be important for young people to appear motivated, but to also recognise the benefits that are associated with changing or reducing their current substance use behaviour. Young people being able to see the value in engaging with a substance use programme is linked to the NPT Coherence construct.
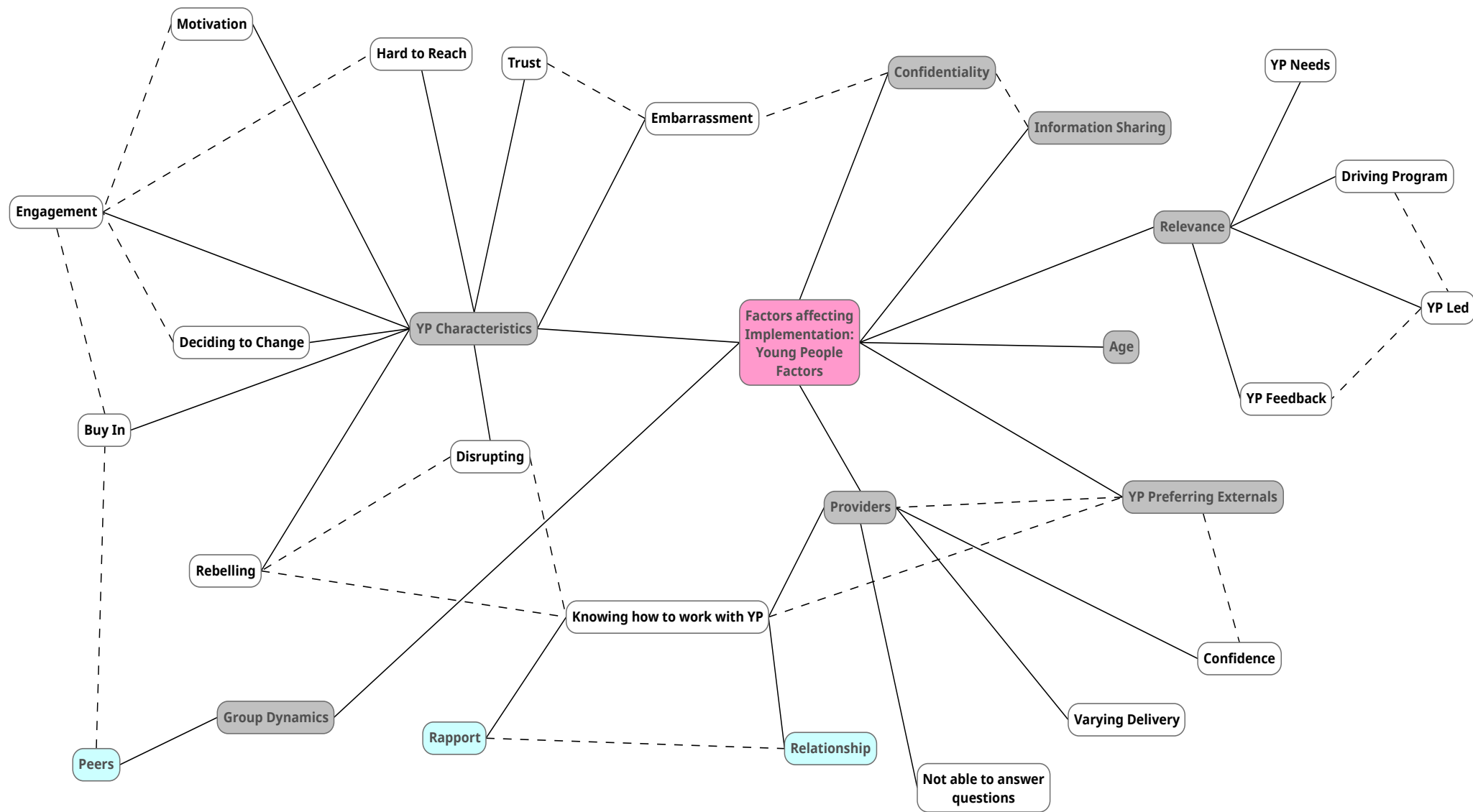
Figure 11: Mind Map of the Codes within the Young People Theme

"I suppose, the decision's got to come from them […] Especially, like teenagers as sometimes, they'll just, dig their heels in, even more"

[SS10, Female, PE Teacher]

6.5.3.2 Young People and Provider Type

It was also apparent from interview participants that young people were likely to display different behaviour depending on the provider responsible for delivering the substance use intervention, with some providers knowing how to work with young people effectively and confidently, thus facilitating implementation.

An area highlighted within several of the interview participants' responses was around the provider knowing how to work with young people effectively. By employing a provider who could effectively engage and deliver content in a meaningful way to young people, it was identified as being a significant facilitator of implementation. This is again highly reflective of the Collective Action construct of NPT, as it promotes the exploration of how the work of an intervention should be allocated to internal or external staff.

"I think getting people in, is more effective, the kids tend to respond, to like, when, people come in and give talks because it's not […] the teacher, it's the, you know, somebody different, whether it's a, an ex- addict, or whatever it might be"

[SS10, Female, PE Teacher]

In addition, several of the interview participants identified that young people often preferred talking to external providers about their substance use, as they felt that their information was more confidential.

"confidentiality has to, has to, be explained at the beginning of every lesson […] No matter how many times you tell some children, about confidentiality, they still have a, a lack of trust, or, or, they kinda distrust what you're saying"

[SS9, Male, Senior Safeguarding Lead]

By ensuring that a young person's confidentiality, with regards to sharing of their personal information, is consistently maintained, it acts as an implementation facilitator as it ensures that a young person feels comfortable speaking to staff members, and hence would be more

likely to engage and disclose their information within the confines of a specific, school-based intervention.

6.5.3.3 Relevance

It was also important for a substance use intervention programme to appear relevant, and to be pitched at an appropriate level for a young person.

> *"I think, that generally they buy in to it […] extremely well. I think it helps, that the children buy in to it, extremely well […] in terms of, that they, it's relevant, to them"*

[SS3, Female, Head of Year Eleven]

> *"when you show them a picture after picture, they don't see that as a real thing, because they can't, it's not tangible to them"*

[SS6, Female, English Teacher]

6.5.4 School Factors

The fourth theme encompasses factors that are specific to the secondary school setting. Figure 12 displays a map of the secondary school factor codes, to highlight how they can be linked.

6.5.4.1 The Secondary School as an Appropriate Setting

The majority of the interview participants believed that secondary schools were appropriate settings to deliver tobacco or substance use interventions, due to their frequent closeness to young people, the ability of school staff to develop close rapports, and because secondary schools seek to offer wider, pastoral support to young people. Therefore, the majority of participants recognised the value of implementing a tobacco or substance use programme.

> *"schools, are your kind of captive audience, for want of a better word, they've got that relationship with a young person, and I think it's really important, to do that.*

[LA1, Female, Health Improvement Specialist]
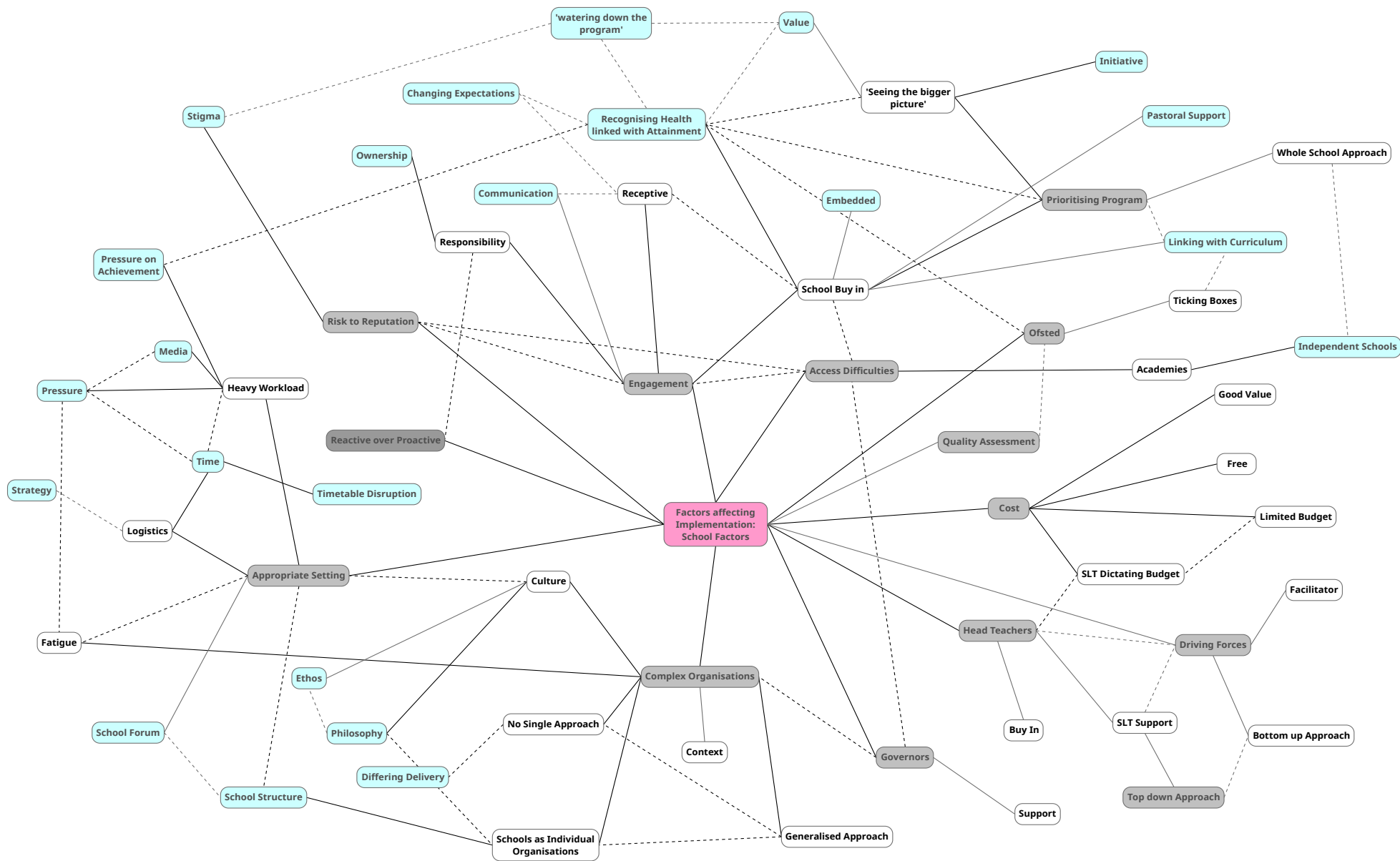
Figure 12: Mind Map of the Codes within the School Factors Theme

"we want to support our students, to be able to, to actually get the, the, the, the skills and the things that they needed for when, they leave school, rather than just an education"

[SS4, Female, Head of PSHE]

However, a small number of participants were not convinced, citing reasons such as a lack of a concrete evidence base, and the fact that secondary schools frequently deliver differing programmes, leaving their curriculum feeling "disjointed".

"My view is with all of these things like mental health, first aid in schools, it's giving schools another job, that is not their core business […] So, and I think sometimes, schools, get, kind of, fatigued by, we've got you this, we can give you this, we can give you this"

[LA12, Female, Wellbeing and Safeguarding Advisor]

Interview participants reflected upon the need to emphasise the link between the health and wellbeing of a pupil, and ultimately their academic attainment, as a way to positively facilitate engagement. This allowed secondary schools to acknowledge the value of a programme and appealed to their priorities around improving and maintaining their pupils' academic achievement.

"I obviously […] believe that you educate the whole child and if they've got issues around, alcohol, or substances, then it's going to impact on their […] education"

[LA6, Female, Health Improvement Practitioner]

This again links with the coherence construct of NPT, as the school being able to recognise the importance of health and wellbeing was identified as a facilitator prior to the implementation of a new intervention programme.

6.5.4.2 The Secondary School as a Complex Organization

Several participants talked about the disparate nature of secondary schools in England, and how they exist as complex and individual organisations.

"And don't understand, how complex school organisations are […] And you can't always have a one model fits all"

[SS1, Female, Assistant Head Teacher]

Unpacking this finding further identified that a secondary school's heterogeneity had the potential to affect the implementation effectiveness. A tobacco or substance use programme that appears to be acceptable and feasible to implement within one secondary school, may not be implemented as extensively in another. This is highly reflective of the workability and contextual integration components of NPT, and links to recognising the importance of a tobacco or substance use programme's flexibility. Being able to adapt a programme to allow it to fit within a unique secondary school context, was identified as having a positive effect on implementation.

> *"something that cuts across all the tiers of need […] that's context relevant, that maps with the culture that it's being delivered within, you know"*

> **[LA2, Male, Health and Wellbeing Manager]**

6.5.4.3 Difficulties with Access

Local authority interview participants frequently expanded upon the difficulties of getting access to a secondary school, and around being able to 'sell' a tobacco or substance use programme to schools.

> *"it's hard enough, to get into schools […] because their key, obviously their key business, is academic achievement […] and I know like when Public Health England brought out the paper that linked in achievement and attainment with health and wellbeing […] that gives us a good floor, to go in on"*

> **[LA3, Female, Young Person Relationship, Education and Sexual Health Co-ordinator]**

It was also apparent that due to the rise in the number of independent schools, such as academies, it was increasingly difficult to gain access to implement new programmes.

> *"And as more and more become academies as well, but even those that aren't academies, you know, the money is going directly to them now, and it's up to them to decide, so the challenge is how you sort of, I suppose, influence and get them to see, how these things, do impact, on all the other things that the kids are dealing with, and ultimately attendance and attainment"*

> **[LA11, Female, Consultant in Public Health]**

6.5.4.4 Driving Forces

A large proportion of the interview participants emphasised the need for comprehensive school support, and an individual 'champion' to be in place, such as a Head Teacher, or those with safeguarding responsibilities within the SLT. This links with the participation, activation, and enrolment concepts as framed by NPT.

"I think you need […] Senior Leadership Teams. So it, needs complete buy in from them initially. For them to then push down to the, the leads within the school, so quite often schools'll have like, either behavioural leads, or […] is it SEN[1] workers or whatever. But that needs to be driven down from, from the top down."

[LA7, Male, Drug and Alcohol Project Manager]

"So within school it, it should be, the safe- in my opinion the safeguarding leads view to be, pushing that forward, that person has to be a member of the Senior Leadership Team […] So you have to have that strategic overview, across the school"

[SS9, Male, Senior Safeguarding Lead]

Interview participants also cited governors as having an important role to play when driving an implementation process forward, and implementation was facilitated by governors working collaboratively with a secondary school's SLT.

"sometimes you need to go in at a governor level as well, and talk to governors […] and I think if you get governors on board, and your senior leadership team, and generally that follows through to the, to the teaching staff as well"

[LA4, Female, Health Improvement Practitioner]

Several of the interview participants identified Ofsted[2] as being another key driving force for implementation. Participants reflected upon the need to link any new tobacco or substance use intervention to current Ofsted criteria, which is indicative of the concept of contextual integration within NPT.

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[1] Special Education Needs
[2] Ofsted as described in Chapter Two, is the Office for Standards in Education, Children's Services and Skills

"And I think if it can be linked, to Ofsted, or just to highlight […] those links, that is often, a good selling point to schools and academies to say well, if you take this programme on board, this is where it will support with your Ofsted judgements"

[LA6, Female, Health Improvement Practitioner]

6.5.4.5 Reputational Risk

Another series of subthemes within the school factors were around a secondary school's perception of reputational risk when considering tobacco or substance use programmes. Participants commonly talked about the concept of stigma, and the fact that secondary schools were often eager to distance themselves from being seen to have issues with substance use which require a programme to be implemented.

"I think, some schools, at, at the beginning, were not too keen […] It's almost like there's not a problem in our school"

[LA5, Female, Drug and Alcohol Service Provider]

"I don't want you to think this is the kind of place where they take loads of drugs, cos it isn't"

[SS1, Female, Assistant Head Teacher]

Some of the interview participants also talked about the advantage of secondary schools adopting a proactive tobacco or substance use approach as opposed to a reactive approach. However, again this was largely dependent on schools not wanting to receive negative stigma by being associated with tobacco or substance use interventions.

6.5.4.6 School Pressures

The final series of codes within the school theme were those relating to the current pressures faced by secondary schools. As discussed within the provider and intervention themes, secondary schools are subject to negative pressures, such as restricted budgets, heavy workloads, and hence restricted time for implementing tobacco or substance use interventions. Participants identified all of these as factors which negatively affect implementation within a school setting.

"I acknowledge at this point, their resources are very stretched […] You know with all of the, really significant budget cuts"

[LA8, Female, Director of Public Health]

"But I've got to be realistic […] time constraints is a, obviously an issue and budget pressures on schools are, becoming a lot […] a lot worse"

[SS9, Male, Senior Safeguarding Lead]

6.5.5 Wider Factors

The final theme that emerged from the interview data was around the impact of wider factors having the potential to affect implementation. These were identified as factors deemed to be outside of a secondary school's control, and largely outside the remit of NPT, but still with the potential to affect the implementation process. Figure 13 is a map presenting the factors that were identified as wider factors, emphasising how they can be linked to the other related factors.

6.5.5.1 National School Climate

An important series of factors within the wider factors theme, was the current national school climate in England, and how it could negatively affect implementation of a novel tobacco or substance use intervention. Specific examples included the previously discussed restricted budgets, resulting in school staff not being able to implement the programmes they believed would be the most useful.

"in some respects, because we're sort of, our hands are tied really, with what we can and can't implement, because of money"

[SS6, Female, English Teacher]

In addition, some of the local authority participants talked about the direct influence of the restructure to public health services. One of the negative outcomes of the restructure was a tighter restriction on resource provision, and current public health spending.
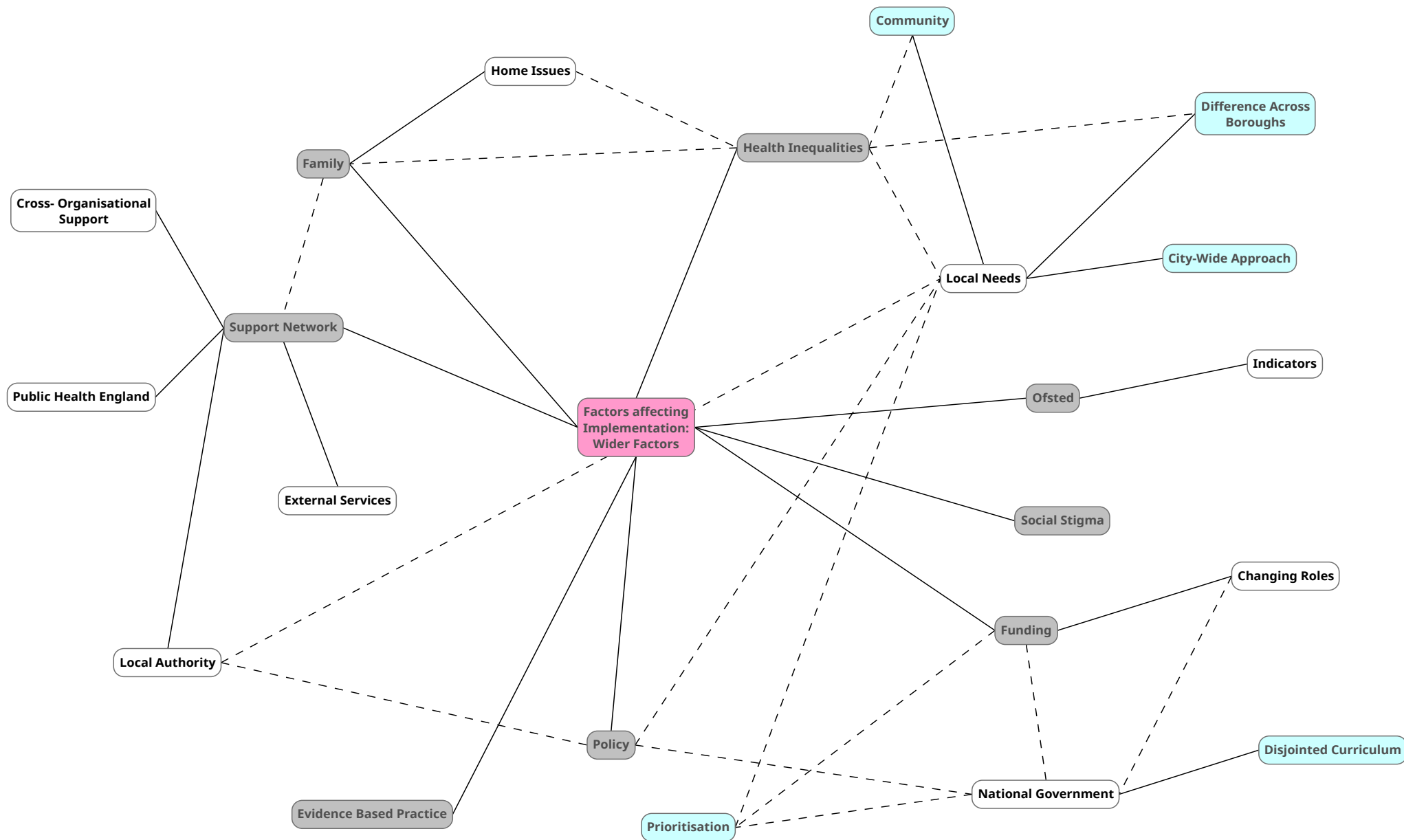
Figure 13: Mind Map of the Codes within the Wider Factors Theme.

One participant in particular reflected upon how the budget cuts to public health had affected the provision of the local, external substance use service in which they worked. By reducing the available number of staff, implementation was significantly more challenging as it reduced the overall capacity and the functioning of the service.

> *"So we have, previously we've, delivered like assemblies, and group sessions to targeted young people […] And we would then deliver that. Part of that's due to the changes that have happened in local authority funding and the way we're funded, […] there's two of us in the team, so we don't have the capacity to go out and, deliver ad hoc, general drugs and alcohol messages"*

> **[LA7, Male, Drug and Alcohol Project Manager]**

Another national challenge was the lack of priority for school-based PSHE education, which is most commonly associated with tobacco or substance use education provision. Interview participants talked about the lack of consistency of PSHE across schools, with a lack of available national standardised curriculum guidance, and also the lack of national priority for school-based pastoral support.

> *"So it's not something that's necessarily as embedded, or as consistent and, that would be something that would be, be, a particular concern for me. I mean I know there was a massive lobbying for PSHE to become, you know, that sort of, statutory part of […] the curriculum and it was disappointing I think, when […] when that didn't happen"*

> **[LA8, Female, Director of Public Health]**

The lack of PSHE standardisation and the provision of health and wellbeing education, were also linked with Ofsted indicators. As discussed within the school theme subsection, interview participants often viewed Ofsted as a driving force with the potential to facilitate implementation. A specific example of this was a participant reflecting upon how implementation could be facilitated by expanding the Ofsted secondary school grading indicators, in order to encourage the provision of high quality, comprehensive tobacco or substance use interventions.

> *"it's all about ticky boxes, isn't it these days […] So if schools have a ticky box, to, to, tick, and you're providing something, or something is provided, at very low cost, very low impact and it's […] going to tick that box, they'll be mad for it"*

> **[LA7, Male, Drug and Alcohol Project Manager]**

6.5.5.2 Differences across Local Authority Boroughs

Assessing the wider factors at a local level, it was apparent that there were distinct differences across boroughs with regards to the local service provision, and how much secondary schools could rely on the external services. One local authority participant talked about an example of an initiative in their borough, which saw the implementation of a city-wide approach to substance use interventions.

> *"I mean we got area-based grant funding to do it, and it was part of, something that went across the community as well, so our programme in schools was matched by a one that went out to all adult services […] and health services. So it was, it was basically ran out across all, non-specialist services across the city at the time, so we were able to say, to schools, you are just part of a city wide programme"*

> **[LA12, Female, Wellbeing and Safeguarding Advisor]**

This was identified as a way in which to facilitate implementation, as the secondary schools involved in the programme saw it as advantageous as they could engage in a broader, city-wide programme. In addition, it reduced the potential of the school being labelled with negative stigma for implementing a substance use intervention.

Another example of the differences observed across local authority boroughs was that a school-based participant talked about their provision of tobacco and substance use education, and how it was largely different to other secondary schools in their area.

> *"Because the way we deliver our pastoral programme, will be very different to* (SCHOOL NAME 1) *or to,* (SCHOOL NAME 2) *[…] Some, some schools have drop down days, we don't do that"*

> **[SS1, Female, Assistant Head Teacher]**

6.5.5.3 The Impact of Family

The final set of findings within the wider factors theme, was the impact of family members, and the influence of family values and perceptions. This was directly discussed in an interview with a school-based participant, who talked specifically about the influence of parents' behaviour, and how family values imposed a bigger influence on a young person, overriding any messages being presented within school.

"We have em, what nine to three, say, roughly, a day. Yes, you see them day in, day out, but you're not the influence, and ultimately, their morals and values, come from home […] So, you could only try and advocate, what it should be […] But if at home, they're buying and selling drugs, what do you do? […] You can't, like we've had instances where you've had, kids taken out with their parents, while they're going, collecting their drug money […] And that's the normal thing"

[SS10, Female, PE Teacher]

This finding was also linked with socioeconomic factors, and the idea that if substance use was an issue within a family, then regardless of the intervention delivered within the secondary school, it would have a negative effect on implementation.

" So, the, the school I was at, was in quite a deprived, well it was, a very deprived area […] Socioeconomic status was not good […] A lot of unemployment, and there would be, substance abuse, in the family"

[SS10, Female, PE Teacher]

Several of the interview participants talked about the influence a parent had around what is delivered within a secondary school setting, and how this affected implementation. Participants reflected upon the fact that if parents were not seen to be in agreement with their child receiving school-based tobacco or substance education, they had the potential to negatively affect implementation by liaising with the school directly or via governors to block the implementation of specific programmes. In contrast, participants also acknowledged that parents could equally act as a facilitator to implementation, and therefore it was highly dependent on the individual and their perspective.

"I think parents could be, either a really good support for making it happen or they could be, a barrier as well"

[LA1, Female, Health Improvement Specialist]

In addition, this highlighted the importance of communication with parents. Communication was characterised by secondary schools regularly liaising with parents via appropriate platforms, such as school-based forums. Open communication encouraged positive

responses to tobacco or substance use interventions, and hence could act as an implementation facilitator.

6.6 Chapter Summary

Chapter Six has presented the key findings obtained from the qualitative interviews. The key findings and contribution to knowledge of Chapter Six have been:

- Twenty-three interviews were conducted with a mixed sample of both secondary school and local authority interview participants.

- Although the sampling frame was not entirely met, over- recruitment was achieved in the local authority participant group.

- The codes were organised into five distinct themes relating to the factors affecting school-based tobacco or substance use intervention implementation: intervention factors, provider factors, young people factors, school-based factors, and wider factors.

- Key factors were observed around the ease and accessibility of the tobacco or substance use intervention, the influence of specific providers, young people's engagement and the impact a school's organisational climate can have on implementation.

- A sixth area within the qualitative data was identified that looked at the interview participants' perceptions around the proposed implementation model, and this will be explored as part of the upcoming model development chapter, Chapter Eight.

Chapter Seven will go on to provide a discussion around the qualitative results that have been provided in this Chapter, linking to the relevant implementation literature in the field.

Chapter Seven

Qualitative Fieldwork- Discussion of the Results

7.1 Overview of the Chapter

Chapter Seven follows Chapters Five and Six, by discussing the qualitative interview data in terms of why the results are meaningful, and how the findings were able to address the fieldwork objectives. In addition, it situates the findings contextually, by making relevant links to the existing implementation literature in the field. Chapter Seven concludes by highlighting the findings that have direct implications for future research, policy and practice and also discusses the limitations of employing a qualitative method as part of this PhD study.

7.2 Summary of Main Findings

Following the assessment and the iterative thematic analysis of the 23 interviews, it was identified that one underlying finding, interlinking and influencing the implementation of tobacco or substance use programmes, was the high level of heterogeneity apparent across the included secondary schools in the North East. The different schools and local authorities offered differing tobacco and substance use education and interventions. For example, some secondary schools employed dedicated members of staff to deliver tobacco or substance use education, whilst others were reliant on form tutors, and the general format, and delivery was highly disparate.

Key findings were observed around the ease and accessibility of the tobacco or substance use intervention, the influence of specific providers, and the impact that a school's organisational climate can have on implementation. Therefore, the codes were organised into five distinct themes relating to the factors affecting school-based tobacco or substance use intervention implementation: intervention factors, provider factors, young people factors, school-based factors, and wider factors. The following sections will discuss how the findings

were able to address the objectives associated with the qualitative fieldwork, whilst linking the findings to existing implementation research in the field.

7.2.1 Discussion of Qualitative Objectives

7.2.1.1 Objective One

To recap, Objective One was:

- To obtain an understanding of the secondary school setting, as a setting in which the short term and long-term health outcomes of adolescents can be influenced.

The first question of the interview schedule was to determine what the specific adolescent health concerns were within a local authority borough or a secondary school. It is important to note that there was an a priori assumption at this stage that interview participants would list either tobacco or substance use in some capacity as an adolescent health concern. This was due to the fact that the public health statistics, as presented in Chapter Two, identify the North East of England to have amongst the highest rates of adolescent tobacco and substance abuse.

In practice interview participants reflected upon a range of public health concerns observed in adolescents, such as mental health, tobacco use, substance use, poor diets, lack of physical activity and risky sexual behaviour. Each participant was able to highlight a plethora of threats to public health; hence it posited the importance of the secondary school acting as a setting for behavioural change interventions to identify and reduce risky behaviours, as they provide access to the captive audience. However as previously stated, the interviews identified that secondary schools displayed heterogeneity in their intervention provision, and also responded to public health concerns differently. Responses were highly dependent on the pupil and the specific behaviour identified, with examples including initiating conversations with young people, involving safeguarding or child protection members of staff, or working with local services. As exploring the data related to Objective One further confirmed the lack of uniformity and the level of complexity within secondary schools; it indicated that future work is needed to explore the secondary school as a setting for implementing health behaviour interventions. This will be discussed in more detail in the future research implications section.

The concept of schools possessing complexity was discussed in depth in the work by Keshavarz et al (Keshavarz et al., 2010). Keshavarz et al reported that schools commonly exhibit characteristics of a complex system, and can be characterised more succinctly as a social complex adaptive system, as the flow of information is largely variable, and school rules

are often fluid due to the control not always being equally distributed (Keshavarz et al., 2010). Similar to the interview findings of the interviews around secondary schools being complex, Keshavarz et al also acknowledged that failing to recognise the complexity of a school system can create fundamental barriers when considering the development and sustainability of health promotion practices (Keshavarz et al., 2010). Several of the interview participants did focus on the importance of secondary school complexity, and how 'one-size fits all' is often unachievable, when considering implementation.

7.2.1.2 Objective Two

Objective Two was:

- To explore the experiences and insights of secondary school staff and local authority staff, in regards to the implementation of tobacco or substance use programmes in the secondary school setting.

Interview participants reported highly disparate experiences of implementing tobacco or substance use interventions. Some participants reflected upon large amounts of experience of implementing substance use or public health programmes within a secondary school, whereas others reported less, or were earlier in their career and had less experience. When assessing the data from secondary school participants, it was apparent that it varied across subject disciplines and specific schools. Some secondary schools expected all staff to deliver tobacco or substance use education as part of tutor time, whereas others dedicated specific sessions to it, such as citizenship where an individual with a greater wealth of knowledge and experience held responsibility for delivery. Again, this links back to the heterogeneity apparent within secondary schools, as different schools implemented disparate levels of intervention and education, future research and policy should be reflective of this.

7.2.1.3 Objectives Three and Four

Objectives 3 and 4 were:

- To develop an understanding of the perceived facilitators to implementation of a substance use intervention within a secondary school setting; and

- To develop an understanding of the perceived barriers to implementation, which can negatively affect the implementation of a substance use intervention within the secondary school setting.

As Chapter Six organised the results in terms of their themes and subthemes, Table 20 has been produced in order to categorise the main findings into facilitators and barriers, as so to clearly address Objectives Three and Four. By presenting the main findings in this way, it sought to not only address Objectives Three and Four, but it provided a valuable summary, and was a useful format for reference during the implementation model development.

Table 20: Summary Table of the Main Facilitators and Barriers to Implementation that were identified during the fieldwork.

	Facilitators	**Barriers**
Intervention Factors	• Acceptable • Coherency • Consistency • Content • Data Driven • Ease • Fidelity • Flexibility • Format • Guidance • Incentives • Linking Health with Attainment • Low Cost • On-going Delivery • Personal Experience • Preparation • Resources • Technology • User Friendly	• Complexity • Content • Fidelity • Format • Front ending • Guidance (lack of) • Inconvenience • Isolation • Preparation (lack of) • Resources (lack of) • Sustainability • Technology • Topic
Young People Factors	• Deciding to Change • Engagement • Knowing how to work with Young People • Motivation	• Confidentiality • Disruption • Hard to Reach • Knowing How to Work with Young People (lack of) • Poor Providers • Trust (lack of)

		• Varying Delivery
Provider Factors	• Caring • Collaboration • Comfortable • Communication • Compassionate • Competent Workforce • Confident • Engagement • Enthusiasm • Experience • Knowledge • Motivated • Passionate • Preparation • Rapport with Young people • Skills • Support • Time • Training	• Role Identity • Capacity (lack of) • Communication (lack of) • Driving Force (lack of) • Engagement • Experience (lack of) • Knowledge (lack of) • Naivety • Power Imbalance • Political Correctness • Pressure • Professionalism • Specialist Staff (lack of) • Sickness • Skills (lack of) • Staff Turnover • Support (lack of) • Training (lack of) • Understanding (lack of) • Confidence (lack of) • Negativity
School Factors	• Communication • Context • Culture • Driving Force • Embedded • Facilitators • Funding • Governors • HT Buy in • Link to Curriculum/ Ofsted • Ownership • Parent Support • Prioritisation • Quality Assessment • Receptive • School Structure • SLT Support • Technology • Time • Value • Whole School Approach	• Academies • Access • Appropriate Setting • Complexity • Cost • Culture • Differing Delivery • Embedding • Engagement • Fatigue • Governors • Head Teachers • Media • Ofsted • Ownership (lack of) • Parents • Pressure • Prioritisation (lack of) • Receptive (lack of) • Reputational Risk • School Philosophy

		• School Structure • Stigma • Technology • Time • Training (lack of) • Whole School Approach (lack of) • Workload
Wider Factors	• Data • Family • Local Needs • Morals and Values • National Government • Ofsted • Policy • Support Network • Wider Approach	• Change • Community • Differences across Boroughs • Family • Funding • Health Inequalities • Morals and Values • National Strategy (lack of) • PH Restructure • PSHE (lack of guidance) • Teacher Training

7.2.1.4 Objective Five

The final Objective Five was:

- To be able to inform the development of the proposed, substance use implementation model.

This objective is explored within the penultimate model development chapter, Chapter Eight, as the specific findings were a better fit within this chapter.

7.3 Comparisons to Existing School-based Literature

Although the findings from the interviews have been presented as an original contribution to school-based implementation research; they can also be put into context by considering the existing work in the field. As previously stated, there was a high level of heterogeneity apparent across the different secondary schools in the North East. This idea was first introduced as part of Chapter Two, which discussed the differences in secondary schools across England, and how their provision, format and styles of health education or Personal Social Health Education (PSHE) varied (Formby and Wolstenholme, 2012, Hayward, 2012). The more complex social

and emotional aspects of public health, such as tobacco use or substance use are most likely to feature as part of PSHE. Although most secondary schools provide PSHE; the content and delivery can vary significantly across the country, and across the differing school types (DfE, 2014). This is because PSHE is classified as a non-statutory subject, and lacks a standardised curriculum, hence PSHE delivery, and the content delivered across schools, remains heterogeneous. In addition, due to the existence of private schools, and the rapid growth of the independently governed academies not following the National Curriculum, the provision and the delivery of PSHE in secondary schools is inconsistent (Formby and Wolstenholme, 2012, Hayward, 2012). Therefore, this presents challenges when considering how to implement tobacco or substance use interventions more widely.

The following subsections will go onto compare and contrast some of the specific systematic review and interview findings with existing implementation research in the field.

7.3.1 Achieving the Right Balance Between Fidelity and Flexibility

An important finding from the systematic review, which was also identified within the qualitative findings, was the importance of a tobacco or substance use intervention exhibiting flexibility. An intervention having flexibility, or a provider being able to adapt or 'cherry-pick' specific elements to increase relevance and acceptability within a particular secondary school, appeared to be an important facilitator for implementation. Additionally, this links with the findings around an intervention being appropriate within a school context, and also being adaptable in terms of school staff capacity and the academic timetable. It is also highly indicative of NPT's Collective Action construct, which examines the degree in which a participant performs all of the intervention tasks as required, and whether the host organisation, in this context the secondary school, is supportive of the new regime (May et al., 2015).

Specific examples of existing research presenting similar results, include Barr et al., 2002, Stead et al., 2007, and Ozer et al., 2010. In general, they all found that substance use interventions that appeared to be too rigid, achieved a lower overall level of implementation fidelity, which had a significant impact on the intervention's effectiveness (Barr et al., 2002, Stead et al., 2007, Ozer et al., 2010). A specific example of implementation fidelity is presented by Wagner et al, who reviewed the methodological dilemmas around implementing a school-based substance abuse intervention. The findings emphasised the importance of recognising the core components of an intervention, and being able to maintain high levels of implementation fidelity (Wagner et al., 2004).

Achieving a balance between fidelity and flexibility was also found in the empirical work and is largely congruent with findings from Woodbridge et al (Woodbridge et al., 2014). Woodbridge et al reported that the implementation of a school-based intervention, designed to achieve positive outcomes in pupils displaying challenging behaviour attributes, was able to benefit substantially from teachers maintaining a malleable and iterative implementation process (Woodbridge et al., 2014). This was because school staff could deliver a meaningful and appropriate programme within their particular school context (Woodbridge et al., 2014). This was found in this study's interview findings as the importance of intervention flexibility was emphasised in order to be salient for a specific secondary school setting.

However, although intervention flexibility was a key finding from the interview data, a paper by Harn et al, exploring the concept of implementation fidelity within schools, argued that fidelity can lack consistency, and hence is not always a reliable indicator for an implementation process (Harn et al., 2013). Harn et al stated that the implementation of interventions *"in the chaotic context of real schools and classrooms will not be consistent from day to day or week to week"* (Harn et al., 2013, page 185). Although Harn et al's proposition is synonymous with the interview finding around secondary schools' heterogeneity, it contrasts the finding around implementation fidelity being important if there is built-in flexibility. Therefore, it was ascertained that implementation fidelity, in the context of the school setting, should be interpreted with caution, and further exploration around the tension between implementation fidelity and flexibility is warranted.

7.3.2 Internal vs. External Providers: Which is Best?

An area which was widely explored with interview participants, was whether they preferred to employ an internal or an external provider to deliver and implement tobacco or substance use interventions. This is reflective of NPT's Collective Action construct as within an implementation process it is important to assess whether the 'work' of an intervention is appropriately allocated to participants possessing the right characteristics and skills (May et al., 2015).

Similarly, to the systematic review findings, responses around the preferred provider were mixed. Several interview participants talked about the benefits of using internal providers as they already have a rapport with students and possessed the skills and knowledge to work with young people effectively. Whilst other participants preferred the use of externals, as external providers did not have to maintain a level of political correctness that school staff did, and in the student's opinion, information sharing felt more confidential. However, in general

there was not a strong argument for which type of provider was more effective at implementing a programme.

In the paper by Rohrbach et al, there was also no consensus around whether an internal or an external provider was more effective at implementing a school-based tobacco or substance use intervention (Rohrbach et al., 2005). Rohrbach et al reported that, out of the four indexes of implementation fidelity, only one, the delivery quality index, was different when comparing external programme specialists with trained secondary school teachers (Rohrbach et al., 2005). This highlighted that there was very little difference in provision and delivery when interventions were implemented by school-based providers compared with external providers (Rohrbach et al., 2005).

A finding obtained from several of the interview participants was that it could be preferential to adopt a team-teaching approach. Team teaching was seen to encompass both the skills and expertise of internal school staff and external providers by working collaboratively and providing interdisciplinary learning. Team teaching has also been found to be effective in other research settings, when delivering academic curriculum in secondary schools, as identified in Jang, 2006 and Chang and Lee, 2010. Although team teaching may be an effective way to deliver and implement school-based interventions, it remains dependent on staff capacity and service provision. As these were both found to be limiting factors within secondary schools it may lack feasibility in practice, however it is an approach warranting future exploration with its potential to facilitate implementation.

A subtheme identified was recognising the importance of providers possessing specific characteristics when considering delivery and implementation, such as enthusiasm, motivation and confidence. This was largely supported by the work of Lochman et al which aimed to assess the impact of provider characteristics when implementing a novel school-based violence prevention intervention (Lochman et al., 2009). Provider characteristics were found to significantly affect the implementation of the intervention, with providers displaying higher levels of compassion and conscientiousness facilitating implementation as it increased the receptiveness of the young people (Lochman et al., 2009).The idea of having motivated providers, who appeared engaged and invested in the content, was frequently identified by interview participants as a factor facilitating implementation, as it was directly associated with a young person's engagement. McBride et al also reported this finding in their paper, as they reported that high staff motivation optimised the implementation of their school-based alcohol intervention (McBride et al., 2002).

Provider motivation can often be associated with a providers' perceived level of job satisfaction and previous research has indicated that teachers in UK secondary schools often have lower

than average levels of job satisfaction (Crossman and Harris, 2006, Brackett et al., 2010). Although this wasn't observed directly within the interview findings, school staff who report a lower level of job satisfaction could have the potential to affect implementation if they appear disengaged or lack motivation. This is supported in the work of Johnson et al which explored the role of teachers' openness to adopt new health behavioural interventions (Johnson et al., 2017). Teachers seen to have a high level of burnout and limited school-based support were less likely to adopt novel practices (Johnson et al., 2017). Subsequently, this offers another area to develop understanding around within future UK school-based implementation research.

7.3.3 The Impact of an Implementation Driving Force

Interview participants were asked to reflect upon employing a nominated individual responsible for managing and driving an implementation process forward. This is considered within the NPT construct Cognitive Participation, as it includes the importance of maintaining an implementation driver. When asked who was most likely to act as an implementation driver, interview participants most commonly stated a member of their secondary school's Senior Leadership Team (SLT) within a top-down approach. However, in contrast, some participants reported that implementation could effectively be driven by a peer-led approach or at teacher level, as they potentially have more capacity and a greater knowledge of the environment.

The importance of employing an implementation driving force is commonly found in examples from the surrounding literature. A paper focusing on the diffusion of a school-based smoking intervention by Little et al, reports the benefit of having an individual responsible for championing the programme (Little et al., 2015). In addition, Sobeck et al, reviewed the implementation of substance abuse programmes, also emphasised the importance of implementation drivers, reporting that principals, teachers, and parents could all act as implementation driving forces (Sobeck et al., 2006). This was observed similarly within the interview findings and following questioning around specifically who should act as implementation drivers there appeared to be a range of responses with no clear consensus around which member of staff or individuals should consistently fulfil the role.

7.3.4 Young People Characteristics

Within the young people theme interview participants talked about the influence of young people and their behaviour, surmising that poor behaviour or disengagement negatively affected implementation. Several of the secondary school staff participants reflected upon the

fact that if young people were not engaged or did not see the value in such an intervention, then it made it extremely challenging, as it had the potential to affect the engagement of their peers. This is supported by the paper by Cahill, which explored the challenges of adopting a school-based drug programme (Cahill, 2007). They found that negative class climate could moderate the effectiveness of the drug programme (Cahill, 2007). In addition, in the realist review around implementing school-based health promotion programmes by Pearson et al, they also reported the importance of pupil engagement (Pearson et al., 2015). In a similar respect to the providers, pupils were said to display higher levels of engagement if the benefits of participating in a health programme were made clear and tangible from the outset (Pearson et al., 2015).

In conjunction with the findings around the intervention characteristics, it was deemed important to ensure that the tobacco or substance use intervention being introduced remained both current and relevant to the young people it targeted. This was also reported by Pearson et al as a factor affecting implementation, as they emphasised the importance of the relevance of a health promotion programme, in order for a programme to be successfully implemented (Pearson et al., 2015). Additionally, this was reported in the work of Gottfredson et al which stated that young people were less likely to engage in overly complex programmes, as they often failed to understand the content, and it did not appear relatable (Gottfredson et al., 1997).

7.3.5 The Pressure on Secondary Schools

An overlapping finding across several of the different themes and subthemes, was observed around secondary schools being under a range of pressures. The most frequently discussed example of this, and one which could be identified as being unique to a school setting, was the pressure placed on academic achievement. A secondary school's core 'business' is ensuring that a young person receives good quality academic provision in order for them to obtain their qualifications. Consequently, due to the significant pressure placed on academic subject provision, the delivery of health education and interventions was often viewed as being second-class or of lower priority (Dewhirst et al., 2014). Interview participants also reflected upon this being affected by the lack of national indicator measurements, and the UK government not consistently prioritising health education in schools.

As discussed in Chapter Two, Public Health England prepared a briefing identifying the importance of secondary school's recognising the link between good health and academic achievement (PHE, 2014). Their findings showed that a pupil's health and well-being is often directly attributable to their engagement and participation within school (PHE, 2014).

Therefore, by offering more of a focus to improving a pupil's health and wellbeing, and implementing tobacco or substance use intervention and education, it is likely to have a positive effect on not only health improvement, but on a pupil's academic achievement.

Again referring to NPT's Collective Action construct is relevant, as Collective Action assesses whether a new intervention is adequately supported by the host organisation, in this context the secondary school and their SLT (May et al., 2015). It could also be argued that it is reflective of the Coherence construct as by being able to see the value, or the improvement to academic achievement by improving health, it could act as a significant facilitating factor to implementation (May et al., 2015).

7.3.6 The Impact of Socioeconomic and Cultural Factors

The differential provision in local services is linked with the subtheme identified around socioeconomic factors. Some of the secondary school interview participants reflected upon the challenges associated with young people living within deprived communities and the difficulties in communicating positive tobacco or substance use messages effectively. The impact of family was often considered to be a barrier to implementation, as family values were considered as more important to a young person than what was being implemented and delivered within school.

Although not specifically within a school setting, this is reflective of the work by Bamm and Rosenbaum, who identified the importance of considering family values when developing a theory to implement rehabilitation medicine approaches (Bamm and Rosenbaum, 2008). The paper reported that families from different cultural backgrounds were able to act as implementation barriers as they held *"distinct beliefs and attitudes towards the intervention"* (Bamm and Rosenbaum, 2008, page 1619). Therefore, it is important that family values and the socioeconomic status of an area are considered as facilitators or barriers to implementation as appropriate, even if they remain outside the control of, or cannot be wholly addressed by the intervention.

The importance of culture is further explored in the paper by Colby et al, which extrapolated cultural grounding to ensure the adaptation of a school-based tobacco intervention programme (Colby et al., 2013). The review recognised the *"centrality of racial/cultural diversity as a primary motivation for adapting prevention programmes"* (Colby et al., 2013, page 192)*,* indicating the importance of ascertaining whether an intervention programme or education is culturally sensitive. This was also observed in the accounts of a school staff interview participant, where they talked about the impact of religion on the implementation

process. Being based within a religious secondary school appeared to affect what could be implemented, as the interview participant reflected upon the challenges associated with securing money for a non-religious intervention.

Finally, the most recent example of existing literature exploring cultural factors can be observed in the work of Oztekin et al (Oztekin et al., 2017). Oztekin et al explored parental attitudes towards substance use and found that school-based adolescents' attitudes were strongly correlated with their parents' attitudes (Oztekin et al., 2017). This was directly observed in the interview findings as several participants reported parents' attitudes towards tobacco or substances having a negative effect on implementation.

7.3.7 Linking with Wider Implementation Literature

As previously stated within the implementation review in Chapter Three, the school-based implementation research is limited in capacity, however the implementation literature in other fields is more extensively populated, and therefore can be considered to add additional context to the findings.

The interview finding around the importance of having a specific individual to act as an implementation driving force, which is expressed within the NPT Cognitive Participation construct, can also be seen as important in other settings outside the school setting. Nemeth et al conducted qualitative work to examine the processes of change that staff used to implement clinical guidelines for primary and secondary prevention of cardiovascular disease within primary care practices using an electronic medical record (EMR) (Nemeth et al., 2008). Key results were modelled around emphasising the importance of leaders setting a clear and measurable vision for staff, whilst involving staff in enabling the proposed goals and vision (Nemeth et al., 2008). Being able to have a measurable vision, with clear goals is likely to be salient within the secondary school setting.

Fidelity is a well-established area of implementation research and was explored as an implementation outcome within Chapter Three. Interview findings were mixed but often reported the benefits of implementation not being overly rigid with flexible components. The exploration of how to manage fidelity has been widespread and recent work by Hoekstra et al, sought to establish the heterogeneity of implementation fidelity, and whether its change over time had the potential to affect the implementation of a health promotion programme within rehabilitation care (Hoekstra et al., 2017). Organisations were categorised as displaying one of three trajectories of fidelity: *'stable high fidelity', 'moderate and improving fidelity',* and

'unstable fidelity' (Hoekstra et al., 2017). However, the quantitative and qualitative data that was collected to assess the organizational and professional differences between the identified trajectories, identified that differences in organizational-level implementation fidelity did not result in outcome differences at patient-level (Hoekstra et al., 2017). This led to the conclusion that an effective implementation fidelity trajectory was contingent on the local organization's conditions, such as the engagement of the physicians (Hoekstra et al., 2017). This is reflective of what was observed in the secondary school setting findings as having positive organizational climates and motivated providers was shown have a positive effect on implementation.

The interview finding around the differing agendas of school staff and being able to see the value in implementing novel programmes has also been replicated within different implementation contexts. A specific example of this can be observed in the research by Ellen et al, which sought to identify the barriers and facilitators associated with implementing supports for Evidence Informed Decision Making (EIDM) in health-care organisations (Ellen et al., 2014). The most commonly identified barriers to implementing EIDM were staff negative attitudes or resistance toward change (Ellen et al., 2014). The participants in the study by Ellen et all also reflected upon a lack of capacity and resources negatively affecting implementation (Ellen et al., 2014), which was highly synonymous with the findings within the interview data as capacity and resources were commonly cited as factors negatively affecting school-based implementation.

Similarly, to the systematic review, there was very little data collected during interviews around the reflexive monitoring construct of NPT. Although one question asked participants whether they had received any feedback after implementation, or conducted an implementation evaluation, responses were limited and most feedback that was discussed, was reported as being collected verbally and lacked standardisation. This finding was similar to the work by Bamford et al who conducted a process evaluation in care homes using qualitative methods and NPT to explore the views of managers, care staff, catering staff, and domestic staff around implementing nutritional guidelines (Bamford et al., 2012). They found there to be no formal systems in place to monitor implementation, and hence some staff members actively resisted implementation, by refusing to make changes, or by sabotaging the implementation process with unacceptable modifications (Bamford et al., 2012). This was highly synonymous with the school-based implementation findings as no interview participants talked about having formal systems to assess their implementation processes, and this could negatively affect implementation and future sustainability. This finding had the potential to directly inform

current policy and practice, and the next section will be used to discuss the specific policy and practice implications of the interview findings in more detail.

7.4 Policy and Practice Implications

This study sought to not only have implications for future implementation research; but also, to obtain findings with the potential to improve both policy and practice within local authorities and secondary schools in England. Therefore, this section details the specific policy and practice implications that were apparent following the completion of the qualitative data collection and analysis. Section 7.5 will go on to present the future school-based implementation research implications.

7.4.1 The Importance of Cost and Resources

The financial cost of implementation was a factor discussed by several of the secondary school staff and local authority interview participants. They believed that in order for a new intervention to be implemented effectively, the intervention should be free and the implementation process should be as low cost as feasible. A specific example includes the interview participants discussing the current financial climate as being a substantial barrier to implementation, as they could not pay for additional resources to facilitate an intervention delivery or to cover the cost of external speakers. Therefore, in order for an implementation process to be salient with a secondary school setting, the financial budget and resource capacity needs to be carefully assessed.

Due to the restrictions in public spending, the cuts to public health services within England and the increasing demands on secondary schools, this finding was not unexpected (Masters et al., 2017). Additionally, as discussed in more detail in Chapter Two, there has been an exponential rise in the number of secondary schools in England, with autonomy over their budgets, and how to prioritise their school spending (Machin and Vernoit, 2011). Therefore, in order for secondary schools to be ready and willing to implement and sustain tobacco or substance use interventions in the future, research should focus around providing non-existent or minimal cost options, without reducing the overall intervention effectiveness. This interview finding around the importance of cost is supported by Gottfredson et al in their book chapter around making prevention work (Gottfredson et al., 1997). The chapter presents the idea that implementation is significantly affected by resource availability, and that any school-based

budget cuts, can affect teachers' ability to provide adequate resources (Gottfredson et al., 1997).

Similarly, limited financial resource is also associated with the lack of available intervention specific resources. Interview participants talked about the importance of using high quality, visual resources as they increased the level of engagement of young people, hence facilitating implementation. This has been observed in previous research, with specific examples of school-based papers including Domitrovich et al., 2008, Thaker et al., 2008, Kremser, 2010 and Ozer et al., 2010. Therefore, an implication for practice is that a tobacco or substance use intervention that is costly, or requires the availability of resources, can act as an implementation barrier.

7.4.2 The Difficulties Associated with Access

A factor, which is largely specific to implementation within secondary schools, and a novel finding, is the increasing lack of access to secondary schools, and their reduced engagement with local authorities. Although some local authority interview participants reported having good links with secondary schools, several talked about finding it more difficult to access, and ultimately support and influence the health service provision within schools. This creates challenges when exploring how to positively facilitate implementation universally in this setting. This finding was supported by the recent research by Brown et al which sought to explore how knowledge exchange within Canadian secondary schools could support the implementation of health promotion programmes (Brown et al., 2018b, Brown et al., 2018a). The results showed that forming partnerships between the schools and public health units allowed a better understanding of the school environment and could be used as a mechanism for schools implementing health promotion programmes (Brown et al., 2018b, Brown et al., 2018a).

When unpacking the reasons behind the lack of engagement within this qualitative work, it was thought to be a multifaceted issue, with factors such as capacity, motivation, and independence playing a role. However, several interview participants talked about the access difficulties being directly correlated with the introduction of academies in England. As largely discussed within Chapter Two, the Academies Act was introduced in 2010 (Parliament, 2010), providing secondary schools an opportunity to gain their independence, by allowing them to take control of their delivered curriculum, and their staffing bodies (Parliament, 2010). The

growth in academies has resulted in secondary schools gradually moving away from their links with the local authorities and public health services.

This was largely reflected upon in the interviews as local authority participants talked about their experiences of reduced communication with academies in their borough and their lack of engagement. Some of the secondary school interview participants included in the sample worked within an academy, and although their responses tended to be positive towards implementing tobacco or substance use interventions, cost was central to their responses, and the relationships between their school and their local services, were not as apparent.

Although not specific to the implementation of tobacco or substance use interventions, the surrounding literature supports the local authority interview participants' responses around the difficulties with access. A paper by West and Bailey, published in 2013 following the introduction of academies, reports how local authorities have been slowly replaced as the main provider of secondary school level education, which poses challenges when considering how to disseminate, communicate and implement novel interventions within secondary schools in the future (West and Bailey, 2013). Therefore, a novel practice and policy finding can be reported around the potential of academies to negatively affect implementation and this will be further expanded upon in the future research section.

7.4.3 The Issue of School Reputational Risk

Several interview participants reflected upon the impact of a perceived reputational risk on secondary schools. The finding centered around the idea that secondary schools did not want to be identified as having a problem with substance use, resulting in some schools appearing reluctant to implement new programmes irrespective of the local need. An example of this was explored with several of the local authority participants expressing their frustration around secondary schools not wanting to damage their reputation by adopting a new substance use programme, even though the potential benefit was high, as the area had extremely high numbers of alcohol related hospital admissions.

Previous research, including the findings in the systematic review, has identified that substance use programmes in particular can be associated with negative stigma (Stormshak et al., 2005, Luoma et al., 2007). In addition, Corrigan et al reported that young people experiencing alcohol issues are significantly more likely to be stigmatized in comparison to those with physical health conditions (Corrigan et al., 2005). Therefore, preventing reputational risk is an important consideration when reflecting upon school-based

implementation of tobacco or substance use interventions. A key implication for policy and practice associated with this, resulted from a local authority interview participant talking about the benefits of implementing a 'city-wide' approach to tobacco and substance use interventions. By including secondary schools in a wider, non-specific programme, it was seen to reduce the negative stigmatization and hence had a positive effect on the implementation process. The introduction of a wide-spread tobacco and substance use intervention programme offers an avenue for future implementation research, due to the great potential implications for policy.

7.4.4 The Differences between Local Authorities and Schools

Differences were found between the local authorities and the provision of services within these, with subsequent consequences for secondary schools. Some interview participants talked about working collaboratively with local services and having dedicated in-school leads to provide and manage tobacco or substance use education. In contrast, other interview participants talked about not being able to have specific members of staff within their school to focus on tobacco or substance use education, due to capacity, and also the budget cuts affecting local services making it more challenging to work with secondary schools.

This differential provision of services and staff capacity makes universal school-based implementation significantly more challenging. Although achieving universal implementation would be largely unfeasible due to the previously discussed highly disparate, school contexts and young people and staff; going forward, a key consideration for policy and practice would be to explore how to improve access to resources and improve school's communication with local tobacco or substance use services or charities. Ways to facilitate this need to be explored further but could include better signposting to related charities or organisations that could provide real-word support and resources, and also increased communication between local authorities and secondary schools, to adopt more of a 'joined up working' approach. This has the potential to reduce adolescents being disadvantaged when it comes to the availability of tobacco and substance use interventions due to their postcode, by facilitating more comprehensive implementation.

Linking in with this, and although it was not explored in great depth, it is also important to acknowledge the fact that there were differences observed between the responses from local authority participants, and the secondary school staff participants. Specifically, local authority participants appeared more receptive to the idea of implementing new tobacco or substance use interventions, as due to their public health backgrounds and experience, they could readily see the value in implementing such programmes and doing so was in keeping with their

specific outcomes around improving population health. However, school staff, were warier and could not always reflect upon the value of implementing such interventions, and the factors around capacity, cost and academic achievement were seen to be big contributors to this. By facilitating increased communication between the two sets of practitioners, it has implications for policy and practice and would likely be beneficial to improving implementation. As by acknowledging the conflicting agendas between local authority practitioners and school staff; it may facilitate working together to implement tobacco or substance use interventions more effectively in the future.

7.5 Future Research Implications

Following on from the implications to policy and practice, it was important to determine the specific implications for future implementation research. As previously discussed, interview participants reflected upon a range of public health concerns observed in young people, such as mental health, tobacco use, substance use, poor diets, lack of physical activity and risky sexual behaviour. But by exploring the data further, it was identified that these health concerns were often addressed differently and that secondary schools were largely heterogenous. Due to the lack of uniformity and the level of tortuousness apparent across the secondary schools; it was able to add weight to the argument that future research would be valuable to explore the complexities within a secondary school as an implementation setting further. By exploring the heterogeneity and the confounding factors in more detail, it would allow for a better understanding on how to improve implementation processes and to offer more wide-spread health interventions successfully.

Although the focus of this PhD study was factors affecting implementation, opposed to exploring specific school-based interventions, it is important to acknowledge that some of the findings that were observed in regards to implementation may not be directly generalisable across the broad range of school-based tobacco or substance use interventions. Examples of the different types of school-based tobacco or substance use interventions briefly explored in Chapter One included; curriculum based interventions, social environment interventions, or whole school interventions (Vreeman and Carroll, 2007). A specific example of this, could be that the findings explored within the wider factors theme around socioeconomic factors and parental influences may hold direct relevance when considering a social environment intervention, but may prove less important when considering the implementation of a curriculum-based intervention. Therefore, not all of the qualitative findings will be universally relevant across the spectrum of school-based tobacco or substance use interventions, and

subsequently this would be an interesting area to explore further in future work to determine whether specific types of school-based interventions are more challenging to implement than others.

Another area for future research would be the exploration of cost, as previously stated, both the financial costs and resources costs were identified as being important indicators affecting school-based intervention implementation. Future research should be targeted to explore how costs can be better managed; for example, if cheaper providers could implement interventions, if the intervention resources could be of low cost, or if contact time could be reduced to ease staff capacity or lessen academic disruption within a secondary school. Cost- reducing factors should be considered as early as the intervention development stage, in order to be able to facilitate implementation and to ensure that the overall intervention effectiveness or implementation process is not compromised.

Several of the interview participants talked about the introduction of the academy system and how they have had a negative effect on both communication and implementation. As there were no previous examples of research around the introduction of academies and how they have specifically affected the provision and implementation of interventions, it highlights an area of interest for future research. Furthermore, as reported in Chapter Two, the number of academies in England has increased significantly, with over two thirds of secondary schools now existing as academies, it remains a highly topical area for the future.

As the systematic review identified which kind of providers would be best-suited to delivering and implementing a school-based tobacco or substance use intervention as an area to explore, this was addressed by a question in the interview schedule. However, as previously reported there did not appear to a distinct individual universally recommended by participants. Therefore, this offers another avenue for future research to explore whether it does not matter which provider is used or whether a specific provider is more effective. Linking seamlessly to the choice of providers; there also appeared to be no clear consensus around which individual/s, either inside or outside of a secondary school, should act as the implementation driving force or implementation champion. Interview participants generally talked about members of a school's SLT acting as implementation drivers, but often participants reflected upon their lack of capacity and enthusiasm, leading to a lack of whole-school momentum and poor sustainability. Consequently, this presents another area in which to explore within future school-based implementation research, in order to be able to determine whether different

individuals, e.g. pupils or teachers or head teachers, are more effective as implementation drivers.

Finally, similar to the systematic review, it appeared difficult to obtain any meaningful data around implementation process evaluations, or whether any timely feedback or iterative modifications had occurred. The question around evaluating implementation was added to the interview schedule after identifying very few results indicative of NPT's reflexive monitoring construct within the included papers of the systematic review. It was hoped that more of an insight could be gained into what evaluation methods were the most effective, whether they were theoretically driven, or whether they proved useful in improving school-based implementation and sustainability. However, the interview data obtained was limited and the few participants that did reflect upon implementation evaluations, provided little detail, with the majority of evaluations existing as verbal feedback and no mention of implementation theory. Linking back to the a priori assumptions, it further highlighted the gap between research and practice, and emphasises the importance of researchers working with practitioners to facilitate future evaluation processes. There remains to be a gap in the evidence base around the execution of a comprehensive school-based implementation evaluation, and as they can provide an insight into improving the overall implementation process it would prove valuable to revisit this in future research. Chapter Seven will conclude by discussing some of the specific limitations of this qualitative fieldwork and how they were ameliorated.

7.6 Limitations

Even though it was deemed most appropriate to adopt a qualitative research method to explore the aims and objectives, as discussed in the rationale and methods within Chapter Five, there were some limitations associated with employing the qualitative approach that will be acknowledged in this section.

Although qualitative methods are responsible for the generation of detailed and insightful data, with the potential to inform theoretical development; it has been argued that due to the nature of the methods, the data that is obtained can lack a degree of generalisability (Guba and Lincoln, 1994, Morse, 1999, Collingridge and Gantt, 2008). This lack of generalisability is also correlated with the degree of fidelity, and hence the reproducibility of the results obtained is difficult to achieve in practice. The lack of reproducibility was not a high priority for this study component as it sought to obtain individual participants' unique insights and experiences. However, the issue of generalisability needed to be considered more closely due to the

primary outcome of the findings, to inform the development of the implementation model. Although the proposed implementation model was not intended to be universally applicable to every secondary school, it was important to get a wide-ranging set of viewpoints to inform the model as far as possible. From the interview data, it was clear to see patterns emerging with specific factors reflected upon in numerous interviews, which led to the development of five main themes. As these themes were populated with different responses from a range of participants, it was assured that analogous factors were coming through the data, and that they could be easily used to inform the model development.

As discussed within Chapter Five, the interview participants were recruited using a snowball sampling method. Snowball sampling was used to recruit participants, as individuals working within the secondary school health field would have a greater awareness of their colleagues' responsibilities and previous experience. In addition, by asking public health practitioners working directly within young people's tobacco, drug and alcohol services to suggest additional participants; it ensured that those individuals with the most knowledge and experience of the topic were invited to take part in an interview. Although this was identified as being the most appropriate sampling method for this fieldwork, it was difficult to ascertain that a high level of representativeness was achieved. However, representativeness was not a key priority in this fieldwork, as obtaining the in-depth accounts of participants' experiences of tobacco or substance use intervention implementation, developed the understanding of the factors affecting implementation and the contextual information behind why things operate or exist within a school setting.

In practice, the recruitment of participants was challenging, and inevitably took longer in than initially accounted for. The response rate of the local authority participants was high, and greater than the initial proposed sample, allowing a broader range of participants and different job roles to be interviewed. However, it appeared to be significantly harder to recruit secondary school staff. Some of the potential reasons behind this included school staff having restricted capacity or time to engage in research, staff having limited previous experience of implementing tobacco or substance use interventions or simply not wanting to be involved. In addition, it was proposed that low response rates could also have stemmed from the recruitment method being ineffective in some instances. For example, due to the high volumes of email correspondence to Head Teachers, recruitment emails could have been missed or overlooked. Therefore, in future recruitment of school staff participants it may prove worthwhile to employ a combination of different approaches such as telephone calls or written communication, in order to be able to increase the responses from potential participants.

As the participants were recruited entirely from the North East of England; the findings could not be used to explore wider regional differences that may be apparent across different areas within the UK. Nevertheless, there was a wide-ranging coverage of interview participants from the twelve local authority boroughs within the North East, with over two thirds of the boroughs being represented by an interview participant. As each borough was seen to have their own local health priorities and challenges and varying population residing there, responses did appear different across boroughs.

In addition, the sample for the semi-structured interviews did not extend to include interviewing young people. This was due to the belief that the secondary school-based providers, and the local authority service providers and commissioners are specifically responsible for directing implementation processes, and not young people themselves. Although it would be deemed valuable to get a young person's views on a specific tobacco or substance use intervention and whether it appeared to be acceptable to them in practice, it was believed that there would not be enough value to exploring the specific implementation processes and the factors affecting them with young people, as it would be unlikely for them to be involved with all stages of implementation.

Finally, consistent with the systematic review, NPT was employed as the implementation theory of choice to analyse the qualitative data. Although NPT was initially developed for use within a healthcare setting, this study has demonstrated the transferability to other settings because it allowed the flexible consideration of the factors affecting school-based implementation. However, NPT was not designed to consider implementation within a secondary school, and at times some of the qualitative findings were found to fall outside of the four constructs. Whilst it could be argued that another implementation theory could have been used to accommodate this, the decision was made that NPT's primary health focus would be most relevant and useful when exploring the implementation of tobacco and substance use interventions.

7.7 Chapter Summary

Chapter Seven has discussed the results of the qualitative interviews, whilst touching upon some of the relevant results of systematic review. By discussing how these results addressed the research objectives, and by linking them to existing school and implementation literature, it functioned to assess how they could contribute to future research, policy, and practice.

The key findings and contribution to knowledge of Chapter Seven have been:

- Public health concerns were often addressed differently within secondary schools and that different school types were largely heterogenous. Differences were found between the local authorities and the provision of services and this differential provision of services and staff capacity makes universal school-based implementation challenging.

- There was no consensus around which individuals, should act as an implementation driving force or deliver the tobacco or substance use, enabling an area to explore within future school-based implementation research.

- Young people's poor behaviour or disengagement negatively affected implementation and the impact of family values was often considered as a barrier to implementation.

- Both the financial costs and resources costs were identified as affecting school-based intervention implementation. Future research should explore how costs can be better managed and should be considered as early as the intervention development stage.

- Few participants reflected upon implementation evaluations. There remains to be a gap in the evidence base around the execution of a comprehensive school-based implementation evaluation, and as they can prove valuable when attempting to improve an implementation process, it would be useful to incorporate this into future research.

- The qualitative work demonstrated the transferability of the NPT to other settings outside of healthcare as it allowed the flexible consideration of the factors affecting school-based implementation.

The findings from the systematic review and the qualitative data collection were considered comprehensively and used to inform the development of the implementation model which will be presented in the penultimate chapter of this thesis, Chapter Eight.

Chapter Eight

Development of the School-Based Tobacco or Substance use Intervention Implementation Model

8.1 Overview of the Chapter

The objective of Chapter Eight is to present the development of the secondary school-based, tobacco or substance use intervention implementation model, by drawing upon the findings from the systematic review (Chapter Four) and the qualitative study (Chapters Five, Six and Seven). Chapter Eight starts by briefly introducing the implementation model and outlining the methods that were employed during development. It will then summarise the literature review that was undertaken to develop the model, which critically discusses existing school-based implementation theories and models, and how they could inform the development process of the present model. Version 1.0 of the model is then presented in combination with the results from two sources of user-focused validation data: (1) Results of the final question of the qualitative interviews, and (2) Results of Patient Public Involvement (PPI) work assessing the initial structure of the implementation model. Both activities sought to explore the views of secondary school and local authority participants around the perceived usefulness of an implementation model, and what format would be the most acceptable to intended users of the model. Chapter Eight concludes by summarising and discussing how the implementation model was directly informed by the earlier work in this PhD study, the strengths and limitations of the model, and how it will be informed and developed in future work.

8.2 Introduction to Implementation Model Development

An objective of this study was to develop a school-based implementation model:

4) To utilise research findings to develop an early version of an implementation model, which will be suitable for use in a secondary school setting to facilitate the implementation of a tobacco or substance use intervention**.**

Like others in the implementation science field (Nilsen, 2015), the implementation model was proposed as being a guide or a tool to be used by school practitioners or implementation researchers looking to implement a secondary school-based tobacco or substance use intervention. Chapter Three highlighted the importance of the use of implementation strategy and theory whilst reflecting upon the previously discussed school-based implementation research and practice. Including the work presented within this thesis, very few examples of school-based implementation research employed theory or implementation facilitating tools. Therefore, this PhD study concludes its empirical work by documenting the development of an implementation model and how the findings presented in previous chapters (literature reviews and qualitative fieldwork), plus an additional review of the literature and a PPI component, facilitated the model development process.

8.3 Aims and Objectives

The aim was to create an implementation model, which could be used by school practitioners or researchers, in order to facilitate the implementation of a secondary school-based tobacco or substance use intervention.

The research question that this work component sought to answer was:

- Research Question 4: 'Which factors would need to be considered in order to ensure a successful implementation model is operationalized?'.

8.3.1 Objectives

The model development work had the following specific objectives:

1) To review the existing literature around implementation model development, in order to obtain any developmental insights;

2) To review existing school-based implementation tools and models to assess the reasons behind their limited applicability;

3) To explore the responses to the final question of the qualitative interviews around the use and format of the proposed implementation model;

4) To triangulate all of the previous findings to inform the development of a school-based tobacco or substance use intervention implementation model;

5) To conduct a small-scale Patient and Public Involvement (PPI) investigation to obtain initial thoughts on the implementation model; and

6) To inform future school-based implementation research and practice and inform a future postdoctoral implementation model development pilot.

8.4 Methods for Developing the Implementation Model

As highlighted in the findings of both the systematic review (Chapter Four) and the qualitative fieldwork (Chapters Five, Six and Seven), it was important to develop an implementation model that was parsimonious and accessible to secondary school staff. Therefore, in order to inform the development of the implementation model, a range of different data sources were consulted and a comprehensive model development protocol was produced (provided in Appendix C.1). Figure 14 has been used to diagrammatically represent the different sources that informed the development. The upcoming subsections will discuss the different sources and how they were used in greater depth.
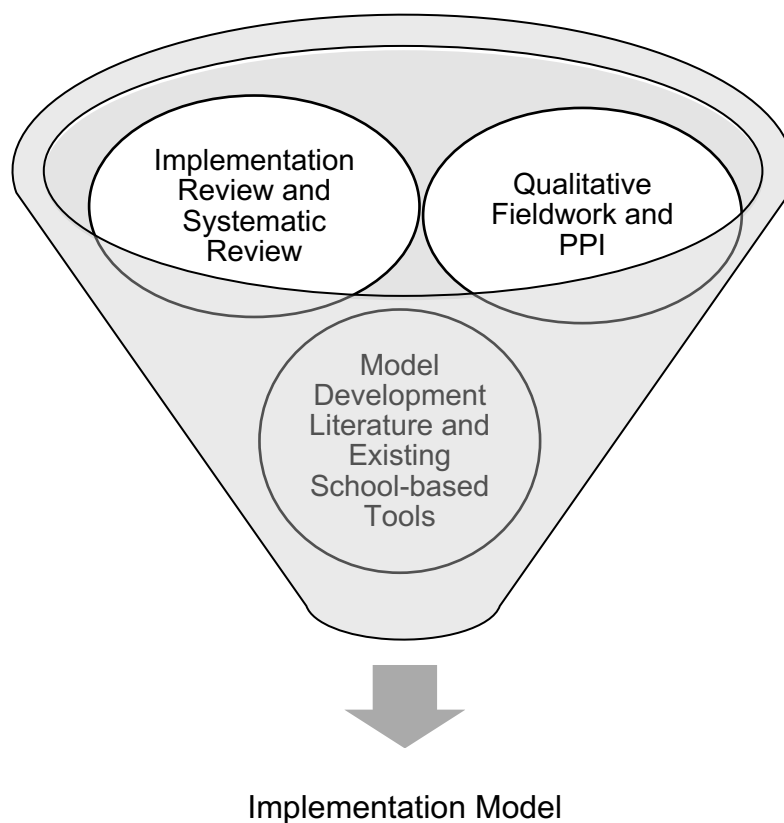
Figure 14: Implementation Model Development Process.

8.4.1 Model Development Literature Review

To ensure the implementation model development process was informed by the insights from existing research, the current literature around implementation model and theory development was reviewed. Although Chapter Three provided a general overview of the available evidence around implementation theory; by adopting a specific model development lens when reviewing the literature, it provided the starting point to the model development. The model development literature searches were less systematic in nature in comparison to the systematic review searches. This was because it was advantageous to be guided by the literature that had been previously collected as part of this thesis, in order to address the model development objectives. All of the previously discussed implementation literature was therefore searched for any model development insights and reference screening allowed a snowball searching method of literature to be undertaken. In addition, searches on PubMed and Google Scholar were conducted to ensure no important literature had been overlooked and both peer-reviewed and non-peer-reviewed material was considered. This approach was also adopted

to identify any pre-existing school-based implementation tools and models that could provide developmental or content guidance.

8.4.2 Role of Implementation Theory

As discussed, the model development literature review allowed other implementation theoretical approaches to be considered in order to inform the proposed school-based implementation model. In addition, as Normalization Process Theory (NPT) was used to inform both the systematic review and the data collection; the implementation model was also informed by NPT. As a brief reminder, NPT is an implementation theory that facilitates the exploration of the factors affecting whether an intervention can be incorporated into professional practice, and the context in which the work of the new intervention happens (May et al., 2009a).

8.4.3 Qualitative Work

The findings of the earlier qualitative work were also used to develop the school-specific content of the model. By identifying the main factors affecting implementation for schools, it provided a starting framework for the model. The final question of the interview schedule asked participants about the proposed implementation model. Participants were asked about whether they thought an implementation model would be useful, and how it could be used in their secondary school or area. Answers to these questions thus informed the model development.

8.4.4 Patient Public Involvement (PPI)

An additional component to the implementation model development was conducting Patient and Public Involvement (PPI) work to assess the usability, the layout, and the general content of the implementation model. PPI is the process of incorporating patients', or more generally stakeholders', perspectives into research, and are used to inform research methods or findings (Staniszewska et al., 2011). By building in the perspectives of patients or stakeholders in research, it can enhance the quality, the relevance, and the appropriateness of the research findings, and can encourage collaborative partnerships during the research process (Staniszewska et al., 2011).

By undertaking PPI in this study, it gave the prospective users of the implementation model a platform in which to provide their thoughts on the initial outline of the model. The PPI work involved engaging with a small sample of three secondary school staff that were previously known to the researcher, across two different secondary schools within the North East of England. A brief summary of the background and the aims and objectives of the PhD study were presented to the PPI participants. Following an explanation of the implementation model, and how it would potentially be used within a secondary school to facilitate the implementation of future tobacco or substance use interventions, the PPI participants were provided with a hard copy of the model and a feedback form. The secondary school staff were then asked to reflect upon and respond to the following questions as openly and honestly as possible:

1) Do you think this tobacco and substance use intervention implementation model is clear and accessible?

2) What do you like about this implementation model?

3) What do you think could be improved?

4) Would you find it useful to facilitate the implementation of a tobacco or a substance use programme within your secondary school?

Following the completion of the PPI session, the responses of the three participants were collated and tabulated and will be discussed in subsection 8.5.5.

8.5 Results of the Model Development Stages

8.5.1 Implementation Model Development Literature Review

To ensure the implementation model was informed by existing research, literature searches around implementation model and theory development were conducted. Nilsen's taxonomy of implementation theory provided a starting point to determine the type of implementation model that would be best suited for the school setting (Nilsen, 2015). This led to the exploration of specific examples of the theoretical approaches, in order to obtain developmental insights.

The literature review culminated in searches of existing school-based implementation models in order to determine their content and usability.

8.5.1.1 Determining the Type of Implementation Model

Drawing upon Nilsen's taxonomy of different implementation theoretical approaches (as reviewed in greater depth within Chapter Three), it was determined that no single 'type' of formulation (e.g. a Process model) was appropriate for developing the working implementation model. Through consideration of the study's objectives and the primary aim of the study, it was determined that the implementation model would be best suited to include elements of a process model, a determinant framework, and an implementation theory, as it sought to guide and inform school-based implementation (Nilsen, 2015). Evaluation frameworks were dismissed given that, as their name suggests, they seek to evaluate an implementation process, whereas the primary objective of developing this implementation model was to facilitate implementation.

To summarise, a process model can be described as a guide, or a tool providing the steps of an implementation process (Nilsen, 2015). Process models do not identify or explain the factors affecting implementation, unlike a determinant framework which provides an assessment of the factors affecting implementation (Nilsen, 2015). As the primary aim of this PhD study was to provide an assessment of the factors affecting the implementation of a school-based tobacco or substance use intervention, it was ascertained that the findings would be most likely suitable to inform the construction of a determinant framework. An implementation theory can be described as a supposition or a system of ideas intended to explain something (Oxford, 2015). Due to the scope of this PhD study, it limited the ability to comprehensively develop and test a fully-fledged implementation theory.

Consequently, the development of an initial framework was considered to be a more realistic prospect, with the scope for further development in the future. However, the implementation model sought to incorporate aspects of all three approaches (process model, determinant frameworks and implementation theory) by offering a guide to implementing school-based tobacco or substance use interventions, whilst also providing an overview of the factors affecting implementation, as informed by the theoretically driven systematic review and qualitative findings. Therefore, it was important to explore the most commonly used examples of implementation process models, determinant frameworks, and theories to assess what strategies were employed during their development.

8.5.1.2 Development Methods

To determine which process models, determinant frameworks, or implementation theories should be reviewed during the model development process, a recent study by Birken et al was used as a point of reference (Birken et al., 2017). The work of Birken et al was consulted as it was the first piece of published implementation research that assessed the criteria used by researchers, to facilitate their choice of an implementation theoretical approach (Birken et al., 2017). In the paper, the authors presented a list of the most commonly used implementation theoretical approaches, as shown in Table 21, by seeking responses to a questionnaire from implementation scientists (Birken et al., 2017).

Table 21: Results of the Most Commonly Used Implementation Theoretical Approaches.

Implementation Model, Framework or Theory	Percent
Consolidated Framework for Implementation Research (CFIR) *	**20.63**
Reach Effectiveness Adoption Implementation Maintenance (RE-AIM)	13.90
Diffusion of Innovation	8.97
Theoretical Domains Framework (TDF) *	**5.38**
Exploration, Preparation, Implementation, Sustainment *	**4.93**
Proctor's Implementation Outcomes	4.93
Organisational Theory of Implementation of Innovations	3.59
Knowledge to Action (KTA) *	**3.14**
Implementation Drivers Framework*	**3.14**
Active Implementation Framework	2.69
Theory of Planned Behaviour	2.69
Behaviour Change Wheel	2.69
Normalization Process Model/ Theory (NPM/ NPT) *	**2.69**
Promoting Action on Research Implementation in Health Services (PARIHS) *	**1.79**
Social Cognitive Theory	1.79
Intervention Mapping	1.79

Interactive Systems Framework	1.79
Organizational Readiness (OR) Theory*	**1.79**
Replicating Effective Programmes	1.35
Social Ecological Framework	1.35
QUERI	1.35
PBIS	1.35
Social Learning Theory	1.35
Other	4.04

* Denotes the process models, determinant frameworks, or implementation theories
that were extracted.

Reproduced from Birken et al 2017.

To inform the implementation model development, the process models, determinant frameworks, or implementation theories were extracted from Table 22 (shown in bold). Any of the most commonly used approaches that did not fall into these three classifications (i.e. were a classic theory or evaluation framework), were not considered. The primary development reference for each approach was obtained, along with any supporting systematic reviews or widely cited examples. All of the papers were reviewed and any relevant information relating to the approach's development was extracted and tabulated. Tables 22, 23, and 24, have been used to display the developmental insights gained from reviewing the different models, frameworks, and theories, whilst noting their primary functions.

Table 22: The Most Commonly Used Process Models

Name	Purpose/ Components of Model	Development Insights	References
Canadian Institute of Health Research (CIHR) Model of Knowledge Translation (KT)	CIHR proposed a KT model, based on a research cycle, which could be used as a conceptual guide for KT. CIHR identified six opportunities within the research process at which interactions and partnerships that will help facilitate KT could occur: 1. Defining research questions and methodologies 2. Conducting Research 3. Publishing research in accessible formats 4. Placing findings in the context of other sociocultural norms 5. Making decisions informed by research findings, and 6. Influencing subsequent research based on the knowledge use.	1. Define key knowledge translation terminology. 2. Qualitative work. 3. Network/ use a snowballing approach to work collaboratively with stakeholders.	(Smylie et al., 2004)
Knowledge to Action (KTA)	KTA relays the process of exchanging knowledge, leading to a specific end goal, or action. The model navigates knowledge translation from the knowledge producer to the end user. The knowledge funnel represents the creation of knowledge, and the knowledge refinement process. Around the outside of the funnel are seven distinct action phases, which can occur sequentially or simultaneously.	1. Define key terminology by reviewing relevant implementation literature. 2. Cultivate appropriate relationships and identify relevant stakeholders who would use planned action theories. 3. Acknowledge the *'complex, iterative and dynamic'* nature of knowledge translation and the fact that boundaries are not always clear.	(Graham et al., 2006)

Table 23: The Most Commonly Used Determinant Frameworks

Name	Purpose/ Components of Framework	Development Insights	Reference
Consolidated Framework of Implementation Research (CFIR)	CFIR is a meta-theoretical framework, which assimilates five different domains: **1. Intervention Characteristics** **2. Outer Setting** **3. Inner Setting** **4. The Individuals Involved,** and **5. Implementation Process** The five domains are used to provide an understanding of an implementation process by providing a list of the constructs that are believed to positively or negatively affect implementation, but it does not specify the interactions between the different constructs.	1. Comprehensive review of terminology and constructs from existing theories- leading to combining constructs across theories, while separating and delineating others. 2. Use snowball sampling for literature reviewing. 3. Review theories that relate to dissemination, innovation, organisational change, implementation, knowledge translation and research uptake, that had been published in peer reviewed journals, until theme saturation had been reached. 4. Allow fluidity and adaptability.	(Damschroder et al., 2009, Kirk et al., 2016)
Conceptual Model of global factors affecting implementation in public service sectors	The conceptual model seeks to identify what and why specific factors are likely to be important at different implementation phases. The four phases of the model include:	1. Review the literature; but instead of replicating other literature reviews, the conceptual model should emphasise the fact that implementation models are *'shaped by the service contexts chosen for emphasis and the contextual levels that serve as primary organising arenas'.*	(Aarons et al., 2011)

(Exploration, Preparation, Implementation, Sustainment)	1. **Exploration** 2. **Adoption/Preparation** 3. **Implementation** and, 4. **Sustainment**	2. Emphasise the role of service delivery organisations and service systems.	
Implementation Drivers Framework	The Implementation Drivers are processes that can be leveraged to improve competence and to create a more hospitable organizational and systems environment for an evidence-based programme or practice. The main three drivers are: 1. **Competency Drivers:** mechanisms to develop, improve and sustain implementation. 2. **Organisation Drivers** –mechanisms to create and sustain hospitable organisational and system environments, and 3. **Leadership Driver** –the right leadership strategies for the types of leadership challenges.	1. Review the literature and previous uses of theories, to identify depth and specificity. 2. Learn from the literature review and interactions with implementation specialists, qualitative interviews and meta-analysis methods to develop 'best practice' implementation drivers.	(Fixsen et al., 2013)
Promoting Action on Research Implementation in Health Services (PARIHS)	PARIHS seeks to facilitate the assessment of different elements, which influence evidence-based practice. It states that in order to achieve effective implementation, there needs to be an assessment of: **Evidence** **Context,** and	**Phase One:** Develop and undertake a content analysis- working with the relevant stakeholders to improve practice. **Phase Two:** Identify case studies and research questions specifically focusing on the factors practitioners identify as important when enabling evidence in	(Kitson et al., 2008)

		practice, and whether the three concepts (to the left) are key elements for getting research into practice. **Phase Three:** Develop a diagnostic and evaluative tool using PARiHS.	
	Facilitation.		
Theoretical Domains Framework (TDF)	The TDF was originally developed for use within the healthcare setting, but its widespread usability, has allowed it to be employed in different intervention settings. It consists of 14 different domains, which can be used to identify the perceived barriers to implementation, whilst also assessing the modifiable factors that arise when developing novel interventions.	Select overlapping theories deemed to be challenging. Develop and modify processes around: (i) *Identifying relevant theories and constructs.* (ii) *Simplifying these into domains.* (iii) *Evaluating the importance of domains.* (iv) *Evaluation and synthesis of domains and constructs.* (v) *Validating domain list.* (vi) *Pilot interviews to obtain feedback on domains.*	(Atkins et al., 2017)

Table 24: The Most Commonly Used Implementation Theories

Name	Purpose/ Components of Theory	Development Insights	References
Normalization Process Model/Theory (NPM/ NPT)	NPT was constructed to bridge the gap between research and practice, by facilitating the understanding around the factors affecting whether an intervention can be incorporated into professional practice. NPT concentrates on the implementation, embedding, and the integration of new technologies and organisational innovations, by considering four theoretical constructs: **Coherence** **Cognitive Participation** **Collective Action,** and **Reflexive Monitoring.**	**Phase One:** Develop empirical generalisations through qualitative work identifying normalization as the end point of implementation. **Phase Two:** Build an applied theoretical model- Normalization Process Model (NPM) was developed as a set of analytic propositions, supported by data analysis, and which is refined and tested via qualitative data analysis and research synthesis. **Phase Three:** Develop a formal theory to address the shortfalls of NPM, expanding the theoretical model with new constructs and mechanisms. Test the theory via qualitative data collection.	(May et al., 2009b)
Organisational Readiness (OR)	OR is a multi-level, multi-faceted construct. At an organization-level construct, readiness for change refers to organizational members' shared resolve to implement a change (change commitment), and shared belief in their collective capability to do so. OR varies as a function of how much organisational members value the change and how favourably they appraise three key determinants of implementation capability:	1. Define terminology by reviewing literature. 2. Use a tool to measure change readiness by including assessments of: group referencing opposed to self-referencing, change commitment, and specifically tailored efficacy items.	(Weiner, 2009)

	1. **Task demands** 2. **Resource availability,** and 3. **Situational factors.**		

8.5.1.3 Key Insights from Considering Previous Approaches

The review of the process models, determinant frameworks, and implementation theories, as shown in Tables 23, 24, and 25, revealed clear similarities in their approaches to model development. Firstly, most of the included studies reported conducting a review of the existing implementation science literature. By reviewing the literature within their development process, it assessed the currently available literature and facilitated the combination of relevant or existing constructs into a novel approach. Similarly, the implementation model within this PhD study was informed by an extensive selection of existing implementation literature. Both the implementation literature review, and the more specific systematic literature review (Chapters Three and Four respectively), provided critical insights when informing the qualitative fieldwork, and the model development. In addition, by reviewing the development of other implementation models, and the previous school implementation models, it has ensured that the development process was as evidence informed as possible.

Another developmental feature identified by the reviewed models, theories, and frameworks was extensive qualitative data collection. Qualitative data was collected to both inform the development of approaches and also to evaluate their effectiveness (Smylie et al., 2004, Kitson et al., 2008, May and Finch, 2009, Fixsen et al., 2013, Atkins et al., 2017). This further confirmed the importance of the study's qualitative findings in informing the implementation model development, as the insights from both the secondary school staff and the Local Authority staff were fundamental in ensuring the development of a useful and relevant implementation model.

Other insights gained from the review of the model development literature, were the importance of defining implementation terminology, working collaboratively with stakeholders, and ensuring that the complexity of implementation processes was not underestimated (Graham et al., 2006, Kitson et al., 2008, Damschroder et al., 2009, May and Finch, 2009, Weiner, 2009, Fixsen et al., 2013, Atkins et al., 2017). For this PhD study, the importance of defining implementation terminology was first introduced within Chapter Three. As implementation science remains a constantly evolving field, the terminology is often inconsistent and interchangeable. Therefore, it was proposed that any implementation terminology used in the model would be consistent and clearly defined. As previously discussed, the initial development of the implementation model was informed by qualitative data collection with school and Local Authority staff. However, following the finding that the most effective development processes involved collaborative work with relevant stakeholders; it was thought to be prudent to build in a component of PPI work within the model development to access the early thoughts of secondary school staff on the model.

The final insight gained from the review of the previous development approaches was the importance of being able to pilot the implementation model (Kitson et al., 2008, May and Finch, 2009, Atkins et al., 2017). By piloting the model, it ensures that it is fit for purpose to facilitate the implementation of a school-based tobacco or substance use intervention. A pilot would also allow modifications to be made which could improve the model's overall usability and accessibility. Although it was agreed that piloting the model would be largely beneficial to development, it was outside the scope of this PhD study, and it would not be feasible to conduct a full pilot study, and rather initial PPI work was used as highlighted above. Therefore, further validation and development work is anticipated in post-doctoral work to further advance the implementation model.

8.5.2 Development of Previous School Implementation Models: A Review

The final step of the implementation model development involved reviewing what insights could be gained from pre-existing school-based models to inform the development of this PhD study's model. A key stage of implementation theory and model development is assessing any existing approaches in order to establish whether components can be modelled, or adapted, into novel approaches (Damschroder et al., 2009). As found in the qualitative fieldwork, none of the interview participants reflected upon the use of a pre-existing model or theory during their previous experience of secondary school implementation. Therefore, it was important to determine whether there were any school-based implementation models and hence why they had not been used in previous implementation work within the UK secondary school setting. After conducting searches of the implementation science literature and reference screening, two school-based implementation models were identified (Han and Weiss, 2005, Domitrovich et al., 2008). These two models were reviewed and are discussed immediately within this subsection.

In the US, Domitrovich et al developed a determinant framework that sought to synthesise the factors affecting the implementation of a health promotion intervention at a macro level, a school level, and an individual level (Domitrovich et al., 2008). Figure 15 presents the school-based framework that was developed by Domitrovich et al (Domitrovich et al., 2008).
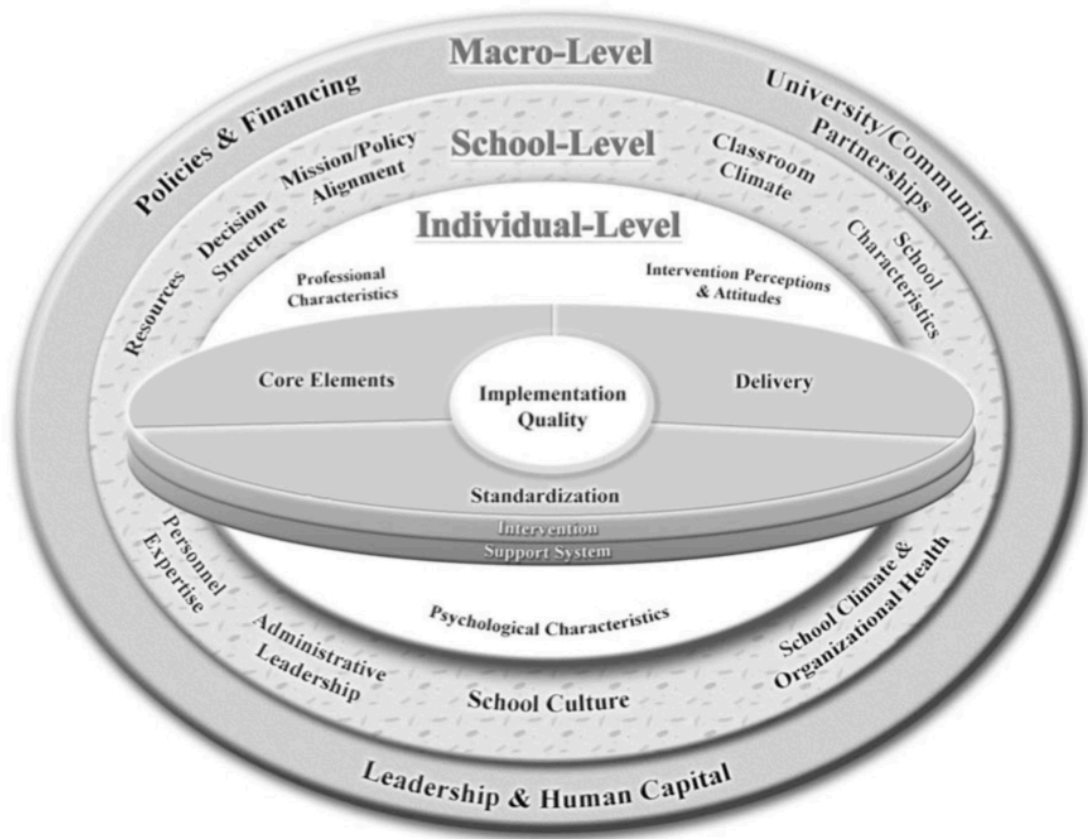
Figure 15: A Framework Identifying the Factors that can affect School-based Implementation Quality.

Obtained from Domitrovich et al., 2008.

The factors presented in the framework appear similar in nature to those identified in the PhD qualitative fieldwork, although characterised and organised differently. The principles of school, individual, and intervention factors were largely homogenous, indicating they are important elements of school-based implementation and should be incorporated into the proposed model.

When considering Domitrovich et al's determinant framework, it was difficult to establish how the framework would be used to inform practice, as opposed to it being used within academic research. The aim of the framework appeared to be to inform implementation research and thus there was little guidance around how the framework should be used practically. Although the authors provided a detailed explanation of the factors affecting a school-based implementation process, the framework shown in Figure 15, does not explain the factors or detail how they could affect implementation. Therefore, referring to the figure in isolation from the lengthy paper would be challenging in practice, especially in the context of a school-based

practitioner with no previous implementation understanding. Consequently, this was identified as being a key challenge of using this framework in practice.

The interview participants, within the qualitative work of this study, frequently talked about needing an 'easy to follow' implementation model. Subsequently, it was proposed that the implementation model to be developed should be clear, with all the explanations and terminology being defined within the 'model package' itself. The idea of the implementation model being 'self-serve' was also a result of the qualitative findings, as interview participants talked about wanting a model or intervention that they could walk through themselves with little guidance or additional resources required. Secondary school staff were found to be open to using self-serve implementation models, if they were deemed to be easy to use and accessible.

The second school-based implementation model to be explored was produced by Han and Weiss in the US (Han and Weiss, 2005). Han and Weiss, developed a process model that sought to guide the implementation of school-based mental health interventions (Han and Weiss, 2005). The model deconstructs school-based implementation into three distinct phases: the pre-implementation phase, the supported implementation phase, and the final sustainability phase (Han and Weiss, 2005). Figure 16 shows how the three phases were arranged diagrammatically as a school-based process model (Han and Weiss, 2005).

When considering Han and Weiss' process model; although the implementation phases are displayed within the model, they are not clearly distinguished and the model appears busy, with numerous contrasting arrows. Similar to Domitrovich et al, without the supporting paper, the model appears difficult to comprehend. The process model does attempt to communicate that implementation is unlikely to be linear; however, the numerous arrows and the vertical font leaves the model appearing arduous and overly complex. Again, this is not synonymous with the findings from the PhD qualitative work, as participants frequently reported challenges with implementing tobacco or substance use interventions that were too complex or using tools that were too difficult to follow. Therefore, as Han and Weiss' model lacks simplicity, it may not appear salient to secondary school staff to facilitate their intervention implementation.
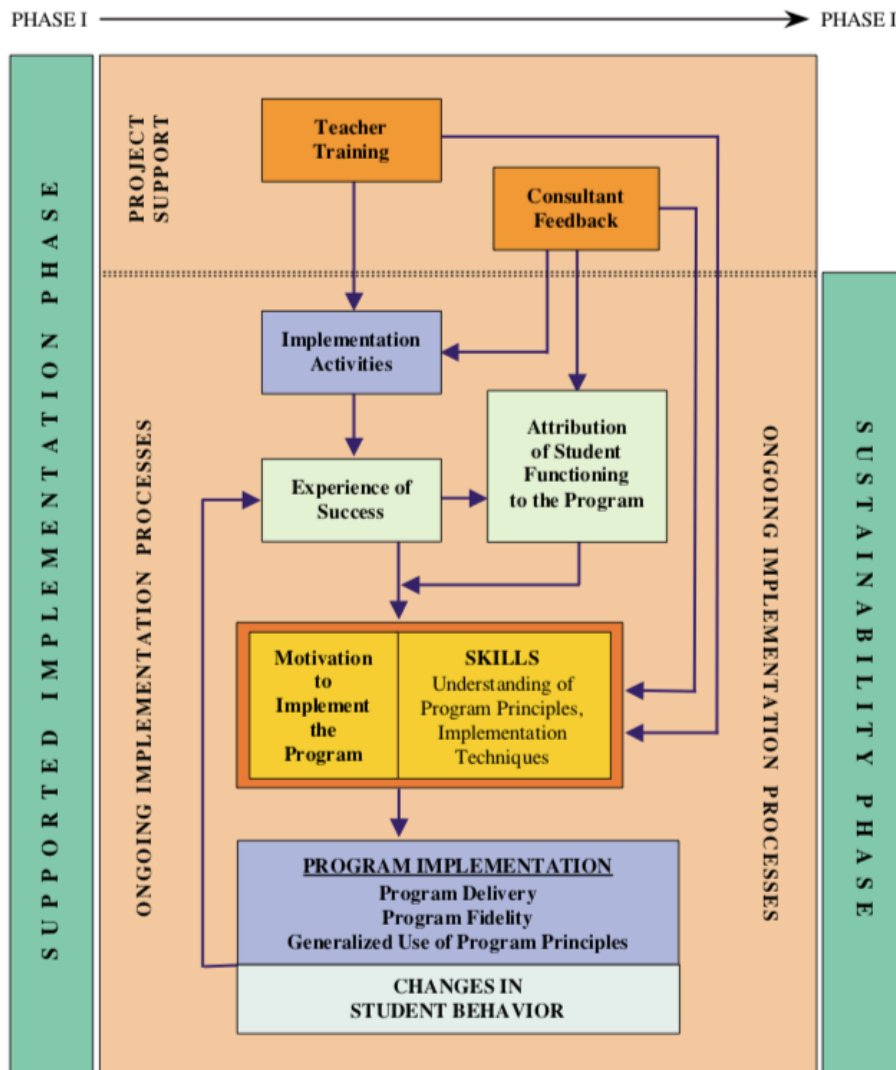
Figure 16: A Process Model of Sustained Programme Implementation by Teachers.

Obtained from (Han and Weiss, 2005).

Unlike Domitrovich et al's framework, Han and Weiss' model has a box entitled 'Consultant feedback'. This was an important addition as it recognised the importance of obtaining feedback in order to sustain implementation (Han and Weiss, 2005). Implementation sustainability is used to refer to the ability of an implementation process to be maintained at an appropriate level (Han and Weiss, 2005). As previously reported, both the results of this PhD study's systematic review and the qualitative work were limited around obtaining feedback and evaluation of implementation, or the 'Reflexive Monitoring' construct of NPT. Obtaining feedback can be useful to inform and sustain long term implementation (Jilcott et al., 2007, Ivers and Grimshaw, 2016, May et al., 2016). Therefore, it was proposed as important to ensure sustainability was sufficiently represented in the proposed implementation

model. Consequently, a characteristic of Han and Weiss' model, and one indicative of the wider implementation literature (Han and Weiss, 2005, Fixsen et al., 2009, Proctor et al., 2011, Meyers et al., 2012) that was incorporated into this PhD study's model, was dividing implementation into the key stages: preparing for implementation, implementation, implementation outcome, and sustainability (Han and Weiss, 2005).

Finally, both Domitrovich et al's determinant framework and Han and Weiss' process model (Han and Weiss, 2005, Domitrovich et al., 2008) were not specific to tobacco or substance use interventions, or a UK secondary school context. Therefore, it was important to ensure that the implementation model that was developed as part of this PhD, was specific to this type of intervention and setting, to not only achieve the aim of this PhD study, but to ensure an original contribution could be made to implementation science, practice or research. Following the review of the literature, subsection 8.5.3 presents the school-based implementation model that was developed and how the qualitative work and the results of the PPI informed its development.

8.5.3 Implementation Model v1.0

Figure 17 displays the implementation model that was developed as the final component of this study. It has been clearly labelled as Version 1.0 as future work is likely to result in modifications or further development.

School- based Tobacco and Substance Use Intervention Model
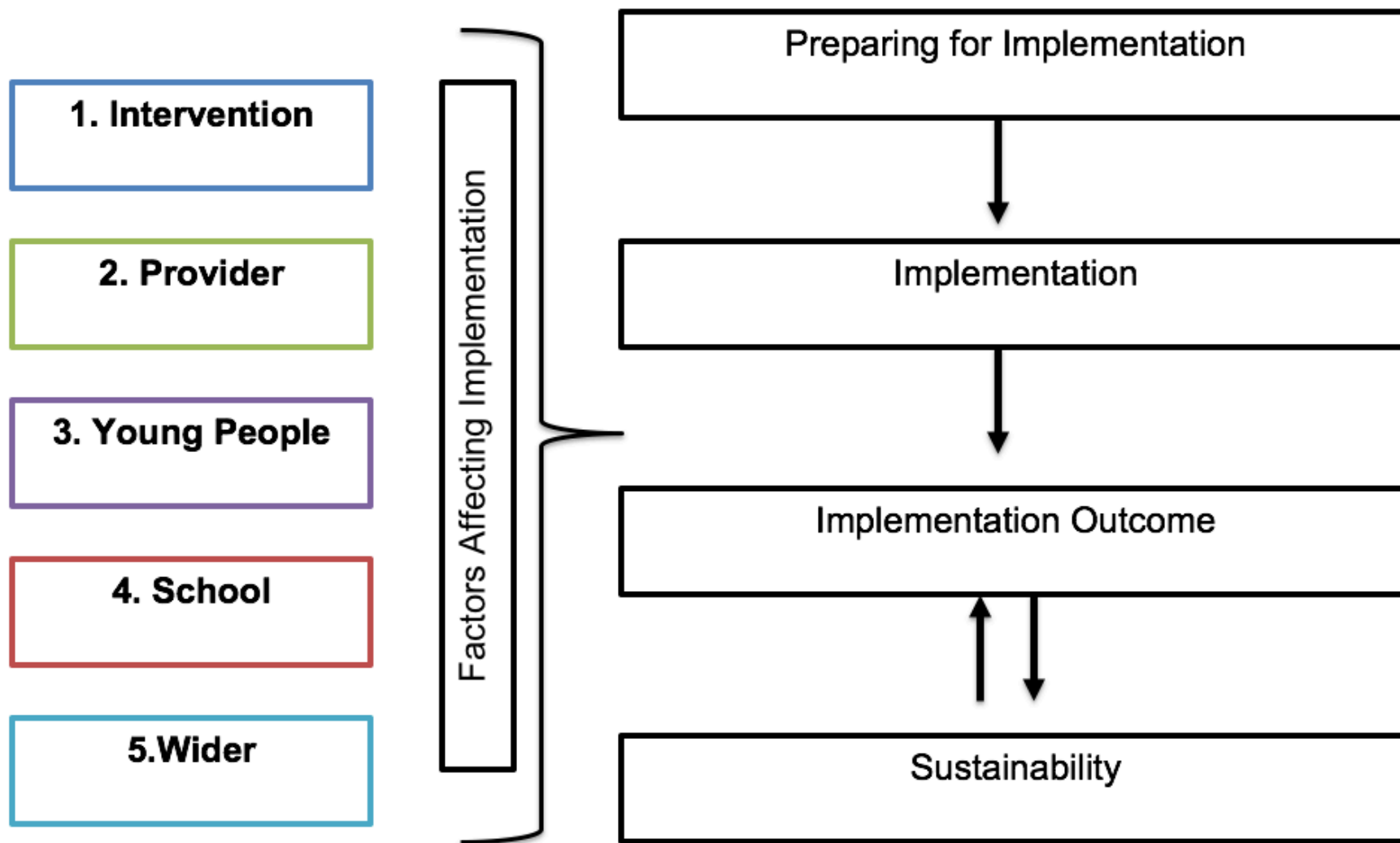
Figure 17: The Implementation Model Version 1.0.

Areas to consider within the Implementation Process

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1. Intervention

Preparing for Implementation

- **Acceptability:** Does the tobacco or substance use intervention appear acceptable in your secondary school? Can the benefits be clearly recognised and communicated?
- **Preparation:** Has sufficient preparation been undertaken to plan the implementation process?
- **Topic:** Is an intervention focusing on tobacco or substance use likely to be stigmatised within your school? If yes, what can be done to reduce this or improve this?

Implementation

- **Coherency**: Is the tobacco or substance use intervention logical and clearly communicable?
- **Content and Format:** Is the content and/ or format of the tobacco or substance use intervention appropriate for your school?
- **Ease:** Can the tobacco or substance use intervention be easily understood and followed?
- **Flexibility:** Is the tobacco or substance use intervention able to be adapted or amended during implementation in order to fit within your school?
- **Resources:** Does your school have access to the tobacco or substance use intervention's required resources?

Implementation Outcome

- **Fidelity:** Has the implementation process and the tobacco or substance use intervention been able to be delivered as intended?
- **Low Cost:** Is there minimal cost or no cost associated with the tobacco or substance use intervention? Can your school meet these costs long term?

Sustainability

- **Resources:** Can the tobacco or substance use intervention's resources be maintained in the long term?
- **Avoiding Isolated Delivery:** Can the tobacco or substance use intervention be supported within other aspects of the curriculum e.g. Science or revisited in later years?

</div>

2. Provider

Preparing for Implementation

- **Competent Workforce:** Is there a competent workforce to be able to implement the tobacco or substance use intervention?
- **Knowing how to work with Young People:** Does the provider know how to work with young people effectively and to build rapports?
- **Preparation:** Have providers made sufficient preparation to undertake the implementation process?
- **Training:** Can school staff be trained in order to confidently deliver and implement the tobacco or substance use intervention?
- **Value/ Engagement:** Can the provider see the value of implementing a novel tobacco or substance use?

Implementation

- **Comfortable:** Does the provider feel comfortable and confident to deliver the tobacco or substance use intervention?
- **Communication/ Collaboration:** Do providers effectively communicate and collaborate with other school staff and local providers around the implementation of a novel tobacco or substance use intervention?
- **Contingency Plan:** Is there a contingency plan to accommodate staff changes, staff leaving or staff sickness?
- **Driving Force:** Is there a dedicated person within your school to drive the implementation process forward and to support providers?
- **Motivated:** Are providers motivated, enthusiastic and passionate when delivering and implementing the tobacco or substance use intervention?
- **Skills, Knowledge and Experience:** Does the provider possess the required skills, knowledge and experience to implement successfully?
- **Specific Provider Characteristics:** Are providers caring and compassionate?
- **Time:** Is there sufficient time allocated for providers to implement a novel tobacco or substance use intervention?

Implementation Outcome

- **Fidelity:** Can providers deliver and implement the tobacco or substance use intervention as intended?

Sustainability

- **Capacity:** Do the providers have sufficient capacity to continue to implement the tobacco or substance use intervention long term?
- **On-going Support**: Can the providers continue to be supported?
- **Role Identity:** Can the providers manage their concerns around role identity?

3. Young People

Preparing for Implementation

- **Deciding to Change:** Are the young people ready and willing to change their tobacco or substance use behaviour?
- **Knowing how to work with Young People:** Does the provider know how to work with young people effectively?

Implementation

- **Confidentiality:** Will the young person's information remain confidential throughout the process?
- **Engagement:** Are all young people engaged in the tobacco or substance use intervention?
- **Hard to Reach:** Does the implementation process consider how to engage and work with hard to reach young people?
- **Motivation:** Do the young people appear motivated by the tobacco or substance use intervention?
- **Trust:** Can the young people trust the providers and feel comfortable sharing information?

Implementation Outcome

- **Fidelity:** Has the implementation process and the tobacco or substance use intervention been able to be delivered as intended? Is this affected by the young people's behaviour?

Sustainability

- **Disruption:** Is the implementation process affected by the young peoples' behaviour in the long term?
- **Varying Delivery:** Can the delivery or implementation process be varied in order to continue to engage young people?

4. School

Preparing for Implementation

- **Context/ Culture/ School Philosophy:** Does the tobacco or substance use intervention fit with the school morals/ philosophy?
- **Head Teacher and Senior Leadership Team (SLT) Buy in:** Do both the Head Teacher and the SLT buy in and support the implementation of a novel tobacco or substance use intervention?
- **Parent and Governor Support:** Do parents and the governors buy in and support the implementation of a novel tobacco or substance use intervention?
- **School Structure and Setting:** Does the tobacco or substance use intervention fit within the school structure/ timetable?
- **Training:** Can school staff be trained in order to confidently deliver and implement the tobacco or substance use intervention?
- **Value/ Engagement:** Does your school see the value of implementing a novel tobacco or substance use?

Implementation

- **Communication:** Is there sufficient communication across the school and staff around the implementation of a novel tobacco or substance use intervention?
- **Driving Force:** Is there a dedicated person within your school to drive the implementation process forward?
- **Receptive:** Is your school and staff receptive to the implementation of a novel tobacco or substance use intervention?
- **Technology:** Does your school have access to the relevant technology to support the implementation of a novel tobacco or substance use intervention?
- **Time:** Is there sufficient time allocated to support the implementation of a novel tobacco or substance use intervention?
- **Whole School Approach:** Has your school adopted a 'Whole School Approach' to support the implementation of a novel tobacco or substance use intervention?

Implementation Outcome

- **Cost:** Is there minimal cost or no cost associated with the tobacco or substance use intervention? Can your school meet these costs long term?
- **Link to Curriculum/ Ofsted:** Can the implementation of a novel tobacco or substance use intervention be linked with the Ofsted objectives?

Sustainability

- **Embedded:** Can the tobacco or substance use intervention be successfully embedded within the school timetable?
- **Prioritisation:** Can the implementation of a novel tobacco or substance use intervention be prioritised long term?
- **Ownership:** Can ownership of the tobacco or substance use intervention be maintained to support implementation?
- **Quality Assessment:** Can the implementation process be evaluated within school to assess what is working, what isn't working?

5. Wider

Preparing for Implementation

- **Data/ Local Needs:** Does the implementation of a tobacco or substance use intervention fit with the Local Need/ health priorities?
- **Differences across Boroughs- Health Inequalities:** Is the implementation process affected by differential Local service provision or health inequalities?
- **Morals and Values:** Does the tobacco or substance use intervention fit with wider morals/ philosophy?
- **Teacher Training:** Can teacher training be expanded to include specific tobacco or substance use teaching?

Implementation

- **Community:** Can the implementation of a school-based tobacco or substance use intervention be supported by the local community?
- **Support Network:** Can the implementation process be supported with a network of school contacts, local services and practitioners?

Implementation Outcome

- **Cost:** Is there minimal cost or no cost associated with the tobacco or substance use intervention? Can your school meet these costs long term?
- **Ofsted:** Can the implementation of a novel tobacco or substance use intervention be linked with the Ofsted objectives?

Sustainability

- **Family:** Can the implementation of a tobacco or substance use intervention be affected by family values?
- **National Government- Policy:** Can the implementation of a tobacco or substance use intervention be further supported by national policy/strategy changes?
- **PH Restructure:** Can the communication with Public Health or Local drug and alcohol services facilitate the implementation process?
- **Resources:** Can the tobacco or substance use intervention's resources be maintained in the long term- Is there access within the local or national community?

Glossary Of Terms

Fidelity: The assessment of how closely a new practice has been implemented as intended.

Implementation: The process of putting a decision or plan into effect- in this case a school-based tobacco or substance use intervention.

Sustainability: The degree to which an implementation process is maintained in the long term.

8.5.3.1 Content of the Implementation Model

When considering the implementation model development literature, as presented in Subsection 8.5.1, a variety of literature sources discussed the conflicting linearity of models, and how the use of flowcharts is largely typical and useful (Han and Weiss, 2005, Damschroder et al., 2009, WHO, 2016). Therefore, it was prudent that a flowchart, representing the overarching components of implementation within a secondary school, would act as the basis of the implementation model. The components of school-based implementation, used within this model, were directly informed by those presented in Han and Weiss' process model (Han and Weiss, 2005).

As discussed in Chapters Six and Seven, the interview data from the qualitative fieldwork was coded and organised into five overarching themes: intervention factors, provider factors, young person factors, school factors, and wider factors. These five themes were considered to be the key factors affecting the implementation of secondary school-based tobacco or substance use interventions. As the majority of the themes appeared analogous to the pre-existing school-based implementation models and the wider implementation literature; they provided the initial structure of the implementation model. Therefore, the five themes were added to the main implementation flowchart as five colour-coded boxes. As they were identified as being the key groups of factors affecting school-based implementation, the implementation model then included each theme as a coloured text box. The five textboxes were designed to situate the main areas to consider within each theme and were informed by reflecting upon the results of the systematic review and the results of qualitative fieldwork.

In order to make a unique contribution to implementation science, it was essential that the implementation model presented factors that were unique to a UK secondary school and the implementation of a tobacco or substance use intervention. Table 25 has been compiled to distinguish these factors from other implementation contexts. Although some statements were prepared to be specific to the implementation of secondary school-based tobacco or substance use interventions, the majority could be modified in order to support the implementation of other, similar school-based public health interventions. Other statements, such as 'Driving Force: Is there a dedicated person within your school to drive the implementation process forward?', can be seen in wider implementation work, such as NPT.

Table 25: Factors Specific to UK Secondary School Implementation and Tobacco or Substance Use Implementation

UK Secondary School	Tobacco or Substance Use Intervention
Capacity and Staff Availability	Confidentiality of Young People
Challenges with Technology	Engaging Young People
Cost	Family and Parental Influence
Linking with National Curriculum	Teacher Training and Previous Experience
Local Community	Topic Stigma (related to Parental/ Governors)
National Government Policy	Resources
Ofsted	Viewing the Local Need or Value of Implementation.
Parents and Governor Influence	
Public Health Restructure	
Service Provision in Local Area	
Senior Leadership Team Engagement	

Reflecting further upon the implementation science literature review in Chapter Three, the qualitative interview findings, and the previous school implementation models; it was imperative to ensure that the wording that was used in each text box was not overly complex, and hence did not assume pre-existing implementation subject knowledge from the user. Therefore, the phrases were designed to be brief and any complex terminology was defined in a glossary. The glossary became a built-in component of the implementation model, following the results of reviewing previous school-based models and the assessment that they are not 'stand-alone'. As each box featured a large amount of text, in order to establish a general level of readability, the contents of each box were copied and pasted into an online readability tool. By employing the use of a readability tool, it provided a quantitative score in regards to the clarity and the complexity of the text. Minor changes were made to improve the score, but as the anticipated users of the implementation model were secondary school staff, a low level of readability was not required. However, it was acknowledged that some of the essential implementation terminology could be viewed as complex and as some users may have no previous implementation experience, they were defined within the glossary.

8.5.3.2 Use of The Implementation Model

When considering how the implementation model would be used in practice; by using the initial stages of the implementation flowchart and the text boxes to form the basis of the implementation model, it was proposed that the model would be best placed to exist as a guide for users in order to facilitate implementation, whilst considering the factors affecting it. The model does presume stages of implementation and was based around implementation consisting of: *preparing for implementation, implementation, implementation outcome and sustainability.* This situates the implementation model within Nilsen's taxonomy of a process model and a determinant framework (Nilsen, 2015). Although this was the model's intended use, as proposed in the PhD's aims and objectives; the model was also designed to be used flexibly. For example, even though it was not intended to be used to evaluate school-based tobacco or substance use intervention implementation, it could potentially be used as a checklist of components to identify what implementation determinants and factors have been considered.

8.5.3.3 Appearance and Format

When considering the visual appearance of the implementation model, it was important to ensure it was appealing, and appeared easy to read. The Arial font from Microsoft Office was selected as it is clear and a universally accepted font. A larger size of font was chosen for the implementation flow chart in order to emphasise the main components of implementation, and the five main themes of factors to consider. They were further accentuated by employing a bold typeface. By numbering and colour coding the five main themes, it ensured the model's main themes and the corresponding text boxes appeared distinct and clear to the user.

8.5.4 Interviewee's Perspectives on Model Development and Presentation

Following the qualitative results and discussion communicated in Chapters Six and Seven; Section 8.5.4 presents the qualitative results in relation to the implementation model development. Participants' contributions towards developing a model of implementation for the secondary school context were explored in interviews using the following question:

'*Do you think a model would be useful to support implementation, and if so why/how could it be used?'*

This line of enquiry sought to address the final objective of the qualitative fieldwork:

- To inform the development of the proposed, substance use implementation model.

The following subsections highlight the key areas reflected upon by participants.

8.5.4.1 Usefulness

Interview participants were first probed about whether they believed an implementation model, would be useful within a secondary school. The majority of the interview participants thought a model would be a useful tool and agreed that it would be a welcome addition to facilitate implementation, as secondary schools looked favourably upon extra support.

"Yeah, I mean, I think, anything like that would be really useful […] Anything that could guide, schools, to show them what the sort of best practice looks like […] and how they would, and the process people have gone through to get to that point […] is, just, supportive and helpful, so I think, schools would welcome it"

[LA6. Female, Health Improvement Practitioner]

However, some of the interview participants expressed a view that although an implementation model may prove to be useful in general terms, it would be largely dependent on the content of the model, and whether the implementation model would appear to be an appropriate fit within a specific secondary school.

"Yeah, I think from, teachers love a, and again, I'm not a teacher […] but I think, I get that impression teachers like, if they've got to do something, it's got to be incredibly clear […] what they've got to do and it's […] but it's also got to, have flexibility within that"

[LA7. Male, Drug and Alcohol Project Manager]

"I think it would be worthwhile looking at, for us […] 'cause what we tend to do is, we look at things and then we cherry pick, what actually […] is appropriate to us"

[SS3. Female, Head of Year Eleven]

"Yeah, I mean, I think it could be useful […] but it would be difficult to say, as it depends whether it looked at schools generally […] or was more targeted.

[SS8, Male, Science and Citizenship Teacher]

These quotes further highlight the importance of the implementation model being used flexibly in order to ensure relevance and acceptability to meet the needs of the different secondary schools across the UK.

8.5.4.2 Format

The second line of enquiry was to identify what format the implementation model should be in, in order to ensure it would be the most accessible to secondary school staff or Local Authority based providers. The majority of the interview participants agreed that a web-based model would be the preferred format.

"I'll use different things. Electronic probably is, easier"

[SS4, Female, Head of PSHE]

This was in contrast to the previously discussed findings in Chapter 6, where several interview participants reported that technology issues within a secondary school, such as poor internet connectivity or online resource access, could negatively affect implementation, as it reduced implementation fidelity. However, technology concerns were still reflected upon when considering the implementation model, as several interview participants suggested the implementation model should be hosted online, but with a capacity to download elements, or print hard copies as required.

"I mean, web based is useful but, I know a lot of our schools can have connectivity issues […] So I'd say if it's on like a CD-ROM, memory stick […] or however, something they can download and then use"

[LA1, Female, Health Improvement Specialist]

"I think they do a lot of teaching like that so, I think that's kind of a really useful way to go yeah. I mean everyone loves a bit of a hard copy, don't they […] a bit of paper? But I do think that, web-based resources are, really, are, really helpful […] As I say I'm looking at one at the moment, and that looks really good, and you can just print off when you need them"

[LA4, Female, Health Improvement Practitioner]

8.5.4.3 Challenges

Some interview participants reflected upon challenges they perceived as being associated with developing a school-based implementation model. One of the secondary school participants discussed the fact that as different secondary schools can be heterogeneous, it would be challenging to adopt a universal approach via the blanket use of one model.

"I just think models are good, but schools are so individual, and so complex […] You can't do a one size fits all […] delivery"

> **[SS1, Female, Assistant Head Teacher]**

Whilst one participant expressed concern around the limited capacity of secondary school staff, and the financial resources available to schools, which may negatively affect use of the implementation model.

"Ah I don't know because […] we used to do quite well with the [NAME OF SUBSTANCE USE PROGRAMME], when we had a co-ordinator […] And then the national funding went, and we kept the co-ordinator for a bit longer after that, but the, what was put out nationally was like a self-serve type of model, that schools could just take and do it […] and honestly, they just don't, it doesn't happen"

> **[LA11, Female, Consultant in Public Health]**

As discussed within the main school theme, in Chapters Six and Seven, both restricted capacity and budgets were cited as factors that can negatively affect the implementation of school-based tobacco or substance use intervention programmes. Consequently, it was suggested that an implementation model should be self-sufficient and self-explanatory, in order to facilitate the use of an implementation model in this setting.

"I, I think they want something they can pick up and put back down […] and it's really, really easy used"

> **[LA11, Female, Consultant in Public Health].**

8.5.5 Results of PPI

Linking in with the qualitative results, the PPI session aimed to explore initial thoughts on the implementation model with secondary school staff. Table 26 shows a collation of the responses from the PPI discussion, with useful areas to consider in the future development process.

Table 26: A Collation of Responses from the Model PPI Work

Question	Feedback
Would you find this model useful to help you implement tobacco or substance use programmes in your school?	• The model is clear and is comprehensive in the areas it has considered to be effective. • Great to see all stakeholders being considered at the start both in terms of their understanding of the work and their involvement to make it successful and sustainable.
Would this model be appropriate or acceptable for use by you, or within your secondary school?	• It considers the fact that Senior Leadership Team (SLT) support is essential and that a clear advocate / lead in the school is essential. • Explore with wider range of secondary school staff • To make it work long term it needs to be explicit in terms of impact and be embedded into the curriculum rather than just seen as a one-off event. • Could see this as part of the work to develop character and resilience
Which components of the model do you like?	• Low cost high impact • Involvement of a wide range of stakeholders in and outside the school • Clearly understands the needs of a school and how to get advocacy
Which components do you not you like, or think could be improved?	• Be clearer about evidence base and intended impact and focus in terms of age groups • Clarify the time expectations of staff to train, lead and curriculum time to deliver • Ensure providers carry out appropriate safeguarding training and clarity is sought over issues that emerge and how and what information should be passed onto the school i.e. what does confidentially mean in this work

	• Ensure with work is compliant with the GDPR regulations • Clarity over where it fits into the curriculum • Clarity over time expectations • Clarity over intended impacts • Ensure it doesn't conflict with existing schemes • Consider the use of voluntary organisations to help

It was initially apparent that the PPI participants were pleased to be consulted during the model development process, as they felt best placed to offer feedback on the implementation model, as they all worked directly within a secondary school. Therefore, they could reflect upon what would be relevant or acceptable within the context of their secondary school. The PPI participants agreed that the implementation model appeared clear and comprehensive with its scope and content. Participants felt the implementation model clearly communicated the needs of a secondary school and the components that were involved in implementing a novel tobacco or substance use intervention. However, it was acknowledged that this could be explored further with a wider selection of secondary school staff with differing backgrounds and levels of experience to ensure that the implementation model appears acceptable to the majority of secondary school staff providers. Similar to the results of the systematic review and the qualitative fieldwork, the PPI participants also discussed the importance of cost. Participants liked the idea of the low cost, self-sufficient implementation model. Emphasis was placed on a 'low cost, high impact' approach, as school budgets are restricted and therefore low-cost intervention and implementation options, with the potential for significant impact were viewed as being highly advantageous.

The PPI participants were also able to reflect upon areas of improvement or elements that would benefit from further clarification within the implementation model. The PPI participants wanted more explanation and clarity around the benefits of using an implementation model and why improving implementation in a secondary school would be important. Participants also wanted to see improved clarity around the intended age groups and whether the implementation model would be appropriate to facilitate implementation of interventions within all age groups of a secondary school. This was expanded further to discuss the importance of ensuring that a tobacco or substance use intervention was age appropriate as this could negatively affect implementation.

Another area of discussion was participants talked about being able to clearly distinguish and not conflict with existing tobacco or substance use work programmes. If school staff were unable to see the benefit or felt the content was being delivered in another subject, it would

be a barrier to implementation and would affect the use of an implementation model in that context.

Finally, similar to results of the qualitative fieldwork, comments were also received around the time allocated to using the implementation model and also the importance of ensuring that the right school-based and external providers were implementing and supporting the interventions using the model, and consequently that their levels of knowledge and training were appropriate.

Chapter Eight concludes by summarising and discussing how the key findings of the earlier work of the study informed the implementation model, acknowledging some of the observed limitations of the implementation model, and the initial plans that have been proposed for dissemination and future development.

8.6 Discussion

8.6.1 Summary of how the PhD Study Components Informed the Model Development

Table 27 has been used to summarise the key findings from each of the PhD thesis components and how they have made a direct contribution to informing the implementation model development and the implementation science field.

8.6.2 Discussion of the Model Development Results

In general, when reflecting upon the responses to the final question in the interview schedule and conducting the PPI, the majority of the participants appeared positive and open to the idea around the development of an implementation model. Although there are some pre-existing examples of school-based implementation models; no participants, when reflecting on their previous implementation experience, talked about using a model or an implementation theory to facilitate their own implementation. This indicated that there was a gap for a practice focused model to be developed to improve school-based implementation of tobacco and substance use interventions. However, as introduced when assessing the existing school-based models, this PhD study was conducted in the context of a UK secondary school setting, whereas the previous school-based implementation research has been based in the US and therefore may not directly transferable. Therefore, it may prove valuable in future implementation research, to explore the US secondary school setting in more detail, in order to compare and contrast whether school staff have been able to access and experience value

from using the existing academic implementation research findings, as translation can often appear challenging (Green and Glasgow, 2006).

Table 27: Summary Table of how the Study Components have Informed the School-based Implementation Model.

PhD Study Components	Key Findings	Contribution to Implementation Model
Implementation Literature Review Chapter Three	Need standardised definitions when using implementation terminology	The use of consistent terminology was used throughout the model and a glossary was included to define complex terms
	Distinguishing between implementation outcomes is important as it can guide the choice and application of implementation strategy and theory	Understanding implementation outcomes allowed the difference between intervention and implementation outcomes to be determined and they can also be used to establish whether an implementation process has been successful-informing the systematic review and qualitative work
	Implementation theory can be a useful tool to guide, facilitate or evaluate school-based implementation processes.	This informed the use of NPT in all PhD components and prompted the review of previously developed implementation theoretical approaches for developmental insights
Systematic Review Chapter Four	Key facilitators of implementation were having a positive organisational climate, adequate training and having motivated teachers and pupils. Barriers included heavy workloads, budget cuts and lack of resources or support	The key factors informed the interview schedule, and the qualitative data findings were incorporated directly into the model. Any results of the review that were not observed within the qualitative data, were included within the implementation model's content as areas to explore

	The quality appraisal identified that the included papers tended to be of moderate to weak quality	This informed the model write up; ensuring high quality reporting, and also informing the model content by ensuring the level of detail was appropriate
Qualitative Fieldwork Chapters Five, Six and Seven	Five themes of factors affecting implementation were established: intervention, provider, young people, school-based, and wider factors	The five main themes were used as text boxes on the model to break up the different areas of consideration
	Public health concerns were addressed differently within schools and different school types were heterogenous	The model was developed to be flexible and to be used as required depending on the needs of the user. It does not seek to achieve 'universal implementation'
	Key factors were observed around the intervention's accessibility, the influence of providers, the financial and resources costs, young people's engagement and the impact of a school's organisational climate	The key factors were all incorporated as 'questions' or things to consider within this model to facilitate the implementation of school-based tobacco or substance use interventions
	A sixth theme identified the perceptions around the proposed implementation model. Participants stated that the model should be pitched appropriately to avoid being complex, and to reduce the amounts of additional work	To ensure this model was not too complex, it was examined using a readability tool and presented to potential users via PPI. This model was developed to be flexible and to be 'stand-alone' (not requiring any additional papers or explanations)
	Interview participants preferred the idea of an online model	Making the model available online will address the lack of an online version and would allow users to print off hard copies

Model Development Literature Review	The importance of conducting a review of the existing implementation science literature was highlighted	By reviewing Nilsen's taxonomy and the work of Birken et al, the implementation model incorporated features of a process model, a determinant framework and implementation theory
Chapter Eight	Qualitative data was often used to inform the development of previous models	The qualitative findings were used to inform the model as discussed and reinforced the importance of conducting PPI
	Other insights were the importance of defining implementation terminology and working collaboratively with stakeholders	Terminology was defined by including a glossary in the model, stakeholders were included by conducting the qualitative fieldwork and by building in the additional PPI component
	Conducting a pilot study is imperative to 'test' a developed implementation model	Pilot work will be explored further in future postdoctoral work to develop the existing model
Review of School-based Implementation Models	The pre-existing school implementation models were complex and inaccessible without lengthy journal articles	The model was produced to be 'easy to follow' without the need for additional explanation or resources
Chapter Eight	Previous school-based implementation models were not specific to UK secondary schools (both produced in the US) or tobacco or substance use interventions	The implementation model made explicit the factors specific to both UK secondary schools and tobacco or substance use interventions in order to be a novel contribution
	The appearance of previous models was busy and were largely confusing	The model was designed to be easy to use and colour coded to allow for clear and logical presentation

	Previous models were designed by researchers with implementation research in mind	The model was developed using practitioner input in order to be user friendly to both academics and school practitioners
	Han and Weiss unpacked implementation into the key stages and this allowed the long-term sustainability of implementation to be considered	The model organised implementation into separate stages; preparing for implementation, implementation, implementation outcome and sustainability
PPI Work Chapter Eight	Participants placed emphasis on a 'low cost, high impact' approach, as school budgets are restricted	The model has been designed to be publicly available for no cost
	It was identified as important to consider the input of additional secondary school staff when developing the model further	Pilot work will be explored further in future postdoctoral work to develop the existing model and will work collaboratively with school practitioners to ensure the model is fit for purpose
	The implementation model is clear and comprehensive with its scope and content, but could define use (age/ intervention type) more clearly as so to not conflict with existing delivery	The model's appearance and content was informed using various sources. It will be of high priority to establish how the model would fit within different secondary schools and the acceptability to school- based providers.

An example of recent research from the US school implementation field is the work of Leeman et al, which set out to explore school health 'implementation tools' by conducting an evaluation assessing their use (Leeman et al., 2018). Leeman et al defines implementation tools as resources that *"summarize and organize information about EBIs (Evidence Based Interventions) and provide guidance on how to select, adapt, implement and evaluate those EBIs in practice"* (Leeman et al., 2018). The paper reports that although there is a widespread availability of general implementation tools, there has been less research exploring how they can be used in school-based practice or the factors influencing their use in non-clinical settings (Leeman et al., 2018).

Following their evaluation of school-based tools, none of which focused on tobacco or substance use intervention implementation, the findings emphasised the importance of working with school-practitioners in order to fully meet their needs and align with their context (Leeman et al., 2018). The implementation tools were deemed to be too complex for school staff and there was low knowledge and confidence around use (Leeman et al., 2018). This finding further confirms the fact that the implementation model developed in this PhD study needed to be simplistic and not overly complex. However, due to the low participant response rate, Leeman et al highlighted the need for more work around assessing the use of school implementation tools and future development (Leeman et al., 2018). This highlights the need for future work around developing the use of implementation tools in the school setting, as improving implementation can result in more effective interventions and improvements to long-term health.

Another point of discussion, which proved useful to the development of the implementation model, was asking both the interview and the PPI participants what format they believed would be the most accessible. As discussed in Chapter Three, Proctor et al cited *accessibility* as an implementation outcome, as varying levels of accessibility can affect an implementation process (Proctor et al., 2011). Accessibility is likely to vary across secondary schools but interview participants consistently emphasised the fact that secondary school staff have large quantities of work to complete, and experienced conflict with challenging and altering role identities. Consequently, it was acknowledged that in order to avoid contributing to workload and to maintain accessibility, the proposed implementation model should be pitched at an appropriate level and should avoid the need for large amounts of additional work from secondary school staff.

Although the implementation model was developed as a static, hard copy; the feedback from the qualitative interviews suggested that it may appear more salient to school users if it existed as an online model. However, technology concerns, and accessibility were often cited as

having the potential to negatively affect the implementation of school-based tobacco or substance use programmes. Due to the timescales of the PhD study, it was not possible to explore the potential of developing a web-based implementation model or an interactive toolkit. Nevertheless, interview participants also expressed the importance of having the option to obtain a hard copy version of the implementation model. Therefore, it was proposed that making the static implementation model available online could address the lack of an online version and would allow secondary school staff and Local Authority users to print off hard copies as required.

An overarching observation within Chapter Seven was that secondary schools within England are largely heterogeneous. Unlike other implementation settings, schools in the UK have increasing heterogeneity and autonomy, as explored in Chapter Two, around delivery content and staff capacity. In addition, interview participants reflecting upon their experiences of differential service provision and accessibility further confirmed this. Therefore, it was important not to assume a 'one-size-fits-all approach' would be feasible when considering the implementation of a school-based tobacco or substance use intervention. Consequently, one of the frequently reoccurring findings from the interview data was the idea of implementation flexibility and this came out frequently from the existing literature collated within the systematic review (Barr et al., 2002, Basen-Engquist et al., 1994, McBride et al., 2002, MacDonald and Green, 2001, Pettigrew et al., 2013, Rohrbach et al., 2007, Skara et al., 2005, Sloboda et al., 2009, Stead et al., 2007, Sussman et al., 1993, Thaker et al., 2008). It was therefore important to develop an implementation model that was flexible and easily adaptable for secondary school-based practitioners.

By creating an implementation model that was flexible to use, it refers to the fact that users would be able to use the specific elements that are the most salient to them, and their secondary school context. The fact that secondary school staff were seen to have limited capacity to implement new tobacco or substance use programmes, or sustain existing ones, is highly challenging, and as discussed by interview participants, is likely to be a factor that influences the use of an implementation model. This opens an area to be explored within the pilot work to determine how a secondary school staff member would use an implementation model and what can be explored to increase use and usability.

The implementation model that was developed was indirectly informed by the implementation theory NPT (May et al., 2011); however, a potential area for future research would be to align the implementation model with a more school-focused, pedagogical theory. Pedagogical theories are most commonly used to establish a greater understanding of the values and principles behind teaching, whilst exploring how it is possible to facilitate the learning process.

They are most frequently based on learning theory, which centres around the concept of how we learn (Rogers and Freiberg, 1994). Like implementation theory, no one pedagogical theory can be applied to consider all examples of learning and teaching practice. However, a specific and well-established example of a learning theory is Carl Rogers' theory of learning which unpacks two types of learning; cognitive (academic knowledge) and experiential (applied learning, which addresses the needs and wants of the learner) (Rogers and Freiberg, 1994). Considering how the implementation model can be aligned with learning theory would be an important area for future research to not only obtain any insights into intervention implementation from a school-based learning theory perspective, but also to ascertain how teachers or educational providers can learn and develop their understanding around how to use an implementation model in future practice.

8.6.3 Strengths and Limitations of the Implementation Model Development

The key strength of this school-based implementation model is that it is a direct product of the triangulation of a range of different data sources; the systematic review, qualitative data, model development literature and PPI. Triangulation refers to the use of multiple methods or data sources in research to develop an understanding of a phenomena or process (Patton, 1999, Carter et al., 2014). By using a range of data sources, it ensured that the model was as well informed as possible, and that it incorporated the views and experience of different school-based practitioners during the development process.

Although the element of PPI work that was undertaken during the study was small in scale, it was valuable when improving and refining the developed implementation model. The PPI session allowed initial thoughts to be obtained on the implementation model and sets the scene for a larger-scale pilot study using the model in practice. By reviewing the development processes of other implementation models and theories, it was acknowledged that conducting a pilot with the developed implementation model would be an integral component of the refinement process. Even though the lack of a pilot study could be viewed as a limitation, it enables a novel area of exploration that can be revisited in greater depth within future postdoctoral work. Therefore, it leaves the implementation model open for further development and assessment of its acceptability and feasibility in practice.

A finding that was observed in the qualitative data, and when reviewing the development processes of other implementation approaches, was that both implementation processes and secondary school settings are highly complex. This thesis has shown at numerous points that implementation is multi-faceted and is strongly affected by the context and the participants, which can be considered a challenge when reflecting upon the use of a universal

implementation model. Therefore, in response to this, the implementation model that has been developed does not attempt to be a 'one-size fits all' model that can be seamlessly applied in every instance, to every secondary school. However, it seeks to offer a flexible guide in which to improve the consistency, and the facilitation of future implementation processes of tobacco or substance use interventions within the secondary school setting. In addition, by organising the model by the qualitative data themes, the model is not presented as being linear and that the range of factors can affect implementation in any order or combination. The implementation model does not claim to be definite and the use is likely to be variable in different school contexts.

8.6.4 Dissemination and Future Plans for the Implementation Model

In this chapter, the findings from this study and reviews of the literature have been used to inform development of the school-based implementation model. Due to the scope of this study, it limited the ability to comprehensively test out a fully-fledged model. The initial development of an initial framework was considered a more realistic prospect by collating the factors to consider when undertaking the implementation of a school-based tobacco or alcohol intervention. As previously stated, the implementation model does require further validation and pilot work in order to better assess how contextual factors would affect the use of an implementation model and whether it appears acceptable and feasible in practice. The proposed pilot work will be expanded upon in the final Chapter 9.

When considering the dissemination pathway for the implementation model; it was important to acknowledge that secondary school staff do not always have the capacity, knowledge, or access to academic journals, such as the academic journal 'Implementation Science', which publishes relevant work in this field. The systematic review findings from this study were published in Implementation Science in 2017 and a paper presenting the qualitative findings is currently in production. However, the dissemination of the implementation model will be restricted to after the model has been sufficiently developed.

In order to reach the intended audience of secondary school staff, the proposed implementation model will not be restricted to dissemination via relevant academic journals, and a multifaceted dissemination process will be undertaken. Although this will be explored in greater depth following future development, early ideas for dissemination include presenting the model at secondary school networks and discussion boards, with open channels of communication to include Local Authority practice partners and supporting services. In addition, following adequate piloting, the aim would be to make the implementation model publicly available at no cost to users. This would be most likely to be facilitated online, and an

option for this could be to share the implementation model via the platform of a co-production research website, which is currently in development. Components of the website will include overviews of co-production research methods and signposts to best practice guidelines and commonly used tools.   When live, this co-production toolkit will most likely be hosted by Teesside University with the goal to facilitate best practice around collaborative working of academics with local authority practice partners.

8.7 Chapter Summary

Chapter Eight documented the process undertaken to develop the secondary school implementation model, which was the final objective of this study. By considering some of the pre-existing implementation theories and models, reviewing the relevant implementation model development literature and conducting a PPI session; it informed the development process and allowed different perspectives to be considered. The key findings and contribution to knowledge of Chapter Eight have been:

- The pre-existing school-based implementation models were not specific to tobacco or substance use interventions or UK secondary schools, were largely complex and were not suitable for practice.

- Together, the qualitative and PPI findings highlighted both the benefits and the challenges of employing an implementation model in the secondary school setting.

- The majority of the participants were positive; emphasising the importance of developing an implementation model that was easy to use, accessible, and one, which possessed both online and hard copy capabilities.

- The school-based tobacco or substance use implementation model was developed and presented in Section 8.5.3.

- Using five text boxes, populated from the qualitative interview themes, to form the basis of the implementation model; it was proposed the model would be best placed to exist as a guide of factors to consider to facilitate school-based implementation.

- The factors unique to implementing specifically tobacco or substance use interventions included being aware of the stigmatization of such interventions, being able to integrate

them within the school curriculum, developing staff knowledge and ensuring the young person's confidentiality.

- The implementation model is the primary contribution to knowledge of this thesis and it will be developed and tested further in postdoctoral research.

Chapter Nine is the final chapter of this thesis and will therefore conclude this PhD study by summarising and concluding the key results, re-emphasising the original elements of the study and proposing the future progression of the implementation model.

Chapter Nine

Discussion, Conclusions and Future Research Implications

9.1 Overview of the Chapter

Chapter Nine, the final chapter, opens by briefly summarising the key findings of this study. The integration of findings across the study components was addressed in Chapter Eight, as represented in the developed implementation model. Chapter Nine extends the discussion of the study findings to highlight how these findings add to the evidence base within the school-based, implementation science field and highlights the original contribution to knowledge of this research. The chapter, and hence this PhD thesis concludes by providing the strengths and limitations of the work and discusses the potential future work that could be undertaken to develop the implementation model further.

9.2 Summary of this PhD Study

The aim of this study was to explore the factors affecting the implementation of a tobacco and substance use intervention within a secondary school, with the goal of producing a model to facilitate implementation in this setting. The secondary school was identified as being the primary setting as it can provide an ideal opportunity to target health related behaviour change for young people. Detrimental behaviours, such as tobacco or substance (drug or alcohol) use, adopted during adolescence, can have a significant impact across the life-course (Umberson et al., 2010, Viner et al., 2012). As the majority of adolescents in the United Kingdom (UK) attend school until at least 16 years of age; research has identified that interventions, modifying risky behaviour, can be effectively introduced within secondary schools (Wiehe et al., 2005, Lemstra et al., 2010, Foxcroft and Tsertsvadze, 2011). However, the implementation processes of these types of interventions have not been widely explored, and prior to this PhD study, there had been no tools to facilitate their implementation, developed in the UK.

In order to explore the study's aim, the following distinct components of work were undertaken:

- A review of the general implementation science literature to increase understanding around pre-existing implementation research;

- A systematic review synthesised the literature specific to the implementation of tobacco and substance use interventions in secondary schools;

- Semi-structured interviews were conducted with secondary school staff and local authority practitioners to explore the factors affecting school-based implementation and their thoughts on a proposed implementation model;

- A review of the implementation model development literature, to assist with the early model development;

- A participant and public involvement (PPI) session to assist with implementation model development, and

- Triangulation of these findings to design and refine a school-based implementation model, which allowed recommendations for future research to be made.

9.3 Main Findings and Contribution to Knowledge

9.3.1 Summary and Discussion of Main Findings

The implementation science literature review, presented in Chapter Three, first introduced the concept of implementation. The key conclusion drawn from this chapter was the importance of researchers achieving consistency when using implementation terminology. As implementation science continues to be an emerging field, the use of terminology is often interchangeable and concepts are used inconsistently. Although there was not a large body of school implementation literature from the UK; identifying the terms often used interchangeably, such as implementation, dissemination or adoption, used in health implementation literature, proved extremely valuable when planning the systematic review search strategy (Greenhalgh et al., 2004, Rabin and Brownson, 2012). Therefore, the literature review demonstrated the importance of both developing a shared understanding of terminology, as well as informing the search terms for the systematic review. In addition, the exploration around implementation theory informed the choice of theoretical methodology

used, the Normalization Process Theory (NPT), for the systematic review and the qualitative fieldwork.

Chapter Four documented the mixed-method, systematic review which synthesised the research around the implementation of school-based substance and tobacco interventions. Nineteen papers met the review's inclusion criteria, and NPT acted as a framework to identify the common factors affecting implementation. Some of the key factors affecting implementation included school providers being able to distinguish the intervention from their current work, the providers' level of comfort with delivery and the topic, the level of specialist knowledge required, student engagement, implementation fidelity, and the importance of training.

A common finding across the review papers emphasised that the choice of implementation staff was an important consideration. This is highly concurrent with the wider implementation literature, and a specific example can be found in the development of the Consolidated Framework of Implementation Research (CFIR), which was reviewed in more depth in Chapter Three (Damschroder et al., 2009). One of the five theoretical domains of the CFIR focuses on the individuals involved and their characteristics (Damschroder et al., 2009). Looking at the desired characteristics, unique to the school setting staff; it was found to be important to ensure staff were well trained, displayed confidence and knew how to work with young people effectively. Relating this back to NPT, this finding was highly reflective of the NPT Collective Action construct as it can be used to determine if the work of an intervention is allocated appropriately (May et al., 2015). As such, it is important to ensure that the staff member chosen to deliver or implement a tobacco or substance use intervention is provided adequate consideration.

The systematic review also identified that staff support, both internally and externally, was a key factor affecting implementation. This extended to include the support offered to providers, which was often linked with the need for an implementation driving force, and the organisational support existing within the secondary school setting. As has been found in the healthcare setting, often the available organizational support is variable due to restricted resources (Grol and Wensing, 2004). However, the most effective school support was gained pre-implementation, but required long-term maintenance to be most effective.

As the systematic review demonstrated that NPT could be used to consider school-based implementation, it was posited that it would be advantageous to use NPT as part of the qualitative fieldwork data analysis (May and Finch, 2009). The qualitative work addressed the aim of this study by exploring the factors affecting school-based implementation. Although like

the systematic review it was a distinct piece of research in its own right, its secondary goal was to inform the implementation model development.

Following the assessment and analysis of the interviews; one overarching finding unique to the school setting, was the importance of not underestimating the heterogeneity amongst secondary schools. Several of the interview participants reflected upon the challenges posed by secondary school diversity, such as varying student and staff populations, and emphasised the implementation setting's complexity. Even though this was expected, following the development of Chapter Two and exploring the different secondary school types; it made the aim of developing a universal implementation model more challenging in practice (Machin and Vernoit, 2011). Therefore, the idea of offering a flexible implementation model, that did not need to be followed rigidly, was taken forward to inform the model development. Five overarching themes, from the qualitative fieldwork, represented the plethora of different factors affecting secondary school-based tobacco or substance use implementation processes. To recap, these five themes were: intervention specific factors; provider factors; young people factors; school factors; and wider factors.

The key findings from the intervention factors theme found that for a tobacco or substance use intervention to be implemented within a secondary school effectively, it should be able to be used flexibly and should be adaptable within a school setting. Findings also suggested that the intervention should avoid being overly complex and should require minimal training and resources. This finding was found to be specific to secondary schools and the type of intervention (tobacco or substance use). As many school-based providers have limited experience in delivering or implementing tobacco or substance use interventions, implementation was affected if the intervention was too difficult to follow or required activities secondary school providers had no prior experience with. Finally, in order for an intervention to be implemented and sustained effectively, it should have little to no cost associated with the initial implementation or maintenance. The issue of cost and restricted resources was discussed in almost every interview and also arose strongly from the systematic review findings. As previously discussed, this PhD study took place during a period of major change in the English school system (2015-2018), and the backdrop of austerity and budget cuts remained ever-present, hence cost was identified as an important area for future research as reduced school funding has the potential to negatively affect future implementation processes.

The second theme encompassed provider factors, with the main topic of discussion being the type of provider implementing and delivering the interventions. There did not appear to be a general consensus around whether an internal or an external provider was more effective. This conflict was first raised within the systematic review findings, where no consensus was

reached around whether an external or internal provider was preferable. Engaged and motivated providers were seen to positively affect implementation and this was facilitated by offering skill-based training. However, the qualitative work also showed that the capacity of school staff and local substance use services was limited, and hence finding time for training would be challenging. Practical suggestions to overcome this in practice could include online training, as video training was observed as acceptable in some conditions in the systematic review findings (Basen-Engquist et al., 1994), or smaller, bitesize training sessions.

The third theme collated findings around young people, and how they can affect implementation. Interview participants reflected upon how young people's behaviour or engagement with the intervention and intervention staff had the potential to positively or negatively affect implementation. The main finding from this theme was that the provider delivering the intervention, needed to have had experience of working with young people in the substance misuse field, in order to facilitate engagement. These were findings highly specific to the secondary school implementation setting. Although school staff have daily experience of working with young people, some found it more difficult to deliver health related teaching. Subsequently an important implication for practice would be ensuring that any local service staff, who deliver school-based tobacco or substance use interventions, have the right skills to engage and work with young people.

The penultimate theme represented secondary school specific factors. Similarly, to the systematic review findings, it was seen to be important to have the right support in place within schools; for example, it was advantageous to have nominated individuals to manage and drive implementation. This finding has been widely explored within the healthcare setting, with the work of Fixsen et al offering an implementation drivers framework (Fixsen et al., 2013). The framework concentrates on the relationship between three main categories of implementation driver; competency, organizational and leadership (Fixsen et al., 2013). Previously, the results of the systematic review indicated that the use of theoretical frameworks was limited across the included studies (1 of 19). Therefore, the framework by Fixsen could prove useful when guiding future work around the importance of school-based implementation drivers, to assess whether the drivers are largely the same or provide disparate challenges to the healthcare setting (Fixsen et al., 2013).

Another concurrent finding across the systematic review and the qualitative findings was that the interventions were prone to negative stigma across school staff, young people and more widely to include parents. Negative stigma was seen to be directly associated with the type of intervention, i.e. tobacco or substance use and this has previously been identified in intervention studies (Newbury-Birch et al., 2014). The interview participants discussed

wanting to explore ways to ameliorate the stigma, and the idea of adopting a universal school approach, provides an implication to practice, as a way to avoid the focus on specific, 'problem' schools. A final factor affecting implementation, which was specific to the secondary school setting, is the growth in the academy school structure. The increasing number of academies has resulted in some secondary schools moving away from the links with local authorities and public health services (Eyles et al., 2018). This is a finding with practice implications, as in order to facilitate implementation, exploring different ways to engage and communicate with the increased number of academies should be explored further.

The final theme, wider factors, assessed the impact of the broader issues affecting school-based implementation, such as budget cuts, the provision of local services, and the socioeconomic status of both schools and pupils. The main findings were around the availability of local public health services appearing heterogeneous, meaning the substance use or tobacco services available to a young person were variable and the national guidance was seen as limited and outdated. Therefore, this informed the observation that the level of tobacco or substance use education provision was variable across the schools and the different areas included in the sample. Additionally, the lack of a common framework around the importance of tobacco or substance use intervention delivery, from organisations directly related to secondary schools, such as Ofsted, was seen as problematic by both the interview and the PPI participants. Similar observations were made by Formby and Wolstenholme who reported the decreasing importance of Personal Social Health Education (PSHE) in secondary schools in the UK, compared to primary education (Formby and Wolstenholme, 2012).

9.3.2 Original Contribution to Knowledge

Although the main findings have been discussed above, this subsection highlights the original contribution to knowledge that the distinct components of this study have made. The systematic review offered the first synthesis of literature concentrating on implementing tobacco or substance interventions. Although previous work has been published around UK health promotion implementation (Pearson et al., 2015); the review was original as it was the first systematic review to focus on tobacco and substance use interventions within a secondary school setting (Waller et al., 2017). In addition, as the systematic review was successfully published in the journal Implementation Science, it provided an initial platform for the first set of findings from this study to be disseminated to a highly relevant audience (Waller et al., 2017).

Similarly, the qualitative fieldwork provided an original contribution by being the first study of its kind to explore the implementation of tobacco or substance use interventions in secondary

schools within the UK, with both school staff and local authority participants. To date, no other research group has conducted this exploration, and both factors unique to the implementation setting and unique to tobacco and substance use interventions were able to be identified. Although the systematic literature review and the qualitative work were distinct pieces of work by themselves, it was also unique that they could be used to inform the development of the implementation model.

Another novel contribution, more specific to the implementation science field, was the use of NPT as a theory to synthesise and organise school specific factors affecting implementation. Using NPT provided both theoretical advantages and methodological advantages as it was used to structure the narrative synthesis of the systematic review, and to guide the assessment of the factors affecting implementation within both the review's included studies and the qualitative fieldwork findings. NPT was initially chosen as it has been shown, in previous research, to be an effective theory to synthesise research findings and to identify consistencies and gaps regarding implementation determinants (Mair et al., 2012, O'Reilly et al., 2017).

As NPT was initially developed for use within the healthcare setting, this research also added to the evidence base that NPT can be applied effectively in other implementation contexts (May et al., 2009b). This was confirmed in the most recently published systematic review on NPT, which explored how NPT had been used across different implementation settings and research studies (May et al., 2018). The review's included studies fell into seven categories; service organisation and delivery (26.9%), implementing diagnostic and therapeutic interventions (25.9%), implementing E-Health and telemedicine (19.4%), implementing screening and surveillance tools (10.1%), assessing the factors affecting the outcome of decision support and shared decision-making (7.4%), implementing change in professional roles (6.5%) and guideline implementation (3.7%) (May et al., 2018). Although the systematic review by May et al did not identify any school-based implementation studies using NPT; this study has proved that NPT can be used flexibly within a school setting to consider implementation. This conclusion has broad implications as previously discussed, the school-based implementation research has not been largely theoretically driven. Therefore, NPT can provide an implementation theoretical option which can be applied within a school context by researchers or implementers.

Finally, the largest contribution to knowledge has been the development of the school-based implementation model that was the primary outcome of this work. The model is an original entity as although other school-based models were considered, the development process involved consulting secondary school staff to develop a unique model which was pitched at

the right level for the proposed users. This study has frequently highlighted that implementation can be a complex phenomenon; therefore, by developing an implementation model that was proposed as being simple and flexible for use within a secondary school, it attempts to offer a 'layman's' approach to implementation. By directly employing the findings from the qualitative work, the model presents a collection of areas or factors to consider and acts as a hybrid of a process model and a determinant framework and this was seen as an appropriate approach to adopt when discussed during the PPI sessions with secondary school staff.

This implementation model is visibly different to the pre-existing school-based model and framework, from the US, that were reviewed in Chapter Eight (Han and Weiss, 2005, Domitrovich et al., 2008). This is because this model exists as an 'implementation package', i.e. it is self-contained, with all of the explanations and everything needed for use included in the model itself. Furthermore, in order to improve understanding, the implementation terminology was defined in the glossary, as informed by the work of Rabin et al, discussed in Chapter Three (Rabin and Brownson, 2012). This was an important feature of the implementation model as both the systematic review and the qualitative findings, highlighted the need for an accessible, easy and rapid to use tool.

9.4 Strengths and Limitations of this Work

Although the previous chapters of this thesis have touched upon the strengths and weakness of the specific methods employed, this subsection discusses the overall strengths and weaknesses of this body of research.

9.4.1 Strengths

The overarching strength of this study was that it provided an in-depth examination of the factors affecting the implementation of tobacco or substance use interventions using multiple different methods. The findings were the first of their kind to offer a novel contribution to both the secondary school setting health field and the implementation science field as each component had not been previously replicated within the UK school setting.

As the pre-existing school-based UK implementation literature was limited, the systematic review was broadened to include internationally published studies, and this proved to be the first review focusing specifically on secondary school tobacco or substance use implementation literature. As the review was published, it underwent peer-review, and as such

the review was strengthened by identifying additional areas of consideration, highlighted by reviewer comments.

The qualitative component was the first of its kind to include both local authority staff and school staff to explore their experiences and insights into implementation. Although some of the findings echoed previous school research and existing implementation literature (Buston et al., 2002, Domitrovich et al., 2008, Forman et al., 2009, Pearson et al., 2015), the findings provided specific insights into the factors affecting tobacco or substance use intervention implementation. These findings informed the development of the implementation model which is the first UK based model focusing exclusively on the implementation of tobacco or substance use interventions. This is a key strength of this work as it shows this PhD study has provided an output that has the potential to facilitate current practice following future development.

Each piece of work, that has been conducted as part of this study, has been executed to the highest standard with best practice guidelines consulted throughout the processes (Stone, 2002, Popay et al., 2006b, Liberati et al., 2009, Rapley and Silverman, 2011). In addition, individual protocols were constructed for each of the components of work. This ensured that the review and the qualitative interview methods employed were adequately considered, it improved the reporting of each component and it aimed to increase the overall replicability.

A final strength is the ability of this research to direct future research and practice. It has identified gaps in the knowledge base and also highlighted areas which would benefit from further research. The future research recommendations will be discussed in more detail in the final section of this chapter.

9.4.2 Limitations

Whilst highlighting the strengths of this work, there are some limitations that have been acknowledged. Although the weaknesses of the individual methods have been discussed in greater depth in previous chapters (Chapters Four, Five, Six and Eight), some of the most pertinent limitations for each method will be briefly re-discussed.

As discussed in depth, this research used NPT to provide a common framework to link and organise findings, and to provide an approach to structure the systematic review and the qualitative findings. However, the sole use of NPT could be viewed as a limitation as there are other implementation theories, models, and frameworks available, some of which were discussed in Chapter Three. A different theoretical approach could have been applied heterogeneously, with potentially different outcomes. By exploring the use of another

implementation theory or framework within the secondary school, it may have provided an additional or different perspective when presenting the findings within this setting and hence could be a useful avenue for future research.

When considering the literature reviews and the systematic review within this work, it is possible that relevant papers may have been missed. The systematic review literature searches were sifted by two people to minimise the risk of overlooking relevant work, however the implementation literature review and the model development review searches were conducted solely by GLW. This means that although efforts were made to obtain all of the relevant literature, some articles may have been missed. In addition, grey literature searches were only conducted as part of the systematic review. Therefore, it is acknowledged that further insights may have been gained by accessing a wider pool of literature when searching the implementation and model development literature. However, the literature review approach, that was adopted whilst searching the implementation literature and developing the implementation model, was targeted so that the risk of missing key exemplar studies, which could inform the methodological approaches to the systematic review or developing the model, was low.

As previously discussed, in Chapter Five, doubts can be cast around whether the findings obtained via qualitative approaches can apply to other contexts beyond this study (Mays and Pope, 1995). Nevertheless, when considering the representativeness of the sample; it was possible to obtain a broad, relevant sample, which consisted of a plethora of different local authority and secondary school staff roles being interviewed. In addition, due to the high response rate from local authorities and the wide range of job roles, over-recruitment was achieved in the local authority participant group, as 13 participants were able to be interviewed, which exceeded the proposed 10 participants.

Finally, when considering the development of the implementation model, a current limitation is the lack of validation and testing of the model, as this was not a component of this study. Due to the small number of people consulted in the PPI and the current lack of iterations and testing, it is acknowledged that any data obtained about its use should be deemed as tentative. Future research will work to assess the feasibility and the usability of the implementation model within secondary school practice.

9.5 Future Research Recommendations

The final subsection of Chapter Nine, has been used to discuss the potential future development of the implementation model and some of the pertinent questions to answer. A number of key areas for further implementation research within the school setting are also identified.

9.5.1 Implementation Model Development

The main area identified for future research is around the development of the implementation model. As briefly discussed in Chapter Eight, and in order to fit with the epistemological stance adopted within this study; the early version of the implementation model was enhanced by carrying out PPI work with secondary school staff. The PPI session was reflective of the interpretivist stance, as it explored the experiences and insights of the secondary school staff within their social contexts. However, it was acknowledged that this element of the development process was small in scale, and it was reliant on a small sample of secondary school staff participants. Although testing and refining of the model were not part of this study within the school setting; the primary goal was to develop a model with the idea to conduct further validation and development within postdoctoral work.

When synthesising the model development literature in Chapter Eight, it was apparent that the development processes were heterogenous is their use of methods to further develop and pilot their initial process models and determinant frameworks. Examples included consensus style methods i.e. relying on experts judging the importance of specific components (Smylie et al., 2004, Kitson et al., 2008, Fixsen et al., 2013), in-depth qualitative investigation with users (Smylie et al., 2004, Kitson et al., 2008, May and Finch, 2009, Fixsen et al., 2013, Atkins et al., 2017), and evaluations (Kitson et al., 2008, Atkins et al., 2017). Subsequently, it is acknowledged that the future progression of the implementation model would benefit from exploring ways to develop the structure, the content and the usability. The aim was to develop a model that encompassed a theoretical underpinning, but one that continued to be accessible, and of an acceptable format to be used by secondary school staff. Future areas of investigation are likely to include exploring how secondary school staff would use the model and which elements, and what questions they are they likely to ask about how to use it and their perceived value of using it. This introduces exploration around the challenges around how to develop support on how to use the model and how to engage and inform the proposed users. In addition, it will be important to explore more specifically what types of interventions can be implemented using the model, i.e. is it only relevant to implementing certain tobacco or substance use interventions, or it is more widely applicable.

The future development of the implementation model also provides an opportunity to identify where this work fits in within the established MRC framework for complex interventions (Craig et al., 2008, Moore et al., 2015). The MRC framework presents the phases of a complex intervention development as four stages that can occur in a cyclic, non-linear nature; Development, Feasibility and Piloting, Evaluation and Implementation (Craig et al., 2008). As the implementation model, developed in this study, could be identified as an intervention to improve the school-based implementation of tobacco or substance use interventions, the MRC framework could be applied as a guiding framework of things to consider when further developing the model (Moore et al., 2015).

When relating the development stage of the MRC framework to the model development process undertaken as part of this study, the elements are largely analogous, with the current model development evidence being explored and complemented by the modelling of the participant responses to formulate the initial model. The next stages could therefore concentrate on further development, testing the feasibility and hence learning how the model can be successfully implemented into the secondary school setting (Craig et al., 2008). For example, specific areas to explore within the implementation of the model could include *the secondary school contextual factors*- i.e. how they can affect the use of an implementation model, *the fidelity,* i.e. if the model can be used as intended, *the reach,* i.e. if the model is accessible and can be used by a large number of school staff and hence *the potential adaptations* that could be made (Moore et al., 2015).

As the development and the evaluation of a complex intervention is not always linear; it is likely that the model could return to the development stage, in order to conduct a deeper exploration of the implementation outcomes that are deemed the most important to secondary school staff (Moore et al., 2015). This can be directly linked back to the discussion in Chapter Three, which referred to the work of Proctor et al, around being able to identify the outcomes of implementation and being able to distinguish them from the intervention outcomes (Proctor et al., 2011). In addition, the evaluation phase of the MRC framework could aid this by questioning secondary school staff around the model's use, and could be used to determine whether specific implementation outcomes were achieved, to what degree and hence whether implementation was improved.

Consequently, the key areas of whether the model is functional, how it can be used, and whether it can improve the implementation of tobacco or substance use interventions within a secondary school setting can be explored in future research, with the aid of the MRC framework (Craig et al., 2008, Moore et al., 2015).

9.5.2 Additional Areas for Future Research

Both the systematic review and the qualitative fieldwork were informed, structured, and framed using NPT, which also highlighted the gaps in the school-based implementation knowledge base. A knowledge gap, which was summarised in the previous chapters, were that findings consistent with the Reflexive Monitoring construct were limited. There appeared to be a lack of evidence around evaluating school implementation processes in the systematic review, and when discussed within the qualitative fieldwork; participants talked about more general, intervention evaluations, as opposed to conducting an evaluation of implementation. Although an intervention evaluation may include assessments of the implementation process, none of the interview participants were able to reflect upon this when questioned. The lack of Reflexive Monitoring findings did not come across as strongly in the aforementioned review of NPT (May et al., 2018). However, the review did highlight that Reflexive Monitoring was seen as the final stage of implementation, and as a large proportion of the included studies were feasibility studies, or studies assessing the earlier stages of implementation, the synthesis was skewed towards the initial stages.

By conducting an implementation evaluation into what appears to be effective, or what appears less successful, it can help to improve the feasibility or sustainability of an implementation process. However, participants rarely reflected upon how they were implementing interventions and what strategies (explicit or implicit) they were using. This is in contrast to implementation within healthcare settings, as practitioners often have had some training or a background in research and evaluation methods and the use of theory is more well-established (Eccles et al., 2005). Therefore, as this study showed that school staff may lack the skills and confidence to evaluate implementation; it would be beneficial to explore this further and to ascertain whether the implementation model may need extra attention around resources in reflecting, appraising or monitoring implementation in the future.

This can also be related to the finding that there was a distinct lack of implementation theory used, and limited implementation strategy observed within the secondary school setting implementation research and practice. As demonstrated in Chapter Three, using implementation theory can facilitate evaluation processes (Kitson et al., 2008, King et al., 2010). Therefore, future work could focus around not only implementation evaluations, but being able to increase the accessibility and use of implementation theory, in order to ensure the benefits of employing a theory or model can be effectively communicated to a school practitioner outside of a research setting. This is a particularly current area of investigation within the implementation science field, and a specific example of this is the NPT toolkit (May et al., 2015). The NPT online, interactive toolkit was developed to make the implementation

theory more accessible in order to consider the complex implementation and integration challenges within healthcare (May et al., 2015). The toolkit offers a simplified breakdown of the NPT constructs to provide a clearer picture of the specific areas to consider when embedding an innovation or complex intervention (May et al., 2015).

Another area proposed as an important direction for future research is the concept of cost, and what impact varying the cost could have on implementation outcomes. Both the findings of the systematic review and the qualitative fieldwork, highlighted that high financial costs act as an implementation barrier within secondary schools, as schools increasingly face restricted finances. In addition, the PPI participants also reflected upon the importance of ensuring the implementation model was of low cost. When scoping the pre-existing research, there appeared to be limited research around the implementation costs associated with school-based interventions, with no UK based studies being identified. Even when assessing the international literature included within the systematic review; there was no exploration of the impact of cost on implementing school-based tobacco or substance use interventions, thus it identifies a gap in the evidence base.

Although cost can be recognised as an outcome of implementation (Proctor et al., 2011); cost can also play a role within an implementation process. Therefore, experimentally manipulating the implementation costs would be an area worth exploring when considering future school-based research in order to improve the implementation outcomes. Examples of differing implementation costs could include the feasibility, or suitability of having a less expensive staff member implementing the intervention, reducing the training costs, or reducing the resources costs. In addition, in the context of implementation work, cost does not always have to refer to the financial costs and can refer to the perceived cost of resources or opportunity costs (Palmer and Raftery, 1999). For example, it could refer to the opportunity cost of prioritising the implementation of a tobacco or substance use intervention over an academic subject, as this was highlighted in the qualitative fieldwork as challenging to balance. As secondary schools become more pressured to deliver academic results, whilst integrating wellbeing initiatives; it becomes increasingly important to assess the financial or opportunity costs of doing so, in order to facilitate implementation and long-term sustainability. Therefore, exploring the different costs associated with implementing school-based tobacco or substance use interventions, offers an area worthy of further research.

It is also important to continue to assess the changing climate of the secondary school setting in the UK, in order to remain up to date with changes to policy or practice. As previously reflected upon, this PhD study took place during a period of major change in the English school system, as increasing numbers of secondary schools became academies, and cuts to school

funding and local authority services presented additional challenges. A factor affecting novel implementation, identified within the qualitative work, was the increasing lack of access to secondary schools, and their reduced engagement with local authorities. Although some local authority interview participants reported having good links with secondary schools; several talked about finding it more difficult to access, support and influence the health service provision within secondary schools. Interview participants frequently talked about the access difficulties being correlated with the introduction of academies in England. In addition, this was directly observed during recruitment as academies were more difficult to engage with interviews and local authorities had less established links with academies to refer GLW to. As the number of academies in England continues to increase; it brings additional challenges around being able to engage secondary schools in non-compulsory health intervention provision. Therefore, the impact of academies and the changing secondary school structures, could also be an important area to explore within future research.

9.7 Final Conclusions

This PhD study identified the factors affecting the implementation of tobacco or substance use interventions within a secondary school setting and the mixed methods used in this project, were triangulated to develop a model for facilitating these implementation processes. The overall conclusion of these research findings therefore, is that they informed the development of the school-based implementation model and shaped the direction of future, school-based implementation research.

This research has addressed the limitations of existing research in this context by specifically focusing on the factors associated with UK secondary schools and the implementation of tobacco or substance use interventions. By conducting a series of literature reviews and qualitative fieldwork, with both secondary school staff and local authority practitioners; a comprehensive assessment of the factors affecting implementation in this context has been presented within this thesis, therefore achieving the study's aim.

Key factors were observed around the content of tobacco or substance use interventions, the influence of specific providers, young people's engagement and the impact that a school's organisational climate and the wider environment can have on an implementation process. The qualitative fieldwork, supported by an additional PPI session, was used to explore participants' perceptions around the proposed implementation model, and the responses directed the model development process. The implementation model that was developed is unique to the implementation of school-based tobacco and substance use interventions, and

its use will be explored further in future research. Consequently, undertaking this body of work has added to the current school-based implementation evidence base, and has provided the necessary grounding to progress with future research.

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Appendices

Appendix A- Systematic Literature Review Appendices

A.1 An Example of the Search Strategy used in Medline

Search Terms	Search Options	Actions
S26	S8 AND S13 AND S23 AND S25	**Search modes** - Boolean/Phrase
S25	AB health* OR TI health*	**Search modes** - Boolean/Phrase
S24	S7 AND S8 AND S13 AND S23	**Search modes** - Boolean/Phrase
S23	S14 OR S15 OR S16 OR S17 OR S18 OR S19 OR S20 OR S21 OR S22	**Search modes** - Boolean/Phrase
S22	AB school-based intervention* OR TI school-based intervention*	**Search modes** - Boolean/Phrase
S21	AB intervention* AND TI intervention*	**Search modes** - Boolean/Phrase
S20	AB behaviour change* OR TI behaviour change*	**Search modes** - Boolean/Phrase
S19	AB readiness to change* OR TI readiness to change*	**Search modes** - Boolean/Phrase
S18	AB quality improvement OR TI quality improvement	**Search modes** - Boolean/Phrase
S17	AB organizational change* OR TI organizational change*	**Search modes** - Boolean/Phrase
S16	AB knowledge* OR TI knowledge*	**Search modes** - Boolean/Phrase
S15	AB innovation OR TI innovation	**Search modes** - Boolean/Phrase
S14	AB improvement* OR TI improvement*	**Search modes** - Boolean/Phrase
S13	S9 OR S10 OR S11 OR S12	**Search modes** - Boolean/Phrase

S12	AB normali* OR TI normali*	**Search modes** - Boolean/Phrase
S11	AB integrate* OR TI integrate*	**Search modes** - Boolean/Phrase
S10	AB adopt* OR TI adopt*	**Search modes** - Boolean/Phrase
S9	AB implement* OR TI implement*	**Search modes** - Boolean/Phrase
S8	AB school* OR TI school*	**Search modes** - Boolean/Phrase
S7	S1 OR S2 OR S3 OR S4 OR S5 OR S6	**Search modes** - Boolean/Phrase
S6	AB young adult* OR TI young adult*	**Search modes** - Boolean/Phrase
S5	AB young person OR TI young person	**Search modes** - Boolean/Phrase
S4	AB young people OR TI young people	**Search modes** - Boolean/Phrase
S3	AB teenag* OR TI teenag*	**Search modes** - Boolean/Phrase
S2	AB adolescen* OR TI adolescen*	**Search modes** - Boolean/Phrase
S1	(MH "Adolescent")	

A.2 Systematic Review Data Extraction Workbook

Study Reference	Setting	Program Type	Study Design	Study Population	Implementation Measurement	Key Results	Quality of Study	Other
Author Year Title Journal	Country Location School	Tobacco Alcohol Substance Use Mixed	Methodology Used	Schools Providers Other relevant characteristics	Type of Analysis How Implementation is measured	Key Results Factors affecting Implementation	Quality of Study Quality of Reporting Strengths and Weaknesses	Possible New Includes Background Papers

A.3 CASP Qualitative Study Quality Assessment Tool

10 questions to help you make sense of qualitative research

How to use this appraisal tool

Three broad issues need to be considered when appraising the report of a qualitative research:

- **Are the results of the review valid?**
- **What are the results?**
- **Will the results help locally?**

The 10 questions on the following pages are designed to help you think about these issues systematically. The first two questions are screening questions and can be answered quickly. If the answer to both is "yes", it is worth proceeding with the remaining questions.

There is some degree of overlap between the questions, you are asked to record a "yes", "no" or "can't tell" to most of the questions. A number of italicised prompts are given after each question. These are designed to remind you why the question is important. Record your reasons for your answers in the spaces provided.
These checklists were designed to be used as educational tools as part of a workshop setting
There will not be time in the small groups to answer them all in detail!

1

325

Screening Questions

1. Was there a clear statement of the aims of the research?   ☐Yes ☐Can't tell ☐No

HINT: Consider
- What was the goal of the research?
- Why it was thought important?
- Its relevance

---

2. Is a qualitative methodology appropriate?   ☐Yes ☐Can't tell ☐No

HINT: Consider
- If the research seeks to interpret or illuminate the actions and/or subjective experiences of research participants
- Is qualitative research the right methodology for addressing the research goal?

Is it worth continuing?

2

326

Detailed questions

3. Was the research design appropriate to   ☐ Yes   ☐ Can't tell   ☐ No
address the aims of the research?

HINT: Consider
- If the researcher has justified the research design (e.g. have they discussed how they decided which method to use)?

---

4. Was the recruitment strategy appropriate to the   ☐ Yes   ☐ Can't tell   ☐ No
aims of the research?

HINT:Consider
- If the researcher has explained how the participants were selected
- If they explained why the participants they selected were the most appropriate to provide access to the type of knowledge sought by the study
- If there are any discussions around recruitment (e.g. why some people chose not to take part)

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327

5. Was the data collected in a way that addressed   ☐Yes   ☐Can't tell   ☐No

   the research issue?

HINT: Consider
- If the setting for data collection was justified
- If it is clear how data were collected (e.g. focus group, semi-structured interview etc.)
- If the researcher has justified the methods chosen
- If the researcher has made the methods explicit (e.g. for interview method, is there an indication of how interviews were conducted, or did they use a topic guide)?
- If methods were modified during the study. If so, has the researcher explained how and why?
- If the form of data is clear (e.g. tape recordings, video material, notes etc)
- If the researcher has discussed saturation of data

6. Has the relationship between researcher and   ☐Yes   ☐Can't tell   ☐No
participants been adequately considered?

HINT: Consider
- If the researcher critically examined their own role, potential bias and influence during
  (a) Formulation of the research questions
  (b) Data collection, including sample recruitment and
     choice of location
- How the researcher responded to events during the study and whether they considered the implications of any changes in the research design

328

7. Have ethical issues been taken into consideration? ☐Yes ☐Can't tell ☐No

HINT: Consider

- If there are sufficient details of how the research was explained to participants for the reader to assess whether ethical standards were maintained
- If the researcher has discussed issues raised by the study (e.g. issues around informed consent or confidentiality or how they have handled the effects of the study on the participants during and after the study)
- If approval has been sought from the ethics committee

8. Was the data analysis sufficiently rigorous? ☐Yes ☐Can't tell ☐No

HINT: Consider

- If there is an in-depth description of the analysis process
- If thematic analysis is used. If so, is it clear how the categories/themes were derived from the data?
- Whether the researcher explains how the data presented were selected from the original sample to demonstrate the analysis process
- If sufficient data are presented to support the findings
- To what extent contradictory data are taken into account
- Whether the researcher critically examined their own role, potential bias and influence during analysis and selection of data for presentation

5

329

9. Is there a clear statement of findings?   ☐Yes   ☐Can't tell   ☐No

HINT: Consider

- If the findings are explicit
- If there is adequate discussion of the evidence both for and against the researchers arguments
- If the researcher has discussed the credibility of their findings (e.g. triangulation, respondent validation, more than one analyst)
- If the findings are discussed in relation to the original research question

10. How valuable is the research?

HINT: Consider

- If the researcher discusses the contribution the study makes to existing knowledge or understanding e.g. do they consider the findings in relation to current practice or policy?, or relevant research-based literature?
- If they identify new areas where research is necessary
- If the researchers have discussed whether or how the findings can be transferred to other populations or considered other ways the research may be used

6

A.4 EPHPP Quality Assessment Tool for Quantitative Studies

QUALITY ASSESSMENT TOOL FOR QUANTITATIVE STUDIES

COMPONENT RATINGS

A)   **SELECTION BIAS**

(Q1)   **Are the individuals selected to participate in the study likely to be representative of the target population?**
1   Very likely
2   Somewhat likely
3   Not likely
4   Can't tell

(Q2)   **What percentage of selected individuals agreed to participate?**
1   80 - 100% agreement
2   60 – 79% agreement
3   less than 60% agreement
4   Not applicable
5   Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

B)   **STUDY DESIGN**

Indicate the study design
1   Randomized controlled trial
2   Controlled clinical trial
3   Cohort analytic (two group pre + post)
4   Case-control
5   Cohort (one group pre + post (before and after))
6   Interrupted time series
7   Other specify _____
8   Can't tell

Was the study described as randomized? If NO, go to Component C.
No   Yes

If Yes, was the method of randomization described? (See dictionary)
No   Yes

If Yes, was the method appropriate? (See dictionary)
No   Yes

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

C)   CONFOUNDERS

(Q1)   **Were there important differences between groups prior to the intervention?**
   1   Yes
   2   No
   3   Can't tell

   The following are examples of confounders:
   1   Race
   2   Sex
   3   Marital status/family
   4   Age
   5   SES (income or class)
   6   Education
   7   Health status
   8   Pre-intervention score on outcome measure

(Q2)   **If yes, indicate the percentage of relevant confounders that were controlled (either in the design (e.g. stratification, matching) or analysis)?**
   1   80 – 100% (most)
   2   60 – 79% (some)
   3   Less than 60% (few or none)
   4   Can't Tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

D)   BLINDING

(Q1)   **Was (were) the outcome assessor(s) aware of the intervention or exposure status of participants?**
   1   Yes
   2   No
   3   Can't tell

(Q2)   **Were the study participants aware of the research question?**
   1   Yes
   2   No
   3   Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

E)   DATA COLLECTION METHODS

(Q1)   **Were data collection tools shown to be valid?**
   1   Yes
   2   No
   3   Can't tell

(Q2)   **Were data collection tools shown to be reliable?**
   1   Yes
   2   No
   3   Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

F)   WITHDRAWALS AND DROP-OUTS

(Q1)   Were withdrawals and drop-outs reported in terms of numbers and/or reasons per group?
- 1   Yes
- 2   No
- 3   Can't tell
- 4   Not Applicable (i.e. one time surveys or interviews)

(Q2)   Indicate the percentage of participants completing the study. (If the percentage differs by groups, record the lowest).
- 1   80 -100%
- 2   60 - 79%
- 3   less than 60%
- 4   Can't tell
- 5   Not Applicable (i.e. Retrospective case-control)

RATE THIS SECTION	STRONG	MODERATE	WEAK	
See dictionary	1	2	3	Not Applicable

G)   INTERVENTION INTEGRITY

(Q1)   What percentage of participants received the allocated intervention or exposure of interest?
- 1   80 -100%
- 2   60 - 79%
- 3   less than 60%
- 4   Can't tell

(Q2)   Was the consistency of the intervention measured?
- 1   Yes
- 2   No
- 3   Can't tell

(Q3)   Is it likely that subjects received an unintended intervention (contamination or co-intervention) that may influence the results?
- 4   Yes
- 5   No
- 6   Can't tell

H)   ANALYSES

(Q1)   Indicate the unit of allocation (circle one)
community   organization/institution   practice/office   individual

(Q2)   Indicate the unit of analysis (circle one)
community   organization/institution   practice/office   individual

(Q3)   Are the statistical methods appropriate for the study design?
- 1   Yes
- 2   No
- 3   Can't tell

(Q4)   Is the analysis performed by intervention allocation status (i.e. intention to treat) rather than the actual intervention received?
- 1   Yes
- 2   No
- 3   Can't tell

GLOBAL RATING

COMPONENT RATINGS
Please transcribe the information from the gray boxes on pages 1-4 onto this page. See dictionary on how to rate this section.

A	SELECTION BIAS	STRONG	MODERATE	WEAK	
		1	2	3	
B	STUDY DESIGN	STRONG	MODERATE	WEAK	
		1	2	3	
C	CONFOUNDERS	STRONG	MODERATE	WEAK	
		1	2	3	
D	BLINDING	STRONG	MODERATE	WEAK	
		1	2	3	
E	DATA COLLECTION METHOD	STRONG	MODERATE	WEAK	
		1	2	3	
F	WITHDRAWALS AND DROPOUTS	STRONG	MODERATE	WEAK	
		1	2	3	Not Applicable

GLOBAL RATING FOR THIS PAPER (circle one):

1	STRONG	(no WEAK ratings)
2	MODERATE	(one WEAK rating)
3	WEAK	(two or more WEAK ratings)

With both reviewers discussing the ratings:

Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings?

    No   Yes

If yes, indicate the reason for the discrepancy

1	Oversight
2	Differences in interpretation of criteria
3	Differences in interpretation of study

Final decision of both reviewers (circle one):   **1   STRONG**
                                                         2   MODERATE
                                                         3   WEAK

A.5 Implementation Science Systematic Review Journal Article

Implementation Science

SYSTEMATIC REVIEW   **Open Access**

CrossMark

Exploring the factors affecting the implementation of tobacco and substance use interventions within a secondary school setting: a systematic review

Gillian Waller[1], Tracy Finch[2]* , Emma L. Giles[1] and Dorothy Newbury-Birch[1]

Abstract

Background: The aim of this mixed-methods, systematic literature review was to develop an understanding of the factors affecting the implementation of tobacco and substance use intervention programmes in the secondary school setting using NPT as an analytical framework.

Methods: A search strategy was developed that combined implementation, school and intervention search terms. Literature searches were conducted in MEDLINE, Embase, PsycHINFO, Scopus, ERIC, CINAHL, Web of Science and the Cochrane Library. PROSPERO was also searched for similar systematic reviews and a grey literature search of policy documents and relevant material was also conducted. Papers were eligible for inclusion if they were based in a secondary school and focused on the implementation of a tobacco or substance use programme. Both quantitative and qualitative methodologies were considered for inclusion. Normalisation Process Theory (NPT) was used as a conceptual framework to identify facilitators and barriers of implementation and to structure the synthesis.

Results: Inclusion criteria were met by 15 papers. The included papers were both quantitative and qualitative and focused on a range of tobacco and substance use interventions, delivered by differing providers. Key facilitating factors for implementation were positive organisational climate, adequate training and teacher's and pupil's motivation. Barriers to implementation included heavy workloads, budget cuts and lack of resources or support. Quality appraisal identified papers to be of moderate to weak quality, as papers generally lacked detail.

Conclusion: NPT highlighted the need for studies to extend their focus to include reflexive monitoring around appraisal and the evaluation processes of implementing new tobacco or substance use programs. Future research should also focus on employing implementation theory as a tool to facilitate bridging the gap between school health research and practice.

Keywords: Systematic literature review, Implementation, Secondary school, Substance use, Tobacco, Normalisation Process Theory

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Background

Adolescence can be identified as a critical development phase and therefore a key stage within the life course. It is a time when adverse health-related behaviours, such as tobacco or substance use, are frequently established and 'tracked' into adulthood [1–4]. Adolescence—or the 'secondary school years'—thus provides a key period for the delivery of interventions [2, 5–7] to deter uptake of unhealthy behaviours. The uptake of health risk behaviours are more likely to occur in the later stages of adolescence, between the ages of 15 and 19 years [8, 9]. This is largely due to the fact that a young person in late adolescence is more susceptible to social influences, such as peer pressure, experimentation and rebellion. These social influences are associated with an increased tendency to undertake in risk-taking behaviour, such as drug taking or risky alcohol consumption, and can play a substantial role in influencing long-term health outcomes [8, 10, 11].

As it remains compulsory for young people, in the UK, to engage in academic education until the age of 16 years; the secondary school setting acts as a platform in which to deliver preventative health education and complex interventions to tackle tobacco and substance use. Recent feasibility research exploring the delivery of brief alcohol interventions (ABIs) in secondary schools has proved effective, highlighting the potential as a setting to deliver such interventions [2, 7]. However, the effectiveness of school-based substance use interventions has often proved inconclusive. A specific example of this is a systematic review conducted by Foxcroft and Tsertsvadze, aiming to explore the extent of research around the effectiveness of school-based, alcohol primary prevention programmes [12]. The review identified that some studies showed no evidence of a primary intervention being effective in a school setting, whilst others presented statistically significant results, indicating a degree of effectiveness [12].

Breaking this down further, to assess whether complex substance use interventions have a place within secondary schools, although there remains to be a series of factors affecting the effectiveness of such an intervention, there does appear to be a gap between generating school-based, tobacco and substance use intervention research evidence and the implementation of this research in practice [13]. Very few of these papers offered a significant assessment of the factors affecting the implementation of their substance use interventions, or how varying the implementation process of such an intervention could have the potential to affect the effectiveness. Therefore, this systematic review was proposed as a way in which to collate the available evidence from studies, which present evidence around the factors affecting the implementation of a tobacco or substance use interventions, within a secondary school setting. It builds upon the current work in this area [14, 15], to provide an account of factors specific to secondary school level education and specifically the implementation of tobacco and substance use interventions.

The field of implementation science has been born as a result of recognising the importance of the gap between research and practice [13]. This gap has expedited the use of multitudinous theoretical constructs, aiming to enhance the implementation process, identify the barriers and facilitators and acting as valuable tools in evaluating implementation [16, 17]. Much of the advancing knowledge on barriers and facilitators to implementation has been construed within health care and the provision of primary care, and implementation theory has been frequently employed within this context [18, 19]. The use of theory has been less widely associated with school implementation research [20]. Therefore, this systematic review seeks to interpret and synthesise determinants of implementation in the school setting by using a specific implementation theoretical framework.

The Normalisation Process Theory (NPT) provides an explanation of the factors affecting whether an intervention can be incorporated into practice, with reference to the context in which the work of the new intervention occurs [21]. It focuses on understanding the implementation, embedding and integration of new technologies and organisational innovations by considering four theoretical constructs: Coherence, Cognitive Participation, Collective Action and Reflexive Monitoring [16, 21, 22]. Table 1 presents an overview of the four NPT constructs and its respective subconstructs.

NPT is our chosen framework as it has demonstrated value in synthesising research findings to identify knowledge consistencies and gaps regarding implementation determinants [23, 24]. Although NPT was designed for implementation and integration problems in healthcare, the constructs are transferable and thus can be applied fluidly to consider the review's focus of factors affecting implementation in the school setting [25]. As this field is currently small and studies of implementation are heterogeneous, NPT offers advantage as a theoretical framework for integrating both qualitative and quantitative findings to develop an assessment of the factors which can affect implementation in this context [25]. To our knowledge, NPT has not previously been used to synthesise findings in the context of secondary school implementation research.

Aim

The aim of this systematic review was to identify and synthesise the factors affecting the implementation of tobacco and substance use interventions in the secondary school setting, by applying the Normalisation Process Theory.

335

Table 1 Normalisation Process Theory (NPT) breakdown of key constructs [16, 21, 22]

NPT construct	Definition	Sub constructs
Coherence	The sense-making work that people do individually and collectively when they are faced with the problem of operationalizing a set of practices.	• Differentiation • Communal specification • Individual specification • Internalisation
Cognitive Participation	The relational work that people do to build and sustain a community of practice around a new technology or a complex intervention.	• Initiation • Enrolment • Legitimation • Activation
Collective Action	The operational work that people do to enact a set of practices, whether these represent a new technology or a complex healthcare intervention.	• Interactional Workability • Relational Integration • Skill set Workability • Contextual Integration
Reflexive Monitoring	The appraisal work that people do to assess and understand the ways that a new set of practices affect them and the others around them.	• Systematisation • Communal appraisal • Individual appraisal • Reconfiguration

Methods

Using a registered protocol (PROSPERO: CRD42016039354), systematic review methods were undertaken to identify eligible literature. Developing specific inclusion and exclusion criteria allowed the selection of papers.

Study inclusion and exclusion criteria

Both quantitative and qualitative studies were eligible for inclusion. Papers were not excluded by their methodology alone, and to minimise the risk of bias, papers were not excluded by their background, ethnicity or language. To be included, papers had to be based within a secondary school or the international equivalent, and focusing on students aged between 11 and 18 years. Papers based outside the secondary school (e.g. primary, universities and community locations) were excluded. Included papers were those that reported any factors affecting the implementation of a tobacco or substance use intervention. Studies conducted pre-1980 were excluded due to subsequent school system reforms, which would likely limit the relevance of findings.

Literature searches

The electronic databases, MEDLINE, Embase, PsycHINFO, Scopus, ERIC, CINAHL, Web of Science and the Cochrane Library, were searched using specific key words to obtain eligible papers, as shown in Table 2. Search terms were modified to accommodate the differences in the databases, and Boolean search terms and MeSH terms were employed to ensure all relevant literature was searched for.

Grey literature, such as national government school curricula and local government websites, were searched for via common search engines using key words reflecting the formal research strategy. Potentially relevant material was obtained and assessed using the same inclusion and exclusion criteria. In addition, the PROSPERO database was searched to identify whether any similar reviews had been conducted.

Study selection

Screening was undertaken by two of the review authors (GW and DNB). In the first round of screening, GW assessed papers against the criteria by reviewing the title and abstract and DNB was responsible for double sifting 20% of the results. If papers appeared relevant, the second stage involved full papers being obtained, assessed and retained if they continued to meet the inclusion criteria. One hundred percent of the papers at the second stage were double sifted by DNB. Any screening discrepancies between reviewers were resolved by further discussion and a third reviewer (TF) was consulted if necessary.

Data extraction

A data extraction form was developed and piloted on the first five studies. The information extracted from each paper was based around the following: *Paper Reference and Location*—The author information and which country the study had been conducted in, *Intervention*—Whether the intervention was an alcohol, drug or substance use intervention or a combination of some or all, *Study Population*—How many young people or providers participated in the study, *Study Design*—The methods the study employed, *Implementation Measurement*—What was measured in relation to implementation, *Data Analysis*—What methods were used to analyse the collected data, and the *Key Results*—These were the key results stated in the paper that specifically identified as factors affecting implementation. The information extracted was used to formulate a summary table, which is displayed in Table 3, Additional file 1.

Data synthesis

A narrative approach to synthesis was undertaken due to the expected heterogeneity of the included studies. The Normalisation Process Theory (NPT) [22, 25] was used as a novel way to structure the synthesis and to guide the assessment of established implementation

336

Table 2 Search Terms for each Database

Databases	Search terms—*combined with 'AND'*			
	School	Implementation	Intervention/change	Health
Cochrane Library EMBASE Via OVID ERIC Via EBSCO host Medline Via EBSCO host SCOPUS Web of Science Via Thomson Reuters	school*	implement* **OR** adopt* **OR** integrate* **OR** normali*	improvement* **OR** innovation **OR** knowledge* **OR** organisational change* **OR** quality improvement **OR** readiness to change* **OR** behaviour change* **OR** intervention* **OR** school based intervention*	health*
CINAHL Via EBSCO host	school*	implement* **OR** adopt* **OR** integrate* **OR** normali*	CINAHL Search Terms: Health Behaviour exp. **OR** Behavioural Changes **OR** Behaviour Modification exp. **OR** Health Education Key Words: improvement* **OR** innovation **OR** knowledge* **OR** organisational change* **OR** quality improvement **OR** readiness to change* **OR** behaviour change* **OR** intervention* **OR** school based intervention*	health*
PSYCHINFO Via EBSCO host	school*	implement* **OR** adopt* **OR** integrate* **OR** normali*	MeSH Terms: Behaviour Change **OR** Health Education **OR** School Based Intervention Key Words: improvement* **OR** innovation* **OR** knowledge* **OR** organisational change* **OR** quality improvement **OR** readiness to change* **OR** behaviour change* **OR** intervention* **OR** school based intervention*	health*

OR and AND denote the Boolean operators used
* denotes truncation symbol

factors reported in the included studies. NPT-based interpretations of the study findings were assessed by two authors (GW and TF) and discussed as necessary within the wider review team.

Quality assessment
Included papers were assessed using quality assessment tools appropriate to the study design. However, due to the limited availability of relevant literature, quality was not used as an indicator of exclusion. The Effective Public Health Practice Project (EPHPP) appraisal tool was used to assess quantitative studies [26]. Each component of a paper was rated, with each rating being combined to obtain a global rating of Strong, (0 weak ratings), Moderate (1 weak) or Weak (2+ weak). The Critical Appraisal Skills Programme (CASP) tool was employed to appraise qualitative papers [27]. CASP assessed the included papers with three questions: Is the study valid? What are the results? and Are the results useful? [27].

Results
Figure 1 shows a PRISMA diagram displaying the number of papers excluded at each sifting stage [28, 29], whilst Table 3 presents a summary of each paper, their key findings and the results of quality appraisal.

Fifteen papers were deemed eligible for inclusion in the review. Six papers focused on tobacco interventions [30–35], four focused on drug use interventions [36–39], three focused on general substance use interventions [40–42], one focused on an alcohol intervention [43] and one focused on a dual alcohol and drug intervention [44]. All but one paper lacked the use of an implementation theory [44, 45] and no reference was made within the included papers to the use of implementation strategies.

Results of quality assessment
The results of the quality assessment are displayed in the final column of Table 3. The EPHPP tool identified that, of the quantitative papers, four were moderate quality papers [32, 33, 36, 37] and seven were classed as weak papers [30, 31, 35, 39–41, 43]. The weakest areas in papers included validity and reliability of data collection, reporting of participant withdrawals, and nearly every paper lacked confounding factor reporting. The five qualitative papers were rated, using CASP, from strongest to weakest by how many 'Yes', 'No' or 'Can't tell' outcomes they received. The weakest papers lacked reporting of specific methodological details and no papers made reference to ethical considerations or obtaining ethical approval.

Synthesis of results
During data extraction, the key factors, found to affect the implementation of a tobacco or substance use intervention

Fig. 1 PRISMA flow chart showing the number of papers identified in the original literature searches and the study selection process
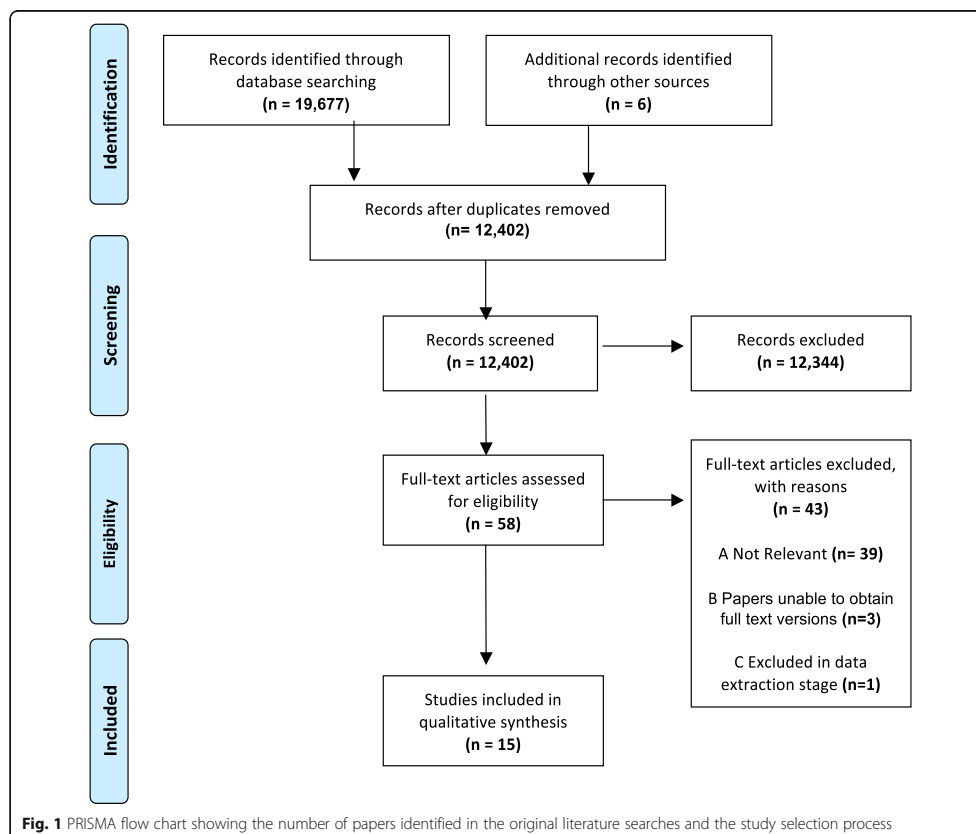
within a secondary school, were identified within the 15 included papers and coded and organised using the four NPT constructs. This is displayed in Table 4.

Coherence

The coherence construct of NPT refers to the sense-making work that individuals participate in either individually, or collectively, when operationalizing a new intervention [25]. A key result relating to Coherence was that providers were often found to not understand, or were not able to make sense of what a tobacco or substance use intervention required, in order to implement it successfully [38, 41, 42, 44]. MacDonald and Green found that Project Workers (PWs) responsible for implementing their substance use intervention *'didn't understand the model enough to implement it or to sell it to others'* [44]. PWs were unable to make sense of the intervention and therefore were unable to fulfil their role of introducing and implementing the intervention [44]. This was

reported similarly in the paper by Thaker et al., as learning the Reconnecting Youth (RY) intervention was found to be challenging, and even following training, teachers found RY to be complex and difficult to implement [41].

Training was identified in a large proportion of included papers as a factor with the potential to facilitate implementation within the secondary school setting [32, 34, 41, 42]. Specific examples included McCormick et al. identifying that teachers who were adequately trained to deliver their tobacco intervention were more likely to implement curricula, and also increased the amount of curricula implemented [32], whilst Pettigrew et al. reported that the training, that was provided for the implementation of their substance use intervention, was insufficient for maintaining implementation fidelity and improving outcomes, and the importance of investment in delivery personnel, and delivery support was emphasised [42]. Basen-Engquist investigated the effect on implementation of a tobacco intervention when providers were trained in a live session

Table 3 Summary table of included studies

Study	Intervention	Study design	Population	Implementation measurement	Data analysis	Key results—*factors affecting implementation*	Quality appraisal
Audrey et al., 2008 [34] UK	*Tobacco* A Stop Smoking In Schools Trial (ASSIST)	cRCT. questionnaire interviews	30 ASSIST schools & 29 control	Process evaluation to examine the context, implementation and receipt of the intervention	Framework method of data management. (reading, coding & identifying themes, & sorting material according to key issues)	Teachers welcomed external training—it interested pupils, prevented difficulties of discussing smoking with teachers and relieved staff burden. Implementation appeared compatible with the school ethos and timetable. Smoking was perceived as a difficult issue and staff welcomed a new initiative. Disruption to the timetable was inevitable, and the importance of communication between ASSIST staff and teachers was important	CASP. Moderate
Barr et al., 2002 [33] USA	*Tobacco* Tobacco Use Prevention Education (TUPE)	Telephone survey	296 middle school teachers & 282 high school teachers	Relations between TUPE teachers' receptivity or amenability to implement TUPE programs and features of implementation settings	Cluster analyses for amenability to implementation. A one-way ANOVA for associations between amenability and implementation. A hierarchal multiple-regression for staff effectiveness perceptions	Indicators of staff amenability were variable. The most amenable staff reported consistently covering each activity with few barriers. For staff perceptions of effectiveness to prevent smoking initiation: Tobacco related norms accounted for 9.9% of variance, staff training & TUPE support or barriers—4.2%, and class activities—4.0%. For staff perceptions of TUPE for cessation: Tobacco norms—6.6% of variance, staff training & TUPE support—6.3%, class activities—5.5%	EPHPP. Moderate
Basen-Engquist et al., 1994 [31] USA	*Tobacco.* Minnesota Smoking Prevention (MSPP)	Questionnaire	39 districts in live training & 33 in video training. Mean number of pupils was 41, 2.8 teachers	Assessing how the type of teacher training affects implementation via a live workshop or video training	Fisher exact test & Mann-Whitney *U* for differences in teacher implementation Two group *t*-tests tested differences between students in the live and video districts	The relationship between type of training and use of the curriculum was significant. Districts who were assigned to the video training condition were less likely to teach the curriculum. However, implementing teachers from both groups reported high levels of implementation. Students in live workshops were more likely to recall discussions and activities	EPHPP. Weak

Table 3 Summary table of included studies (*Continued*)

Study	Intervention	Study design	Population	Implementation measurement	Data analysis	Key results—*factors affecting implementation*	Quality appraisal
Garrahan 1995 [40] USA	*Substance Use*	Systems approach model	800 students	Not stated	Baseline substance use data was collected via a survey & analysed	Involving school personnel in a building-wide manner and monitoring efforts and outcomes was important. All implemented intervention aspects were linked to existing components of the school, and this gave the impression that what was implemented was based on common sense or self-evident reasoning	EPHPP: Weak
Jarrett et al., 2009 [35] USA	*Tobacco* Not-On-Tobacco (NOT)	Survey	769 pupils who reported regular smoking.	Perceptions of facilitator characteristics & the relationship between perceptions & outcomes	Descriptive analyses used to determine overall ranking of facilitator characteristics. Chi-square test to determine if facilitator ratings differed by race or sex	88.7% of pupils rated facilitators as favourable. No nagging or preaching, nonjudgmental, trustworthy, caring, & confidentiality were scored highly. There were few differences in ratings by race. Favorability scores were associated with changes in smoking (quit or reduce). Pupils who perceived facilitators favourably showed significant smoking reduction and cessation rates, regardless of sex or race	EPHPP: Weak
MacDonald and Green 2001 [44] Canada	*Substance Misuse*	Interviews and observations with Project Workers (PWs)	100 interviews in 6 sites with school admins, teachers, pupils, parents, & agency staff	Participants were probed around the level of understanding and support for prevention, implementation experiences, implementation barriers & facilitators, support for PWs and the school's problem with drug and alcohol issues	Constant comparative method of grounded theory Field notes were recorded and used to support analysis	PWs needed to establish legitimacy and familiarity within schools, by overcoming staff opposition. They had to address conflicting expectations, resulting from poor preparation. Schools had to be ready and willing to implement, and PWs faced issues selling the model, and facilitating participation. Training sought to teach PWs to understand the model, but this did not occur and PWs realised they did not understand it enough to implement to others and few achieved it as intended. Some tried, but were discouraged by school barriers. Some retained key features, but omitted elements due to admin pressure or context demands	CASP: Strong

340

Table 3 Summary table of included studies *(Continued)*

Study	Intervention	Study design	Population	Implementation measurement	Data analysis	Key results—*factors affecting implementation*	Quality appraisal
McBride et al., 2002 [43] Australia	*Alcohol* The School Health & Alcohol Harm Reduction Project (SHAHRP)	Longitudinal study	41 classes,28 teachers 6 schools	Series of methods to optimise and assess implementation fidelity including training, critical assessment and self report	Spearman's rank measured fidelity.Theme matrices described qualitative responses	SHAHRP was taught 80.7% as intended, with fidelity ranging from 78.9 to 83.4%. Implementation was optimised by: training, staff and pupil motivation and timing. Teachers found too much work in some lessons, interruptions reduced classroom time and implementation effectiveness was pupil dependent. Expectations needed to be lowered for difficult pupils and some activities were not implemented as intended	CASP: Weak EPHPP: Strong/ Moderate
McCormick et al., 1995 [32] USA	*Tobacco*	RCT	21 districts; 50 schools, and 3000 pupils. Districts were assigned to control or intervention.	Use of 'Level of use' tool and implementation check-sheets	Population means, median, frequencies & correlations used for summary. Non-parametric tests tested for differences between control and intervention	Overall implementation completeness was low, with the mean % implemented being 70% and 23% implemented ≥90%. Larger districts were more likely to implement than small ones. Districts with favourable climates were more likely to implement and reported higher usage. Trained teachers were more likely to implement curricula and more likely to implement higher proportion	EPHPP: Moderate
Pettigrew et al., 2013 [42] USA	*Substance use* keepin' it Real (kiR)	Ethnography	39 schools; 14 Control, 14 Rural: Mean number of pupils per school = 99, with a range from 27 to 226	An assessment of teacher implementation using the indicators; delivery methods, consistency of delivery, teaching standards	Coding provided; quantitative implementation ratings—quality adherence, adaptation, delivery and engagement, whilst qualitative codes identified adaptation and engagement	Analysis identified teacher control as passive, coordinated, or strict, and pupil participation as disconnected, attentive, or participatory; serving as a classroom typology for kiR implementation. Passive teachers were linked with passive pupils, strict teachers had attentive pupils, whilst classes with participatory pupils were taught by coordinated teachers. Teachers who taught kiR frequently tended to display similar control and pupils participated consistently	CASP: Moderate

341

Table 3 Summary table of included studies (*Continued*)

Study	Intervention	Study design	Population	Implementation measurement	Data analysis	Key results—*factors affecting implementation*	Quality appraisal
Rohrbach et al., 2007 [37] USA	*Substance Use* Project Towards No Drug Abuse (TND)	RCT	18 schools—6 in each different condition. Pupils ranged from 13 to 19 years of age	Study compared teachers with Program Specialists (PSs). Questionnaire assessed implementation fidelity of TND via adherence, classroom process and perceived pupil acceptance	Inter-rater reliability was calculated for each item. To test the effect of implementer on fidelity and outcomes, a mixed-linear model was used	Of the 4 indexes of fidelity, only delivery quality differed between PSs and teachers. Both teachers and PSs achieved effects on 3 of the 5 immediate outcome measures, including program knowledge, addiction concern, and self-control. Pupils' posttest ratings of the program and the quality of delivery showed no difference between teacher and specialist-led classrooms	EPHPP: Moderate
Skara et al., 2005 [36] USA	*Substance Use* Project Towards No Drug Abuse (TND).	Questionnaire	18 schools—6 in each different condition. 2735 students completed pretest questionnaires; 85% completed post-program	Questionnaire assessed implementation fidelity of TND via questions open and closed questions	Data was analysed using a generalised mixed-linear model using SAS	The curriculum was implemented as intended, received favourable ratings, and significantly improved knowledge. Providers reported high adherence to lesson plans and lessons were not difficult to teach. Adherence and delivery quality did not differ by curriculum or school. Individual ratings of delivery quality were favourable, including providers' perceptions of pupil participation, pupil interest, provider's maintenance of class control & providers' perceptions of effectiveness	EPHPP: Moderate
Sloboda et al., 2009 [39] USA	*Substance Use* Take Charge of Your Life (TCYL)	Observation and surveys	TCYL was delivered by 140 Drug Abuse Resistance Education (DARE) officer instructors	Implementation fidelity measured using instructional strategy (IS)	Descriptive statistics & analyses between content coverage and IS & scores from targeted lessons were conducted using hierarchical linear modelling to gain 2-level random intercept models	Higher content was correlated with IS. There were no correlation between age, sex, race, education, content coverage or use of IS. Pupils with higher coverage scored higher on the consequences measure. Results indicated pupils with a higher proportion of the content had greater perceptions of negative consequences. Greater exposure and greater content coverage was related to negative alcohol expectancies	EPHPP: Weak

342

Table 3 Summary table of included studies (*Continued*)

Study	Intervention	Study design	Population	Implementation measurement	Data analysis	Key results—*factors affecting implementation*	Quality appraisal
Stead et al., 2007 [38] UK	*Substance Use* Blueprint	Observations and interviews	30 schools in 4 Local Authority areas: 24 intervention & 6 control. Year 7 (11–12 years) & Year 8 (12–13 years)	Implementation fidelity measured via adherence, exposure, participant responsiveness, quality of delivery and program differentiation	Observation schedule used to generate descriptive statistics.	The mean content fidelity was 72%. As teachers got familiar with lessons, they were likely to modify or omit elements. Fidelity was highest in teacher-pupil lessons & lowest for pupil-pupil. Resource use was variable and teachers found content difficult. Teachers were unsure of interactive sessions due to disruption & unpredictable outcomes. Some teachers expressed concern about answering questions about drugs, but there was no difference in delivery quality of teachers with experience & those without	CASP: Moderate
Sussman et al., 1993 [30] USA	*Tobacco* Project Towards No Tobacco Use	Questionnaire	4852 7th grade pupils. 9 Health Educators. 76 observers collected teacher data	Key implementation measures were around program completion and delivery (fidelity- adherence, exposure, reinvention)	Pupils & educators gave ratings of implementation. Post hoc comparisons were used between pairs of means and one-way ANOVAs pre-dicted response means	Adherence did not vary by condition and high levels of implementation were observed in all conditions. Pupils preferred physical consequences and enthusiasm was rated the lowest. Health educators' enthusiasm, effort and class enthusiasm differed by condition. Teachers did not differ in their ratings of class control or understandability	EPHPP: Weak

Table 3 Summary table of included studies *(Continued)*

Study	Intervention	Study design	Population	Implementation measurement	Data analysis	Key results—*factors affecting implementation*	Quality appraisal
Thaker et al. 2008 [41] USA	*Substance Use* Reconnecting Youth (RY) program	Organisational diffusion study	At risk of drop out students from grades 9–12. 5 schools from each district took part	Three diffusion of innovation indicators used: perceived advantage, complexity and compatibility. Capacity, school turbulence and leadership/admin support were also explored to assess how they could affect implementation	Survey data was analysed using SPSS whereas interview data was transcribed and analysed using qualitative content analysis	Teachers reported learning RY difficult, as they were not prepared & needed to plan. RY was rigid, complex and difficult to implement the timelines & content. School capacity (skills and resources) varied & affected implementation. Other issues were budget shortfalls, funding cuts, difficulties finding rooms and school turbulence (transient pupil populations, school reorganisation, schedule changes, & staff turnover). RY lacked leadership and admin support. Only 50% of staff reported principles being supportive. Whilst only 1/3 of district admins considered RY important	EPHPP: Weak

344

Table 4 A summary of the key results organised by their corresponding NPT construct

Factors affecting implementation	Papers	NPT construct
Distinguishing from current practice	[34, 40]	Coherence
Fitting with school ethos	[34]	Coherence
Providers seeing the value or benefit of an intervention	[34, 36, 38, 44]	Coherence
Providers not delivering or not understanding how to deliver (use of specialist knowledge)	[38, 41, 42, 44]	Coherence Collective Action
Training	[32, 34, 41, 42]	Coherence Collective Action
Implementation driving force	[34, 37, 42–44]	Cognitive Participation
Role identity—provider 'agreeing' it should be part of their role	[30, 34, 40, 43, 44]	Cognitive Participation
Provider supporting intervention	[30, 33, 34, 39, 41]	Cognitive Participation
Provider motivation	[43]	Cognitive Participation
Sustainability	[30]	Cognitive Participation
Young people behaviour	[42]	Cognitive Participation
Providers feeling uncomfortable with delivery	[38]	Cognitive Participation Collective Action
Budget cuts or limited resources	[41]	Collective Action
Disruption to school timetable	[34]	Collective Action
Favourable organisational climate/host support	[32, 34, 40, 41, 44]	Collective Action
Fidelity	[30, 31, 33, 36–39, 41–44]	Collective Action
Importance of staff skills, knowledge or characteristics	[35, 42]	Collective Action
Involving schools; monitoring outcomes	[40]	Collective Action
Schools prepared for implementation	[44]	Collective Action
Staff turnover	[41]	Collective Action
Modifying practice (from feedback)	[38]	Reflexive monitoring
Negative implementation experience	[41]	Reflexive monitoring
Positive feedback	[36]	Reflexive monitoring

in comparison to video training [31]. They reported that providers in the video training condition were less likely to teach the curriculum, indicating pre-recorded training affected implementation [31]. Sloboda et al. showed higher content coverage was correlated with appropriate instructional strategy ($r = 0.93$, $P < 0.001$). In Stead et al., some teachers were new and were concerned with implementing the substance use intervention as required [38]. Although training emphasised that teachers did not need specialist drug education, some felt uncomfortable about being unable to answer students' questions [38].

The ability of participants to distinguish the intervention from their current ways of working was also identified as being a factor affecting implementation [34, 40]. Audrey et al. reported that as smoking was seen as problematic in schools, secondary school staff welcomed the implementation of a tobacco intervention, that was different from their current practices [34]. But due to the heterogeneity of the results, it was also identified to remain cautious when straying considerably from existing practice, as Garrahan reported that all of their

intervention elements were linked to existing school components as '*it gave the impression that much of what was done was based on common sense or derived by reasoning from self-evident conditions*' [40].

It was identified as being important for tobacco or substance use interventions to fit with a school's ethos, in order to be able to construct a degree of value to implement [34, 36, 38, 44]. A specific example of this was Audrey et al. reporting the importance of using peer students, as it resulted in the recruitment of students representative of their peer group and staff found this to be valuable [34].

Cognitive Participation
In the context of this review, the construct Cognitive Participation was used to refer to the relational work that individuals do to build and then sustain a community of practice around a new intervention within the secondary school setting [25].

Having a designated individual or a group of individuals to act as implementation driving forces was identified in several papers as being important in influencing the

implementation of a tobacco or substance use intervention [34, 37, 42–44]. A specific example included Audrey et al., which reported the importance of students in driving implementation and in engaging other peers to be involved with the intervention [34]. This is also linked with provider motivation and buy-in. McBride et al. discusses teachers' motivation and their view of students' motivation towards the alcohol intervention SHAHRP. Motivation positively influenced teachers' willingness and commitment to implement as intended, as there was buy-in and support for the intervention in response to students' attitudes [43]. Motivated teachers were seen to act as implementation driving forces in which to motivate students [43]. This was further confirmed by Rohrbach et al., as '*motivated, trained classroom teachers*' implemented substance use programs with fidelity and achieved immediate effects [37]. In Sussman et al., it was reported that health educators' enthusiasm, effort and class enthusiasm differed, when it came to the implementation of their tobacco intervention, indicating there was differing levels of willingness depending on the context [30].

Pettigrew et al. acknowledged that whilst teachers played a central role in driving the intervention implementation, students' behaviour was important, as not all students appeared equally engaged. Some displayed disconnected behaviour, whilst others were attentive or participatory, and this affected implementation [42]. In addition, in the paper by Jarrett et al., an association between teens' perceptions of facilitator characteristics and how important N-O-T was in quitting smoking was reported [35].

The perceptions of providers, and agreeing that a tobacco or substance use intervention should be part of their work were identified as factors affecting implementation [30, 34, 40, 43, 44]. This was seen in Audrey et al., as teachers recognised the importance of using student peers, as it '*complemented their attempts to promote confidence and responsibility*' [34]. In Barr et al., results showed that teachers' perceptions of the implementation settings significantly influenced their reactions, which ultimately affected implementation and long-term sustainability [33]. Sustainability was also discussed in Macdonald and Green as PWs needed to maintain willingness to introduce and implement new practices, and sustainability was often difficult [44]. The paper by Stead et al. reported tension, with teachers being uncomfortable with some of the intervention sessions [38]. Sessions, such as interactive sessions, were not looked upon favourably by some providers and were therefore not delivered as intended, indicating providers were less likely to agree that an intervention should be part of their work if they were unhappy or uncomfortable with delivery [38].

Collective Action
The construct Collective Action characterises the operational work that individuals are required to do in order to

be able to enact a new practice [25]. Fidelity, or how closely an intervention is implemented as intended, was one of the most commonly discussed factors affecting implementation within included papers [30, 31, 33, 36–39, 41–44]. Fidelity generally appeared high across the papers, with McBride et al. reporting 80.7% of SHAHRP was taught as intended, in Rohrbach et al., out of four implementation indexes, only one showed differences in delivery between program specialists and teachers, and both Sloboda et al. and Skara et al. reported programs being implemented as intended [39]. In Thaker et al., RY was implemented according to protocols, and high fidelity was observed in all schools [41]. Sussman et al. reported adherence did not vary by condition, and high fidelity was observed in all conditions [30]. Basen-Engquist et al. reported teachers from both groups reported high implementation fidelity [31]. Pettigrew et al. found that teachers, who taught the kiR intervention more than once, tended to exert similar levels of control in delivering curriculum and students exhibited consistent participation levels [42].

However, high fidelity was not observed in Barr et al. as it reported substantial heterogeneity in teachers' amenability and tasks [33]. Stead et al. reported the mean lesson content fidelity to be 72%, but as teachers became familiar with lessons they were more likely to modify or omit elements [38]. MacDonald and Green reported that few PWs were able to implement the model as intended [44]. Some PWs reported trying to, but were discouraged by school barriers and administrative pressures, indicating inadequate support from the school acted as a factor negatively affecting implementation [44].

This links to the several papers identifying ways in which contextual factors affected implementation [32, 34, 40, 41, 44]. MacDonald and Green reported that before PWs could implement new strategies, schools needed to be ready and willing [44]. Issues were reported with selling the program, facilitating participation, and also steering the committee, indicating host support was lacking [44]. Further challenges were reported in Thaker et al., with only 50% of staff reporting they had Head Teacher support [41]. Teachers in one school reported that the assistant principal and counsellors did not support RY and support for student recruitment and teachers was also lacking [41]. In addition, the capacity of skilled staff and resources varied significantly. Budget shortfalls, funding cuts and inadequate resources, such as classroom space, were all cited as factors negatively affecting implementation [41]. Garrahan emphasised the importance of involving school personnel in a building-wide manner, and monitoring efforts to achieve outcomes were found to be beneficial [40].

Timing was reported as a factor negatively affecting implementation. McBride et al. reported that teachers found it difficult to complete activities in the allocated time, as

did Thaker et al. [41, 43]. This was also observed in Stead et al., where teachers frequently overran and lacked sufficient preparation time, indicating the operational work was not appropriately allocated [38]. Audrey et al. also presented findings around the allocation of work during implementation, with teachers welcoming training by external trainers, as it created a greater interest amongst students and reduced the difficulties facing students discussing smoking with teachers [34].

Thaker et al. reported a high level of staff turnover as a factor negatively affecting implementation, as teachers reported that staff turnover made the implementation of substance use interventions difficult, and it made it difficult for providers to maintain trust in each other's work [41]. Trust and communication were also identified as being factors facilitating implementation in Audrey et al. The implementation of ASSIST was responsible for causing disruption to the school timetable, with students needing to be removed from classes. This was ameliorated by facilitating communication between the ASSIST team and school contacts, and between teachers within the school [34].

Reflexive Monitoring

Reflexive Monitoring considers the appraisal work that individuals participate in to assess and understand the ways that a new practice can affect them and the others around them [25]. Few of the included papers reported results indicative of the Reflexive Monitoring construct; only one paper reported participants modifying work in response to intervention appraisal [38], and there was a general lack of evaluatory components or reporting of how participants appraised implementation and how to improve the process.

In Skara et al., providers gave delivery quality ratings, such as their perception of student participation. As this was high ($M = 6.2$ on 7 point scale), delivery quality was reported as 'very favourable', indicating participants evaluated the implementation of the substance use intervention positively [36]. In Stead et al., the amount of activities in the implementation of Blueprint were modified, as a result of teacher feedback. Feedback highlighted that there was insufficient time to cover all aspects as intended, and although developers reduced the content, lessons still remained content rich and timing remained problematic [38]. One school, in Thaker et al's study, evaluated the implementation of RY extremely negatively and stated they would be unlikely to implement RY again due to 'a lack of flexibility, high preparation and a bad implementation experience' [41].

Discussion

Despite the 15 included papers being heterogeneous, common factors affecting the implementation of tobacco and substance use interventions in the secondary school could be identified. During quality appraisal, the majority of papers were classified as weak or moderate quality. A common weak area was found to be the reporting of confounding and contextual factors affecting study results, which was also identified in the review of healthcare innovation by Greenhalgh et al. [18]. By offering more of a focus to confounding factors, which have the potential to affect implementation, it is likely to add value in providing a richer understanding of the context and facilitate implementation within the secondary school setting.

This is a common thread within the implementation field, and advances in implementation science has led to the identification that implementation studies often display insufficient and inadequate reporting, requiring intervention [46–48]. Therefore, the recently published Standards for Reporting Implementation Studies (StaRI) Statement was developed as a set of guidelines to increase the transparency and accuracy of implementation study reporting [46]. This would particularly be of use within the school setting, as the reporting was shown in the review to be largely disparate. By employing the StaRI guidelines, within future implementation studies in the school setting, it would likely have a significant impact on the structure and reporting of implementation outcomes, and would not only ensure the delivery of higher quality papers but would increase the comparability and work towards improving implementation in practice in this setting [46].

NPT was used to provide a common interpretative framework to apply across the full set of papers and ensured that a comprehensive assessment of the factors affecting implementation could be made. This sought to be a novel element of this paper as NPT's use outside of the healthcare setting has been limited, and no previously published work has used it within the secondary school context. This has implications for broader implementation research, as it emphasises the usefulness of NPT in the school setting, and highlights the transferability of NPT in settings outside of healthcare.

A key result, relating to the implementation determinants of tobacco and substance use interventions, was that few papers reported providers being able to distinguish the intervention from their current ways of working. This is likely to create difficulties with staff engagement, which was also reported as a key factor affecting implementation, as there is no clear discernible benefit to a new practice. However, if an intervention is highly removed from current practice, providers may struggle with role identity conflicts, if it is perceived as being outside their traditional role. This is of increased importance within the secondary school setting, as staff in the included papers reported heavy workloads and time pressures, indicating the adoption of a new role or practice may provide a degree of conflict.

Another key factor determining implementation was the providers' level of comfort with delivery and the

topic. This has not been observed in a similar way in general health promotion implementation studies in schools [15] but is largely unsurprising when focusing on tobacco or substance use interventions, as they are often associated with negative stigma [49, 50] indicating a consideration for future work. Results highlighted providers feeling unprepared or that specialist knowledge was required to deliver interventions effectively [44]. This links with the conflict around role identity and the importance of training, which was emphasised in several papers [32, 34, 41, 42]. Comprehensive training can therefore be highlighted as an implementation strategy, which can positively affect implementation, if it is able to address how to deliver controversial topics and leaves providers feeling adequately supported.

Support and provider buy-in were consistently portrayed as factors facilitating and determining implementation and good engagement were seen to positively influence student behaviour [30]. In addition, provider support was linked with the need for an implementation driving force. Due to the disparate nature of the papers and their context, this was explored differently, with students, teachers, project workers and outsider providers acting as implementation drivers. Organisational support, which has previously been identified as a key implementation determinant [45, 51, 52], was also identified as a key factor affecting implementation, with the most effective support being gained pre-implementation and providing long-term maintenance [32].

Another result specific to the school setting included student engagement, which was observed as a factor affecting implementation in Pettigrew et al. [42]. Although the school settings were shown to be highly heterogeneous, this is likely to be common across schools, as individual differences will affect students' engagement levels.

Moving on to consider the finding around the implementation outcome fidelity, implementation fidelity appeared to be variable across the included papers and was affected by multiple factors. In some papers, providers felt it necessary to modify intervention components, leading to emphasising the importance of establishing which components are essential for implementation and which components should possess flexibility. Implementation fidelity is often considered as being complex and a key source of variability [37, 53, 54]. A specific example from the surrounding literature is within the review of implementation fidelity of school-based drug use interventions by Dusenbury et al. [55]. The idea that school providers can reduce implementation fidelity, but ultimately increase the 'implementability', is an important area to discuss. Although, it was seen as beneficial to possess flexibility, as programs that were too rigid experienced low fidelity, it is important to identify critical intervention components, to ensure that modifications do not affect the intervention's effectiveness. Therefore, to facilitate future school-based tobacco or substance use intervention implementation, core elements should be identified and complemented with flexible components, in order to be salient for the differing school contexts. This observation is also supported by several papers reporting teachers struggling with adhering to timelines; as although teachers were seen to be appropriate providers, heavy workloads made it difficult to maintain fidelity due to the preparation or time constraints. It is likely to be inappropriate to allocate teachers large implementation activities, and it may prove advantageous, if feasible, to source training or delivery to outside providers.

Even though this review highlights factors unique to the school setting, such as provider factors and pupil engagement, fitting this review into the wider implementation literature context; the findings around organisational host support, adequate resources and the need for appropriate feedback echo the findings of previously conducted implementation work [14, 45, 56, 57]. NPT was useful as an organising framework for synthesising findings from disparate study designs, to not only identify the factors affecting implementation, but also to highlight the knowledge gaps and areas warranting future research and or action in terms of intervention modification.

A unique finding of the review was that few of the included papers reported results indicative of NPT's Reflexive Monitoring construct. This could have resulted from methodological reasons, such as participants were not asked or the intervention effects were not known, or could simply be a result of the previously discussed limited reporting. However, as evaluations can provide value to implementation studies by identifying ineffective areas, such as provider or host support, it is likely that building in feedback or evaluation components into future work in the school setting would be advantageous.

Other gaps included papers lacking reporting around the use of predefined implementation strategies, which can be complemented by the use of implementation theory. As stated, almost all of the review's included papers lacked a theoretical driving mechanism. We argue that future school implementation work would significantly benefit from being theoretically driven, and this has frequently been raised when considering existing implementation studies [46, 58–60]. By employing the use of a conceptual framework to underpin the implementation research in the secondary school setting, it could have facilitated implementation strategies and the reproducibility and clearly highlighted specific areas of improvement for future implementation and sustainability.

This finding has broad implications for future work, and one of the goals of this systematic review has been to inform the development of a school-based intervention

implementation model to facilitate the implementation of novel substance use interventions in the secondary school setting. Although the model will be developed with reference to the rapidly advancing knowledge on implementation determinants assessment [61] implementation strategies [62] and progress and outcomes assessment and measurement [63], it will be informed by in-depth qualitative research currently being undertaken with local school staff and key stakeholders in the implementation process to ensure targeting of key challenges in the secondary school setting. This review thus represents initial advancement in understanding the challenges of implementing substance use interventions in the school setting, as part of a programme of work that moves more towards the development and testing of tools for facilitating improved implementation of such interventions. Conceptual and practical developments stemming from this work will therefore be useful in the wider school implementation field and will be publicly available for use in future implementation research in this setting.

A final gap identified was there was little to no focus, within the included studies, around the cost effectiveness of implementation. This could benefit from playing a role in future work as small budgets and cuts to school funding were reported to be factors negatively affecting the implementation of a tobacco or substance use intervention, specifically within the context of UK secondary schools [41]. There remains limited available research evidence investigating how altering the implementation of a such an intervention, could influence the total cost, and which costs can be directly attributable to implementation. Therefore, as the secondary school setting remains to be a financially restricted setting, it highlights a key area of investigation for school-based intervention implementation research and one which will be explored within the future planned work.

Limitations
Although systematic search procedures were followed, it is possible that key studies were missed, or published after searching concluded. However, the authors minimised the likelihood of this by double sifting, reference list searching and re-running searches during the period of research.

The included papers were highly heterogeneous, making synthesis and interpretation of authors' findings challenging. NPT did, however, provide a common framework against which to link and synthesise study findings, and best practice approaches to narrative synthesis (including multiple team member checking of data interpretation) add to our confidence in the presentation of findings. Our findings in relation to policy and practice at this moment in time should thus be deemed as tentative, but will be further explored in in-depth qualitative research with key stakeholders.

We acknowledge that other implementation theories or frameworks could have been employed differently to further classify and interpret the results. NPT was most useful for the purpose of our review, given the small but diverse literature we synthesised. However, a more elaborate tool such as that offered by Flottorp et al. could be used to map existing theories by their corresponding constructs and is likely to be useful future reviews in this field [61].

Conclusion
This review identified and synthesised factors reported to affect the implementation of tobacco and substance use interventions within the secondary school setting. Key factors affecting implementation that were identified, such as contextual factors, and support and training and provider perceptions, should be understood and addressed when implementing secondary school-based interventions. However, increased exploration should be provided to NPT's reflexive monitoring construct, the appraisal and evaluation processes of implementing new interventions, as findings around providers reflecting upon components they believe facilitated the implementation process and which aspects could benefit from modifications, were limited and are likely to add value in facilitating improved implementation and sustainability of interventions in the future.

This review sought to reinforce the importance of considering the factors affecting introducing a new intervention into practice. As there were relatively few papers specifically focusing on the implementation of tobacco or substance use interventions in the secondary school, it demonstrated that the school health field could benefit from more work in this area and should build on the findings and lessons from the existing school implementation work. Research should focus on bridging the gap between research and practice, and reflective collaborative working involving educators and practitioners will be conducted, in order to generate an implementation model with the most salience for this setting. Working collaboratively to develop implementation strategies, which employ the use of implementation theory and which comprehensively consider the implementation outcomes, such as adoption, feasibility and acceptability in practice, would be advantageous and would likely contribute to increasing the effectiveness of interventions seeking to reduce tobacco and substance use in adolescents.

Additional file

Additional file 1: Data extraction worksheet. (XLSX 52 kb)

Abbreviations

ANOVA: Analysis of variable; ASSIST: A Stop Smoking In Schools Trial; CASP: Critical Appraisal Skills Programme; CINAHL: Cumulative Index to Nursing and Allied Health Literature; cRCT: Cluster Randomised Controlled Trial; EPHPP: Effective Public Health Practice Project; ERIC: Education Resource Information Centre; IS: Instructional Strategy; kiR: Keeping It Real; MSPP: Minnesota Smoking Prevention; N-O-T: Not on Tobacco; NPT: Normalisation Process Theory; PS: Program Specialist; RCT: Randomised Controlled Trial; RY: Reconnecting Youth; SHAHRP: School Health and Alcohol Harm Reduction Project; TND: Towards No Drug Use; TUPE: Tobacco Use Prevention Education; WHO: World Health Organization

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351

Appendix B- Qualitative Fieldwork Appendices

B.1 Recruitment Emails for Local Authorities

Recruitment Email for Local Authorities (directed to the Director of Public Health (DPHs)):

Dear _____,

My name is Gillian Waller and I work with Professor Dorothy Newbury-Birch at the Health and Social Care Institute at Teesside University. I am presently conducting my PhD looking at how we can introduce and sustain programmes to prevent and reduce substance use within the secondary school setting. It is imperative to my doctoral studies to find out experiences of Local Authority staff on their views on implementation of new programmes to target substance use in young people. This is whether they have been involved or not in implementing programmes.

We would like to conduct short interviews with either yourself or staff members at your Local Authority to investigate this. Your experiences and insights will allow us to develop a model, which will be used to aid the implementation process with the aim of improving the long-term health of students. I have attached a participant information sheet to explain the project in more details and it also explains what to expect if you agree to be interviewed and to facilitate recruitment of your staff members to take part.

I would be happy to discuss this with you further in person or by email or phone. Please contact me at g.waller@tees.ac.uk or by phoning 01642 384 635.

Many thanks,

Gillian Waller

(EMAIL SIGNATURE)

Reminder Email for Local Authorities (directed to DPHs):

We recently contacted you about taking part in a PhD research project, which has been designed to explore how we can introduce and sustain programmes to prevent and reduce substance use within the secondary school setting. If you received the previous email and your local authority is not interested in taking part in this project, please accept our apologies and ignore this follow up email. However, if you would be interested in taking part please read the email and the attachments below:

Dear _____,

My name is Gillian Waller and I work with Professor Dorothy Newbury-Birch at the Health and Social Care Institute at Teesside University. I am presently conducting my PhD looking at how we can introduce and sustain programmes to prevent and reduce substance use within the secondary school setting. It is imperative to my doctoral studies to find out experiences of Local Authority staff on their views on implementation of new programmes to target substance use in young people. This is whether they have been involved or not in implementing programmes.

We would like to conduct short interviews with yourself and staff members at your Local Authority to investigate this. Your experiences and insights will allow us to develop a model, which will be used to aid the implementation process with the aim of improving the long-term health of students. I have attached a participant information sheet to explain the project in more details and it also explains what to expect if you agree to be interviewed and to facilitate recruitment of your staff members to take part.

I would be happy to discuss this with you further in person or by email or phone. Please contact me at g.waller@tees.ac.uk or by phoning 01642 384 635.

Many thanks,

Gillian Waller

(EMAIL SIGNATURE)

Recruitment Email for Local authority staff (directed to Participant- once identified via DPH):

Dear _____,

My name is Gillian Waller and I work with Professor Dorothy Newbury-Birch at the Health and Social Care Institute at Teesside University. I am presently conducting my PhD looking at how we can introduce and sustain programmes to prevent and reduce substance use within the secondary school setting. It is imperative to my doctoral studies to find out experiences of Public Health staff on their views on implementation of new programmes to target substance use in young people.   This is whether they have been involved or not in implementing programmes.

We would like to conduct a short interview with you to investigate this. Your experiences and insights will allow us to develop a model, which will be used to aid the implementation process with the aim of improving the long-term health of students. I have contacted you because I asked your Manager to think about who may wish to take part and to ask those people if it was ok for me to contact them directly and, if it was, to give me their contact details. No other information about you has been given to me by your Manager. I have attached a participant information sheet to explain the project in more detail and it also explains what to expect if you agree to take part.

I would be happy to discuss this with you further in person or by email or phone. Please contact me at g.waller@tees.ac.uk or by phoning 01642 384 635.

Many thanks,

Gillian Waller

(EMAIL SIGNATURE)

Reminder Email for Local authority staff (directed to Participant- once identified via DPH):

We recently contacted you about taking part in a PhD research project, which has been designed to explore how we can introduce and sustain programmes to prevent and reduce substance use within the secondary school setting. If you received the previous email and you are not interested in taking part in this project, please accept our apologies and ignore this follow up email. However, if you would be interested in taking part please read the email and the attachments below:

Dear _____,

My name is Gillian Waller and I work with Professor Dorothy Newbury-Birch at the Health and Social Care Institute at Teesside University. I am presently conducting my PhD looking at how we can introduce and sustain programmes to prevent and reduce substance use within the secondary school setting. It is imperative to my doctoral studies to find out experiences of Public Health staff on their views on implementation of new programmes to target substance use in young people.   This is whether they have been involved or not in implementing programmes.

We would like to conduct a short interview with you to investigate this. Your experiences and insights will allow us to develop a model, which will be used to aid the implementation process with the aim of improving the long-term health of students. I have contacted you because I asked your Manager think about who may wish to take part and to ask those people if it was ok for me to contact them directly and, if it was, to give me their contact details. No other information about you has been given to me by your Manager. I have attached a participant information sheet to explain the project in more detail and it also explains what to expect if you agree to take part.

I would be happy to discuss this with you further in person or by email or phone. Please contact me at g.waller@tees.ac.uk or by phoning 01642 384 635.

Many thanks,

Gillian Waller

(EMAIL SIGNATURE)

B.2 Recruitment Emails for Schools

Recruitment Email for Schools (directed to Head Teachers):

Dear _____,

My name is Gillian Waller and I work with Professor Dorothy Newbury-Birch at the Health and Social Care Institute at Teesside University. I am presently conducting my PhD looking at how we can introduce and sustain programmes to prevent and reduce substance use within the secondary school setting. It is imperative to my doctoral studies to find out experiences of school staff on their views on implementation of new programmes to target substance use in young people. This is whether they have been involved or not in implementing programmes.

We would like to conduct short interviews with yourself or staff members at your school to investigate this. Your experiences and insights will allow us to develop a model, which will be used to aid the implementation process with the aim of improving the long-term health of students. I have attached a participant information sheet to explain the project in more details and it also explains what to expect if you agree to be interviewed and to facilitate recruitment of your staff members to take part.

I would be happy to discuss this with you further in person or by email or phone. Please contact me at g.waller@tees.ac.uk or by phoning 01642 384 635.

Many thanks,

Gillian Waller

(EMAIL SIGNATURE)

Reminder Email for Schools (directed to Head Teachers):

We recently contacted you about taking part in a PhD research project, which has been designed to explore how we can introduce and sustain programmes to prevent and reduce substance use within the secondary school setting. If you received the previous email and your school is not interested in taking part in this project, please accept our apologies and ignore this follow up email. However, if you would be interested in taking part please read the email and the attachments below:

Dear _____,

My name is Gillian Waller and I work with Professor Dorothy Newbury-Birch at the Health and Social Care Institute at Teesside University. I am presently conducting my PhD looking at how we can introduce and sustain programmes to prevent and reduce substance use within the secondary school setting. It is imperative to my doctoral studies to find out experiences of school staff on their views on implementation of new programmes to target substance use in young people. This is whether they have been involved or not in implementing programmes.

We would like to conduct short interviews with yourself and staff members at your school to investigate this. Your experiences and insights will allow us to develop a model, which will be used to aid the implementation process with the aim of improving the long-term health of students. I have attached a participant information sheet to explain the project in more details and it also explains what to expect if you agree to be interviewed and to facilitate recruitment of your staff members to take part.

I would be happy to discuss this with you further in person or by email or phone. Please contact me at g.waller@tees.ac.uk or by phoning 01642 384 635.

Many thanks,

Gillian Waller

(EMAIL SIGNATURE)

Recruitment Email for School staff (directed to Participant- once identified via HT):

Dear _____,

My name is Gillian Waller and I work with Professor Dorothy Newbury-Birch at the Health and Social Care Institute at Teesside University. I am presently conducting my PhD looking at how we can introduce and sustain programmes to prevent and reduce substance use within the secondary school setting. It is imperative to my doctoral studies to find out experiences of school staff on their views on implementation of new programmes to target substance use in young people. This is whether they have been involved or not in implementing programmes.

We would like to conduct a short interview with you to investigate this. Your experiences and insights will allow us to develop a model, which will be used to aid the implementation process with the aim of improving the long-term health of students. I have contacted you because I asked your Head Teacher to think about who may wish to take part and to ask those people if it was ok for me to contact them directly and, if it was, to give me their contact details. No other information about you has been given to me by your Head Teacher. I have attached a participant information sheet to explain the project in more detail and it also explains what to expect if you agree to take part.

I would be happy to discuss this with you further in person or by email or phone. Please contact me at g.waller@tees.ac.uk or by phoning 01642 384 635.

Many thanks,

Gillian Waller

(EMAIL SIGNATURE)

Reminder Email for School staff (directed to Participant- once identified via HT):

We recently contacted you about taking part in a PhD research project, which has been designed to explore how we can introduce and sustain programmes to prevent and reduce substance use within the secondary school setting. If you received the previous email and you are not interested in taking part in this project, please accept our apologies and ignore this follow up email. However, if you would be interested in taking part please read the email and the attachments below:

Dear _____,

My name is Gillian Waller and I work with Professor Dorothy Newbury-Birch at the Health and Social Care Institute at Teesside University. I am presently conducting my PhD looking at how we can introduce and sustain programmes to prevent and reduce substance use within the secondary school setting. It is imperative to my doctoral studies to find out experiences of school staff on their views on implementation of new programmes to target substance use in young people. This is whether they have been involved or not in implementing programmes.

We would like to conduct a short interview with you to investigate this. Your experiences and insights will allow us to develop a model, which will be used to aid the implementation process with the aim of improving the long-term health of students. I have contacted you because I asked your Head Teacher to think about who may wish to take part and to ask those people if it was ok for me to contact them directly and, if it was, to give me their contact details. No other information about you has been given to me by your Head Teacher. I have attached a participant information sheet to explain the project in more detail and it also explains what to expect if you agree to take part.

I would be happy to discuss this with you further in person or by email or phone. Please contact me at g.waller@tees.ac.uk or by phoning 01642 384 635.

Many thanks,

Gillian Waller

(EMAIL SIGNATURE)

B.3 Director of Public Health Information Sheet

PARTICIPANT INFORMATION SHEET
'How can we implement substance use interventions into the secondary school setting'

What is this study about?

We would like to invite you and your staff members to take part in this doctoral research project, which has been designed to explore how we can introduce and sustain programmes to prevent and reduce substance use within the secondary school setting. We would like to conduct interviews to reflect on previous experience of introducing new programmes; what worked, what didn't and how the process could be improved. If you or staff members have no previous experience of implementing health programmes within the secondary school setting we would also welcome any insights you might have about the process in other areas or the factors you believe are important to consider. Your experiences and insights will allow us to develop a model, which will be used to aid the implementation process with the aim of improving the long-term health of students.

Why have I been contacted?

You have been contacted as you hold a Director of Public Health position within a Local Authority in the North East of England. We are looking to interview a range of staff involved with health in the secondary school setting including Directors of Public Health, Commissioners, Public Health Practitioners and staff directly involved in the delivery of health related programmes in order for us to obtain a range of different perspectives. I have contacted you to obtain your permission for you or your staff to take part and ask if you are willing to send an email to relevant staff, from me, inviting them to take part in the research. The email to the staff will give them information about the study and how they can contact me should they wish to take part. Please feel free to pass this information on or to circulate it more widely through internal or external networks.

How will information be collected?

We are proposing to conduct interviews at a convenient location, which will last no longer than an hour. Interviews can also be conducted via the telephone or videoconferencing software such as Skype for convenience. Interviewees will be asked to provide their consent and will then be asked questions around their own experience of introducing health programmes and how the process could be improved or facilitated in the future. Some questions seek information about interactions with and the actions of people who have not consented take part. As a result whilst we hope interviewees will draw upon their own experiences, no specific people should be named, nor give any information that could render anyone or any organization identifiable. If they do, that information will not be included in the transcripts of the interview or the analysis. With their consent interviews will be recorded as this allows the conversation to be transcribed for data analysis purposes. In addition, it is likely that the researcher will make notes during the interview, as this can aid transcription.

If staff choose to participate there is a possibility that they may be contacted for a second interview if, for example, they are currently involved with implementing a substance use program and results would be available to talk about in the future. Contact details will be securely retained until there is no more possibility of being contacted again.

How will information be used?

The interview data will be stored in line with the rules of the Data Protection Act (1998). Only the research team will have access to this data and any electronic copies all data will be stored on the Password Protected TU Server by the lead researcher and any storage on external media will be encrypted. Recording equipment will be stored in a secure facility and recordings will be destroyed following transcription.

Will information remain confidential?

All of the information that will be collected during the interviews will be kept strictly confidential. Transcripts of the conversations will be made by the researcher conducting the interview, and will remain between the researcher and members of the research team. The only instance confidentiality would be broken is if a safeguarding issue is presented that poses a risk to the interviewees safety or those involved. Some direct quotes may be used in the final write up of the research, but any identifiable information present in these quotes (names, places etc.) will be changed to protect their identity. Although the best efforts will be made to ensure anonymity, complete anonymity cannot be guaranteed due to the unlikely instance that participants could be identified by a family member or close individual even with the removal of identifiable information. While interviewees will not be named in any report, if they are either the only, or one of very few people who do their job, people who know that and read the findings of this study may well know, or speculate, if they chose to took part and what they said if they did.

Are there any risks associated with taking part?

We do not anticipate that participants will experience any distress or discomfort by taking part in this study and therefore expect the risk of taking part to be minimal. None of the interview questions will be of a personal or of a sensitive nature and all information will remain confidential. Participation is voluntary and interviewees have the right to withdraw from the study, even up to two weeks after the interview has been conducted.

How do I give my consent for my Local Authority to take part?

We would like to thank you for taking the time to read this information sheet. If you decide your staff could help with this research project, please contact Gillian Waller by Email: g.waller@tees.ac.uk or Tel: 01642384635

Even if you consent for your staff to take part, before all participants take part in an interview, they will be asked to complete a consent form. This is to ensure that they understand the requirements of the research, how their information will be used and that they are happy to take part.

Additional questions

If you have any further questions about the study please contact:

Gillian Waller	**Professor Dorothy Newbury-Birch**
PhD Researcher	*Director of Studies*
Health and Social Care Institute	Health and Social Care Institute
C1.18 Constantine Building	C1.18 Constantine Building
Teesside University	Teesside University
Middlesbrough	Middlesbrough
TS1 3BA	TS1 3BA
T: 01642 384996 E: g.waller@tees.ac.uk	T: 01642384635 E: D.Newbury-Birch@tees.ac.uk

In addition, if you have any concerns about the study you can contact the Governance and Ethics Committee. Although they have approved this research, they are not directly involved with the running of this study. They can be contacted via:

Dr Alasdair MacSween
Principle Lecturer in Research Governance
Health and Social Care Institute
C1.10 Constantine Building
Teesside University
Middlesbrough
TS1 3BA
T: 01642 342965   E: a.macsween@tees.ac.uk

B.4 Local Authority Participant Information Sheet

PARTICIPANT INFORMATION SHEET
'How can we implement substance use interventions into the secondary school setting'

What is this study about?
We would like to invite you to take part in this doctoral research project, which has been designed to explore how we can introduce and sustain programmes to prevent and reduce substance use within the secondary school setting. We would like to conduct interviews to reflect on your previous experience of introducing new programmes; what worked, what didn't and how you think the process could be improved. If you have no previous experience of implementing health programmes within the secondary school setting we would also welcome any insights you might have about the process in other areas or the factors you believe are important to consider. Your experiences and insights will allow us to develop a model, which will be used to aid the implementation process with the aim of improving the long-term health of students.

Why have I been contacted?
You have been contacted as you work within a Local Authority in the North East of England and are likely to understand what would work better than we do! We are looking to interview a range of staff involved with health in the secondary school setting from Commissioners, Public Health Practitioners and staff directly involved in the delivery of health related programmes in order for us to obtain a range of different perspectives. Your Manager has contacted you because I asked them to think about who may wish to take part and for them to contact you directly. No other information about you has been given to me by your Manager. Please feel free to pass this information on or to circulate it more widely through internal or external networks.

How will my information be collected?
We are proposing to conduct interviews at a location convenient to you, which will last no longer than an hour. Interviews can also be conducted via the telephone or videoconferencing software such as Skype for convenience. You will be asked to provide your consent and will then be asked questions around your own experience of introducing health programmes and how you think the process could be improved or facilitated in the future. Some questions seek information about your interactions with and the actions of people who have not consented take part. As a result while we do hope you will draw upon your own experiences you must try not name any specific people, nor give any information that could render anyone or any organization identifiable. If you do that information will not be included in the transcripts of the interview or the analysis. With your consent interviews will be recorded as this allows the conversation to be transcribed for data analysis purposes. In addition, it is likely that the researcher will make notes during the interview, as this can aid transcription.
If you choose to participate there is a possibility that you may be contacted for a second interview if, for example, you are currently involved with implementing a substance use program and results would be available to talk about in the future. Your contact details will be securely retained until there is no more possibility of you being contacted again.

How will my information be used?
The interview data will be stored in line with the rules of the Data Protection Act (1998). Only the research team will have access to this data and any electronic copies all data will be stored on the Password Protected TU Server by the lead researcher and any storage on external media will be encrypted. Recording equipment will be stored in a secure facility and recordings will be destroyed following transcription.

Will my information remain confidential?

All of the information that will be collected during the interviews will be kept strictly confidential. Transcripts of the conversations will be made by the researcher conducting the interview, and will remain between the researcher and members of the research team. The only instance confidentiality would be broken is if a safeguarding issue is presented that poses a risk to your safety or those involved. Some direct quotes may be used in the final write up of the research, but any identifiable information present in these quotes (names, places etc.) will be changed to protect your identity. Although the best efforts will be made to ensure anonymity, complete anonymity cannot be guaranteed due to the unlikely instance that you could be identified by a family member or close individual even with the removal of identifiable information. While you will not be named in any report, if you are either the only, or one of very few people who do your job, people who know that and read the findings of this study may well know, or speculate, if you chose to took part and what you said if you did.

Are there any risks associated with taking part?

We do not anticipate that participants will experience any distress or discomfort by taking part in this study and therefore expect the risk of taking part to be minimal. None of the interview questions will be of a personal or of a sensitive nature and all information will remain confidential. Participation is voluntary and you have the right to withdraw from the study, even up to two weeks after the interview has been conducted.

How do I give my consent to take part?

We would like to thank you for taking the time to read this information sheet. If you decide you would like to take part in this research, please contact Gillian Waller by Email: g.waller@tees.ac.uk or Tel: 01642384635

Before you take part in an interview, you will be asked to complete a consent form. This is to ensure that you understand the requirements of the research, how your information will be used and that you are happy to take part.

Additional questions

If you have any further questions about the study please contact:

Gillian Waller	**Professor Dorothy Newbury-Birch**
PhD Researcher	*Director of Studies*
Health and Social Care Institute	Health and Social Care Institute
C1.18 Constantine Building	C1.18 Constantine Building
Teesside University	Teesside University
Middlesbrough	Middlesbrough
TS1 3BA	TS1 3BA
T: 01642 384996 E: g.waller@tees.ac.uk	T: 01642384635 E: D.Newbury-Birch@tees.ac.uk

In addition, if you have any concerns about the study you can contact the Governance and Ethics Committee. Although they have approved this research, they are not directly involved with the running of this study. They can be contacted via:

Dr Alasdair MacSween
Principle Lecturer in Research Governance
Health and Social Care Institute
C1.10 Constantine Building
Teesside University
Middlesbrough
TS1 3BA
T: 01642 342965   E: a.macsween@tees.ac.uk

B.5 Head Teacher Participant Information Sheet

PARTICIPANT INFORMATION SHEET
'How can we implement substance use interventions into the secondary school setting'

What is this study about?

We would like to invite you and your staff to take part in this doctoral research project, which has been designed to explore how we can introduce and sustain programmes, to prevent and reduce substance use within the secondary school setting. We would like to conduct interviews to reflect on previous experience of introducing new programmes; what worked, what didn't and how the process could be improved. If you or staff members have no previous experience of implementing health programmes within the secondary school setting we would also welcome any insights you might have about the process in other areas or the factors you believe are important to consider. Your experiences and insights will allow us to develop a model, which will be used to aid the implementation process with the aim of improving the long-term health of students.

Why have I been contacted?

You have been contacted as you hold a Head Teacher position within a School in the North East of England. We are looking to interview a range of school staff personnel from Teachers, Head Teachers, Learning Mentors and Pastoral care staff who have been involved in the delivery of health related programmes, in order for us to obtain a range of different perspectives. I have contacted you to obtain your permission for you or your staff to take part and ask if you are willing to send an email to relevant staff, from me, inviting them to take part in the research. The email to the staff will give them information about the study and how they can contact me should they wish to take part. Please feel free to pass this information on or to circulate it more widely through internal or external networks.

How will information be collected?

We are proposing to conduct interviews at a convenient location, which will last no longer than an hour. Interviews can also be conducted via the telephone or videoconferencing software such as Skype for convenience. Interviewees will be asked to provide their consent and will then be asked questions around their own experience of introducing health programmes and how the process could be improved or facilitated in the future. Some questions seek information about interactions with and the actions of people who have not consented take part. As a result whilst we hope interviewees will draw upon their own experiences, no specific people should be named, nor give any information that could render anyone or any organization identifiable. If they do, that information will not be included in the transcripts of the interview or the analysis. With their consent interviews will be recorded as this allows the conversation to be transcribed for data analysis purposes. In addition, it is likely that the researcher will make notes during the interview, as this can aid transcription.
If staff choose to participate there is a possibility that they may be contacted for a second interview if, for example, they are currently involved with implementing a substance use program and results would be available to talk about in the future. Contact details will be securely retained until there is no more possibility of being contacted again.

How will information be used?

The interview data will be stored in line with the rules of the Data Protection Act (1998). Only the research team will have access to this data and any electronic copies all data will be stored on the Password Protected TU Server by the lead researcher and any storage on external media will be encrypted. Recording equipment will be stored in a secure facility and recordings will be destroyed following transcription.

Will information remain confidential?

All of the information that will be collected during the interviews will be kept strictly confidential. Transcripts of the conversations will be made by the researcher conducting the interview, and will remain between the researcher and members of the research team. The only instance confidentiality would be broken is if a safeguarding issue is presented that poses a risk to the interviewees safety or those involved. Some direct quotes may be used in the final write up of the research, but any identifiable information present in these quotes (names, places etc.) will be changed to protect their identity. Although the best efforts will be made to ensure anonymity, complete anonymity cannot be guaranteed due to the unlikely instance that participants could be identified by a family member or close individual even with the removal of identifiable information. While interviewees will not be named in any report, if they are either the only, or one of very few people who do their job, people who know that and read the findings of this study may well know, or speculate, if they chose to took part in what they said if they did.

Are there any risks associated with taking part?

We do not anticipate that participants will experience any distress or discomfort by taking part in this study and therefore expect the risk of taking part to be minimal. None of the interview questions will be of a personal or of a sensitive nature and all information will remain confidential. Participation is voluntary and interviewees have the right to withdraw from the study, even up to two weeks after the interview has been conducted.

How do I give my consent for my school to take part?

We would like to thank you for taking the time to read this information sheet. If you decide your staff could help with this research project, please contact Gillian Waller by Email: g.waller@tees.ac.uk or Tel: 01642384635

Even if you consent for your staff to take part, before all participants take part in an interview, they will be asked to complete a consent form. This is to ensure that they understand the requirements of the research, how their information will be used and that they are happy to take part.

Additional questions

If you have any further questions about the study please contact:

Gillian Waller	**Professor Dorothy Newbury-Birch**
PhD Researcher	*Director of Studies*
Health and Social Care Institute	Health and Social Care Institute
C1.18 Constantine Building	C1.18 Constantine Building
Teesside University	Teesside University
Middlesbrough	Middlesbrough
TS1 3BA	TS1 3BA
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In addition, if you have any concerns about the study you can contact the Governance and Ethics Committee. Although they have approved this research, they are not directly involved with the running of this study. They can be contacted via:

Dr Alasdair MacSween
Principle Lecturer in Research Governance
Health and Social Care Institute
C1.10 Constantine Building
Teesside University
Middlesbrough
TS1 3BA
T: 01642 342965   E: a.macsween@tees.ac.uk

B.6 School Staff Participant Information Sheet

PARTICIPANT INFORMATION SHEET

'How can we implement substance use interventions into the secondary school setting'

What is this study about?

We would like to invite you to take part in this doctoral research project, which has been designed to explore how we can introduce and sustain programmes to prevent and reduce substance use within the secondary school setting. We would like to conduct interviews to reflect on your previous experience of introducing new programmes; what worked, what didn't and how you think the process could be improved. If you have no previous experience of implementing health programmes within the secondary school setting we would also welcome any insights you might have about the process in other areas or the factors you believe are important to consider. Your experiences and insights will allow us to develop a model, which will be used to aid the implementation process with the aim of improving the long-term health of students.

Why have I been contacted?

You have been contacted as you work directly within a school setting in the North East of England and are likely to understand what would work better than we do! We are looking to interview a range of school staff personnel from Teachers, Head Teachers, Learning Mentors and Pastoral care staff who have been involved in the delivery of health related programmes, in order for us to obtain a range of different perspectives. Your Head Teacher has contacted you because I asked them to think about who may wish to take part and for them to contact you directly. No other information about you has been given to me by your Head Teacher. Please feel free to pass this information on or to circulate it more widely through internal or external networks.

How will my information be collected?

We are proposing to conduct interviews at a location convenient to you, which will last no longer than an hour. Interviews can also be conducted via the telephone or videoconferencing software such as Skype for convenience. You will be asked to provide your consent and will then be asked questions around your own experience of introducing health programmes and how you think the process could be improved or facilitated in the future. Some questions seek information about your interactions with and the actions of people who have not consented take part. As a result while we do hope you will draw upon your own experiences you must try not name any specific people, nor give any information that could render anyone or any organization identifiable. If you do that information will not be included in the transcripts of the interview or the analysis. With your consent interviews will be recorded as this allows the conversation to be transcribed for data analysis purposes. In addition, it is likely that the researcher will make notes during the interview, as this can aid transcription.
If you choose to participate there is a possibility that you may be contacted for a second interview if, for example, you are currently involved with implementing a substance use program and results would be available to talk about in the future. Your contact details will be securely retained until there is no more possibility of you being contacted again.

How will my information be used?

The interview data will be stored in line with the rules of the Data Protection Act (1998). Only the research team will have access to this data and any electronic copies all data will be stored on the Password Protected TU Server by the lead researcher and any storage on external media will be encrypted. Recording equipment will be stored in a secure facility and recordings will be destroyed following transcription.

Will my information remain confidential?

All of the information that will be collected during the interviews will be kept strictly confidential. Transcripts of the conversations will be made by the researcher conducting the interview, and will remain between the researcher and members of the research team. The only instance confidentiality would be broken is if a safeguarding issue is presented that poses a risk to your safety or those involved. Some direct quotes may be used in the final write up of the research, but any identifiable information present in these quotes (names, places etc.) will be changed to protect your identity. Although the best efforts will be made to ensure anonymity, complete anonymity cannot be guaranteed due to the unlikely instance that you could be identified by a family member or close individual even with the removal of identifiable information. While you will not be named in any report, if you are either the only, or one of very few people who do your job, people who know that and read the findings of this study may well know, or speculate, if you chose to took part and what you said if you did.

Are there any risks associated with taking part?

We do not anticipate that participants will experience any distress or discomfort by taking part in this study and therefore expect the risk of taking part to be minimal. None of the interview questions will be of a personal or of a sensitive nature and all information will remain confidential. Participation is voluntary and you have the right to withdraw from the study, even up to two weeks after the interview has been conducted.

How do I give my consent to take part?

We would like to thank you for taking the time to read this information sheet. If you decide you would like to take part in this research, please contact Gillian Waller by Email: g.waller@tees.ac.uk or Tel: 01642384635

Before you take part in an interview, you will be asked to complete a consent form. This is to ensure that you understand the requirements of the research, how your information will be used and that you are happy to take part.

Additional questions

If you have any further questions about the study please contact:

Gillian Waller	**Professor Dorothy Newbury-Birch**
PhD Researcher	*Director of Studies*
Health and Social Care Institute	Health and Social Care Institute
C1.18 Constantine Building	C1.18 Constantine Building
Teesside University	Teesside University
Middlesbrough	Middlesbrough
TS1 3BA	TS1 3BA
T: 01642 384996 E: g.waller@tees.ac.uk	T: 01642384635 E: D.Newbury-Birch@tees.ac.uk

In addition, if you have any concerns about the study you can contact the Governance and Ethics Committee. Although they have approved this research, they are not directly involved with the running of this study. They can be contacted via:

Dr Alasdair MacSween
Principle Lecturer in Research Governance
Health and Social Care Institute
C1.10 Constantine Building
Teesside University
Middlesbrough
TS1 3BA
T: 01642 342965   E: a.macsween@tees.ac.uk

PARTICIPANT CONSENT FORM

'How can we implement substance use interventions into the secondary school setting'

Please read each statement below and if you are happy to take part in each aspect of this research project please initial each box and provide your signature at the bottom of the form:

1. **I have been provided with and I have read and understood the Participant Information Sheet- Local Authority, Version 2.1, 26/09/16, for this research project.**

2. **I consent to having my interview recorded and to allow notes to be made during the interview.**

3. **I am aware that whilst all identifiable details, such as my name and location, will be removed and will not be published in any reports or papers, complete anonymity cannot be guaranteed.**

4. **I understand that while I will not be named in any report or publication if I am either the only, or one of very few people in this role it is not possible to absolutely guarantee that my contribution and participation will be anonymous.**

5. **I have been informed that all of the data collected will be securely stored and accessed only by the lead researcher (GW). However, the 3 core members of the research team (DNB, EG and TF) will be able to view data in the data analysis stages. Following the generation of transcripts, all audio recordings will be destroyed. Following the dissemination of the completed research, all transcripts will be destroyed.**

6. **I consent to taking part in this research project but understand that I have the right to withdraw my consent at any stage of the process, even up to 2 weeks after the data has been collected.**

Name _____   Date _____

Signature _____

Name of researcher_____   Date _____

Signature _____

B.8 School Staff Participant Consent Form

PARTICIPANT CONSENT FORM

'How can we implement substance use interventions into the secondary school setting'

Please read each statement below and if you are happy to take part in each aspect of this research project please initial each box and provide your signature at the bottom of the form:

1. **I have been provided with and I have read and understood the Participant Information Sheet- School Setting, Version 2.1, 26/09/16 for this research project.**

2. **I consent to having my interview recorded and to allow notes to be made during the interview.**

3. **I am aware that whilst all identifiable details, such as my name and location, will be removed and will not be published in any reports or papers, complete anonymity cannot be guaranteed.**

4. **I understand that while I will not be named in any report or publication if I am either the only, or one of very few people in this role it is not possible to absolutely guarantee that my contribution and participation will be anonymous.**

5. **I have been informed that all of the data collected will be securely stored and accessed only by the lead researcher (GW). However, the 3 core members of the research team (DNB, EG and TF) will be able to view data in the data analysis stages. Following the generation of transcripts, all audio recordings will be destroyed. Following the dissemination of the completed research, all transcripts will be destroyed.**

6. **I consent to taking part in this research project but understand that I have the right to withdraw my consent at any stage of the process, even up to 2 weeks after the data has been collected.**

Name _____   Date _____

Signature _____

Name of researcher_____   Date _____

Signature _____

Local Authority Staff

Introduction

(i) Check interviewee is happy to go ahead with interview

(ii) Ensure consent form has been signed

(iii) Recording of interview- check interviewee is happy to have the interview recorded

(iv) Briefly mention that all responses will remain confidential and will be anonymised

(v) Ensure no further questions or concerns before commencing.

Role identification and school climate:

1) Could you please explain your current role (within Council X)?

Prompts- Job title, Daily tasks, Responsibilities

2) What do you believe the main health issues to be within secondary schools in your area?

Prompts- Diet, Substance use, Lack of PA?

3) *If issues have been raised-* How do schools identify or respond to these health issues and how does (Council X) support this? *Explore examples*

Prompts- No response, intervention programme, one to one care, new policies, research

External Policies and Incentives

Moving on to look at substance use more specifically:

4) How useful do you think implementing a programme to reduce substance use would be in secondary schools in your area?

Prompts- Diet, Substance use, Lack of PA?

5) (i) Do you have any previous experience of introducing/ implementing programmes in schools designed to reduce substance use?

   (ii) *If yes-* Ask to give examples if not provided without prompt

6) *If yes to 5i- and not covered in previous answer-* What has been the outcome of this/these programme/s?

If ongoing- How is this current programme going?

Prompts- Staff/Students engaged, host support, positive outcomes, issues with implementation?

(If any interesting aspects of programme outcomes are raised- explore further)

7) If yes to 5i- Was the substance use programme able to be implemented as intended, and if so why/how?

Prompts- Implementation plan, clarity of aims, well designed programme, support, timing

Organisational and Implementation climate

8) *If yes to 5i-* How well do you feel school staff are supporting the programme and how have you been able to help/measure this?

Prompts- highly/ poorly supported, motivation, engagement

9) (i) *If yes to 5i-* Was/Is there specific factors that facilitated the implementation of the programme/s?

(ii) *If no to 5i-* Is there specific factors that you think would facilitate the implementation of a substance use programme in a secondary school setting?

Prompts- Staff, Training, Support, Understanding etc.

Structural Characteristics

Planning and Engaging

(If any interesting aspects of factors are raised- explore further)

10) *If yes to 5i-* Was/Is there any specific factors that hindered/negatively affected the implementation of the programme/s?

If no to 5i- Is there any specific factors you think would hinder/ negatively affect the implementation of a substance use programme/s in a secondary school setting?

Prompts- Lack of engagement, planning, training, support, understanding, poor intervention buy in etc.

Knowledge and Beliefs about Intervention

(Again, If any interesting aspects of factors are raised- explore further)

11) *If yes to 5i-* What kind of feedback do/did you get about the implementation of the programme?

Prompts: Verbal, written, clear benefits, positive reinforcement

Reflecting and Evaluating

Looking more specifically at implementation:

12) Which individuals inside/outside of the school do you think should be involved in driving the substance use programme implementation forward, and why?

Prompts- How should different roles contribute? Head Teachers, senior staff, local authority staff, peer pressure

13) Which individuals inside/outside of the school do you think should deliver the programmes to students, and why?

Prompts- Teachers, pastoral staff, outside providers such as healthcare workers.

14) <u>How do you think individuals can be supported to implement new substance use programmes in the future?</u>

Prompts- Training, resources, mentors, External Policies and incentives

Networks and Communication

15) <u>Do you think a model would be useful to support implementation, and if so why/how could it be used?</u>

Prompts- Guiding, motivating, helping, driving etc.

Thank interviewee for taking part, reassure confidentiality and signpost them to findings if interested

School Staff

Introduction

(i) Check interviewee is happy to go ahead with interview

(ii) Ensure consent form has been signed

(iii) Recording of interview- check interviewee is happy to have the interview recorded

(iv) Briefly mention that all responses will remain confidential and will be anonymised

(v) Ensure no further questions or concerns before commencing.

Role identification and school climate:

1) Could you please explain your current role within your school?

Prompts- Job title, Daily tasks, Responsibilities

2) What do you believe the main health issues to be within your school?

Prompts- Diet, Substance use, Lack of PA, Mental Health?

3) *If issues have been raised-* How does your school usually identify or respond to these health issues? *Explore examples*

Prompts- No response, intervention programme, one to one care

Moving on to look at substance use more specifically:

4) i) How useful do you think implementing a programme to reduce substance use would be in your school?

Prompts- Relative advantage, Diet, Substance use, Lack of PA?

5) (i) <u>Do you have any previous experience of introducing/ implementing programmes in your school/previous schools designed to reduce substance use?</u>

(ii) *If yes or recruited via SIPS-* <u>Ask to give examples if not provided without prompt</u>

6) *If yes to 6i- and not covered in previous answer-* <u>What has been the outcome of this/these programme/s?</u>

If ongoing- <u>How is this current programme going?</u>

Prompts- Staff/Students engaged, host support, positive outcomes, issues with implementation?

7) If yes to 6i- <u>Were you able to implement the substance use programme as intended, and if so why/how?</u> *If no move to q10(ii)*

Prompts- Implementation plan, clarity of aims, well designed programme, support, timing.

 Organisational and implementation climate

8) *If yes to 6i-* <u>How well do you feel staff are supporting the programme?</u>

Prompts- highly/ poorly supported, motivation, engagement

9) (i) *If yes to 6i-* <u>Was/Is there specific factors that facilitated the implementation of the programme/s?</u>

(ii) *If no to 6i-* <u>Is there specific factors that you think would facilitate the implementation of a substance use programme in a school setting?</u>

Prompts- Staff, Training, Support, Understanding etc.

Structural Characteristics

Planning and Engaging

10) *If yes to 6i-* Was/Is there any specific factors that hindered/negatively affected the implementation of the programme/s?

If no to 6i- Is there any specific factors you think would hinder/ negatively affect the implementation of a substance use programme/s in a school setting?

Prompts- Lack of engagement, training, support, understanding, poor intervention buy in, Cost etc

11) *If yes to 6i-* What kind of feedback do/did you get about the implementation of the programme?

Prompts: Verbal, written, clear benefits, positive reinforcement

Reflecting and Evaluating

Looking more specifically at implementation:

12) Which individuals inside/outside of the school do you think should be involved in driving the substance use programme implementation forward, and why?

Prompts- How should different roles contribute? Head Teachers, senior staff, local authority staff, peer pressure

13) Which individuals inside/outside of the school do you think should deliver the programmes to students, and why?

Prompts- Teachers, pastoral staff, outside providers such as healthcare workers.

14) How do you think individuals can be supported to implement new substance use programmes in the future?

Prompts- Training, resources, mentors, financial, staffing, physical

External Policies and incentives

15) <u>Do you think a model would be useful to support implementation of substance use interventions, and if so why/how could it be used?</u>

Prompts- Guiding, motivating, helping, driving etc.

Thank interviewee for taking part, reassure confidentiality and signpost them to findings if interested

B.11 Teesside University Ethics Application Form

REQUEST FOR ETHICAL APPROVAL **EthAppV8_2012 - CONFIDENTIAL** *Please fully answer every Section as the RG&EC may not be able to review any incomplete forms.*	**Please return completed and signed form to:** **The Secretary,** **School of Health and Social Care, Research Governance and Ethics Committee**

Before submitting this form:

Please read Section 1.3 of the TU 'Policy Procedures and Guidelines for Research Ethics' and ensure the proposed research complies with the University's six Principles for Research Ethics. The ethical issues underlying these principles are laid out in detail in the Guidelines section of *'Policy Procedures and Guidelines for Research Ethics'* on pages 24-49. It is recommended that you consult the Guidelines in order to answer specific questions on: risk (pp 24-28); consent (pp 29-37); confidentiality (pp 38-45); regulated materials (p 46); conflicts of interest (p 47). Researchers' liabilities in the conduct of research are laid out on page 49.

If this project will require ethical approval from a National Research Ethics Service, Research Ethics Committee (NRES REC) after TU ethical clearance has been confirmed then do not complete this form. You must apply for TU ethical clearance by submitting a form generated through the Integrated Research Application System (IRAS https://www.myresearchproject.org.uk/). To help you decide if you will need to do that please refer to: http://www.nres.nhs.uk/applications/guidance/ - and - http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_133993.pdf (in particular Section 2 which details the remit and scope of NRES RECs) - and - Section 1.3.3 pages 36-37 of the TU 'Policy Procedures and Guidelines for Research Ethics'. You must not apply for NRES REC nor any other external approval or permission until after TU ethical clearance has been confirmed.

If you are in any doubt about which form you should use please contact the Chair of RG&EC before applying.

SECTION A: To be completed by the applicant

1) Project title:

'How to get research findings into practice in the changing landscape of public health'.

2a) Name, job title and address (for TU employees do not give address) of the Academic Supervisor/Director of Studies/Project Leader:

Professor Dorothy Newbury-Birch (Professor of Alcohol and Public Health Research) Teesside University

2b) Name, job title, employer and address (for TU employees do not give employer nor address) of any other Supervisor(s):

Dr. Tracy Finch (Senior Lecturer) Newcastle University

Prof Rosemary Rushmer (Professor of Knowledge Exchange and Public Health) Teesside University

2c) Name, job title, employer and address (for TU employees do not give employer nor address) of all other people involved with this project:

3a) Name(s) of researcher(s)/student(s) working on this project:

Gillian Waller, PhD Student, Teesside University

3b) Please initial below to indicate which category of researcher(s)/student(s) will be working on this project:

Taught Postgraduate		*PG Research Student*	*X*	*Staff - higher degree*		*Staff - other research*		*Final Year Undergrad Student*

4) Expected duration of this project: *From:* May 2015   *To:* May 2018

5) Research Question(s), Aim(s) and/or any Hypotheses being tested:

The aim of this PhD will be to explore the extent of which it would be feasible to get research evidence into practice by developing a model to facilitate the implementation of substance use interventions within a secondary school setting. Although the aim is currently to develop a generic substance use implementation model, these implementation issues will be explored within the currently underway SIPS-JR-HIGH project at Teesside University, which is focusing on reducing alcohol consumption in secondary school settings across England. The aim of the qualitative fieldwork component will be to obtain the perceptions, experiences and insights of school staff and local authority staff in order to inform the development of the implementation model.

Research Questions

The PhD project's research questions that this qualitative fieldwork will seek to address are; What factors would need to be considered to ensure a successful implementation model is developed?' 'What are the potential barriers and facilitators to achieving successful implementation in an educational setting?'.

Objectives

The qualitative interviews will have the following objectives:

❖ To obtain a good overall understanding of the secondary school setting, as a setting at which change can occur, in the right conditions, in order to improve the health outcomes of adolescents.

❖ To obtain an increased understanding of the role and responsibility of staff in regards to the implementation of substance use programmes in the secondary school setting and to explore their previous experiences.

❖ To establish the perceived facilitators to implementation of substance use programmes within a school setting, at each different level, for example at the child level, the school staff level or at the policy maker level.

❖ To establish the perceived barriers to implementation, which have the potential to negatively affect the introduction of a substance use intervention and whether they differ across the different levels.

❖ To be able to inform the choice of theoretical approaches appropriate for the implementation of substance use interventions in the school setting, and the development of an implementation model to guide the implementation process.

6) Please give full details of who the participants in this project will be (i.e. what are the things which make a person eligible to take part in this project) *:

This project aims to conduct semi-structured interviews with participants from both the local authority setting and the secondary school setting.

Following ethical approval, it is proposed that participant recruitment will start in October. The local authority participants will be either be public health practitioners; such as a Public Health Specialist or a Speciality Consultant, employees that possess specific knowledge or experience of the secondary school setting, or commissioners who may not necessarily have a public health speciality but may have a general health remit related to the school setting.

The school setting participants will be teachers, head teachers, learning mentors, pastoral care, or other staff working within a school setting with the responsibility or experience of delivering or implementing health interventions in the secondary school setting.

All consenting members of staff from the appropriate job roles in both the local authority and the school setting will be eligible to take part in interviews.

*Please note - If you plan to recruit Teesside University staff in this project please refer to Section 1.4.5 of 'Policy, Procedures, and Guidelines for Research Ethics'

7) Please give full details of how you will recruit the participants:

Please state who will identify the potential participants (i.e. the people who can take part), how they will know a person is eligible and how they will obtain the potential participants' contact details?

GW will be responsible for identifying schools and local authorities. All members of staff from appropriate job roles will be eligible to take part, if they are able to consent to take part. Contact

details will be obtained by searching local directories and websites of local authorities and secondary schools in the North East of England. Contact details will be compliant with the Data Protection Act as they will be obtained fairly and will be stored securely. A list of schools will be compiled along with a list of local authorities and contact email addresses will be obtained via these online directories or local contacts.

School staff and Local authority participants will be identified by either the Head Teacher or their Manager (DPH). The initial contact will be made to the HT or DPH by email to ask if he/she would consent for their school or LA to take part in the research. The email will include an information sheet attachment. If they consent for their school/ LA to take part, they will be asked to contact for GW for further information. GW will provide an email with a participant's information sheet, which will require forwarding to the staff identified by the HT or the DPH. The email will ask staff to contact GW and GW will speak with potential participants who contact her following this to ensure they meet criteria. If they are happy to take part, they will be provided with a consent form. All responses will remain confidential. If a lack of response occurs 1 reminder email will be sent again from the Head Teacher/Manager with the information sheet as an attachment.

In the case of participants recruited through SIPS-JR-HIGH, recruitment will be conducted via the SIPS PI sending participating schools the SIPS staff recruitment email and PIS. A lack of response from SIPS staff requires no action. Any emails/ phone calls from SIPS staff, re participation, directed to GW (as requested in email) will remain confidential in the same way as other recruited participants and information will be securely stored. Emails sent back to PI (via email reply) will be forwarded to GW without reading and will be immediately deleted by PI.

How and by whom will the potential participants first be contacted and find out that this project is running, that they are eligible and that they are invited to consider taking part?

School Heads and DPHs will be contacted via email by GW and asked to take part in an interview or recommend staff to help gain an insight into implementation of substance use programmes in the secondary school setting, which could inform the development of a model to facilitate this process. The participant information sheet for HT/ DPHs will be attached detailing the study's requirements. If a low response rate is observed- A low rate would constitute a response rate of lower than the sample required. The initial email will be followed up with a reminder email.

Recruitment will also be linked with the SIPS-JR-HIGH project. School staff taking part in the trial will be invited to take part in this project by the PI and being provided with an information sheet and contact details of GW.

Who will potential participants be able to contact to ask any questions they may have before they decide whether or not they wish to take part?

Contact details; both phone and email details, will be provided within the initial email and the version 2.1 information sheet, with instructions on how to contact GW or the academic supervisor DNB if there are any questions.

How many participants do you hope to recruit and how did you decide on that number?

The proposed sample will aim to include approximately 25-30 participants depending on recruitment and whether the later interviews are generating new themes or ideas, or if data saturation has been

reached. However, it may be appropriate to conduct follow-up interviews with participants if an implementation programme is on-going, and further insights could be gained from their heightened experiences or knowledge at a later stage of the implementation process, meaning the number of participants may be reduced if participants are being re-interviewed. A statement regarding participants being asked to be re-interviewed is provided in the PISs. An amendment would be submitted to ethics board as the interview schedule may need altering.

It would be advantageous to obtain a mixed age and gender sample, but as this is dependent on the staff employed in either the Local Authority or the school setting in the North East of England, this may not be feasible. However, the sample will aim to be as varied as possible.

This approximate number of interviews was proposed as being an appropriate number of participants to include as it is important to have enough data to gain a good range of different ideas and experiences. A larger number of interviews would generate repetition of key themes, ideas and would eventually reach a stage of data saturation. In addition, it was proposed as an appropriate amount of interviews to conduct, transcribe and analyse in the allocated time frame of the PhD project.

How many people will you contact and invite to take part?

It has been proposed that approximately 30-40 members of local authority staff will be contacted to take part. Likewise, around 30-40 schools will be contacted to obtain staff available for interviewing.

All potential gatekeepers will be contacted via email and asked if they or their staff would be interested in taking part in the research project. In the unlikely instance that the number of individuals interested in taking part exceeds the maximum number, it will be useful to select participants from a range of different locations. If the number of participants expressing an interest in taking part is low, then it will be important to expand the field of potential participants and contact further schools or local authorities and this will be done in blocks of 10 at a time.

Face to face interviews will take place at a location convenient to the participants. This is likely to be the school in which they work for the school staff or the council offices in the case of the participants based in the local authority. However, it could also prove appropriate to conduct an interview at a more convenient location, such as a local public health event or it may transpire necessary to conduct the interview by telephone or Skype for convenience. Consent forms will still be used for telephone/Skype interviews, but these will be emailed/ posted back to the researcher in advance of the interview. Verbal consent will also be sought at the time of interview to ensure nothing has changed since the completion of the consent form.

How long will the potential participants have to decide whether or not they wish to take part?

Participants will be asked to express their interest to the initial email from the researcher receiving the participant information sheet to confirm whether or not they will be interested in taking part in the research.

How will a potential participant indicate that they would like to take part?

Those interested in participating in an interview will make contact with GW expressing their interest by email, by telephone.

When and how will you obtain and document the participant's Informed Consent/Consent & Assent* to take part?

Participants will be provided with information about the study and how the data they provide will be used. They will then be given the opportunity to ask any questions they may have about the interview process or the data usage. Following this, all participants wishing to take part in this study will be asked to provide written consent prior to the commencement of any interviews.

*If young person's under the age of 16 are eligible how will the Informed Consent of their parents/guardians (Informed Consent for their child to be asked if they would like to take part and to take part if they wish to) be obtained and documented?

Not applicable. Although this project is based in the school setting, it is not anticipated that any students will be interviewed as it is focusing on the implementation of programmes, which is determined by school staff and Local Authority staff.

*How will the young person's Assent be obtained and documented after parents/guardians Informed Consent is confirmed? If the young person's Assent will not be obtained and documented then please justify this choice.

Not applicable

Will participants be given any monetary or other inducements to/rewards for taking part?

No

If <u>YES</u>, please detail the inducement/incentive/reward and how and when participants will receive this:

N/A

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8)   Please give full details of the study Protocol*; please detail <u>all</u> the procedures, activities and equipment involved in the proposed project from when Informed Consent is obtained and documented (i.e. where Section 7 stops) through to the end of the project and the destruction (or archiving) of the data collected. Please include copies of all materials or documents you will use (e.g. Invitation Letter/email, Participant Information Sheet, Consent/Assent Form, Questionnaire, Interview Schedule, Focus Group topic guide etc) as cross-referenced appendices.

Appendix A: Protocol

Appendix B: Information Sheets

Appendix C: Invitation Letters

Appendix D: Reply slip

Appendix E: Consent form

Appendix F: Interview Schedule

*If you would like to please do submit a separate Protocol document as a cross-referenced appendix but please do not repeat information given on this form, or any of the supporting documents, in that document.

9a) What (if any) risks do you feel there will be to anyone who decides to take part in the research as a result of their choice?

It is felt that the risk posed to participants who take part in these interviews is extremely low, as they have been designed to obtain thoughts, opinions and experiences of implementation within the school setting, which is unlikely to be a sensitive topic. All information provided will be confidential and will be made anonymous by removing all identifiable information. It will also be made clear at all times that a participant is free to withdraw at any point, should they feel that they should wish to do so.

9b) What (if any) risks do you feel there will be to the people who are involved in running the project and/or the University?

The risk posed to the researcher and university by this project is minimal. Contact with the participants will be restricted to the facilitation of interviews, which will be conducted in the school environment or local authority venues and the lone-worker policy will be adhered to.

10): Will participants be allowed to withdraw their data <u>after</u> it has been collected?

Yes, but only for 2 weeks following data collection.

If <u>NO</u>, why have you chosen not to allow this?

N/A

If <u>YES,</u>

Why have you chosen to allow this?

To allow participants time to reflect on what they have said and make amendments or withdraw their interview completely if taking part has resulted in unnecessary distress.

How will this be made possible *(i.e. will the data be person identifiable or pseudonymised [link-anonymised] during the period when withdrawal of data is allowed)***?**

Information sheets and consent forms will be labelled with a unique Participant Identification Number, which will also distinguish whether the participant is based in a school or a local authority setting. This number will be included as part of the audio recording and will hence transcribed at the beginning of each transcript. During the transcription process, all personal identifiers will be removed (excluding job title) leaving only the specific Participants ID Number. Participants will be allowed to withdraw up to two weeks after the completion of their interview. Should a participant wish to amend or remove their data they will need to provide GW with their ID number in order to enable to locate the transcript. This process will be made clear to all participants before they consent to take part.

What (if any) time limit will be set on the period when withdrawal of data is allowed?

There will be a limit of two weeks- all participants will be informed that they are able to withdraw or postpone being interviewed at any time up to and during the data collection process.

If any time limit will be set what will happen to the data after that period *(i.e. will the data be destroyed or retained, if retained for how long, where and in what format will it be retained e.g. non or person identifiable, pseudonymised [link anonymised], as electronic files or hard copies etc)?*

All interviews that have been completed; following a 2-week cool off period will be transcribed verbatim. Transcripts will be retained in electronic format and will be stored in both a secure network folder at Teesside University and will be encrypted and stored on a password protected laptop owned by GW. Transcripts will not contain identifiable information and will only be held for long enough to conduct data analysis, be included in the PhD thesis, and be included in any publications, which may arise as a result of this work.

11a) What steps and procedures will be taken to preserve the confidentiality and privacy of any people and/or organisations involved in, and/or data or information collected as part of this project? *See pages 38-42 of 'Policy, Procedures, and Guidelines for Research Ethics' for guidance on confidentiality*

All of the participant's contact details held will be stored on the Password Protected TU Server and any data stored on external media will be encrypted. In addition, any data will not be kept for longer than necessary and will be securely deleted following the interview being conducted. The Dictaphone, which is used for transcription, will be stored in a secure filing cabinet. During transcription, all person and organisation identifiers will be removed and all audio recordings will be erased following completion. It is important to note that all information will be held in accordance with the Data Protection Act (1998).

All participants being interviewed will be made aware of the confidentiality procedures through the participant information sheet and the consent form.

11b) Please detail what, where and in what format people's data will be stored from the point at which is collected to when it is destroyed or archived.

Participants' contact details will be encrypted and stored on a password-protected laptop prior to the interviews taking place. The contact details may be required after the completion of the participant's first interview for re-interviewing purposes, and it has been stated in the PIS that participants may be invited for a second interview. Once data collection has been completed, all contact details will be removed and securely deleted. All interviews will be recorded using a specifically purchased Dictaphone, and the unique Participants ID number will be voiced at beginning of the recording. All audio recording equipment will be held securely in locked filing cabinets prior to being transcribed.

During the transcription process all personal and all identifiable information will be removed, excluding the job title, which is needed for analysis purposes. Once the transcription has been completed, all of the audio recordings will be removed from the Dictaphone immediately.

Non-identifiable transcripts will be stored on both the Teesside University, password protected, secure U drive and any data stored on GW's password-protected laptop will be encrypted, until the completion of the PhD and the subsequent dissemination of results. Only anonymous quotes, in which no personal information is presented, will be used during dissemination and subsequent publications. Following the completion of dissemination, all transcripts will be destroyed.

11c) Do you foresee any circumstances under which that confidentiality and privacy may need

to be breached? *(See pages 43-44 of 'Policy, Procedures, and Guidelines for Research Ethics' for guidance on possible required breaches of confidentiality.)* For example - what actions (if any) would be taken if any previously unknown factors become known during the course of the research which may require disclosure (e.g. medical or health problem(s), criminal confession or intention to commit crime, abusive or unprofessional behaviours or actions by any person etc).

No, given the nature of the interviews no sensitive information will be discussed such as criminal or medical issues. However, confidentiality would be broken if a safeguarding issue is presented that poses a risk to the interviewees safety or those involved, or if inappropriate practice is disclosed. This will be disclosed to DNB by GW before proceeding with the appropriate action, if required.

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12) Will any secondary analysis of data occur during the project (i.e. will you be using any data which was collected separately from this project)?

No

If YES – Please give full details of how the use of that data complies with the requirements of the Data Protection Act (1998) and any other relevant legislation? *(See pages 41-42 of 'Policy Procedures and Guidelines for Research Ethics' and the DPA (1998) in particular Section 33)*

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13) Will the research involve the use of any of the following:

a) Human Tissue of any kind (e.g.) blood, semen, saliva, urine, bodily fluids etc?

No

b) Radioactive materials?

No

c) Any other potentially dangerous or hazardous materials, such as chemicals or other agents?

No

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14) Will the project receive financial support from outside Teesside University?

Yes

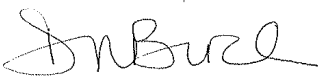*If YES,*

Please detail the nature and source of the support:

This PhD project has been funded by Fuse and any additional costs e.g. travel or cost of Dictaphone etc. will be met by the grant associated with the PhD stipend.

Have any restrictions/conditions been imposed upon the conduct of research?

 No

If YES, please detail the nature of, and reason for, these restrictions/conditions:

N/A

15) Will any restrictions been placed on the dissemination, or use of the results and/or findings?

No

If YES, please state the nature of, and reason for, these restrictions:

N/A

16) Does the project require any external approvals or permissions after TU ethical clearance has been granted?

School Heads and Local Authorities will be contacted to first give permission for staff to take part in the research project.

If YES, please state what these are and include any required documentation as cross-referenced appendices.

Emails included in appendices

17) Is there anything which has not already been included on this form, or in any supporting documents that you would like the REC members to be aware of when reviewing this application?

No

18) I confirm that have read the University's '*Policy Procedures and Guidelines for Research Ethics*' and confirm that my project will conform to the University's six Principles for Research Ethics contained therein. I am aware of University procedures on Health & Safety. I understand that the ethical propriety of this project may be monitored by the School's Research Ethics Sub-Committee and that my project may be audited by the University Research Ethics Committee *at any time during the course of the project*.

(Please complete the following as appropriate by putting your initials or explanatory text in the boxes)

▪ **I have appropriate experience of the research area of the project**	GW
▪ **I have undertaken any research ethics training *required* by my School.** *Note: having undertaken training is not a condition of application for ethical Approval unless a School requires that training be completed.*	GW/DNB
▪ **I confirm that as Supervisor I will monitor progress of the project.**	DNB
• **I confirm that the project complies with the Code of Practice of the following Professional Body (state N/A, if this is not applicable):**	N/A

19: Signature of Staff Researcher: _____   Date: _____

OR: *For any student projects Signature of*

Academic Supervisor or Director of Studies   Date: 11/07/16

B.12 Teesside University Ethical Approval Letter

Teesside University
Middlesbrough Tees Valley
TS1 3BA UK
www.tees.ac.uk

PRIVATE AND CONFIDENTIAL

Direct Line: 01642 384124

6th October 2016

Dorothy Newbury-Birch
School of Health & Social Care
Teesside University

Dear Dot

Study No 130/16 - 'How to get research findings into practice in the changing landscape of public health'. Researcher: Gillian Waller. Supervisor: Dorothy Newbury-Birch.

Decision: Approved

Thank you for submitting an amended application pack. I am pleased to confirm that the comments raised by the School of Health & Social Care Research Governance and Ethics Committee have been addressed in your amended application pack and your study has been approved through Chair's Action. Your study may proceed as it was described in your approved application pack. The application was presented on a TU Request for Ethical Approval form.

Please note:

If another body was not named as the Sponsor, in the application documents reviewed, Teesside University, acting through its School of Health & Social Care, will act as Sponsor for the project.

Where applicable, your study may only proceed when you have also received written approval from any other ethical committee (e.g. NRES) and operational / management structures relevant (e.g. Local NHS R&D). A copy of this approval letter **must** be attached to applications to any other ethical committee. If applicable please forward to me a copy of the approval letter from NRES before proceeding with the study.

In all cases, should you wish to make any substantial amendment to the protocol detailed, or supporting documentation included, in your approved application pack (other than those required as urgent safety measures) you must obtain written approval for those, from myself and all other relevant bodies, prior to implementing any amendment. Details of any changes made as urgent safety measures must be provided in writing to myself and all other relevant bodies as soon as possible after the relevant event; the study should not continue until written approval for those changes has been obtained from myself and all other relevant bodies.

On behalf of the School of Health & Social Care Research Governance and Ethics Committee please accept my best wishes for success in completing your study.

Yours sincerely

Dr. Alasdair MacSween
Chair
Research Governance and Ethics Committee
School of Health & Social Care

VAT REG NO. GB 686 4809 81

POSITIVE ABOUT DISABLED PEOPLE

INVESTOR IN PEOPLE

388

B.13 An Example of a Set of Field Notes

Qualitative Field Notes

Participant Reference: (REMOVED)

Date of Interview: (REMOVED)

Notes:

- Child Protection- children/ social care links.
  Importance of Safeguarding-variable across schools.

- Mental Health prioritised- issues with self-harm
  Drugs and alcohol
  Issues with Sexual Health
  → Running theme of 'Vulnerability' of young people.

- Risk assessment- identifying what is not known.

- Importance of age appropriate content

- Trained teachers- content watered down, adaptability, flexibility
  → Importance of being 'child-led'

- Links with other curriculum- Science, PSHE.

- Ofsted- difficult to get schools to see past this.
  Guidance/ policies needing to change to reflect this- how to get national backing?

- Collaborating with local services, charities

- Creative Engagement- exploring new ways of thinking, working together.
  'Building blocks'

- Resources- money, capacity
  → undertones of religious and independent management affecting resource availability
  (Academy)
  Lack of control/ support.

B.13 Qualitative Coding Grids

Intervention Factors		
Code	**Key Quotes (line reference)**	**NPT Construct**
'Hard-hitting' Examples	**SS7**- 340	Coherence
'Ready-made Package'	**LA1-** 255	Coherence
	LA6- 649	Cognitive Participation
	SS3- 612	
Appropriate Content	**LA3-** 320	Coherence
	LA6- 979	Cognitive Participation
	SS7- 467	
	SS10- 456	
Appropriate Setting	**LA2-** 304	Coherence
		Collective Action
Collaborative Development	**LA4-** 267	Coherence
		Collective Action
Confidentiality	**SS10**- 484	Cognitive Participation
Controversial Issues	**LA4-** 284	Coherence
	SS1- 218	Cognitive Participation
	SS6- 50, 555	
Data (driving factor)	**LA3-** 107	Coherence
Evidence Base	**LA6**- 800	Cognitive Participation
	LA9- 431	Collective Action
	LA10- 439	
	LA11- 971	
	SS9- 591, 957	
Difficulty Assessing/Quality Managing	**LA3-** 339	Reflexive Monitoring
Embedding	**SS3-** 158	Cognitive Participation
		Collective Action
Format	**LA1-** 485- 486	Coherence
		Cognitive Participation

Guidance *(lack of)*	**SS9-** 850	Coherence
		Cognitive Participation
		Collective Action
Identifying Gaps	**SS9-** 278	Coherence
		Cognitive Participation
Incentives	**LA11-** 844	Coherence
	SS8- 141, 153	Cognitive Participation
Inconvenience	**SS10-** 347	Coherence
		Cognitive Participation
Isolated Delivery	**LA1-** 507	Cognitive Participation
	LA6- 1033	Collective Action
Knowledge Translation	**LA2-** 431	Coherence
	LA8- 650	Cognitive Participation
	SS7- 498	Collective Action
Linking Health with Attainment	**LA6-** 587	Coherence
		Cognitive Participation
		Collective Action
Not Appropriate Level	**LA3-** 320	Coherence
	LA6- 979	Cognitive Participation
		Collective Action
On-going Delivery *-Drip feeding*	**LA1-** 507-8	Coherence
	LA13- 471	Cognitive Participation
Online Connectivity	**LA1-** 954	Cognitive Participation
		Collective Action
Packaging/ Labelling *-Stigma*	**LA9-** 354	Coherence
	LA11- 276	
Part of a Universal Offer	**LA11-** 387	Collective Action
	LA12- 188	
Personal Knowledge/ Experience	**SS7-** 223, 562	Coherence
		Cognitive Participation
Plan *(lack of)*	**SS1-** 249	Coherence

		Cognitive Participation Collective Action
Quality Resources	**LA1-** 860 **LA6-**1147 **LA8-** 242 **SS1-** 278 **SS3-** 276 **SS8-**185 **SS9-** 719	Coherence Cognitive Participation
Self-Serve *(not being effective)*	**LA7-** 337, 491 **LA11-** 828 **LA13-** 150, 603 **SS8-** 164	Cognitive Participation Collective Action
'Some Information Over no Information'	**SS9-** 689	Coherence
Targeted Advice	**SS9-** 977	Coherence
Technology	**LA6-** 1135	Coherence Cognitive Participation
Timing of Intervention	**SS7-** 668	
Topic *-Lack of Buy in for Substance Use*	**LA12-** 188 **SS7-** 282	Coherence Cognitive Participation
Using a Clear Pathway *-Plan/ Strategy*	**LA6-** 264, 432, 675 **LA7-** 565 **LA9-**151	Coherence Cognitive Participation
Using Technology *-E-based Learning*	**LA2-** 725 **LA11-** 789	Cognitive Participation

Varying Consistency	**LA8-** 146	Coherence
Specific Programme Characteristics		
Acceptable	**LA11-** 318	Cognitive Participation Collective Action
Accessible	**LA11-** 932	Cognitive Participation Collective Action
Coherency	**SS1-** 235	Coherence
Complexity	**LA4-** 393	Coherence
Comprehensive *(lack of)*	**SS3-** 629	Coherence Cognitive Participation Collective Action
Consistency	**LA6-** 393,965 **LA8-** 286, 411 **LA10-** 318 **LA11-** 427 **SS1-** 244 **SS4-** 135	Collective Action
Ease	**LA4-** 369, 382 **LA11-** 757	Coherence Cognitive Participation Collective Action
Fidelity *'Cherry picking'*	**LA4-** 213 **LA6-** 495 **SS1-** 209, 618 **SS2-** 382 **SS3-** 629 **SS5-** 85 **SS9-** 587	Collective Action
Flexible	**LA1-** 794, 805 **LA5-** 192 **LA6-** 495 **LA7-** 561 **LA11-** 773	Cognitive Participation Collective Action

	SS1- 163	
	SS2- 127	
	SS7- 77	
	SS9- 599	
Front Ending	**LA12-** 183, 233	Collective Action
Low Cost	**LA2-** 558	Cognitive Participation
	LA7- 304	Collective Action
	SS7- 389	
Meaningful *-Adjusting Lessons*	**LA4-** 382 **SS7-** 69	Coherence Cognitive Participation Collective Action
Standardised	**SS1-** 204	Collective Action
	SS3- 280	
Sustainability	**LA6-** 405	Collective Action
	LA7- 337	Reflexive Monitoring
	LA11- 508	
User Friendly	**LA11-** 757	Coherence Cognitive Participation Collective Action

Provider Factors		
Code	**Key Quotes (line reference)**	**NPT Construct**
'Any Staff can Deliver with Right Characteristics'	**LA2-** 613	Collective Action
	LA10- 790	
	SS2- 490	
Being Unaware of Programme Value	**LA4-** 394	Coherence
	SS7- 241	Cognitive Participation
		Collective Action
Capacity *(lack of)*	**LA11-** 602, 609	Cognitive Participation
	LA12- 206, 336	Collective Action
	SS2- 414	

	SS8- 85	
Collaboration *-Programme's Purpose* *-Collaborative Working*	**LA5-** 232 **SS2-** 296 **LA3**- 293 **LA8-** 578 **LA13-** 525 **SS7-** 695	Coherence Cognitive Participation Collective Action
Communication	**LA2-** 290 **LA3-** 232 **LA5-**125 **LA6-** 866 **LA8-** 271 **LA9-** 294 **LA10-** 734 **SS1-** 294	Coherence Cognitive Participation Collective Action
Competent Workforce	**LA9-** 478	Collective Action
External vs. Internal *-Externals Supporting Internal Messages* *-Reactive Support from Externals*	**LA11-** 502 **SS2-** 462 **SS9-** 532, 1005, 1061 **SS2-** 474 **SS3-** 365 **LA11-** 225	Cognitive Participation Collective Action
Driving Force	**LA6-** 1139	Cognitive Participation
Engagement	**LA6-** 741	Coherence Cognitive Participation Collective Action
Experience *(lack of)*	**SS10-** 744	Coherence Cognitive Participation Collective Action

Expert Knowledge	**SS3-** 406 **SS9-** 538	Coherence Cognitive Participation Collective Action
Facilitating Knowledge Transfer	**LA5-** 308 **LA6-** 279	Cognitive Participation Collective Action
Going the extra mile	**SS7-** 237	Cognitive Participation Collective Action
Having the 'right' staff *-Importance of delivery*	**SS9-** 883 **SS10-** 448	Collective Action
Identifying the 'best' Provider	**LA11-** 529	Cognitive Participation Collective Action
Judgement	**SS9-** 265	Cognitive Participation Collective Action
Knowledge	**LA6-** 1078 **LA13-** 505 **SS1-** 254 **SS9-** 643 **SS10-** 714	Coherence Cognitive Participation Collective Action
Knowledge Sharing	**SS7-** 763	Coherence Collective Action
Managing Change	**LA3-** 400	Coherence
Multiagency support *-Using Externals*	**LA1-** 351 **LA3-** 454 **LA4-** 153 **LA6-** 1095 **LA8-** 578 **LA11-** 165 **SS1-** 578 **SS2-** 303 **SS3-** 339	Cognitive Participation Collective Action

	SS8-140, 235	
	SS10- 376	
Naivety	**SS10-** 722	Coherence
Not Seeing Need	**SS4-** 212	Coherence Cognitive Participation
Pastoral Support	**LA1-** 338 **LA12-** 329	Collective Action
Personal Experiences	**SS6-** 299 **SS9-** 265	Coherence Cognitive Participation Collective Action
Political Correctness	**SS10-** 128	/
Power Imbalance	**SS9-** 1084	Collective Action
Preparation *-Training, Process* *-Answering Questions*	**SS2-** 163	Coherence
Pressure	**LA11-** 995	Cognitive Participation Collective Action
Professionalism *-Maintaining Boundaries*	**SS6-** 303	Collective Action
Programme Value *-Understanding Benefit*	**LA2-** 558 **LA4-** 393 **LA13-** 265	Coherence
Raising Issues *(difficulty)*	**SS10-** 162	Collective Action
Responsibility *(lack of)*	**LA12-** 152	Cognitive Participation Collective Action
Role Confusion	**LA12-** 314 **LA13-** 552	Cognitive Participation Collective Action

	SS9- 667	
Role Identity *-Defined Roles*	**LA2-** 412 **SS7-** 575	Cognitive Participation
School Nurses	**LA9-** 230 **LA11-** 900 **SS7**- 691	Cognitive Participation Collective Action
Skill Level *-Utilising Skills*	**LA2-** 667 **LA3-** 400 **LA7-** 379 **LA10-** 739 **SS1-** 487	Cognitive Participation Collective Action
Specialist Staff	**SS9-** 694	Cognitive Participation Collective Action
Staff Attitudes	**LA3-** 384, 427 **LA8-** 305	Cognitive Participation Collective Action
Staff Engagement	**LA6-** 741 **SS1-** 402	Coherence Cognitive Participation Collective Action
Staff Sickness	**SS1-** 353	Collective Action
Staff Skills	**SS9-** 855	Coherence Cognitive Participation Collective Action
Staff Turnover	**LA10-** 386 **LA11-** 188, 587	Collective Action
Support	**LA1-** 527 **LA4-** 594 **LA5-** 116 **LA8-** 301 **SS4-** 151	Cognitive Participation Collective Action

	SS13- 304	
Support for Using Externals *-Comfortable Asking Qs* *-Different Approaches*	**LA5-** 57 **LA6-** 471 **LA7-** 337, 423 **LA8-** 404 **LA13-** 481, 547 **SS4-** 372 **SS7-** 329, 355, 635 **SS8-** 235 **SS9-** 1055 **SS10-** 318, 363 **SS6-** 658 **SS10-** 376	Cognitive Participation Collective Action
Support for Using Internals *-Avoid 'parachuting' Externals* *-Steady Relationship with Tutors*	**LA6-** 369 **LA10-** 533 **SS6-** 526 **SS7-** 570	Cognitive Participation Collective Action
Teachers	**SS7-** 204	Coherence Cognitive Participation Collective Action
Teaching Assistants	**LA9-** 392	Cognitive Participation Collective Action
Team Teaching	**LA4-** 508 **LA6-** 110 **SS10-** 390, 681	Cognitive Participation Collective Action
Time Taken	**SS7-** 231	Cognitive Participation

		Collective Action
Trained Skills Not Used	**LA7-** 379	Coherence
		Collective Action
Training *-Part of Teacher Training*	**LA1-** 811 **LA3-** 490 **LA4-** 340, 577 **LA5-** 303 **LA6-** 279, 643 **LA7-** 374, 379 **LA8-** 220, 422, 628 **LA10-** 799 **LA11-** 591 **LA12-** 311 **LA13-** 535 **SS1-** 211, 248 **SS3-** 573 **SS6-** 555, 722 **SS7-** 253, 723 **SS8-** 85 **SS9-** 260, 626, 1098	Coherence Collective Action
Understanding Need/ Importance	**LA4- 393,** 582 **SS4-** 212 **SS8-** 260 **SS9-** 812	Coherence
Provider Characteristics		
Care	**SS7-** 221	Cognitive Participation Collective Action
Comfortable	**LA1-** 757 **LA2-** 593 **LA10-** 544 **SS1-** 218 **SS4-** 427	Cognitive Participation Collective Action

	SS6- 186, 539	
	SS7- 591	
	SS9- 373, 652, 667	
Compassion *-Sensitive to Needs*	**LA10-** 739	Cognitive Participation Collective Action
Competent	**LA5-** 247 **LA7-** 471 **LA8-** 533	Cognitive Participation Collective Action
Competent Workforce *(lack of)*	**LA5-** 247 **LA9-** 478	Cognitive Participation Collective Action
Confidence	**LA7-** 359 **LA8-** 422 **LA10-** 799 **LA11-** 591 **SS2-** 278 **SS3-** 388 **SS4-** 415 **SS6-** 448	Cognitive Participation Collective Action
Effort	**SS7-**231	Cognitive Participation Collective Action
Enthusiasm	**LA6-** 480 **LA13-** 225	Cognitive Participation Collective Action
Knowledge *(lack of)*	**LA7-** 359 **LA8-** 422 **LA10-** 799 **LA11-** 591 **SS3-** 285	Coherence Cognitive Participation Collective Action
Motivation	**LA2-** 636 **LA7-** 437 **LA13-** 643	Cognitive Participation Collective Action

Negativity	**LA6-** 783	Cognitive Participation
Passionate	**LA11-** 524	Cognitive Participation Collective Action
Personal Experience *(lack of)* *-Creditworthy*	**SS10-** 688	Coherence Cognitive Participation Collective Action
Rapport with YP *-Credibility*	**SS9-** 1098	Cognitive Participation Collective Action
Skills *(lack of)*	**SS1-** 487	Coherence Cognitive Participation Collective Action

Young People Factors		
Code	**Key Quotes (line reference)**	**NPT Construct**
Being Unable to Answer Qs	**SS6-** 453	Coherence Cognitive Participation Collective Action
Confidentiality	**SS9-** 752	/
Disrupting/ Hijacking Lesson	**SS9-** 761	/
Group Dynamics	**LA5-** 216	/
Hard to Reach YP	**SS10-** 546	/
Information Sharing	**SS6-** 663 **SS9-** 746	/
Knowing how to work with YP	**LA5-** 216 **LA11-** 701 **SS6-** 439, 613 **SS2-** 501 **SS9-** 300	Cognitive Participation Collective Action

Not Appealing to YP *-Relevance (lack of)* *-Embarrassing*	**LA13-** 244 **SS6-** 513 **SS6-** 672	/
Rebelling Against Programmes	**SS10-** 441	/
Targeting YP *(being unable to)*	**SS10-** 150	/
Trust *(lack of)*	**SS9-** 757	/
YP Recognising a Teacher lacks Confidence	**LA10-** 799	/
Use of Peers	**LA4-** 536	/
Varying Delivery *(due to pupils)*	**SS2-** 283	/
YP Buy in	**SS3-** 246	/
YP Deciding to Change	**SS10-**437	/
YP Driving Programme *-Child Led*	**LA4-** 470, 491 **LA11-** 866 **LA13-** 280, 455 **SS9-** 607-17	/
YP Engagement *-Creative Engagement*	**SS2-** 141 **LA9-** 164	/
YP Feedback	**SS2-** 436 **SS3-** 459	/
YP Identifying Poor Providers *-lack of confidence*	**LA8-** 544 **LA10-** 799	Collective Action
YP Motivation	**LA4-** 221	/
YP Needs	**SS4-** 463 **SS7-** 62	/

-Reflecting YP needs- Not School Needs	**LA10-** 760	
YP Preferring Externals	**SS1-** 287 **SS5-** 106 **SS9-** 1066	Cognitive Participation Collective Action
YP Preferring Teachers *-Rapport* *-Relationship*	**LA3-** 427 **SS4-** 360 **SS7-** 79, 630 **SS9-** 651, 706, 1071	Cognitive Participation Collective Action

School Factors		
Code	**Key Quotes (line reference)**	**NPT Construct**
Academies *-Challenge with Implementing*	**LA1-** 234 **LA11-** 645	Collective Action
Access *"doors closing"*	**LA3-** 191 **LA9-** 239 **LA11-** 497	/
Appropriate Setting	**LA2-** 304	Collective Action
Bottom up Approach *-Staff Engagement*	**LA8-** 526	Coherence Cognitive Participation Collective Action
Changing Expectations	**SS9-** 782	Cognitive Participation Collective Action
Communication with Services	**SS4-** 160 **SS8-** 235	Cognitive Participation Collective Action

Complex Organisations *"no single approach"*	**SS1-** 540	Collective Action
Cost	**LA7-** 304 **SS7-** 768	Collective Action
Cost- Effectiveness *-Low Cost but Same Impact?*	**SS3-** 549 **SS7-** 412	Collective Action
Culture	**LA2-** 419	Cognitive Participation Collective Action
Differing Delivery	**LA4-** 456 **SS1-** 548	Collective Action
Embedding	**LA5-** 287 **LA6-** 490 **LA8-** 591	Cognitive Participation Collective Action
Embedded within School *-Common Thread*	**LA2-** 338 **LA5-** 287 **SS3-** 158	Cognitive Participation Collective Action
Engagement	**LA4-** 275 **LA9-** 259	Coherence Cognitive Participation Collective Action Reflexive Monitoring
Evidencing for Ofsted	**SS9-** 1145	Reflexive Monitoring
Fatigue	**LA12-** 200	Cognitive Participation

		Collective Action
Free Good Value	**LA10-** 339	Collective Action
Funding	**SS7-** 747	Collective Action
Governor Support	**LA1-** 474, 502 **LA2-** 554 **LA4-** 289 **LA8-** 526, 550 **LA9-** 284, 333 **LA11-** 748	Cognitive Participation Collective Action
Having a Facilitator/ Lead *-Support System*	**LA1-** 571 **LA6-** 114 **LA10-** 367, 586 **LA12-** 251 **LA13-** 232 **SS4-** 218, 434	Cognitive Participation Collective Action
Head Teachers	**LA9-** 280 **LA10-** 323, 651 **LA11-** 657, 844 **LA13-** 211	Cognitive Participation Collective Action
Heavy Workload *-Slow Process*	**LA1-** 544 **LA7-** 481 **LA11-** 995 **SS1-** 330	Cognitive Participation Collective Action
Independent Schools	**LA2-** 824 **LA4-** 450 **LA6-** 555 **LA8-** 389 **LA10-** 198 **LA11-** 615 **LA12-** 75	Collective Action

Key Driving Force *-Champion/ Facilitator*	**LA6-** 346, 1139 **LA10-** 367, 655 **LA13-** 164 **SS9-** 898	Cognitive Participation
Limited Budgets	**SS7-** 376 **SS9-** 826, 1001	Collective Action
Linking to Curriculum	**LA4-** 378 **LA8-** 709 **LA10-** 507	Cognitive Participation Collective Action
Linking to Ofsted	**LA2-** 132 **LA3-** 400 **LA6-** 745, 793, 823 **LA8-** 346 **LA10-** 520 **LA11-** 547 **LA13-** 437 **SS9-** 1106	Cognitive Participation Collective Action
Linking with Safeguarding	**SS9-** 897, 918	Cognitive Participation Collective Action
Linking to School	**LA13-** 383	Collective Action
Logistics	**SS1-** 430	Cognitive Participation Collective Action
Media *(additional school roles)*	**SS9-** 782	/
No Single Approach	**LA8-** 114	Cognitive Participation Collective Action
Not Having Initiative	**LA13-** 202	Cognitive Participation

		Collective Action
Not Recognising Issues *-Fear*	**LA13-** 338	Collective Action
Parent Support	**LA1-** 463, 653 **LA11-** 657	Cognitive Participation Collective Action
Pastoral Engagement	**LA11-** 672, 1007	Cognitive Participation Collective Action
Perceived Value	**LA13-** 310	Coherence
Philosophy of School *-Policy*	**LA2-** 303 **LA3-** 473 **LA6-** 1173 **LA11-** 561	Collective Action
Positive Experiences	**LA6-** 896	Cognitive Participation Collective Action
Pressure	**SS9-** 791	Cognitive Participation Collective Action
Pressure on Achievement	**LA4-** 405 **LA9-** 326 **SS9-** 803	Cognitive Participation Collective Action
Prioritisation	**LA10-** 422 **LA11-** 556, 631 **LA12-** 274 **SS9-** 803	Cognitive Participation Collective Action
Proactive vs. reactive *-Responsive/ Progressive*	**LA9-** 294 **LA13-** 61 **SS6-** 38 **SS7-** 167	Coherence

Programme Ownership	**LA10-** 602 **LA11-** 690 **LA13-** 184	Cognitive Participation Collective Action
Programme Value - *'Value of Free Good'* - *Valuing Health*	**LA2-** 558 **LA10-** 339 **LA11-** 631 **LA2-** 125 **LA3-** 199 **LA6-** 823 **LA10-** 563 **LA11-** 806 **SS4-**146 **SS8-** 260	Coherence Cognitive Participation Collective Action
Quality Assessment *-Performance Monitoring*	**SS2-** 229 **SS3-** 335 **LA2-** 285	Collective Action Reflexive Monitoring
Receptive *(lack of)*	**LA6-** 560	Coherence Cognitive Participation Collective Action
Recognising Health is Linked with Attainment	**LA2-** 125 **LA3-** 199 **LA6-** 823 **LA8-** 332 **LA10-** 563 **LA11-** 531	Cognitive Participation Collective Action
Reputational Risk	**SS1-** 168	Collective Action
Responsibility *(lack of)*	**SS0-** 913	Collective Action
Schools as Individual Organisations	**SS1-** 600	Collective Action

School Buy-In	**LA4-** 713	Collective Action
	LA6- 1380	
	LA7- 275	
	LA8- 151	
	SS4- 451	
School Context	**SS2-** 168	Collective Action
School Culture *-Culture* *-Ethos*	**LA2-** 108, 567, 686 **LA3-** 254, 473 **LA6-** 1173 **LA11-** 561	Collective Action
School Forum	**LA4-** 475	Cognitive Participation Collective Action
School Structure	**LA4-** 131	Collective Action
Seeing the Bigger Picture	**LA11-** 536	Coherence Cognitive Participation
Setting as Appropriate	**LA1-** 424	Collective Action
SLT Support	**LA2-** 402 **LA4-** 290, 466 **LA7-** 409 **LA10-** 457, 699 **LA11-** 668 **LA13-** 236 **SS6-** 808 **SS8-** 215 **SS9-** 928	Cognitive Participation Collective Action
Strategy	**SS9-** 936	Coherence Cognitive Participation Collective Action
Stigma	**LA2-** 295	Collective Action

	LA5- 139	
	LA9- 101	
	LA10- 222	
	LA11- 291	
	LA13- 347	
-Not Acknowledging Issue	**SS10-** 529	
Ticking Boxes	**LA7-** 313, 497	Collective Action
Time	**LA4-** 363-4, 414	Collective Action
	LA5- 175	
	LA6- 788	
	LA10- 572	
	LA11- 530	
	LA13- 217	
	SS2- 168	
	SS8- 135	
	SS9- 821	
Timetable Disruption	**LA5-** 175	Cognitive Participation Collective Action
Top Down Approach	**LA7-** 390	Cognitive Participation
	LA8- 521	
	LA13- 394	
	SS9- 932	
Training *(finding time for)*	**SS1-** 379	Coherence Cognitive Participation Collective Action
Variable School 'Buy In'	**LA7-** 275	Collective Action
	LA8- 151	
Variable Support	**LA11-** 576	Cognitive Participation Collective Action
Varying Provision	**SS9-** 486	Collective Action

Watering down Programme	**SS2-** 383	Collective Action
Whole School Approach	**LA1-** 512, 608, 689 **LA2-** 104 **LA3-** 489 **LA8-** 548 **LA10-** 527 **LA13-** 394, 652	Collective Action

Wider Factors		
Code	**Key Quotes (line reference)**	**NPT Construct**
Change *-Roles, capacity, funding*	**LA1-** 714	Cognitive Participation Collective Action
Community *(low importance)*	**SS10-** 644	/
Cross Organisational Buy-In *-Support*	**LA8-** 366	Collective Action
Difference across boroughs	**LA12-** 286 **SS1-** 549	/
Disjointed Curriculum	**LA11-** 870	Collective Action
Family	**SS10-** 206-240, 245, 541	/
Funding *(lack of)*	**LA8-** 281, 434 **LA12-** 207 **SS2-** 175 **SS9-** 826, 997	Cognitive Participation Collective Action
Health Inequalities *-Social Deprivation*	**SS10-** 197, 580	/
Indicators *(lack of)*	**SS9-** 795, 850	Reflexive Monitoring

Influencing Policy	**LA10-** 538	Reflexive Monitoring
Issues with Home	**SS10-** 551	/
Local Needs	**LA9-** 492	Coherence
	LA10- 497	Reflexive Monitoring
	LA13- 410	
	SS4- 146	
	SS9- 325, 952	
Local/ National Data	**LA2-** 142	Reflexive Monitoring
	LA3- 107	
	LA6- 804	
	LA10- 438	
	LA11- 250	
	SS4- 329	
Morals and Values	**SS10-** 542	/
National Government *-Making it a Priority)*	**LA8-** 714 **LA11-** 602	Collective Action Reflexive Monitoring
National Strategy *(lack of)*	**LA3-** 473	Reflexive Monitoring
	LA8- 366	
	LA11- 736	
Ofsted	**LA11-** 752	Collective Action
	SS9- 1106	
Ofsted *(affecting priority)* *- Assessment is a Tick box exercise*	**LA10-** 373 **SS9-** 119	Reflexive Monitoring
Parents	**LA1-** 463-465	/
	LA11- 486, 672, 1007	
	LA13- 351	
	SS10- 625, 775	
PH Restructure	**LA7-** 146	/
PSHE *(not being statutory)*	**LA3-** 330	/

	LA6- 1150 SS9- 877	
Support Network **Links with:** *-LA/PH* *-External Services* *-Other Schools- Information Sharing*	LA4- 480 LA6- 842 LA8- 565 LA9- 337 SS9- 940, 989 SS9- 1005 SS4- 192	Cognitive Participation Collective Action Reflexive Monitoring
Taking a Broader View	LA13- 276	Reflexive Monitoring
Teacher Training *(lacking health)*	LA2- 412 LA8- 628 SS3- 573	Coherence Cognitive Participation Collective Action
Using a "City-Wide" Approach	LA13- 488	/
Using Evidence to Assess Impact of the Programme	LA8- 488	Reflexive Monitoring

Appendix C- Implementation Model Development Appendices

C.1 Model Development Protocol

Model Development Protocol

1.1 Background

The overall aim of this PhD was to explore the factors affecting the implementation of a tobacco or substance use intervention within the UK secondary school setting. One of the specific objectives was to develop an implementation model, which could be used by secondary school staff to facilitate implementation processes, in this context, in the future. The different components that were undertaken; the systematic literature review and the semi-structured interviews, were used to inform the development and the content of the model. Following obtaining the results of both work components, the results highlighted that for the implementation model to be the most useful, it should be:

- Easy to follow;
- Simple- not using complex terminology or requiring additional skills or knowledge;
- Accessible;
- Flexible- to allow for 'cherry- picking' or easily adaptable to accommodate workloads and time constraints;
- Appropriate and relevant to secondary school staff;
- Self-serving;
- Low-cost;
- Of web-based format- but with a hard copy capability.

1.2 Review of Literature

It was next important to review the relevant implementation science literature, in order to determine what type of model should be developed, and how the development process should be undertaken, or the important elements that should be considered. This included the following steps:

- **Reviewing the Nilsen, 2015 paper:** Nilsen looks at the different theoretical approaches in implementation science and classifies them by their typical characteristics. Following the review, it was identified that it would be most appropriate to construct an implementation Process Model, a Determinant Framework or an Implementation Theory.

- **Birken et al 2017:** The recently published paper by Birken et al looks at the different theoretical approaches and how they have been used. The paper was useful to determine what the most commonly used approaches are, and this formed the basis of a summary table.

- **Assessment of the most common Process Model, Determinant Framework or an Implementation Theory:** The summary table that was constructed was used to house the key development insights that could be identified from the development of each theoretical approach. After the table was completed the results were reviewed to identify the key insights, which were:

  (i) *Literature Review-* Achieved but need to look at other implementation models.

  (ii) *Qualitative Data Collection-* Achieved but should be developed further with PPI.

  (iii) *The importance of defining terminology.*

  (iv) *Not to Underestimate Complexity- model to be shaped by context*

  (v) *Piloting-* Outside the scope of this PhD, but useful for postdoctoral development.

- **The final step was to look at the previously developed school implementation models to see what could be gained and to determine why they are not commonly used in practice:**
  (i) *Domitrovich et al:* Determinant Framework looking at the macro level, school level and the individual level factors affecting implementation- figure doesn't explain factors and not sure how it would be useful.
  (ii) *Han and Weiss:* Process Model to guide implementation; pre-implementation phase, supported implementation phase and sustainability phase. The model appears overly complex and difficult to use in practice.

1.3 Development of the first draft of Model

Following the completion of data collection, the literature reviewing, and the conversations that were had in the supervision model development session; a full first draft of the implementation model will be proposed by GW. The early version that is proposed will be circulated to all supervisors and asked for feedback and initial comments on the structure and content in the New Year. Any modifications to this version will be made, and comprehensively discussed in upcoming supervision sessions.

1.4 Patient and Public Involvement (PPI)

As this PhD has been focused on developing outcomes, that are directly relevant and useful for future practice; it is important that the proposed implementation model will be both relevant and accessible to secondary school staff. A way in which to explore this and to test its initial usability will be to obtain feedback on the developed model via the conduction of a PPI session. The PPI will ask a small number of secondary school staff members their thoughts and feedback based around the following question prompts:

- *Do you think the implementation model is clear and accessible to use?*
- *What do you like about the implementation model?*
- *What do you think could be improved?*
- *Would you find it useful to facilitate the implementation of a tobacco or a substance use programme within a secondary school?*

1.5 Model Modifications

After the completion of the PPI session, and comments from supervisors, a final version (for the purpose of this PhD) of the implementation model will be constructed by GW. The final version will be re-circulated to secondary school staff for any additional comments and confirmation.

1.6 Write Up of Model

Process and chapter write up will be on-going throughout the model construction process, and therefore the full draft of the chapter will be added to the full first thesis draft to be circulated to supervisors in March.