An Investigation of the Relationship Between Interprofessional Education, Interprofessional Attitudes, and Interprofessional Practice

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No part of this thesis has been previously submitted for a degree in this or any other University. No part of this thesis has formed part of any solely or jointly-authored publications.

<u>Abstract</u>

Study aims: This study aimed to explore: the interprofessional attitudes of first- and final-year healthcare students, recent graduates, and senior healthcare professionals; the influences upon those attitudes (including participation in interprofessional education (IPE)); how attitudes change over time and between groups; and the factors influencing interprofessional interaction in education and practice settings.

Methods and methodology: This study used a mixed methods convergent parallel design. Quantitative data were collected from first- and final-year healthcare students using the Attitudes to Health Professionals Questionnaire. A control group of first-year students who had not participated in the IPL programme was used to determine the effect of participation in the Interprofessional Learning (IPL) programme. Data from first- and final-year students were compared to explore changes in interprofessional attitudes during students' training. Qualitative data were collected from first- and final-year students using focus groups and from graduates and senior healthcare professionals using individual interviews. These data provided insight into the attitudes of participants to IPE and practice and into factors that influence their attitude towards interprofessional interaction and other professions.

Key findings: The interprofessional attitudes of first-year students who participated in the IPL programme are more positive than those of the control group, but this effect does is not sustained with final-year students. Students' attitudes towards the IPL programme are mixed, but graduates' views are more positive. The qualitative data showed there are many factors aside from participating in the IPL programme that influence the interprofessional attitudes, and these factors affect the attitudes of all participants.

Conclusions: IPE is a viable way of improving students' interprofessional attitudes. Ensuring that students value IPE and that IPE addresses issues influencing student attitudes should produce graduates who will be better equipped to deal with the necessity of interprofessional working, benefitting patients, and meeting the evolving needs of the health service.

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Chapter One – Introduction and Aims of study

1.1 Introduction

Over the last 30 years, interprofessional education (IPE) has been widely recognised as a key strategy in improving communication, attitudes, and working practices between healthcare professions in order to provide holistic, patient-centred healthcare (Department of Health, 2000; WHO, 2010, 1988). Despite this, IPE is often not compulsory for all students, taught by trained staff, or evaluated as part of students' learning (Rodger and Hoffman, 2010).

With an aging population in most developed economies and an increase in long-term health conditions and co-morbidities (Fried *et al.,* 2004), it is more important than ever that health and social care professions are able to work together effectively to meet the demands of the changing landscape of health. With service users being more active in decisions about their own health and a shift from paternalism towards a culture of shared decision-making between clinician and service user (Elwyn et al., 2012; Rodriguez-Osorio and Dominguez-Cherit, 2009) professionals must know one another's roles and responsibilities. This increased understanding may improve clinical efficiency and patient safety and enable patients to make an informed choice about their own needs. These are crucial outcomes for a modern effective healthcare service to meet the increasingly complex demands for safe, high quality healthcare despite increasing financial and time constraints (Turnberg, 2015). IPE at a pre-registration level has been suggested

as a possible way to ensure that these important professional relationships are cultivated at an early stage in the careers of healthcare professionals (Barker *et al.,* 2005; Barr *et al.,* 2005; Barr and Ross, 2006; D'amour and Oandasan, 2005; Hale, 2003; Morison and Jenkins 2007 2010; Reeves *et al.,* 2010a). In spite of the adoption of IPE across many different higher education institutions, the long-term effectiveness of such interventions across the years of students' training and into professional practice are poorly understood (Cooke *et al.,* 2003; Cooper *et al.,* 2009; Saini *et al.,* 2011;Wamsley *et al.,* 2012)

By including an element of longer-term follow-up on the effects of a programme of IPE on the attitudes of healthcare students, this study makes a contribution to an area of paucity in the present research on IPE and attitudes.

1.1.1 Aims of the study

The aims of this study were to:

- explore the effect that the Interprofessional Learning programme at the University of East Anglia (UEA) has upon the interprofessional attitudes of healthcare students in their first year of pre-registration study, and how those attitudes change as students enter their final-year of study and move into professional practice;
- analyse the influences on the interprofessional attitudes of students and healthcare professionals in the educational and practice environment;
- explore the attitudes of students and healthcare professionals towards IPE and practice.

By exploring the longer-term effects of the educational programme and contributory factors to related attitudes, this illuminated the complex relationship between these and everyday practice according to students and qualified professionals (both in education and professional practice).UEA graduates, and local senior healthcare professionals who had mentored such students and junior professionals afforded a rich mix of diverse perspectives on the effect of IPE and influences on interprofessional attitudes. Looking for points of commonality and divergence across these findings gave a greater understanding of the issues of importance to students and professionals at different stages of their careers.

Chapter Two – Background

2.1 A definition

> *"Interprofessional Education occurs when two or more professions learn with, from and about each other to improve collaboration and the quality of care"*
>
> *CAIPE 2002*

The above definition by the Centre for the Advancement of Interprofessional Education (CAIPE) is used throughout this study to identify and understand examples of IPE. The key statement to be taken from this definition is "with, from and about each other". This phrasing excludes examples of educational interventions where multiple professions have been involved in a parallel but non-interactional fashion, for example a skills update session or a lecture attended by a mixed group of professionals. However, it is acknowledged that the terms multidisciplinary, or multiprofessional and interdisciplinary, or interprofessional have been used interchangeably (Mandy, 1996). This is important to bear in mind when reviewing the literature on IPE so as not to dismiss papers out of hand. The CAIPE website further clarifies that IPE in this definition refers to education in academic and work environments, and at pre- and post-qualification levels, with an inclusive view of the word "professional"(CAIPE, 2002).

This chapter focuses on the rationale for IPE, why it is important and its aims. Over the next section, IPE is briefly covered in a global context and a basic overview of the rationale for IPE in the UK is given with reference to specific critical publications and high-profile incidents. The literature review presented in Chapter Three offers a more detailed and critical review of the existing literature surrounding the effects of IPE on the interprofessional attitudes of

healthcare students, a major point of focus for this study. The measurement of change in interprofessional attitudes, as an outcome measure for IPE initiatives, is discussed later in this chapter.

2.2 The recognition of the need for increased interprofessional collaboration

The need for greater interprofessional collaboration was recognised in the 1970s by the World Health Organization, who stated that medical students were ill-prepared to work in healthcare teams (Hale, 2003). The WHO committee suggested that greater integration between healthcare professionals would be beneficial in terms of: recognition of the different skills of healthcare professions by professionals and the public; increased job satisfaction for professions; and more effective and holistic care for patients. A notable publication in 1988 from the WHO identified examples in developing and developed countries to generate a rationale for IPE, stating that students should learn together to improve their ability to work in teams and to face the particular health needs of their communities and environments (WHO, 1988). In 2010, the WHO reiterated its support for IPE and collaborative care with the publication of its "Framework for action on interprofessional education and collaborative practice" (WHO 2010), which outlined ways that increased interprofessional interaction could be used to combat health inequalities and improve the health of populations amid a global shortage of healthcare workers. This framework also emphasised the ability of IPE to improve interprofessional attitudes and lead to greater efficiency and safety in healthcare practice. The publication of this framework was intended to provide impetus for policymakers globally to recognise the need for IPE and practice and encourage its adoption in the education of healthcare professionals and the design of services and systems (Gilbert, 2010).

With over 50 years of enquiry, the evidence-base indicates that IPE leads to more collaborative practice, optimising healthcare services, strengthening systems, and improving both health

outcomes and patient satisfaction in primary and secondary care settings (Barr, 2010). A global scan of IPE in 2010 indicated that the vast majority of IPE (91%) was occurring in developed countries (Rodger and Hoffman, 2010). This is not surprising given the organisational and monetary resources required to implement IPE, but this finding should be viewed with some caution as the online survey used was only available in English, and by definition required internet access to complete. Nevertheless, 41 countries responded world-wide. While most IPE occurred in English-speaking, developed countries (with two thirds of responses from North America and the UK), IPE was gaining traction in less economically developed nations also, e.g. countries in Sub-Saharan Africa and South Asia (Rodger and Hoffman, 2010) . This indicates that the call by the WHO for IPE to be implemented globally is occurring, albeit at differing rates and levels of development in different parts of the world.

In addition to the motivation provided by the publications from the WHO (WHO, 2010, 1988), there have been several watershed moments in the UK that have highlighted the need for greater IPE to improve collaboration in health and social care in the UK. Several of the key reports that have provided impetus for such changes are outlined below.

At the outset of the new millennium, a plan for modernising and improving the NHS was published: "The NHS Plan: a plan for investment, a plan for reform" (Department of Health, 2000). This plan identified "old-fashioned demarcations between staff and barriers between services" (p 10) as a key area for improvement within the NHS in order to bring the system up to standard for the modern age. As part of these changes, the scope of nurses and other health professionals was increased with additional responsibilities such as prescribing medications, after necessary

training, and the expansion of nurse and therapist practitioner and consultant roles. With the proposed changes to professional roles outlined by this report, the need for IPE to ensure that professionals are clear about different professional roles is apparent. Barr and Ross (2006) described in greater depth the efforts to integrate IPE as part of the mainstream of health and social care pre-registration training. This was described in their paper "Mainstreaming IPE in the United Kingdom: A position paper". The need for improved collaboration among healthcare professionals was highlighted further by several high-profile reports into institutional failings that followed over the next decade and a half.

The Bristol Royal Infirmary Inquiry (2001) into high death rates following children's heart surgery between 1984 and 1995 is one of the earlier examples of a substantial development in the realisation of the need for improved interprofessional collaboration in healthcare. Poor communication between departments and professionals plus a failure to ensure that the needs of patients were kept central to care were highlighted as contributory to the unacceptably high mortality rates at the centre. Shared learning across health professions and greater emphasis on skills such as communication were recommended as ways of ensuring that similar failings are avoided in the future (Kennedy, 2001). IPE is one way in which the need for shared learning has been addressed, with 52 educational institutions of the 127 contacted in the report by Barr *et al.* (2014) reporting running IPE programmes by 2013.

Shortly after the publication of the inquiry into the Bristol Royal Infirmary, failures in communication and collaboration between health and social care professionals were again identified as a major contributory factor in the circumstances surrounding the death of Victoria Climbié, who died as a result of an extended

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period of abuse by her guardians. The Victoria Climbié Inquiry (Laming, 2003) recognised the need for more effective and flexible working across professional boundaries, in order to ensure the safety of children and prevent such cases in the future from being able to fall between the cracks of services. This finding provided further evidence for the need for IPE to improve interprofessional practice.

In 2008, the Department of Health published "High quality care for all: The NHS next stage review final report". This report promised improvements to health and social care services through improved interprofessional collaboration and working with the need of the local communities served reflected in the make-up of organisations and services, a point that WHO emphasised in its 1988 report. The report also called for greater shared learning and innovation within primary and secondary care and universities, as well as other organisations. These recommendations developed ideas first expressed in the NHS Plan (2000), placing further emphasis on the need for IPE and working to allow the NHS to move forward with its modernisation aims.

In addition to promoting greater interprofessional collaboration and education, the Bristol Royal Infirmary Inquiry (2001) and the Victoria Climbié Inquiry stated that organisational change was needed to foster greater patient safety and patient-centred care. This message was also espoused by the two NHS reports discussed previously in this chapter. The Francis Inquiry Report (Francis, 2013) (on the failings of the Mid Staffordshire NHS trust that led to unnecessary patient suffering and poor quality of care) further emphasised the need for organisational change and for putting the needs of patients above all other concerns. The response from CAIPE to this report asserted that the training and organisational change that are needed to ensure greater patient safety and

culture change would be best delivered in an IPE context (CAIPE, 2013). This assumption is logical, as widespread changes to systems will affect workers, requiring that they understand the respective positions of their own and other professions.

The primary motivation for enhancing interprofessional collaboration is to provide higher quality care for patients by reducing the duplication of work among health and social care professionals and improving communication and coordination of service, thereby increasing patient safety (Reeves *et al.,* 2010a). These goals reflect the findings of the reports and papers discussed previously. Hale (2003) summarised developments that provided impetus for the introduction of IPE i.e. transfer of education to universities, increased specialisation, reduced junior doctors' hours, reduced hospital stay, more care in the community, more consumerism, more performance management, and high-profile scandals (Box 1). While this study refers specifically to changes within the UK, many of the points are transferable to most developed countries.

Recent changes that reinforce the need for interprofessional learning
The **transfer of all healthcare professional education into universities**, providing enhanced opportunities for shared earning in a formal learning environment
Increased specialization in healthcare, meaning that nurses and other healthcare professionals often have a greater knowledge base about certain aspects of patient care than medics
Reduction in junior doctor's hours, meaning that their interaction time is reduced and that some work previously carried out by medical staff is now carried out by nurses and others
Reduction of lengths of hospital stay, meaning that the potential for serious consequences of a failure in collaborative working increases and that, since patient acuity is higher, there are fewer opportunities for students to "practise" on patients
Increased focus on care in the community – a number of different professionals are involved in the care of a patient
A **growing consumer movement in health**, which has become less tolerant of protecting professional turf
Increased performance management – failure in communication are less likely to be swept under the carpet
A number of **high profile scandals** in the NHS, indicating communication breakdown and poor working relationships

The field of health and social care in the last 15 years has been undergoing substantial change and upheaval, with greater focus on patient-centred care and accountability of professionals. New

healthcare roles (such as nurse and allied health practitioners and consultants), changed roles and responsibilities, and a shift from acute to community care require health and social care professionals to appreciate one another and communicate and work together better.

The requirement for all healthcare professions to be educated to a university level provides an obvious opportunity to begin this process of education and socialisation at a pre-registration level. The effectiveness of such pre-registration programmes remains unclear though (Reeves *et al.*, 2013; Reeves *et al.,* 2010b; Zwarenstein *et al.,* 2005) due to the lack of inquiry into the outcomes of such programmes on professional practice and the heterogeneous nature of interventions both at a pre- and post-registration level. Thistlethwaite and Moran (2010) also noted that although changes in attitude, or behaviour, are often used as outcome measures in the evaluation of IPE, there is less emphasis on assessing the level of knowledge about other professions and collaborative practice gained. With the increase in professionalization of nurses and other allied health professionals, there is a greater overlap of knowledge and skills between professionals (Parsell and Bligh, 1998). Clarity about professional roles is therefore a worthy topic for IPE to address.

In short, while it appears that increased collaboration and interprofessional practice in health and social care are seen as necessary for high quality patient care, there is no consensus on the methods by which this can be achieved through IPE. Additionally, the outcome measures of IPE are varied and appear to lack the scope to explore fully the changes, if any, that IPE on the knowledge, attitudes and skills of healthcare students and professionals. Measures of attitudinal change to evaluate the effectiveness of IPE are frequently given as a method of gauging the

impact that an educational initiative has had, but such measures do not record the full scope of learning. The use of additional data collection methods, such as interviews and focus groups, may go some way to addressing this need, as well as providing valuable data on outcomes on professional practice (Reeves *et al.,* 2013). The use of multiple data collection methods to investigate these phenomena is explored further in Chapter Three, Literature review.

While how to evaluate IPE interventions is still the subject of debate, there has been development on the use of sound theoretical bases for such interventions, two of the most prominent of which are discussed below.

2.3 Theoretical underpinnings of IPE initiatives

With the focus on IPE having increased in the last decade, more literature has emerged on the theoretical underpinnings of IPE and the principles necessary for its successful implementation. While the theoretical underpinnings of IPE remain the subject of debate (Hean *et al.,* 2009), adult learning theory and the contact hypothesis have emerged as two key concepts in the successful implementation of IPE interventions. Adult learning theory is a large and complex topic, and as such only a brief introduction is provided in this section to allow for greater understanding of its use within IPE. One of the main principles of adult learning theory is that adult learners are inherently different to child learners, with different motivations and goals behind their learning (Knowles, 1980).

The underpinning principles of adult learning theory are given as:

- "Adults are independent and self-directing
- They have accumulated a great deal of experience, which is a rich resource for learning
- They value learning that integrates with the demands of their everyday life
- They are more interested in immediate, problem centred approaches than in subject centred ones
- They are more motivated to learn by internal drives than by external ones"

(Kaufman, 2003 p213)

These principles are compatible with IPE, especially in that active learning is a crucial part of IPE, requiring students to engage and take ownership of the learning experience. By making sure that IPE occurs in topics and situations that matter to participants and

allows them opportunity to build upon prior practice experiences and knowledge, the IPE intervention is more likely to be successful (Barr *et al.,* 2005). Adult learning theory provides a useful theoretical foundation for the design and implementation of IPE; it does not provide a template for the form that the intervention should take, rather a set of guidelines for use in the design of a variety of different situations and locations, adaptable to the context of the learner. This flexibility of adult learning theory dovetails neatly with the expressed need for IPE to address the specific health needs of the population and community the professionals serve (WHO, 1988).

Contact theory (that underpins the contact hypothesis) has also been frequently used, often in conjunction with the principles of adult learning theory, to underpin IPE (Bridges and Tomkowiak, 2010; Hean *et al.,* 2009; Hean and Dickinson, 2005). Contact theory was first developed by Allport in the book, "The nature of prejudice" (1979) (first published in 1954), and focuses on the grounds of prejudices between different groups of people and the negative effects of strong identification with one's own group on inter-group interactions. The work of Tajfel and Turner (1979) expands further on this concept, explaining further the effects of social identity on intergroup behaviour. This concept is relevant to interprofessional working and education, which bring together members of different healthcare professions with different attitudes towards one another. Allport stated that bringing groups with negative feeling towards one another together was not enough to challenge effectively those feelings, and there were four pre-requisite conditions for any such interactions to facilitate positive change:

- Equal status of all group-members
- Common goals within the group

- No competition between group-members
- Organisational support

In order to further the applicability of this theory to IPE in particular, Hewstone and Brown (1986) developed the contact theory into the contact hypothesis by adding the conditions of:

- Positive expectations of group-members towards interprofessional interaction
- Successful experience of joint working
- Understanding of both differences and similarities of professions

As with the use of adult learning theory, contact theory does not provide rigorous guidelines for the development and implementation of IPE, but a basis upon which programmes can be designed. Looking at the foundations of adult learning theory and contact theory together it is clear to see why these two theories are compatible in the design and implementation of IPE courses and interventions. Together these two theories provide a basis for working in an educational context with adults who identify with different professional, and possibly social, groups (a concept that is explored in greater depth in Chapter 6, Qualitative Findings).

2.4 The Interprofessional Learning (IPL) Programme at the UEA

The IPL programme is aimed at pre-registration healthcare students at the UEA. The programme was first developed in late 2002 by the Centre for Interprofessional Practice (CIPP) within the Faculty of Medicine and Health Sciences. The programme was expanded in 2004 to include all schools of study within the Faculty and the School of Pharmacy in the Faculty of Science (CIPP 2014a). At the outset of this study, the IPL programme operated four different levels: IPL1, IPL2, IPL3 and IPL4.

Each of the levels of the IPL programme has a different focus that is considered to be appropriate to stage of learning of the students at the time. At the outset of this study, IPL1 emphasised the roles and responsibilities of professions and the progression of the patient through the health and social care system. IPL2 focused more on communication skills and requiring students to think reflectively on experiences they have had on practice placement or in other settings. IPL3 and 4 allowed for consolidation of the learning that students had acquired over their professional training in encouraging them to engage with service users and health and social care professionals about specific health and social care issues in the format of a conference and workshops. This development and increase in complexity of the IPL programme are in line with the principles of adult learning theory (Kaufman, 2003). As the students increase in experience and knowledge during their professional studies, they are able to apply this to their IPE. The changes of topic from the more basic (roles and responsibilities) to the more challenging (e.g. engagement and access to services for alcohol misuse) ensures that the programme is relevant to learning at all stages.

Before participating in IPL1, students are asked to complete the Attitudes to Health Professions Questionnaire (AHPQ), which is used as an outcome measure of the effect of the IPL programme on students' interprofessional attitudes. Two more data-points are collected in order to facilitate this, one at the end of IPL1, and another at the end of IPL2. An additional data-point is now collected in the students' final-year of training, something that at the time of this study was a one-off occurrence to facilitate this project. The development and use of the AHPQ is discussed further in a later section of this chapter.

The IPL programme has undergone multiple changes since this study was carried out, and the changes to the programme are discussed in Chapter Eight – Reflections and Conclusions. The descriptions of the levels of the IPL programme given in this chapter pertain to the programme as experienced by participants in this study.

2.4.1 IPL1

IPL1 is a compulsory first level of the programme, occurring in year one of study for healthcare students. At the outset of this study, medical, nursing, midwifery, pharmacy, occupational therapy, physiotherapy, speech and language therapy, and operating department practice students were all required to attend the module. A paramedic science course has recently commenced at the university, and these students now also participate in the course. IPL1 consists of a programme of small group-work on a case study, exploring the healthcare needs of the patient in the scenario and learning who would provide which services and interventions necessary for the successful treatment of the patient. In the version of the programme that the study participants experienced, the

programme lasted for seven weeks, with one session per week, culminating in a plenary session in which four IPL groups gave presentations on their learning from the programme to one another and to their facilitators. The group presentations were formatively assessed by both the two facilitators present and the other three groups present, in a form of peer feedback via a feedback form.

One facilitator was assigned to two IPL groups, and after the first introductory session alternated between sessions with each group in the subsequent weeks up until the plenary session. Meanwhile, students were expected to produce a joint report on the care and treatment of the patient in their case study, with reference to the particular healthcare professions who would be involved and their interactions at different stages of the patient journey. How the report was written was self-directed by the students, with the facilitator available for guidance or advice. The reports were assessed by the facilitator assigned to the IPL group, and the group was assigned a pass/fail grade based on their attendance and completion of the report and presentation to satisfactory standards. In the event of a failure, a remedial essay was set in order to allow students to complete the module in a satisfactory fashion. Students were also asked to complete the AHPQ prior to participating in IPL1, and again at the completion of their 7-week session. This questionnaire is used to investigate changes in students' interprofessional attitudes over the duration of the intervention, and is discussed in greater depth at the end of this chapter.

IPL1 was and is divided into three main groups: Session A; Session B; and Session C - with a third of the cohort of healthcare students in each Session. The reason for this is logistical, as IPL1 is compulsory for all students in their first year of study in the Faculty

of Medicine and Health Sciences and the School of Pharmacy. With such a large number of students participating in the programme, dividing the cohort into thirds allows for enough facilitators to be available for the programme. In the format of the programme described above each session ran sequentially, beginning with Session A in the autumn semester and ending with Session C in the spring.

2.4.2 IPL2

The second level of the IPL programme, like IPL1, is a compulsory module for all students in the Faculty of Medicine and Health Sciences and the School of Pharmacy. The format of this level of the programme has remained largely unchanged since the start of this study. It is completed during the second year of students' study and consists of three sessions. The first session is an introductory session in which students meet with their new IPL groups and facilitators and are given a task to prepare for the first of their two communication workshops. One facilitator is assigned to two mixed profession groups of students, with the same two facilitators and their respective groups present in the introductory session and two communication workshops.

In the intervening weeks between the introductory session and first communication workshop students are expected to complete the following task given to them in the introductory session. The students receive a fictional case study of a healthcare team caring for a patient; focusing on a member who feels that his/her suggestions about patient care are being ignored. Each student is required to discuss issues surrounding communication raised by the case study with two other healthcare students of a different profession to his/her own, drawing upon their personal experiences

on professional placement in addition to the information provided in the case study. Following their discussion, the students are required to write a 500-word reflective statement, including key learning objectives, which are then discussed by the students in their IPL groups during the first communication workshop (Wright and Lindqvist, 2008).

In-between the first and second communication workshop, each student is expected to complete a shadowing exercise for half a day with a healthcare professional not of his/her own profession. During this experience the students are asked to observe and reflect on the professional's interactions with patients. An extended version of the previously used case scenario is used to encourage discussion with the professional being shadowed. The extended version involves the deterioration of the patient after a team-member's ideas were ignored, with the fictional team needing to inform the patient and family. After the shadowing experience, students are required to complete a 500-word essay on their reflections, incorporating their observations and discussions from the shadowing exercise and their own experiences on professional placement (Wright and Lindqvist, 2008). The reflective statements are assessed by the facilitator responsible for the student, and a pass/fail grade assigned.

At the second communication workshop, each IPL group gives a short presentation of their key learning points during the IPL2 programme, which is formatively assessed by the other three IPL groups in the plenary session and the two facilitators present. The students receive formative feedback from their peers in much the same format as the presentations in IPL1, and their essays are marked as a pass/fail grade by their facilitator. This grade plus their attendance at the two sessions required determines if they pass or fail the module. In the event of failure, as with IPL1, the students

are set remedial work to be handed in to their facilitators. At the end of IPL2 students are again asked to complete the AHPQ.

As these sessions are also compulsory and therefore involve large numbers of students, IPL2 follows the format of A, B, and C sessions sequentially throughout the academic year to allow for a sufficient number of facilitators to be available. An additional scheduling difficulty with IPL2 is the increased practice placement requirements for students in their second year of study. There is no period of time during the academic year that is long enough to conduct a session of IPL2 without some students being on clinical placement at some point either during the workshops or the intervening weeks of study. While clinical placement may make participating in the shadowing exercise easier, if the students are based far from the university it can make completing the first task and attending the workshops more difficult. It is particularly important therefore that students take ownership of their learning and are proactive in completing the requirements of the module.

2.4.3 IPL3

IPL3 is a voluntary level of the programme open to third- and/or final-year students across the Faculty of Medicine and Health Sciences and the School of Pharmacy. This level of the programme allows approximately 120 students to take part in a one day conference with qualified health and social care professionals and service users, and places are allocated on a first-come, first-served basis. The focus of the conference is a health and social care issue such as drug or alcohol misuse. The conference is held in a dedicated conference venue, separate from either academia or healthcare, to establish neutral ground. This relates to the need for equality in IPE as previously discussed.

At the outset of the conference, students attend presentations from professionals working in the relevant field, who give an overview of the impact of the healthcare issue on the mental and physical health of individuals and the effects on their families and the wider community. Students then work in small mixed professional groups with the support of a facilitator, to hear from service users and family members on their experiences and perspectives and discuss issues raised (and how the interprofessional team can contribute). The students also to take part in workshops led by professionals and service users to explore in greater depth specific issues surrounding the topic of the conference, and to further consider the role of the interprofessional team in tackling these issues (CIPP, 2014b).

There is no summative assessment to IPL3 as it is a voluntary part of the programme, but students do receive a certificate of attendance and can participate in a poster competition by designing and presenting a poster at the conference.

2.4.4 IPL4

Similarly to IPL3, IPL4 also focuses on a specific health and social care issue, and follows a similar format, primarily based on workshops. Alcohol misuse, drug misuse, domestic abuse and eating disorders have all been topics for previous workshops. This level of the IPL programme is also voluntary, with places allocated to students in their final-year of study on a first-come, first-served basis. In order to prepare for this level of the programme, students are asked to reflect on an experience relevant to the topic of the conference, or read up on relevant research and reports.

At the outset of IPL4, presentations are given from health and social care specialists in the subject area and from service user groups if appropriate. Following these introductory talks, students, professionals, and service users divide into small groups - each of which is aided by a facilitator. During these groups, students hear service users speak about their experiences and discuss with the professionals and service users the knowledge and skills required when working with a particular service user group, as well as the services available and how they can be accessed. The final element of the half-day is an informal question and answer session in which students are able to put any questions that they have about their learning during the workshops to a panel of service users and professionals. As with IPL3, there is no formal assessment, but students do receive a certificate of attendance (CIPP, 2014c).

2.5 Interprofessional attitudes as an outcome measure of IPE

In order to ensure that interprofessional education (IPE) is working, it is necessary to evaluate and measure the impact that initiatives have. The main focus of the present study is the effect that IPE has on the interprofessional attitudes of healthcare students, as they progress through their studies and into professional practice. With this in mind, it is necessary to explore two things: i) what is meant by interprofessional attitudes and ii) what measures exist to record the impact, if any, that IPE has upon them?

In this study, interprofessional attitudes are defined as the opinions that individuals hold about different healthcare professions. At its most straightforward, this is seen as the opinions that members of one profession hold about another profession collectively, rather than about individuals within that profession. This can become more complex though when both in-group and out-group attitudes are explored within a study or evaluation. In-group attitudes are those expressed by members of a profession towards their own profession, e.g. nurses' opinions about nurses, and out-group opinions are those expressed about professions that differ from one's own, e.g. nurses' opinions about doctors (Carpenter, 1995a). Positive interprofessional attitudes are included within the necessary conditions and characteristics for interprofessional learning and working, as described by Parsell and Bligh (1999), which are grouped into four dimensions:

- "Relationships between different professional groups (values and beliefs people hold)
- Collaboration and teamwork (knowledge and skills needed)
- Roles and responsibilities (what people actually do)

- Benefits to patients, professional practice and personal growth (what actually happens)" (p96)

The "values and beliefs people hold" covers the aspect of interprofessional attitudes in this set of necessary conditions. It is reasonable to infer that negative attitudes, or opinions, about different professions may lead to dysfunctional working relationships, making teamwork and communication difficult - if not impossible. The use of interprofessional attitudes, as an outcome measure for the success of IPE initiatives, is then not surprising.

Stereotyping has been suggested as having an influence upon the formation of interprofessional attitudes (Hean and Dickinson, 2005; Oandasan and Reeves, 2005). The assumption made is that a negative stereotypical view of a profession leads to a negative attitude towards that profession, ultimately preventing high quality interprofessional working (Ateah *et al.,* 2010; Carpenter, 1995b; Rudland and Mires, 2005). A stereotype, by definition "a widely held but fixed and oversimplified image or idea of a particular type of person or thing" (OED online, 2015) is not in itself an attitude. Attitudes are more reflective of the values that an individual holds, but these values may have in turn been influenced by exposure to stereotypes. This relationship between stereotypes and interprofessional attitudes is important to consider throughout this study.

Several measures of change in interprofessional attitudes have been developed over the last two decades, a reflection upon the perceived importance of interprofessional attitudes to the success, or failure, of IPE to prepare pre-registration health and social care students for interprofessional practice. The most frequently used of these measures are briefly discussed in turn below, with particular

emphasis given to the AHPQ, the measure currently in use at the UEA. An article by Thannhauser *et al.* (2010), "Measures of IPE and collaboration", presents a review of quantitative measures used in the literature surrounding IPE and practice. While this review primarily focuses on two scales, the Readiness for Interprofessional Learning Scale (RIPLS) and the Interdisciplinary Education Perception Scale (IEPS), it does give a useful overview of the majority of the quantitative measures in use.

2.5.1 Interdisciplinary Education Perception Scale (IEPS)

The IEPS was developed in 1990, and as such is the oldest tool discussed in this section. The 18-item questionnaire focuses on the perception of respondents' own profession and the perceived relationship their profession has with other professions. The 18 items in the IEPS are measured on a six-point scale, with three points of disagreement and three points of agreement with the statement. This scale was devised with no mid-point to create a dichotomy of responses, thus forcing variance into the measure (Luecht *et al.,* 1990). After items had been content-analysed by five faculty researchers to ensure that the factors were relevant, the questionnaire was administered to a mixed group of undergraduate students, graduate students, and administrators (Luecht *et al.,* 1990).

Following factor analysis, a four subscale structure was developed, with each of the 18 items leading on to one of the following subscales: 1) Competence and Autonomy, 2) Perceived Need for Cooperation, 3) Perception of Actual Cooperation and 4) Understanding Others' Values. The Cronbach's alpha coefficient (a statistical measure of internal consistency) score for each of the subscales is given as: 1) 0.823, 2) 0.563, 3) 0.543, 4) 0.518. The

overall Cronbach's alpha coefficient score for the IEPS is 0.872, indicating a reasonably high level of internal consistency (Luecht *et al.,* 1990)*.*

Further efforts at refining the scale and increasing its internal consistency and test-retest reliability were made by McFadyen *et al.* (2007). Following content analysis of the original items of the IEPS, and subsequent multiple rounds of testing with a cohort of pre-registration students from eight different professions, a final three-subscale structure was decided upon; 1) Competency and Autonomy, 2) Perceived Need for Cooperation, 3) Perception of Actual Cooperation. The fourth subscale was eliminated (McFadyen *et al*., 2007). While the new versions of subscales 2) and 3) are identical to those reported by Luecht *et al.* (1999), three further items were dropped from subscale 1) in order to improve overall internal consistency of the scale to 0.86. The test-retest reliability of the revised version of the scale was judged to be moderate, with intra-class correlation coefficient (ICC) values nearing or exceeding 0.60 for all three subscales (McFadyen *et al.,* 2007).

The IEPS does not place particular emphasis on interprofessional attitudes, as part of its measurement of change. Given that the focus of the items on the IEPS is on the profession of the respondent, rather than their perception of others, this is logical. However, item 11 "Individuals in my profession have a higher status than other professions", which loads on to sub-scale four (Luecht *et al.,* 1990), and 16 "Individuals in my profession think highly of other related professions", which loads on to sub-scale three (Luecht *et al.,* 1990) can be seen as measuring changes in interprofessional attitudes. The focus in these items is still on the profession of the respondent, giving a measure of how a typical member of one profession views all other professions in the context of the item. The IEPS therefore appears to focus more on the necessary

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attitudes for interprofessional collaboration to occur, rather than changes in interprofessional attitudes. However, as item 11 was dropped from the revised version of the IEPS (McFadyen *et al.,* 2007), its usefulness as a measure of change in interprofessional attitudes further is questionable.

2.5.2 The Readiness for Interprofessional Learning Scale (RIPLS)

The development of the RIPLS was reported in 1999 (Parsell and Bligh, 1999) and the reliability of a revised version of the scale was reported in 2006 (McFadyen *et al.,* 2006). Similarly to the IEPS, and as suggested by the name of the scale, its emphasis is not on measuring the change in interprofessional attitudes of healthcare students, but instead on evaluating the "readiness" of healthcare students to participate in IPE. Nevertheless, several of the questions included in the original 19-item questionnaire do assess interprofessional attitudes, as part of the conditions necessary for interprofessional collaboration, also summarised in the subsequent paper (Parsell and Bligh, 1999).

The RIPLS was administered to undergraduate healthcare students from a mixture of professions (Parsell and Bligh 1999). The results from the 19-item questionnaire underwent principal components analysis to form a three-factor scale, with an internal consistency of 0.9 (Cronbach's alpha coefficient). This indicates a high level of internal consistency, meaning that the items on the same subscale are measuring the same construct. The three subscales are: Teamwork and Collaboration; Professional Identity; and Roles and Responsibilities (Parsell and Bligh, 1999). None of the items included in the RIPLS directly questions students about their attitudes towards other specific healthcare professions, but some questions focus on interprofessional attitudes in a more general

sense. The item "The function of nurses and therapists is mainly to provide support for doctors" is the most direct statement included in the questionnaire that concerns attitudes towards professions, and is one of the three items that makes up the third factor of Roles and Responsibilities. Each of the 19 items is rated on a five-point Likert scale (1 = strongly disagree, 2 = disagree, 3=undecided, 4 = agree, 5 = strongly agree), with nine items loading on to factor one, Teamwork and collaboration, seven on to factor two, Professional identity and three on to factor three, Roles and responsibilities (Parsell and Bligh, 1999).

A revision of this three-scale structure to a four-scale structure was suggested in 2005 by McFadyen *et al.* (2005). A group of experienced healthcare professionals using content analysis divided the second factor of Professional Identity into Positive Professional Identity and Negative Professional Identity (McFadyen *et al.,* 2005). The new four subscale structure was assessed with data from pre-registration students from eight different professions at the outset and again at the end of their first year of study. The data were fitted into the original three-subscale structure and the new four-subscale structure. The four-subscale structure appeared to have improved the stability of the questionnaire, with the RIPLS 19 items now emerging consistently as part of one of the four factors, rather than occasional inconsistent allocation between the original three-factors (McFadyen *et al.,* 2005).

A concern about using the RIPLS as a scale for the measurement of interprofessional attitudes is that its main focus is not on the change in interprofessional attitudes but on the factors that demonstrate receptiveness to IPE. The lower internal consistency of the Roles and Responsibilities factor, variously 0.32 (Parsell and Bligh, 1999) and 0.40 (McFadyen *et al.,* 2005) suggests that this factor may not be as reliable as other elements of the RIPLS. It has

been proposed that more reliable results in this subscale may be generated from students who are further along in their professional studies, given their increased practical experience (McFadyen *et al.,* 2006).

In summary, while the RIPLS has been used in many studies on IPE (See Chapter Three for further details), it may not be the most appropriate measure to assess changes in interprofessional attitudes due to its focus on the factors that determine readiness for interprofessional learning (and not the interprofessional attitudes of students).

2.5.3 Attitudes Towards Health Care Teams Scale (ATHCTS)

The ATHCTS was developed in 1999 by Heinemann *et al.* and is the only measurement tool discussed in this section that was not included in the paper by Thannhauser *et al.* (2010). The decision to briefly discuss this scale in this section was made due to the frequency with which the researcher encountered this measure in the literature on IPE, and as such a basic understanding of the scale is useful when exploring this area.

During its extensive development, three versions of the scale were proposed. The first version of the scale was developed from a pilot 31 items. Following principal component analysis three sub-scales: 1) Patient Outcomes; 2) Gains and Losses to Team-Members; and 3) Physician Centrality emerged from the results a convenience sample of healthcare professionals. Internal consistency values for sub-scales one and two were 0.82 and 0.78 respectively, with the third sub-scale having a Cronbach's alpha value of 0.64 (Heinemann *et al.,* 1999).

The second phase of development utilised a revised 38-item version of the original scale. After content analysis by four experts from different healthcare professions, three sub-scales were identified: 1) Quality of Care; 2) Costs of Team Care; and 3) Physician Centrality. This new version of the scale was administered to a convenience sample of graduate healthcare students. This testing revealed a correlation between factors one and two, which appeared to be measuring different aspects of the same phenomenon, and reduced the number of items to 28 (Heinemann *et al.,* 1999).

In further testing of this new version of the ATHCTS, a shortened 21-item questionnaire was administered to a diverse sample of healthcare professionals. The four-point Likert scale used in the phase two version of the ATHCTS was changed to a six-point Likert scale in order to increase the variability of responses. This version of the ATHCTS had two emergent sub-scales: 1) Quality of Care/Process; and 2) Physician Centrality (Heinemann *et al.,* 1999). The previous subscales of Quality of Care and Costs of Team Care were merged to form the Quality of Care/Process subscale, due to the continuing strong correlation between these two subscales. The final two subscale version of the ATHCTS comprised 19 items (Heinemann *et al.,* 1999). The ATHCTS subscales were acknowledged as having moderate to good internal consistency in all versions throughout development (Hyer *et al.,* 2000).

The ATHCTS was revisited in 2000 by Hyer *et al.* who proposed a three subscale version of the scale with different labels to the ones proposed originally by Heinemann *et al.* (1999). Using the 21-item version of the ATHCS subscale, Hyer *at al.* (2000) administered the questionnaire to pre-registration medicine, nursing, and social work students, a different demographic to the previous developments of the ATHCTS, which should be taken into consideration when

comparing the results of the two studies. This version of the questionnaire continued to use the six-point Likert scale, similarly to the IEPS, encouraging greater variation in results. The three sub-scales that resulted from this analysis were: 1) Team Value (previously Quality of Care); 2) Team Efficiency (previously Costs of Team Care); and 3) Shared Leadership (previously Physician Centrality). The alpha coefficients for these subscales ranged from 0.75 to 0.85 with this version of the ATHCTS, having an overall value of 0.87 indicating a high level of internal consistency. The use of a three-factor scale, rather than a two-factor scale as an outcome measure for IPE for pre-registration students, gives greater differentiation between attitudes towards interprofessional teams and attitudes towards interprofessional care (Hyer *et al.,* 2000), which may be more valuable when working with students whose attitudes may be less structured than qualified practitioners. The greater sensitivity offered by a three sub-scale structure may be more helpful when considering outcomes and changes to educational programmes.

In all versions of the ATHCTS, a strong view in favour of physician dominance of the healthcare team was correlated with a more negative view of team-led healthcare. This focus on the centrality of the physician or doctor does give some information on the attitudes of different healthcare professions towards doctors, with items such as "Physicians are natural team-leaders" assessing the perception of the doctor as the head or most influential member of the healthcare team. The ATHCS does not, however, provide any information on attitudes towards other members of the healthcare team. While well-developed and effective at measuring attitudes to teamwork and team dynamics , this scale does not appear to be the most comprehensive measure for assessing changes in

interprofessional attitudes due again to a lack of focus on the interprofessional attitudes of participants throughout the scale.

2.5.4 The Attitudes to Health Professionals Questionnaire (AHPQ)

The explicit purpose of the AHPQ is to assess changes in interprofessional attitudes before and after exposure to a programme of IPE (Lindqvist *et al.,* 2005a). The questionnaire was developed in response to a lack of appropriate measurement tools for change in interprofessional attitudes that would be applicable to a wide range of healthcare professionals (Lindqvist 2009). Furthermore, the AHPQ was developed and validated using the predecessors of students in the present study, thus being of particular interest for data collection. Developed in 2005 at the UEA, the AHPQ has been used routinely since to collect data from first and second-year students participating in the previously discussed compulsory levels of the IPL programme at the UEA.

Twenty items were initially generated from a construct exercise with twenty professionals who were members of staff across the Faculty of Medicine and Health Sciences at UEA. These members of staff included healthcare professionals, a health economist, a statistician, administrators, domestic staff, and a biologist (Lindqvist *et al.,* 2005a). The professionals were asked to consider nine different healthcare professions: lawyer, nurse, social worker, midwife, accountant, occupational therapist, hospital consultant, physiotherapist, and general practitioner, and think of how two of the professions were similar to one another, but different from a third profession. For example, two professions may be seen as being sympathetic, while another is seen as being non-sympathetic; these opposing terms form a construct (Kelly 1955). Each construct generated from this exercise was then used as a verbal anchor at

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each end of a visual analogue scale (VAS) that was measured from zero to ten centimetres (Lindqvist *et al.,* 2005a). Considering the example given above, at one end of the VAS would be the word "Sympathetic" and at the other end "Non-sympathetic".

The generation of the initial twenty items of the AHPQ formed the first part of stage one of the development of the AHPQ. The second part of stage one of development tested the questionnaire with first-year pre-registration students from five of the pre-registration healthcare programmes available at the UEA: nursing, medicine, midwifery, physiotherapy, and occupational therapy. The students were asked to rate a typical member of a healthcare profession, such as a doctor or a nurse, on the VAS scale for each item (Lindqvist 2009).

Two principal components emerged from this analysis: "Caring" and "Subservient". Component 1: "Caring" had a high Cronbach's alpha coefficient of 0.91, indicating high level of internal consistency and Component 2: "Subservient" a value of 0.59, a moderate level of internal consistency. Overall, the AHPQ had a value of α 0.86 (Cronbach's Alpha Coefficient) (Lindqvist *et al.,* 2005a). The ICC (Intraclass Correlation Coefficient) values for the twenty items varied between 0.34 and 0.85. A value of 0.7 or above is considered acceptable for test-retest values (Nunnally, 1978).

During stage two of the development process, items that had scored less well initially were removed or rephrased from the AHPQ, and the questionnaire was again administered to first-year students to determine if any improvement was gained. The α values for Component 1 increased to 0.93 and Component 2 decreased slightly to 0.58 respectively, while the overall value for the AHPQ increased slightly to 0.87 (Lindqvist *et al.,* 2005a).

The relationship between the two components remained fairly constant throughout the development process; with a lower score on the "Caring" component correlating with a lower score on the "Subservience" component and vice versa (Lindqvist *et al.,* 2005a). This correlation suggests that professions who are considered to be less caring are also considered less likely to work on an equal footing to other members of the healthcare team, instead being perceived as more dominant.

At present, the AHPQ is in routine use with students at the UEA and the questionnaire is now completed online using the same VAS format as the original design. In addition to this regular use, the questionnaire has been used to evaluate changes in interprofessional attitudes of healthcare students after their participation in an IPE intervention taking place on a training ward in Denmark (Jacobsen and Lindqvist, 2009), for which the AHPQ was translated into Danish. The application of the AHPQ in this context generated similar results to those obtained during the validation of the AHPQ, with the relationship between the two component scales remaining the same. This provides an indication that the AHPQ has a good level of consistency when used in multiple environments, which expands upon the previously expressed aim of evaluating the change in interprofessional attitudes of a range of different professionals by demonstrating the suitability of the scale to a range of different environments. As the AHPQ is the only identified outcome measure that focuses on the change in interprofessional attitudes, it is the most suitable measurement tool when setting out to assess the effect that IPE has on interprofessional attitudes.

2.6 Summary

In summary, the main points were that:

- The case for interprofessional education (IPE) has been building momentum for the past forty years and has been identified by the WHO as a necessary strategy to meet the changing demands of a modern healthcare service (WHO, 2010, 1988).

- In the UK, the government has acknowledged the call for greater interprofessional collaboration with a series of publications encouraging reform within the NHS to meet the needs of a changing healthcare system and provide greater quality of care (Department of Health, 2000). This need was further emphasised by several high-profile cases of failing within the health and social care system, for which a contributory factor was a lack of interprofessional cooperation (Kennedy, 2001; Laming, 2003; Francis, 2013).

- The IPL programme at the UEA aims to foster effective interprofessional collaboration through ensuring positive interprofessional attitudes among healthcare students. This programme is one of many IPE initiatives that explore change in interprofessional attitudes as an outcome measure of IPE

- The need to evaluate the effectiveness of IPE programmes is clear. In already busy curricula IPE must achieve its aims in a timely and efficient manner. The development of multiple outcome measures for IPE reflects this need (Thannhauser *et al.,* 2010).

Chapter Three - Review of the Literature

3.1 Search strategy

The literature discussed in this chapter is heterogeneous in nature, with a diverse range of study types, educational interventions, and conclusions drawn. Such diverse literature provides a rich wealth of information and gives rise to many possible avenues of further enquiry. As such, the exploration of topics in this chapter is not exhaustive of the information given in these studies, but is a summary and critique of the themes most relevant to the area of present interest.

Unlike a systematic review, this structured literature review is not intended as an exhaustive compilation of all the research available on IPE and interprofessional attitudes. The exploration was limited to research that was deemed to be of particular relevance to the specific setting of the current study, namely a higher education institution providing pre-registration IPE to healthcare students.

The structured literature review was conducted in seven distinct steps:

1. Determining the search terms and process of the search strategy
2. Deciding the inclusion and exclusion criteria
3. Deciding the databases to be searched
4. Searching for papers using the databases
5. Reading through titles/abstracts of papers (and, if required, part of/whole article)
6. Retaining papers that adhered to the inclusion criteria
7. Hand-searching the reference-lists of the included papers

The literature review was updated three times throughout the project between 2011 and 2013. A detailed record of the searches was kept by the researcher to ensure that no papers found to meet the inclusion criteria were inadvertently excluded and updating the search was more efficient.

3.1.1 Search terms and search strategy

The search strategy used for the literature review was as follows;

1. *Interprofession* OR inter-profession**
2. *Interdisciplin* OR inter-disciplin**
3. *Interoccupation* OR inter-occupation**
4. *Multiprofession* OR multi-profession**
5. *Multidisciplin* OR multi-disciplin**
6. *Multioccupation* OR multi-occupation**
7. *OR 1-6*
8. *Education* OR teach* OR train* OR learn**
9. *Attitude**
10. *Healthcare**
11. *7 AND 8 AND 9 AND 10*

These search terms were decided upon after several drafts and trial-runs on selected databases. At first, too many terms (including value*, belief* and health*) were included in the strategy, resulting in a very low number of papers being identified. This resulted in a poor representation of the literature around IPE and interprofessional attitudes. This was determined by seeking key papers already identified by the researcher and supervisory team during preliminary reading. In an attempt to address this issue, later drafts became too general, leading to a very high number of papers being found (tens of thousands).

The final search terms, as given above, resulted in a realistic number of papers for analysis and a broad enough representation of the literature to allow the present study to progress. A relatively large number of papers were retrieved from the databases (up to 561), which could be effectively appraised at step five of the search strategy for inclusion or exclusion based on titles and abstracts, and where further clarification was needed, reading through part or all of the main text of the study.

One of the challenges of this literature review is that there are many different terms in use for interprofessional practice and education. It was reasonable to assume that not all the literature would use the same terminology to refer to these subjects, a view supported by Mandy (1996). In order to maximise the chances of obtaining a full picture of the existing research on IPE and attitudes, it was necessary to use as wide a range of terms for "interprofessional" as possible. As well as this, there are many different ways of describing the "education" aspect of IPE interventions. Therefore, as many different ways, or saying "education", "learn", or "teach", were included as possible.

It was also important to be consistent in the use of interprofessional attitudes as a term. As the exploration of interprofessional attitudes was one of the areas of interest for this literature review, it was important to develop an understanding of the term and apply it consistently. The researcher defines interprofessional attitudes as the view of one person or professional group of a typical member of another profession. Understanding the roles and responsibilities of a different profession does not imply a certain attitude towards them, though it may be reasonable to assume that a greater understanding and appreciation of roles can lead to a more positive attitude. The expression of a greater understanding of roles and responsibilities

must therefore be qualified with a positive or negative view towards the profession in question to constitute expressing an attitude towards the profession in question, rather than simply knowledge about them.

The relationship between understanding of professional roles and interprofessional attitudes is explored in greater depth in Chapter Six, Qualitative Findings. Similarly, changes in attitude towards interprofessional learning, or practice, also need to be stated together with explicit reference to an improvement or worsening opinion towards a different profession. The reason behind this explanation is that it is often difficult to separate the subjects of attitudes towards different professions, understanding and appreciation of professional roles, and attitudes to interprofessional working and practice. Many of the studies included in this review explored these topics concurrently and to attempt to explain these phenomena entirely separately from one another would result in lost meaning and possible misinterpretation of the facts.

Constructing an effective search strategy that would provide appropriate focus for this study was challenging. As the IPL programme is undertaken by pre-registration students, it was decided that the literature review would focus on this group as the primary subject group for IPE interventions. It proved to be difficult to narrow the parameters of the search effectively to pre-registration students in the search strategy. Therefore, it was decided that this would become an inclusion criterion and would be determined at the reading stage. The other major obstacle was inherent in the challenge of using a computer system to explore a fairly complex and arguably abstract concept, such as attitudinal change. This is sometimes reflected in study titles and abstracts, which do not always give precise information on the topic under

investigation, or the population researched. This is compounded when searching across qualitative and quantitative research as the methods of presenting studies and language used are often very different (Evans, 2002). Given these challenges much checking was necessary to ensure effectiveness of the search.

3.1.2 Inclusion and exclusion criteria

To ensure the relevance of the review to the current project and to limit the number of studies included in the review to a manageable number, the following inclusion and exclusion criteria were decided upon by the researcher and primary supervisor:

<u>Inclusion</u>

- Primary reporting of an IPE intervention
- Pre-registration healthcare students, as participants in the IPE intervention
    - This did not exclude studies with additional data from other sources, such as graduates of programmes or faculty and clinicians involved in education. Some included studies did include such data
- Interprofessional attitudes explored as part of the outcome of the project
    - This did not exclude studies with no pre-test/post-test design

<u>Exclusion</u>

- No English language paper available
    - An accurate translation would not have been guaranteed
- Conference abstracts

- Editorials

The primary supervisor's role as the head of the CIPP at the UEA and her extensive experience in the field of IPE (both in practice and in research) made her a highly qualified candidate to supervise and support the literature review process.

In the event that the researcher was unclear on whether a paper should be included or excluded from the review, the primary supervisor was consulted for her opinion. The final decision on whether to include or exclude a study though always remained with the researcher. The same search terms and structure and inclusion and exclusion criteria were used for all the databases searched and for each search.

3.1.3 Databases searched in the review

The review was carried out by researcher using these databases (Table 1):

- AMED (Allied and Complementary Medicine Database)
- Embase
- Medline
- Cumulative Index to Nursing and Allied Health Literature (CINAHL)
- Education Resources Information Centre (ERIC)
- Scopus
- Cochrane Library

These databases represent the primary health and education databases available at the UEA, with the exception of Web of Knowledge, Web of Science, and JSTOR (Journal Storage). It was

decided that no other databases needed to be searched due to the increasing rate of duplication of results. ERIC returned only thirteen results that had not already been given elsewhere, of which only two were of potential relevance. Scopus only returned three additional possible titles of interest, with the Cochrane library returning no results that had not already been found on another database.

Table 1. Databases, search terms, inclusion/exclusion criteria and date ranges used in literature review

Table 1. Literature review summary				
Databases searched	Search terms	Inclusion criteria	Exclusion criteria	Time-span
• **AMED (Allied and Complementary Medicine Database)** • **Embase** • **Medline** • **CINAHL (Cumulative Index to Nursing and Allied Health Literature)** • **ERIC (Education Resources Information Centre)** • **Scopus** • **Cochrane Library**	*12.* Interprofession* OR inter-profession* *13.* Interdisciplin* OR inter-disciplin* *14.* Interoccupation* OR inter-occupation* *15.* Multiprofession* OR multi-profession* *16.* Multidisciplin* OR multi-disciplin* *17.* Multioccupation* OR multi-occupation* *18.* OR 1-6 *19.* Education* OR teach* OR train* OR learn* *20.* Attitude* *21.* Healthcare* *22.* 7 AND 8 AND 9 AND 10	• Reporting of an interprofessional education (IPE) intervention with primary data collection • Pre-registration healthcare students, as participants in the IPE intervention • Interprofessional attitudes explored as part of the outcome of the project	• No English language paper available • Conference abstracts • Editorials	• AMED 1985 – Present • Embase 1974 – Present • Medline 1946 – Present • CINAHL 1937 – Present • ERIC 1966 – Present • Scopus 1960 – Present • Cochrane Library – 1995 - Present

3.1.4 Hand-searching of reference-lists

The title and abstract of each paper of potential relevance were read through once it had been identified. If it was not clear from the abstract whether the paper was relevant, then the full text was read. The next stage of the search strategy was hand-searching.

A combination of complex database searches and hand-searching had been suggested as a more comprehensive search strategy than using either method in isolation (Hopewell *et al.,* 2008). When compared with simple electronic database searching alone, the use of hand-searching in addition was found to increase the rate of finding relevant literature dramatically. In one example, when searching for reports of randomised controlled trials, hand-searching was estimated to retrieve 92% to 100% relevant research papers, whereas a complex search strategy - with appropriate restrictions an electronic search - retrieved 82% of the total number of relevant research papers (Hopewell *et al.,* 2008). The use of large-scale computer algorithmic searching, along with small-scale human discrimination in this literature review, generated greater opportunity for the maximum number of relevant papers to be found. The considerable number of papers identified from the hand-search stage of the search strategy is most likely reflective of the aforementioned issues with the varied language used in title and abstracts, partially due to inherent differences in the reporting of qualitative and quantitative research (Evans, 2002).

In this instance, with the wide variety of terminology in use and different definitions accepted, hand-searching has proved an invaluable resource, increasing the number of papers in the literature review by 12. This has seemingly given a much richer and

fuller picture of the literature available on IPE and attitudes (Figure 1).
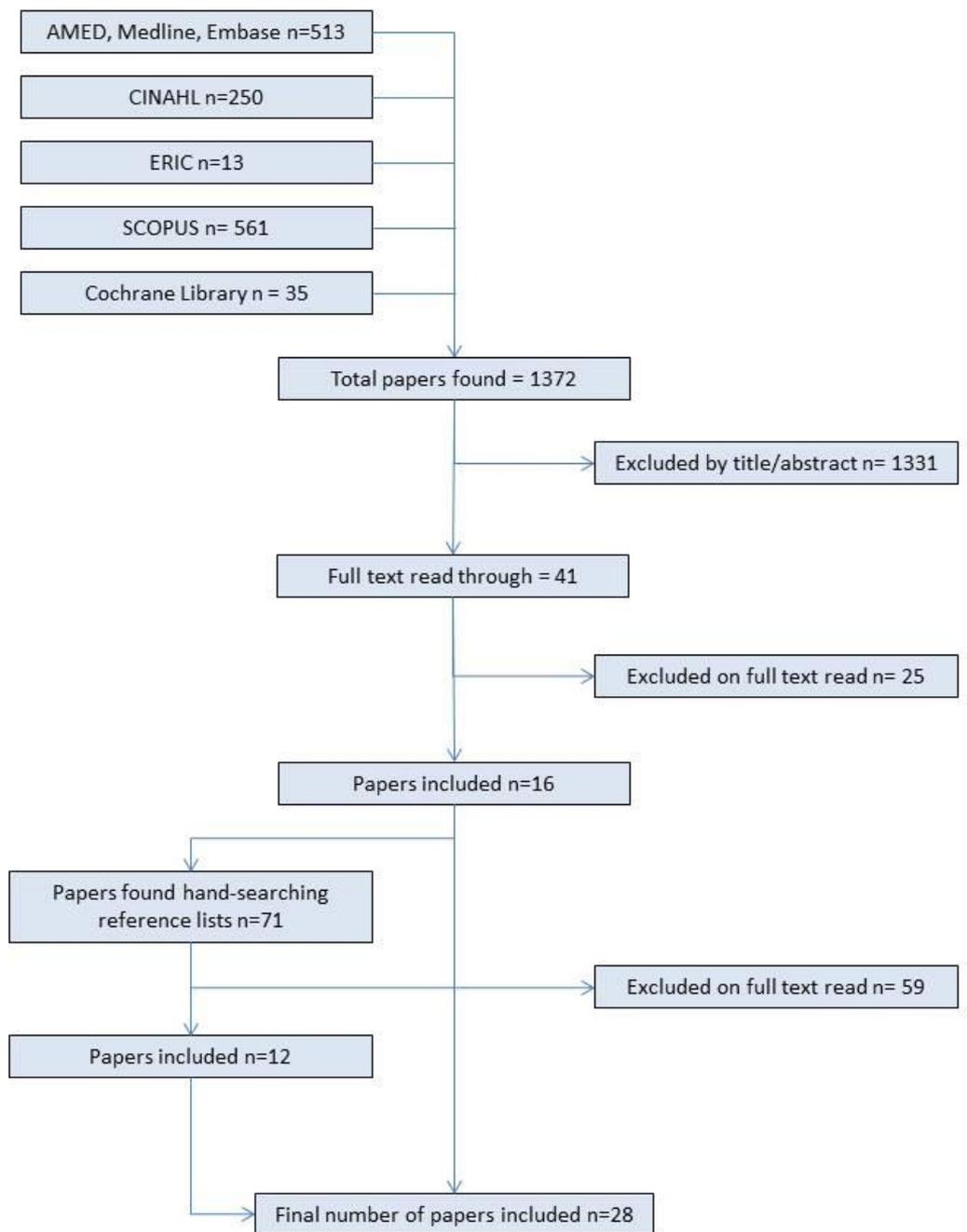
Figure 1. Summary flow-chart of papers included in literature review

3.2 Overview of studies included

The papers included in this review are highly varied and explore interprofessional attitudes to differing extents. For some studies, the exploration of changes in interprofessional attitudes was the sole purpose of the research, for others one outcome among many, or a seemingly incidental finding.

The IPE interventions reported by the studies in this review are also highly diverse in their educational durations. Similarly, the study designs, data collection methods and research paradigm used demonstrate a broad array of how data were collected, analysed and interpreted. Quantitative and qualitative methods were both used, on occasion within the same study. The quantitative studies used questionnaires; the qualitative studies questionnaires, observations, focus groups, and individual interviews. The studies - including both quantitative and qualitative methods - either used predominantly quantitative questionnaires that sometimes included open-ended questions, or quantitative questionnaires in combination with qualitative focus groups and interviews. Often, there was no explicit attempt to integrate the findings, and the qualitative and quantitative data collection methods focused on answering different aspects of inquiry. This meant that that, rather than being considered a truly mixed methods study, the study was regarded as a multiple method study (Johnson *et al.,* 2007). The definition of a mixed methods study is explored further in Chapter Four - Methods and methodology.

All the included studies investigated attitudinal change, as an outcome of the IPE interventions reported. Often the change in the interprofessional attitudes of the participating students was not the only outcome of interest, but having changes in student opinions and knowledge also explored. These other outcomes included, but

were not limited to, increases in knowledge about the roles of other professions and understanding and appreciation of IPE. The level of enquiry around interprofessional attitudes varied greatly between the studies, ranging from the primary focus of the project to a small incidental finding. Many studies also included programme evaluation of their respective IPE interventions, contributing to the literature on the successes and pitfalls of IPE. This variety of strategies used in the included studies suggests that evaluating the outcomes of IPE is complex, with several inter-related factors, including the interprofessional attitudes of participants, influencing findings.

Several studies also collected data from groups other than pre-registration students. In some instances, data were from newly qualified healthcare professionals who had previously undergone a programme of IPE, tutors and academic staff involved in the development and delivery of the programmes of education, and clinical healthcare staff who provided support for educational programmes in their practice locales. In a small number of studies, service users and their families were also invited to take part in the evaluation process. This variety of participants reflects the stakeholders in interprofessional collaboration, giving a broader view of the issues surrounding the topic from multiple perspectives.

Despite the diverse range of educational approaches, participant-groups, and study designs, most of the studies included in the review reported positive changes in students' interprofessional attitudes, as defined by the researcher, e.g. an increase in how caring a profession is perceived to be, or that members of a profession are more academically able than previously thought. Some studies reported non-significant changes in attitudes and in a small number of cases negative outcomes of IPE. Examples of such

negative outcome are an increase in the opinion that a profession is arrogant or that they are disinclined to participate in teamwork.

This variety in assessed outcomes, participants, and overall findings indicates several things. Firstly, there is not only one valid approach to IPE, and the methods used have to be appropriate for the situation and context. Secondly, it appears to be very important to consider the other factors that may have an effect on the interprofessional attitudes of students, aside from participation in IPE. These include, but are not limited to, knowledge of different professional roles and attitude towards interprofessional collaboration.

3.3 Methodological approaches to studies included

Of the 28 studies included in the review, seven used exclusively quantitative data collection methods, eight used methods of data collection and analysis primarily associated with qualitative research, and 13 studies used a combination of both quantitative and qualitative methods. The degree of combination of these methods varied greatly between the studies, ranging from no discernible attempts to integrate the quantitative and qualitative data to studies that used qualitative data to explore their quantitative data in greater depth. Several of the studies that used exclusively quantitative or qualitative methods incorporated multiple methods of data collection, but remained within the quantitative or qualitative research paradigms. The studies included in the review are initially separated into quantitative, qualitative, and studies using both quantitative and qualitative methods sections to allow for easier understanding of their structure, methods and approaches.

3.3.1 Quantitative studies

The seven quantitative studies identified in this review were:

- Jacobsen and Lindqvist (2009) investigated the effects of a two-week stay on an interprofessional training ward on the interprofessional attitudes of occupational therapy, physiotherapy, medical, and nursing students using the Attitudes to Health Professions Questionnaire (AHPQ). Students participated in the study (n=169) from nursing (69), occupational therapy (29), physiotherapy (31), and medicine (33). The remaining seven students are not accounted for, or a mistake was made in reporting participant numbers. All

students were in their fourth to sixth semester of study, or, for medicine, their eighth semester. As all students were approaching or in their final-year of study, this met the tenet of equal status (necessary for successful group interaction) (Hean and Dickinson, 2005; Pettigrew, 1998). As this study was conducted in Denmark, the AHPQ was translated into Danish. The use of a validated instrument (the AHPQ) to assess changes in attitudes is a strength of this study, and the similarity of the results to previous studies using the AHPQ (Lindqvist *et al.,* 2006) suggests that the use of the tool is appropriate to the evaluation of the intervention. The roles of the professions represented within this study in Denmark appear to be comparable with their counterparts in the UK, making direct comparison of the results easier with UK studies. Nevertheless, this study is modest in size and, as such, caution should be used when considering the sub-group analyses of each profession with regard to the generalisability of the findings.

- Kenaszchuk *et al*. (2012) reported on a one-day interprofessional workshop for final-year pre-registration students. The inclusion of students who were all at the same academic level of study may contribute to an atmosphere of equality within the groups, an important pre-requisite for successful group working (Bridges and Tomkowiak, 2010; Hean and Dickinson, 2005; Pettigrew, 1998). This study was conducted in Toronto (Canada), which - like the other countries from which these studies originate - has a well-established healthcare system, making comparison with other such countries, easier due to the similarity of their healthcare standards and development. Nine-hundred final-year students participated in the study, 350 in the intervention group and 550

in a control group, who did not participate in the intervention. Students worked in small mixed profession groups made up of students from ten different professions (nursing, paramedic, occupational therapy assistant, physiotherapist assistant, pharmacy technician, personal support worker, funeral services, early childhood education, exercise science/lifestyle management, and social services). The researchers used a quantitative questionnaire to report attitudinal change, which was constructed from the IPE Perceptions Scale (IEPS) (the sub-scales of: Competency and Autonomy; Need for Cooperation; and Perception of Actual Cooperation), the University of the West of England Questionnaire (UWE), (the subscales of; Communication and Teamwork; Attitudes Towards Interprofessional Learning; Perceptions of Interprofessional Interaction; and Attitudes Towards Own Interprofessional Relationships), and the Attitudes Towards Healthcare Teams Scale (ATHCTS) (the Shared Leadership/Physician Centrality subscale).

The large size of the participant-group in this study makes generalisability to wider populations more credible, and the use of a control group allowed for observed effects to be attributed to the attendance or non-attendance of the intervention. This reduces the likelihood that results observed were due to chance or other confounding factors. The intervention in this study was very brief, and it is unclear if this may have been an influencing factor on the results. It is reasonable to suggest that there may be an element of novelty to such a short programme, which may skew data. The mix of professions present in this study was more unusual also, including funeral services and lifestyle management, as well as professions not always seen at university level - such as assistant roles. Such a diverse range of

participants in the study may provide a different overall perspective on IPE than those studies with fewer or more commonly represented professions.

- Ritchie *et al.* (2013) presented an evaluation of the effects of a redesigned interprofessional curriculum that facilitated shared learning on five out of eight modules for half the cohort of first-year dental and oral health students at the University of Queensland. The remainder of the students participated in the traditional uni-professional programme, acting as a control group within the study. Students were randomised to either the intervention or control group, eliminating any bias from self-selection (Lavrakas, 2008). Ninety-three students participated in each group.

  The use of demographically comparable intervention and control groups in a long-term intervention provides strong indications that any observable differences in the groups are due to the nature of the curricula, rather than other observable factors. The researchers used the Readiness for Interprofessional Learning Scale (RIPLS) to detect changes in student attitudes from the outset to the end of the course, but removed the items of the third subscale - possibly affecting the overall psychometric properties of the scale. The results of the study should be viewed with this consideration in mind. This intervention is one of the most extensive in this review, in that it is a redesign of an existing curriculum to incorporate interprofessional learning throughout, rather than a separate entity. This should be considered when comparing results with other studies reporting much shorter, less integrated interventions.

- Tunstall-Pedoe *et al.* (2003) reported on the outcomes of a ten-week common foundation programme for medical, radiography, physiotherapy, and nursing students in their first term at St George's Hospital Medical School in London and Kingston University in London. A 30-point questionnaire (using a five point Likert scale developed from Carpenter (1995a) focusing on in-group and out-group attitudes of medical and non-medical students) was administered to students before and after the programme. For medical students 232/348 completed the first round of the questionnaire and 140 completed the second. For radiography, physiotherapy, and nursing students 116/154 completed the first round of the questionnaire, and 47 completed the second. This relatively low response rate of the second completion of the questionnaire when compared with the first round, coupled with the vastly differing sizes of the groups of students (nursing students numbered only eight, and it is not clear how many of these completed the questionnaire) introduces a risk of bias to the results if the responses of professional groups are substantially different to one another. The use of a non-validated version of a questionnaire should also be considered when viewing the results of this study as it is unclear how accurate the questionnaire is at measuring its intended variables. This is the only study that used extensive IPE as an introductory education method for new healthcare students. The limited healthcare education experience of the study participants should be borne in mind when considering the results of this study.

- Wellmon *et al.* (2012) used three separate scales, the IEPS, RIPLS, and the ATCHTS to evaluate the changes in final-year clinical psychology (35 students), physical therapy (36 students), Master students in education (17 students) and post-graduate

social work (35 students) students' attitudes to interprofessional learning and collaboration after a single six-hour interprofessional learning experience at Widener University in Pennsylvania. The three questionnaires used in this study were used in their original formats so their psychometric properties remain the same as in their development papers (See Chapter Two for further details), increasing the trustworthiness of the results. The small number of students involved in the study may affect the generalisability of the results to a larger population. The use of a Bonferroni procedure during analysis reduces the risk of a Type 1 statistical error due to multiple testing, which is useful in a study with a small sample size such as this. The participants in this study were not at equivalent educational levels, but it is unclear if this had any effect upon the outcome of the study, as it is not discussed.

- Zucchero *et al.* (2010) and Zucchero *et al.* (2011) described consecutive years of a five-hour symposium on the interprofessional treatment of dementia. The professions included in the study were: health services administration (30 in 2010, 33 in 2011) nursing (87 in 2010, 36 in 2011) occupational therapy (20 in 2010, 26 in 2011) psychology (seven in 2010, six in 2011) and social work (thirteen in 2010, six in 2011), all from Xavier College in Cincinnatti. The students were a mixture of undergraduate, Master, and doctoral students due to the nature of the qualifications necessary for their respective professions. The effect that this may have had on the equality of status of the participants in the programme is not clear, as it is not alluded to in the papers. Both studies used the original ATHCS scale to evaluate changes in the attitudes of healthcare, social work, and administration students. The findings of the

two studies were compared with one another to explore the effect of small adjustments made to the programme. The differences in cohort numbers should be borne in mind when comparing the results of the different year of the study, particularly the large decrease in number of nursing students, which may have had an impact on the differences between the overall results of the two years of the study, and decreased the generalisability of the results for the nursing sub-group.

3.3.2 Qualitative studies

The eight qualitative studies identified in this review were:

- Charles *et al.* (2011) conducted interviews with fourteen social work students at the University of British Columbia who participated in a three month IPE experience in an urban or rural community. Ten health and social care professions participated in the intervention. In subsequent years of the programme, a qualitative questionnaire consisting of the same questions posed in the interviews was used instead. The questions prompted open-ended responses, and the study had no quantitative element. Both forms of data collection were analysed together in the results of the study. All but three of the social work students who participated in the programme were interviewed, or completed the questionnaire, so the data gave a fairly comprehensive view of the attitudes and opinions of these students. The use of multiple researchers to analyse the data (researcher triangulation) reduces the effect of researcher bias on the data. While this study included social work, nursing, medical, physical therapy, occupational therapy, pharmaceutical sciences, speech-language pathology, audiology, laboratory technology and counselling psychology students, only data from social work students were reported in

this paper. From the paper it is not clear where or if the data from the other students were reported. This limits the transferability of the finding of the study.

- Cooke *et al.* (2003) explored the effects of taking part in two interprofessional half-day workshops (at the University of Manchester on breaking bad news) on the interprofessional attitudes of 12 medical and 22 nursing students. Qualitative questionnaires, a focus group, and field notes taken by researches were used to achieve more in depth results. This is a process sometimes referred to as triangulation, or crystallization, and increases the comprehensiveness of the data collected (Barbour, 2001). This intervention comprised a small number of students who attended on a voluntary basis. The voluntary attendance of the students in this intervention may have resulted in an element of bias in the results, as those who self-select to participate in studies are not necessarily a representative sample of the population (Lavrakas, 2008). This is a point common to several of the studies included in this review. The limited mix of professions included in the study should also be considered when comparing the results with other studies, particularly those that do not include medical or nursing students. As with Charles *et al.* (2011), multiple researchers collaborated on the data analysis, preventing one researcher from dominating the analysis process and increasing the trustworthiness of the results.

- Cooper *et al.* (2009) also used a variety of qualitative data collection methods (questionnaires, reflective statements, and focus groups) to evaluate the impact that a student-led seminar-series at a Canadian University (in the autumn semester, on global health) had on student interprofessional

attitudes, among other outcomes. Twelve medical, eight nursing, five occupational therapy, and three physiotherapy students took part. Participants ranged from first- to final-year students, and it is not clear from the study how this dynamic may have affected student interactions. This seminar-series was also open to students from outside healthcare, but these participants were not included in the study itself. Participation in this intervention was voluntary, and as the seminar-series was itself student-led it is not unreasonable to suggest that the participants are likely to have more positive views than the wider population of students. As with many qualitative studies the small number of participants should be considered when evaluating the results. This is likely to compound any potential bias from the self-selection process of participation. The data in this study were also coded and reviewed by multiple researchers to achieve greater trustworthiness.

- Leaviss (2000) conducted telephone interviews with recent healthcare graduates from the University of Liverpool. Three doctors, two nurses, two dentists, three radiographers, one optometrist, two physiotherapists, and two occupational therapists who had taken part in a two-day pilot interprofessional learning course as students participated in the study. Changes in interprofessional attitudes, as a result of the course, were discussed during the semi-structured interviews, but very little detail was given on the IPE intervention or on the analysis process of the data. The brevity of this paper may be attributed to the reported study being a pilot intervention, which may also account for the small number of participants. The use of telephone interviews over face-to-face interviews is not discussed in any depth, but should be considered when appraising the data. A lack of comprehensive guidance on

conducting qualitative telephone interviews makes assessing the impact of this method upon the data difficult (Novick, 2008).

- Lidskog *et al.* (2008) reported on a three-week long ward based interprofessional learning experience for 24 nursing, 16 occupational therapy, and five social work students at a Swedish university. This intervention took place on an interprofessional training ward, similarly to Jacobsen and Lindqvist (2009). Conversational interviews were conducted with participants in the week before and the week after the educational experience to assess changes in student perceptions of their own and other professions. Six student nurses, six student occupational therapists, and four student social workers participated in the interviews, which were analysed by the primary author and the findings validated by two other researchers. The findings of this study are comprehensive with respect to the intervention under study, giving useful information on the effects of an interprofessional training ward on student attitudes. This enables easier comparison with other studies, such as Jacobsen and Lindqvist (2009), which have reported on similar interventions.

- Mellor *et al.* (2013) conducted post-intervention semi-structured interviews to determine the influence of four IPE sessions carried out over four weeks at the University of Queensland on the attitudes and behaviours of one medical, one nursing, two occupational therapy, one physiotherapy and three pharmacy students. Overall 107 students participated in the programme. All of the students were third- or fourth-year students and participated in the programme in small mixed professional groups. The involvement of senior students should

promote an atmosphere of equality in the programme, an important principle of IPE (Hean and Dickinson, 2005; Pettigrew, 1998). As previously discussed, the analysis of the data by multiple researchers from different professional backgrounds increases the trustworthiness of the resulting emergent themes by preventing one viewpoint from dominating the analysis process. The small number of participants in this study may not encompass a representative sample of the 107 students who participated in the programme overall. This should be considered when evaluating the findings of the study.

- Reeves (2000) presented the findings of a fifteen-month project that involved two interprofessional placements for nursing, medical, and dental students, one in their first year and one in their second year of study. Students were studying at two London higher education establishments, with the medical and dental students enrolled at one and the nursing students based at the other. Focus groups were conducted with all 36 student participants before and after their participation and interviews with 18 of the students after their participation in the focus group, to examine emergent issues in more depth. Interviews were also conducted with fifteen tutors and ten service users who were involved in the project and key six educational and professional 'gatekeepers'. This collection of data from different participant-groups gives valuable insight into the perspectives of multiple stakeholders in IPE. Gaining varied perspectives on the effects and needs of IPE increases the transferability of these results to a wider range of other scenarios. The inclusion of all the participants in this long-term project gives a comprehensive insight into the effects the intervention on a

representative group of participants, reducing the likelihood of bias in the conclusions drawn.

- Wright *et al*. (2012) reported on students' experiences of taking part in a shadowing exercise with a healthcare professional not of their own profession. This experience formed part of the second level of the IPL programme. The researchers used framework analysis to analyse reflective statements written by pharmacy (29 students), medical (49 students), nursing (52 students), occupational therapy (14 students), physiotherapy (11 students), midwifery (4 students), and operating department practice (4 students) students after participating in the exercise. These statements were purposively selected from the 507 statements of the second-year students who completed the programme to give maximal variation between professional groups. The data were analysed separately by multiple researchers who met at the end of preliminary analysis to collaboratively develop themes. Ensuring proportional representation of professionals who participated in the intervention and a collaborative analysis process increase the trustworthiness of the data.

3.3.3. Combination of quantitative and qualitative methods

None of the studies that used a combination of quantitative and qualitative methods explicitly identified themselves as mixed methods studies. Some studies appear initially to be more quantitative in nature, but include qualitative elements, and occasionally vice versa. Most of the studies included in this section placed more emphasis on their quantitative elements, with a very small amount of qualitative data added to clarify the main findings or as evidence of the need for further study. Others include a more

even mixture of data collection methods associated with primarily quantitative or qualitative research. That 13/28 studies identified in this review employed both qualitative and quantitative methods to varying extents is interesting. This 'mixing' suggests that this may be an effective method of exploring a complex phenomenon such as the relationship between IPE, interprofessional attitudes, and interprofessional practice. This finding may also be reflective of the difficulty in fully examining and understanding the multifaceted factors influencing the experience and effect of IPE. The studies using both quantitative and qualitative methods are given below:

- Ateah *et al.* (2010) used a predominantly quantitative questionnaire, the Student Stereotypes Rating Questionnaire (SSRQ) in a pre-test/post-test evaluation of students' interprofessional attitudes of healthcare students at a Canadian university. The SSRQ version used in this study was adapted for use with undergraduate students by Hean *et al.* (2006), making it applicable to this study population. There was one open-ended question added to the questionnaire about the role of a nurse within the interdisciplinary team. The mixed methods element was therefore not extensive, with the qualitative question designed to add further information to one small aspect of the study. The study had three student groups: a control group; a group that took part in a 2.5 day educational experience; and a group that participated in an immersive educational experience in addition to the shorter experience. The use of a control group allows for any observed effects to be attributed with greater certainty to participation in one of the two versions of the interprofessional intervention. Medical students (four in each of the three groups respectively), nursing students (two in the control group and four in each intervention group), occupational therapy students (three in the control

group and two in each intervention group), physical therapy students (three in the control group and two in each intervention group), dental hygiene (two in the control group and the immersion group, one in the education group), pharmacy students (one in the control group, two in the education group, and three in the immersion group), and dentistry students (two in the control group and one in each intervention group) participated in the study. The small numbers of each profession participating may have made allocating equal numbers of each profession to each group difficult. It is not clear if the professional group of the respondent affected the results of the study, but the uneven distribution may have amplified any impact this may have had.

- Carpenter (1995a) used a variant on the pre-test/post-test study design. Medical and nursing students at the University of Bristol were asked to rate their attitudes towards their own and the other professional group using a quantitative questionnaire consisting of a seven-point scale with anchors at either end of "not at all" and "very much so". The intervention reported in this paper (a communication and teamworking exercise) was stated as being part of a larger initiative at the university, but without further detail. It is not clear how many participants took part in the programme in total, but questionnaires were analysed from 16 nursing students and 23 medical students. Lack of further detail of the questionnaire prevents comment on the validity of the results. The qualitative element of the data collection came from evaluation forms completed by students and included answers on knowledge gained from the one-day communication skills workshop and how to improve interprofessional working. The analysis procedure for these data is not given, making it difficult to assess the

trustworthiness of the data interpretation. The qualitative and quantitative findings are briefly compared with one another, but no explanation of any comparative process used is given. This means that the study cannot be classified as a true mixed methods study, as deliberate and meaningful integration of the data cannot be confirmed.

- Goelen *et al.* (2006) used the IEPS to evaluate changes in medical students' (20 in the intervention and 22 in the control group), physiotherapy students' (31 in the intervention and 23 in the control group), and nursing students' (25 in the intervention and 28 in the control group) attitudes in a before and after controlled study. This study was conducted in Belgium with final-year physiotherapy and nursing students and second year medical students. The dynamics of having students at different stages of their professional training is not discussed, but the importance of equality in groups (Bridges and Tomkowiak, 2010; Hean and Dickinson, 2005; Pettigrew, 1998) to successful group dynamics should be considered. Similarly to Carpenter (1995a), evaluation forms with free-text options were completed by students and analysed as part of the qualitative data. No detailed information was provided about the integration process of the quantitative and qualitative data, so again this study cannot be called a truly mixed methods study with certainty. Individual interviews with service users were also conducted, but did not focus on interprofessional attitudes. The educational programme consisted of five two-hour problem-based learning sessions over ten weeks. Two cohorts of students completed the evaluations, with the first cohort acting as a control group, as they had experienced uni-professional rather than interprofessional learning during the programme. This allowed for differences in changes in attitudes

to be attributed to participating in the IPE intervention with greater confidence.

- Hope *et al.* (2005) reported on a team-building initiative for pre-registration healthcare students consisting of eleven 3-hour team-building exercises followed by implementation of a community action project over seven three hour sessions. This initiative was run in New York for students from: medicine, nursing, physicians' assistants, physiotherapy, occupational therapy, midwifery, and diagnostic medical imaging. Students worked in interprofessional groups of 20 to 30. Quantitative evaluation involved students completing a pre- and post-intervention programme evaluation questionnaire consisting of a seven-point Likert scale assessing change in five variables, one of which was interprofessional attitudes. A narrative follow-up survey explored longer-term effects of the programme of students after they began working in clinical settings as students, or graduates. Physicians' assistants are not as commonly seen in the UK, and the lack of a comparable profession makes it difficult to assess findings from this group of participants against a UK population of healthcare students.

- Lennon-Dearing *et al.* (2008) looked at participation in a programme of IPE carried out at the East Tennessee State University from a social work perspective. Other professions participating in the programme were: medicine, nursing, public health students, and nutrition. Quantitative evaluation was carried out using a modified version of the 19-item instrument from Hojat *et al.* (1999). The scale was modified to include professions other than medics and nurses. It is unclear what effect this modification of the scale had upon its psychometric properties. Qualitative evaluation did not focus on

interprofessional attitudes but on the course content and structure. Written and verbal evaluations were collected from student participants, and focus groups were conducted with faculty members involved in the course. Collecting data from multiple stakeholder-groups in the intervention gives a richer, fuller picture of the impact of the programme, as it is examined from multiple perspectives.

- Lin *et al.* (2013) explored the effects of a four-week interprofessional module for healthcare students consisting of a lecture, two problem-based learning sessions, and a feedback session. This intervention was carried out at Kaohsiung University in Taiwan, making it the only study included in this review to report on findings from an Asian university. Any cultural differences between professions should be considered when comparing the study with others from western universities. Participants were divided into nursing only, medicine only, or a mixed nursing and medicine group. Eighteen fifth-year medical and 18 fourth-year nursing students took part in the study. Studying only two professions is something to be considered when comparing the findings to other studies. Students completed a ten-item questionnaire developed by the researchers, the Interprofessional Communication and Collaboration Questionnaire (ICCQ), at the end of the final feedback session. The aim of the questionnaire was to assess whether students' attitudes to interprofessional teamwork was influenced by IPE, but it does not appear to have been validated, so its accuracy is unclear. In addition to the questionnaire, verbal and written feedback was collected from students and tutors after each session on their experiences of the programme. These data formed the qualitative element of the study. In total, 34 students and six tutors provided

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feedback, representing almost all the participants in the study. This thorough data collection provides a comprehensive picture of the views of the participants and instructors involved in this study.

- Lindqvist *et al.* (2005b) used the AHPQ, a validated measure of changes in interprofessional attitudes to gauge student attitudes before and after participating in an eight-week programme of IPE at the UEA. Once a week, 462 students met in mixed profession groups to work on a case study about a fictional patient. The groups were made up of students from medicine (110), nursing (230), physiotherapy (50), occupational therapy (50), and midwifery (22). Only 39 students in the intervention group of the study and 18 in the control group provided data. When considering the results of the study, the low response rate and disparity in the numbers of student from each profession should be taken into account. Just under half of all students participating in the intervention were nursing. This is important to acknowledge when drawing conclusions about the effect of the programme on different professional groups. The use of a control group allows for any observed effects to be attributed with greater confidence to participation in the intervention. At the final plenary session, students completed a feedback form, which was then analysed using content analysis to generate categories and quantified into percentages of students who concurred or disagreed with the generated categories. This process of quantification makes comparing the results of the quantitative and qualitative data more straightforward, but it may have resulted in some loss of the richness of the data.

- Morison and Jenkins (2007) reported on the experiences of medical and nursing students who had participated in classroom-based shared learning, classroom-based and placement-based shared learning or neither (a control group of students who had no exposure). Of the 130 University of Belfast student-participants 17 were nursing and 113 were medical. All the nursing students and 35 medical students had participated in classroom-based and placement-based learning, 78 medical student participated in classroom-based learning only, and the other 77 medical students formed the control group who had not experienced either. It is notable that only one of the intervention groups had two professions represented. The implication of this is that the three groups may not be sufficiently similar to one another to make comparison of the groups meaningful, introducing an element of bias to the results. The researchers used a 20-item quantitative questionnaire to assess the differences between the three groups of students after the completion of the intervention, but as no further information is given on the questionnaire it is impossible to assess its validity. Five open questions were also asked at the end of the questionnaire to allow for further expansion on the answers given and to address additional information offered. This is a relatively small qualitative element to the study and, as such, does not provide sufficient data.

- Parsell *et al.* (1998) report on a 2-day pilot course of IPE at the University of Liverpool. The researchers assessed changes in interprofessional attitudes using a pre-test/post-test questionnaire consisting of ten true or false statements about each of the seven professions represented in the students' interprofessional groups. Four students each from: occupational

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therapy, orthoptics, radiography, nursing, physiotherapy, medicine, and dentistry programmes participated as volunteers. The small number of self-selecting students included in this study is likely to have introduced an element of bias to the results (Lavrakas, 2008). Seven closed questions, of which the third question concerned changes in interprofessional attitudes, were included in the questionnaire. This gave a very small amount of data about the effect of the programme on students' interprofessional attitudes. More data were gained from the open-ended questions, but these are not presented in the paper. No in-depth information on the development of the questionnaire is given. This lack of information makes assessing the quality of the research very difficult.

- Priest *et al.* (2008) also used a mixture of quantitative and qualitative questionnaire questions to determine the impact of a 1-year pilot study, followed by a full study of a programme of IPE spread out over two years, at Keele University in the UK. In the single year pilot study, seven (reducing to five during the study) mental health nursing and ten clinical psychology students took part in four sessions of interprofessional learning in small mixed groups. In the full-scale 2-year study, the 11 nursing and ten clinical psychology students participated in seven interprofessional group work sessions. The RIPLS was administered at three time-points (before starting the course, after semester one, and after semester two) in the pilot study, and at the corresponding five points in the full study. Open questions on professional roles, contribution to learning, and programme evaluation formed the qualitative element of the study. No details were given on who performed the analysis of the data, but the qualitative data appears to have been used to supplement the data from the RIPLS, providing information on

other aspects of students' knowledge and attitudes that had been changed after participating in the intervention. No reference was made to any effects that may have been observed as a result of the nursing students being undergraduates and the clinical psychology students being doctoral students. Such a large difference in academic level may have had an effect upon the sense of equality within the groups, an important aspect of contact theory (Bridges and Tomkowiak, 2010; Hean and Dickinson, 2005; Pettigrew, 1998).

- Saini *et al.* (2011) used three different quantitative questionnaires and three different qualitative methods of data collection to evaluate a three-day IPE model at the University of Sydney for nine medical, six nursing, and 11 pharmacy students, which consisted of a workshop, training in delivering a healthcare programme to schoolchildren, and finally delivering the programme. The three quantitative questionnaires used were: Asthma Knowledge for Healthcare Professionals, which did not focus on interprofessional attitudes, the ATHCTS, and the RIPLS. All three questionnaires have been validated, increasing the trustworthiness of the results gained from the study. Qualitative data collection methods used were: feedback interviews with two volunteer students from each profession after the educational experience; reflective essays on the learning experience; and professional descriptors of other professions submitted on day one of the experience. The reporting of the data from the qualitative methods is extensive, and it is stated that two researchers coded the data sources, with discussion with the wider research team to agree themes. This process appears to be rigorous, increasing the trustworthiness of these results. Nevertheless, the small sample

size of volunteer students should mean that these results are viewed as possibly not being representative of the views of the wider population.

- Taylor *et al.* (2004) used the ATHCTS, the revised interprofessional perception scale (RIPS), and an evaluation questionnaire (including open statements) to assess changes in student interprofessional attitudes following a 5-week IPE course at the University of Alberta. This study reported on results from two consecutive years of the programme, which were presented as three calendar years of results. The ability to compare results across years gives a greater indication of their accuracy. The programme incorporated group work on case-based learning, delivering a community-based education programme, and preparing for a joint clinical examination at the end of the course. Ten different healthcare professions were included in this intervention. These were: dental hygiene (n=39 first year, n=38 second year respectively), dentistry (n=30, n=66), medical laboratory science (n=9, n=13), medicine (n=125, n=93), nursing (n=264,n=185), nutrition (n=73, n=38), occupational therapy (n=13, n=73), pharmacy (n=100 n=99), physical education (n=6, n=8), and physical therapy (n=64, n=65). The large disparity between the numbers of students in each profession should be considered when looking at the results of the study, as they may not be representative of all the professions included. The differences in numbers between years for some professions should also be acknowledged, as the demographics of the study population are considerably altered. This makes direct comparisons between years more problematic. The information presented from the evaluation statements is very brief and, as such, it is not possible to make any informed comment upon.

- Wamsley *et al.* 2012 explored the impact of a one-off 4-hour workshop for healthcare students at the University of California, focusing on clinical examination skills and developing interprofessional care plans. The ATHCTS was administered pre- and post-intervention to assess changes in student attitudes. The results of this questionnaire were compared with those from a control group at a single time-point. Medical (26 intervention, 47 control), dental (23 intervention, 19 control), nursing (21 intervention, 27 control), pharmacy (24 intervention, 50 control) and physiotherapy (seven intervention, nine control) students participated. The imbalance of professions and their representation in the intervention and control groups affect both the transferability of the results to the underrepresented professions and the validity of inter-group comparisons. One focus group per profession also allowed students to expand further on their attitudes and opinions, which may go some way towards determining if the overall quantitative results are representative of all of the professional groups included in the study. Both students and involved faculty completed a survey about their perceptions of the educational programme, but this focused primarily on programme evaluation rather than interprofessional attitudes.

In addition to the variety in educational techniques and data collection methods employed by these studies, it is clear from the above sections that the use of control groups and the professions included in the studies varies greatly. The number and balance of participants and the length of follow-up of the results also differed between each study. All these factors make direct comparison with these studies extremely difficult. In addition to this, the transferability of the findings of these studies to other IPE

interventions can be problematic, as the heterogeneous nature of the study designs and participants does not always allow for direct comparison with different study populations and educational settings.

3.4 Factors differing across study approaches

3.4.1 Forms of IPE used in selected studies

The types of IPE identified in the studies included in this review are challenging to categorise, with many of the studies reporting more than one task or setting for their educational intervention. Most of the studies reported that students were required to engage in some form of small-group work during their educational experience, but the format of this experience varied greatly. In the next section of this chapter, the use of problem-based learning and case studies as vehicles for IPE and the use of academic and practice settings for IPE are discussed in reference to the included literature. The duration of the IPE interventions, the use of control groups and academic assessment of participation in IPE in the included studies are also discussed.

3.4.2 Problem-based learning and case studies

Most of the studies reporting participation in small group activities used case studies for the students to work on in an interprofessional team. Four of these studies specifically stated that problem-based learning was the method used by the students to learn from these case studies. Goelen *et al*. (2006) and Kenaszchuk *et al*. (2012) used this technique as the sole focus of their educational interventions. Other studies used problem-based learning as an element of their programme in conjunction with other activities. Lin *et al.* (2013) used two problem-based learning sessions alongside a lecture and feedback session. Tunstall-Pedoe *et al*. (2003) used a combination of problem-based learning sessions alongside anatomy communication skills and visits to a GP

surgery, with the remaining parts of the educational programme consisting of didactic learning and lectures. Priest *et al.* (2008) combined problem-based learning with panel sessions with health care professionals and individual work. Problem-based learning is often used in medical and health care education, requiring students to define and analyse a problem and generate learning objectives based on this discussion. After researching the necessary topics, the students must then synthesise and test this new knowledge (Schmidt, 1983). Using this approach to IPE prompts students to discuss and debate, via interprofessional interaction, which promotes exploration and sharing of information and perspectives with professions not hitherto encountered in their own uni-professional programmes. Very few limitations of problem-based learning are acknowledged, with the main issues being raised around suitable resources to carry out such programmes effectively and potential student uncertainty of how to engage with the learning style (Wood, 2003).

Other studies stated that case studies were used but did not mention a specific approach to the task such as problem-based learning. Carpenter (1995a) reported that nursing and medical students worked in both mixed pairs and groups on a case study concerning communication skills. Similarly, Cooke *et al.* (2003) also worked with medical and nursing students using simulated patient scenarios to practice breaking bad news. Parsell *et al.* (1998) used case studies as a base for students to apply their pre-existing knowledge in both uni-professional and multi-professional groups to learn about case management. Mellor *et al.* (2013) is another example of a study that used case conferences as a teaching method during their programme alongside other activities such as simulated ward rounds. Case-based learning formed the basis of the study by Lindqvist *et al.* (2005b) acting as a vehicle for students

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to discuss and learn about different professional roles. A simulated patient case was used by Wamsley *et al.* (2012) to ensure that the topic being studied by the students was relevant to all the professions represented in the group. Similarly Wellmon *et al.* (2012) developed a clinical case that needed to include students from health care, social care, and educational programmes. Zucchero *et al.* (2010) and Zucchero *et al.* (2011) had participants prepare a case study ahead of a 1-day symposium, where they developed a plan for managing the case.

That so many of the included research projects used case studies, as either the main focus of, or a substantial part of their educational programmes, indicates that IPE often uses this method. The most obvious reason for the use of a case study, or simulated patient exercise, is that of inclusivity. The relevance of the educational experience to the students appears to be a primary consideration for those who design and conduct these programmes. A case study can be designed around a specific group of participants in order to ensure that every member of the group feels that they are able to contribute to the exercise in a meaningful fashion, a key component of adult learning theory (Taylor and Hamdy, 2013). If students do not feel that the case study is relevant to them, they are less likely to engage with the learning process (Hean et al., 2009; Taylor and Hamdy, 2013). Designing a fictional patient or case as the focus for student interaction allows for all the professions involved in the educational intervention to be included in the care of such a patient. It would be much more challenging to find a real life-example of a patient to fit the learning criteria for every such educational event. This allows for IPE to be conducted within the academic environment, not solely in a practice setting.

3.4.3 Settings of IPE

The settings for the IPE initiatives were also varied. Both academic and practice settings were used, with several studies using both at different stages of the educational intervention. Three of the studies described students taking part in a ward-based IPE experience. Jacobsen and Lindqvist (2009) and Lidskog *et al.* (2008) both described the outcomes of working on an interprofessional training ward on students' interprofessional attitudes. The format of the educational interventions in these studies is designed so that students are able to practice working together in interprofessional teams treating real service users. Wright *et al.* (2012) required students to shadow a healthcare professional different from their own for a half-day and document their experiences in a reflective essay. This format encouraged the students to evaluate critically the practice of the healthcare professional and consider how it would impact their own practice in the future. The other two studies that exclusively used practice-based settings did not focus on the inpatient environment but were community based. The study reported by Reeves (2000) incorporated nursing students into a pre-existing placement setting for medical and dental students, but this was at the expense of the nursing students missing some of their uni-professional teaching. Charles *et al.* (2011) also reported some logistical difficulties in integrating student placements, with a 3-month placement for nursing and social work students resulting in only a 6-week period of overlap with students of other professions due to differing placement lengths and timetabling.

Most studies that used a clinical setting also had students take part in classroom-based IPE as part of the intervention. In some cases, this was in order to compare the effects of additional exposure to IPE in a clinical environment to the effects of taking part in IPE in a purely academic setting. So for Morison and Jenkins (2007),

students participated in two weeks of classroom-based learning, then some went on to a 6- week interprofessional clinical placement. Likewise Ateah *et al.* (2010), reported that, in addition to the classroom-based activities, a sub-group of students also took part in an "immersion" experience in a practice setting participating in interprofessional practice. The remaining studies that used this mixed approach to the setting of their educational experience did so with all participants involved in the educational experience, using the classroom study as one stage of the programme and the practice setting as another. In addition to the use of problem-based learning as described above, Tunstall-Pedoe *et al.* (2003) required students to take part in visits to GP surgeries in mixed pairs to observe practice, similarly to Wright *et al.* (2012), who required students to observe a healthcare professional different from their own.

Both Saini *et al.* (2011) and Taylor *et al.* (2004) described an educational intervention in which students were required to deliver an educational programme to the public on a specific health topic. In the case of Saini *et al.* (2011), the students were given training on an asthma prevention workshop for schoolchildren, whereas in the study by Taylor *et al.* (2004) students were able to choose between three different healthcare topics on which to give presentations to the public. Hope *et al.* (2005) allowed an even greater degree of freedom with their study, in which students were given free reign over creating their own health-related community project. The participants in the 2008 study by Lennon-Dearing *et al.* took part in 30 hours of didactic learning, 30 hours of community-based learning, and 30 hours of study around health literacy. Of interest in the community-based portion of the educational experience, students interviewed both service users (around aspects of their diabetes) and staff members at clinics who worked

with them to give differing perspectives on the issue of health literacy in a population.

An educational experience spent entirely in a practice setting may allow students to gain more first-hand experience of interprofessional interaction, but there is the possibility that without sufficient dedicated faculty, or clinician support, or supervision, this approach may not allow for sufficient discussion of more theoretical issues, such as team dynamics, respect for other professions, and communication skills, all of which are essential for effective interprofessional practice and identified as necessary . A mixed approach of IPE in both the academic and clinical environments appears to create greater opportunity to lay the important theoretical groundwork and a safe, relatively consequence-free environment, before allowing the students to put what they have learned into practice and gain valuable first-hand experience of interprofessional practice.

3.4.4 Duration of IPE

The length of the IPE programmes covered by this literature review varied greatly, from hours to months in duration. Some of the educational interventions were a one-off event; others required repeated attendance from participants over anything from two days to sessions interspersed over the course of several months. Eight of the identified studies focused on a single event ranging from four hours to one day in length, with the remaining 21 studies ranging from 2-day experiences, to 3-month placements. In some cases, data were recorded for up to two years from the start of the study. In some cases, the shorter educational interventions reported were part of a larger ongoing programme of IPE, such as the half-day shadowing exercise in Wright *et al.,* 2012. While the

data from this particular study pertain specifically to the short shadowing experience, it is important to be aware of the context of the data as part of a whole, rather than a conclusive stand-alone intervention (Wright *et al.*, 2012). An example of a study that featured a true stand-alone short intervention is the symposium reported by Zucchero *et al.* 2010 and Zucchero *et al.* 2011. These data were collected using the ATHCTS before and after a 5-hour symposium on dementia for health care, social care, and education students. That the data were collected twice over consecutive years with two different cohorts of students does not allow for longitudinal effects to be determined, but it does allow for programme evaluation by comparing the results of the two years and noting any changes that were made in the programme between these two examples.

Several of the studies reported IPE interventions that lasted for longer than a single day, but they should still be considered as one-off interventions as they were still relatively brief, no more than 2.5days. Ateah *et al.* (2010) and Cooke *et al.* (2003) both described educational programmes that were concluded over 2.5-days and two half-days respectively. Leaviss (2000) and Parsell *et al.* (1998) reported on pilot IPE courses, accounting for their brief durations. The educational programme described by Saini *et al.* (2011), while slightly longer at three days, was still an example of an educational intervention that was a one-off occurrence rather than a sustained course. During the three days, participants took part in an educational programme on asthma delivered to schoolchildren. This was conducted as an extended skills exercise. In the case of Ateah *et al.* (2010), one group participated in the 2.5 -day educational programme only, and another in an additional immersive interprofessional placement experience. In this case approximately one-third of the students did complete a longer

course of IPE. This division of students into thirds, each experiencing a different intervention, or as a control group, allowed for comparisons of IPE experiences, as well as providing a baseline measure of no intervention.

Most of the repeated studies consisted of sessions that took place over the course of several weeks. These repeated sessions were either part of a seminar-series, as described by Cooper *et al.* (2009), Goelen *et al.* (2006), and Hope *et al.* (2005), a placement experience as reported by Charles *et al.* (2011)and Reeves (2000), a practice experience such as Lidskog *et al.* (2008) and Jacobsen and Lindqvist (2009), or a series of group work sessions such as those conducted by Lin *et al.* (2013), Lindqvist *et al.* (2005b), Mellor *et al.* (2013), and Priest *et al.* (2008). Similarly to Ateah *et al.* (2010), Morison and Jenkins (2007) had groups of students participate in their educational programme to differing extents. Some took part in a 2-week programme, whereas others additionally participated in a 6-week clinical placement.

Lennon-Dearing *et al.* (2008) also used a mixed approach to their educational programme, with both didactic and practice-based education, but all students participated in all elements of the programme. Similarly, Taylor *et al.* (2004) mixed didactic and practical elements in their educational programme with students required to design and implement a community-based health programme. Finally, two studies focused on integrating IPE as an ongoing feature in the overall education of healthcare students. Tunstall-Pedoe *et al.* (2003) reported on a common foundation programme for first-year healthcare students that capitalised on the similarities in the curricula of healthcare courses to allow for cross-professional sessions to be run where possible. Different professional courses took part in these sessions to varying extents. Ritchie *et al.* (2013) also took the approach of focusing on

commonalities between courses, with a redesigned curriculum to allow for interprofessional participation of oral health and dental student in five out of eight first year modules.

The durational differences of IPE interventions are important to consider when exploring the most effective way of delivering IPE. Shorter educational initiatives will be less logistically challenging to organise and most likely less expensive to run. It is possible though that a very short course of IPE may be viewed as tokenistic or may be seen as an unimportant aspect of study by students, given its brevity and lack of emphasis. Several students in the study by Reeves (2000) expressed the opinion that IPE was a lower status activity than their other course content. This is a point that may warrant further investigation, as if students do not value IPE then it will be difficult to ensure its effectiveness. It may be, however, that there is also a risk that students may resent a longer course of IPE, as it may be seen to be further detracting from their uni-professional studies. The most effective way to assess which of these approaches is preferable is to conduct long-term follow-ups of students who have participated in the programmes to determine the impact that the programme had upon them as they progress through their studies and into practice.

3.4.5 Use of control groups

Nine of the included studies in this review made use of a control group. This was done in two different ways. Most of the studies simply ran an IPE programme for some students and not others but collected data from both groups, whereas others ran the educational programme for both groups but one group was taught interprofessionally and the other in uni-professional groups. Morison and Jenkins (2007) included three groups of students in

their study, one control group who did not participate in any IPE, one group who participated in shared learning in lectures only, and a third group who participated in lecture-based learning and in an interprofessional placement. Ateah *et al.* (2010) took a similar approach, including a control group who did not take part in IPE, one who participated in a classroom-based intervention, and a final group who took part in the classroom-based intervention and an immersive interprofessional placement. This format allowed for the comparison of interventions as well as an intervention and control group.

Lindqvist *et al.* (2005b) collected quantitative data from a control group at the same times as before and after data were collected from students who had participated in IPE. Kenaszchuk *et al.* (2012) and Wamsley *et al.* (2012) used this same format of data collection. Reeves (2000) conducted before and after focus groups with students who had participated in IPE plus focus groups with a random selection of students who had not participated.

The other four studies used slightly different formats. Goelen *et al.* (2006) used data from two different years of a programme to compare the attitudes of one participant-group who were taught in uni-professional groups with data from the following year where the same educational programme was delivered to students in interprofessional groups. Lin *et al.* (2013) followed a similar approach in that their educational programme was delivered to students in three groups, one nursing group, one medical student group, and one mixed group of students. These groups were not explicitly stated as control groups, but could be considered as such as the interprofessional element of the experience is the variable under control.

The study by Ritchie *et al.* (2013) is more difficult to consider as a straightforward control and intervention study. Half of the students involved participated in a curriculum that had been redesigned to allow for interprofessional learning between dental and oral health students, while the other half studied the previous uni-professional curriculum. That the students did not complete the same curriculum makes it difficult to determine how much of the effect observed was due to interprofessional interaction and how much was due to the new curriculum.

A control group may not be appropriate for every research design, but when considering how to measure the effect of a programme of IPE it is a strategy worth considering. If other variables are controlled for as far as possible, such as time and other educational experience, it is possible to determine if a change in interprofessional attitude is due to participation in a programme of IPE. This is one method of increasing the academic credibility of IPE. Another way of increasing the credibility of IPE is by carrying out randomised controlled trials. Very few examples of good quality randomised-controlled trials concerning IPE interventions have been recorded (Reeves *et al.,* 2013, 2010b; Zwarenstein *et al.,* 1996). This may be due to the logistical difficulty of conducting such trials. Other research methods, such as large-scale cohort studies, may be a more realistic and ethical way of conducting further research. High quality research into IPE will increase its academic credibility, providing more evidence of its positively influencing patient care.

3.4.6 Academic recognition of IPE

Information about the academic assessment of student participation in IPE was not given by all the studies. Six studies

reported that the IPE module or course contributed towards a students' overall grade or credit for their academic studies, with others stating that the module was simply assessed as a pass or fail. Three studies did not carry out any formal assessment, but students received some form of recognition from their institution for participating. The remainder of the studies did not explicitly state whether any assessment was carried out. Three of the articles stated that the assessment of the module was different for different professional groups. Both Parsell *et al.* (1998) and Kenaszchuk *et al.* (2012) reported that the students received a certificate of attendance for the course but not a grade. In the case of Kenaszchuk *et al.* (2012), this recognition was given only to students who participated voluntarily, not to those who were required to attend. Cooper *et al.* (2009) reported that only medical students received recognition from their Dean for participating in the IPE course. IPE contributed towards the overall course load of clinical psychology students but not others in Priest *et al.* (2008). The authors acknowledged that this did create some disparity between the participating students. Reeves (2000) also noted that the assessment of the IPE module was summative for medical and dental students but not for nursing students. The consequences of this apparent disparity are discussed in more detail at the end of this section.

In the following studies, students were assessed on their skills learnt from the educational experience. In Lennon-Dearing *et al.* (2008), students were examined on their knowledge of assessment and treatment of diabetes mellitus at the end of their participation in an interprofessional training course, and participation in the course gained each student three course credits. Goelen *et al.* (2006), determined the pass grades of the students by monitoring their attendance and requiring them to complete an essay. Saini *et*

al. (2011), informed students that their work during the module would be compared with a set of learning outcomes to assess if they had reached the standard required to pass. Similarly to Goelen *et al.* (2006), Wright *et al.* (2012) required students to complete an essay as part of the course. In these cases, a 500-word reflective essay was also used as a source of data to assess students' interprofessional attitudes as well as a requirement of passing the course. Taylor *et al.* (2004) stated that their compulsory attendance course was credited but not graded.

There are several points to consider around the assessment of IPE. Formally assessing learning and participation in IPE lends validity to the module, establishing it as an important part of a student's overall education. The risk associated with this is that most healthcare students already have a heavy assessment burden, and adding to it further may detract from student engagement with the purpose of the course. Such assessment may cause them to see it as just another hurdle to overcome on their journey to qualification. The issue of equality is very important and one of the most important principles of IPE is for all students to feel equally valued in the learning environment (Bridges and Tomkowiak, 2010; Hean and Dickinson, 2005; Pettigrew, 1998; Taylor and Hamdy, 2013). By assessing some students and not others participating in the same IPE intervention, or including IPE in the overall grade of some students and not others, inequality is inherently created. It could be interpreted as IPE being viewed as more important by some schools of study or faculties than others. This undermines the process of encouraging interprofessional collaboration by providing reward for some students and not for others. It may also create the view that if one school of study does not appear to value IPE as much as another, then their students do not have to either. This

may set a negative precedent for future practice and

interprofessional working.

3.5 Summary of study findings related to changes in interprofessional attitudes

Studies included in the review provided a wide variety of findings concerning the effect of IPE on interprofessional attitudes.

3.5.1 Positive changes in interprofessional attitudes

The vast majority of the studies reported a positive change in students' interprofessional attitudes after completion of a programme of IPE. Examples of positive changes in attitudes towards professions would be viewing a profession as being better at team working or as less arrogant after participating in IPE. Many of the studies carried out sub-group analysis to determine if there were changes in interprofessional attitudes across different professional groups. The depth in which these studies investigated interprofessional attitudes varied greatly, with some studies conducting a very detailed survey of how these attitudes changed with IPE and respective profession. Others reported a small amount of data, with attitudinal change not being the main focus of the study, but instead an incidental finding. Several studies reported negative or neutral findings, alongside positive findings. A negative view would include aspects such as an increase in perception that a profession is not inclined to respect the views of others, or a decrease in how competent a profession is considered to be. These findings are discussed in more depth separately.

Ateah *et al.* (2010) provided a detailed breakdown of which professions scored more highly on nine identified qualities. The overall results for six of these qualities in the intervention group were statistically significant, with all professions rated more highly on professional competence, leadership, independence, teamplayer, practical skills, and confidence. These results remained significantly above baseline measurements at four months post-

intervention. The results for the qualities of academic ability, interpersonal skills, and decision-making were not statistically significant for all professions, but some professions were viewed significantly more favourably after intervention than before. The results of this study follow a pattern that is seen repeated in many of the other studies. Medics, pharmacists, and dentists in this study were rated highest by participants for traits such as confidence, leadership, professional competence, and academic ability. While there was some significant improvement in the view of other professions with regard to these traits, one of these three professions was always rated highest, with the others close behind. Conversely, these professions were rated lower on the traits of teamplayer, and interpersonal skills, with professions such as nursing and dental hygiene rated higher. Nursing, dental hygiene, and occupational therapy also saw statistically significant improvements in the perceptions of their decision-making skills and professional competence after the intervention. The results for the perception of physical therapists presented more of a mixed picture, not falling at either extreme of the results pattern. While improvements were seen in scores after the intervention, the same overall pattern of the more traditional professions (medicine, dentistry, and pharmacy) being viewed as more confident and as leaders, with the newer professions seen as better at teamwork and interpersonal skills remained largely the same.

Several other studies showed similar trends. Zucchero *et al.* (2010) and Zucchero *et al.* (2011) both detected a statistically significant change in the ATHCTS for physician centrality, with a decrease in score, indicating that students were less likely to view the doctor as the default or dominant focal point of the healthcare team after intervention. A similar pattern to the one identified in Ateah *et al.* (2010) was also seen in Lindqvist *et al.* (2005b) and Jacobsen and

Lindqvist (2009), both using the AHPQ to evaluate changes in interprofessional attitudes. In Lindqvist *et al.* (2005b), all professions were seen as more caring after participating in the pilot IPE programme, but the same pattern was seen, with medics scoring lowest on the caring scale, and nurses scoring the highest in the subservient scale. The trends in the data were however still positive, with the view of a typical doctor the most improved on the caring scale. The direction and magnitude of change is suggestive of the positive effects of the programme. This is further supported by the changes observed in the control group not being as great. Wamsley *et al.* (2012) also noted that positive changes in the ATHCTS were greater in the intervention group than the control group. Jacobsen and Lindqvist (2009) observed similar findings with regard to this aforementioned pattern, i.e. medics were viewed as the least caring before and after and nurses were viewed as the most subservient before and after. All professions were viewed as more caring after participating in the training ward experience, with medics also seen as more subservient, the opposite being true for other professions. This also supports the conclusion that IPE can improve interprofessional attitudes. Taylor *et al.* (2004) reported statistically significant positive changes in eleven out of nineteen statements on the RIPS questionnaire. Nine of twenty items on ATHCTS also had statistically significant positive differences, but no further information was given. Saini *et al.* (2011) also used the ATHCTS, and observed a statistically significant improvement in the mean score for the scale, but no significant differences were observed between the responses of different professions.

In the interviews conducted in Saini *et al.* (2011), students commented that their perceptions of other professions had improved, and that the course addressed preconceptions held about professions. Priest *et al.* (2008) reported positive changes at

each administration of their questionnaire, which included elements of the RIPLS. The qualitative questionnaire data revealed that mutual respect between professions increased. Mellor *et al.* (2013) reported that, as a result of the 4-week interprofessional programme, students had a greater appreciation for each profession and how they can improve the lives of patients.

Hope *et al.* (2005) noted that medical students' views of the importance of nurses, physicians assistants, and midwives improved by a statistically significant 15% percent after taking part in the team-building initiative. In addition to more favourable attitudes being observed overall, Carpenter (1995a) saw that nursing students gave higher ratings than medical students for both in-group (views of their own profession) and out-group (views of a different profession) characteristics. Goelen *et al.* (2006) found statistically significant improvements in the attitudes of male students in the understanding of the value of other professions. Numbers of male students were consistently lower than those of female students across all the studies included in this review, which is reflective of healthcare as a whole. The likelihood of bias is higher in a smaller sample, which is one possible explanation for this observation.

Wellmon *et al.* (2012), while not specifying a participant-group, also noted that there was a statistically significant increase in the understanding of the values of other professions, implying an increase in respect for different professions. The study by Lennon-Dearing *et al.* (2008) was written with an emphasis on social work students, and reported that the improvement in interprofessional attitudes of social work students was statistically significant.

Other studies specifically mentioned overcoming stereotyping and bias towards other professions. Cooke *et al.* (2003) gave

challenging misconceptions as one of the main themes of their qualitative data, stating that students felt able to challenge misconceptions about professions after participating in a joint exercise, and they were able to collaborate more flexibly together. Parsell *et al.* (1998) also stated that students felt that the course of IPE aided in breaking down stereotypical images and increasing respect for other professions, with 75% of students agreeing that the course had changed their attitudes towards other professions in a favourable manner. Charles *et al.* (2011) also recorded that students felt that the course helped to overcome personal and professional biases towards professions different from their own.

The shadowing exercise required of students in Wright *et al.* (2012), was unique among the included studies in that the students completed a one-on-one shadowing exercise with a qualified healthcare professional, and they were not working with other students. Students stated that they gained insights into another profession's working life and expressed positive attitudes towards the examples of interprofessional practice that they observed. This was an example of learning from role models. The impact of negative examples of role modelling is discussed below.

3.5.2 Negative changes in interprofessional attitudes

Far fewer studies reported a negative change in students' interprofessional attitudes following IPE. While this can be interpreted as suggesting that IPE is less likely to have negative outcomes in this respect than positive ones, it is important to bear in mind that studies with negative outcomes are less likely to be reported, resulting in publication bias (Hopewell *et al.,* 2009).

By far the most extensive reporting of negative outcomes occurred in Tunstall-Pedoe *et al.* (2003). By the end of the programme of study, there was a significant change in nursing and allied health students' attitudes towards doctors, with views becoming more negative. The views of medical students from nursing and allied health students were statistically significantly different than those held by medical students, which were more positive. More negative adjectives were used to describe medical students (less caring, less dedicated, not teamplayers, worse communicators, and more arrogant). Of interest, the increase in these negative views after IPE was statistically significant. The views of other professions were also more negative, with nurses seen as less dedicated and hardworking after the educational experience. Indeed positive perceptions of all professions involved in the programme were reduced. The intervention in this study, a common foundation programme for all healthcare students for the first ten weeks of their training, is one of the most extensive IPE interventions reported in this review. This format is unique in the studies included in this review, and raises the question of the best time to introduce IPE and the format that it should take. This is something that is explored in greater depth in Chapter Six, Qualitative Findings.

The information gleaned from the other studies is far less dramatic. Leaviss (2000) reported that one respondent in her study stated that the course reinforced stereotypes rather than dispelling them, but this was a singular finding in the study. The information presented by Lidskog *et al.* (2008) that four of the six occupational therapy students included in their data collection believed nurses to be over-protective in their care of patients suggests that the educational experience may have highlighted possible clashes in priorities between professions. Lindqvist *et al.* (2005b) recorded a

small decrease in the perception of medics' subservience, with a change of – 0.36 on the subservient subscale. A decrease in this area indicates that medical students are seen as increasingly dominant by others, reinforcing the traditional view of doctors as leaders, rather than team-members.

3.5.3 No significant changes in interprofessional attitudes

Several of the studies reported inconclusive findings with respect to change in interprofessional attitudes. Hope *et al.* (2005) found that respondents assigned very similar scores to all the professions represented in their survey with very few of the results being statistically significant. The researchers speculated that the cause of this may have been the complexity of the questionnaire administered to the students, potentially causing confusion. Wamsley *et al.* (2012) recorded no significant change in perception of physician centrality, the perception of the dominance of the doctor, on the ATHCTS, the subscale most clearly associated with interprofessional attitudes. Ritchie *et al.* (2013) showed no significant differences in RIPLS scores between the intervention and traditional education groups on the subscales of teamwork and collaboration, or professional identity. This lack of differentiation between the intervention and control groups suggests that the educational intervention did not affect students' interprofessional attitudes, or that the questionnaire was unable to detect a difference. Reeves (2000) gives a very similar finding, that there was no indication that students' initial stereotypical notions of professions had changed. Kenaszchuk *et al.* (2012) used extensive questionnaire data, but a positive change in the perceptions of physician leadership of the healthcare team was not statistically significant.

Other studies reported some null effects in addition to the previously discussed positive outcomes of their research as a result of sub-group analysis, with some professions or groups. Goelen *et al.* (2006) determined that the overall results of the IEPS for the male participants in their study were statistically significant, as were the results for male students concerning the subscale on understanding the value of others. All other results for this study, including analyses of other sub-groups, were not statistically significant. Wellmon *et al.* (2012) also had mixed results, with increases in scores on all elements of the IEPS, RIPLS, and ATHCTS, but only a few of these results were statistically significant on the IEPS and RIPLs scales. Saini *et al.* (2011) also used the RIPLS as the quantitative data collection tool in their study, but did not gain any statistically significant results in mean scores. It is possible that the high scores given initially created a ceiling effect, preventing significant increases in scores. The overall results for the ATHCTS in this study were statistically significant, indicating a positive change in attitude towards working in interprofessional teams, but there were no differences between professional groups. Lidskog *et al.* (2008) reported changes in student perceptions of nurses and social workers but not occupational therapists, after they completed a course of IPE. They did however report some interesting findings regarding auto and hetero-stereotypes, which will be further examined later. The closer the alignment between the auto and hetero stereotypes of a profession, the more positive the view of the profession. This is because a view held about one's own professional group is generally more positive than the view held by others who are not members of that profession.

3.6 Summary of study findings related to changes in attitudes towards IPE and interprofessional practice

As well as interprofessional attitudes, many of the studies gave insight about attitudes towards IPE itself and interprofessional practice. Often this appeared to be linked with how much students had enjoyed the experience of IPE.

3.6.1 Positive attitudes towards IPE and practice

Goelen *et al.* (2006) took the unusual step of researching service users who had participated in the educational experience to add practical experience for the students. The service users were very positive about making a contribution towards IPE, and while this group could not necessarily be classified as typical, as they all self-selected for the study, it indicates that interprofessional working is something that service users see as positive. Parsell *et al.* (1998) reported that 100% of students surveyed were of the opinion that 'multiprofessional' learning should be included in their curriculum, and that 96% of the respondents felt that the experiences that they had had would influence their future relationships with other professionals. A number of students in Lindqvist *et al.* (2005b) supported the view that IPE should be made compulsory in their course and that they would like to be part of any future interprofessional learning opportunities. When asked about the course described by Cooke *et al.* (2003), students identified the interprofessional aspects of the programme as the most enjoyable element, with medical students who had previously participated in a similar uni-professional module feeling that it added realism. The opportunity to receive feedback from a tutor of a different profession was also praised as a helpful aspect of the course. The concept of realism may have been a factor in the findings of

Morison and Jenkins (2007). Out of their three groups of students, those who participated in both the classroom-based learning and practice-setting elements of the programme showed the most understanding of the benefits of shared learning, and they were most positive about IPE. In this instance, shared learning appears to have been used as a synonym for interprofessional learning. Lin *et al.* (2013) demonstrated that an element of conflict between professional groups in IPE may not always be a bad thing. While students reported some conflicts around profession-specific values and ethical obligations, they also stated that they enjoyed the discussion and problem-solving process with other professions. While too much discord may make effective IPE difficult, challenging one another in a constructive fashion may encourage students to learn more about each other and evaluate critically their own opinions and beliefs, enriching the educational experience. Lin *et al.* (2013) also noted though that medical students were less positively inclined than students of other professions towards learning about interprofessional communication and collaboration, a finding that was statistically significant. This may have accounted for some of the friction experienced within the programme if differences were not explored in a constructive fashion.

3.6.2. Negative attitudes towards IPE and practice

Not all of the findings of the studies were universally positive about IPE and practice. Some of the more negative comments focused around the perceived importance of IPE compared with profession-specific teaching. This is shown in Reeves (2000), where students reported that they felt that IPE was of a lower status than their uni-professional studies. Social work students, specifically in Wellmon

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et al. (2012), were less positive about learning from their peers than students of other professions. While the reasons for this are not clear, it is possible that, as the other professions involved in this study were both healthcare professions as opposed to social care professions, the students may have been hesitant about learning with students from a slightly different professional culture.

The extent of or format of the educational experience may also be a factor in student opinions about IPE. As previously mentioned, the students in Morison and Jenkins (2007), who participated in both the classroom-based and practical elements of the programme were positive about their experience and the concept of interprofessional collaboration. Conversely, the control group and the group who participated only in the classroom-based learning stated that they thought that shared learning was unnecessary. As shown above, some studies have shown that shorter programmes in an academic setting can have positive results. It is unlikely that the participants were blinded in this trial, so it is possible to speculate that students may have viewed the practical experience as the ultimate goal of the programme and the remainder as introductory or providing a basis for further work. Those who did not participate in the full programme may have consequently seen their participation as less important. Cooper *et al.* (2009) found that students recognised the importance of IPE, but they felt that current methods of conducting it made the topic feel forced. By making the interprofessional element of the course an implicit learning objective, focusing instead on meaningful learning about a topic relevant to all students, participants felt that courses would better achieve their aims.

The only study to provide almost entirely negative data in this area, as before, is Tuntall-Pedoe *et al.* (2003). Student attitudes towards IPE were more negative at the end of the term of the common

foundation programme. Data showed that the programme did not enhance learning or increase respect, knowledge, or understanding. More than a quarter of the allied health and nursing students group felt that the programme forced them to learn irrelevant skills, which may be another manifestation of the view that IPE is less important than uni-professional education. That both this study and Lin *et al.* (2013) reported longer interprofessional interventions may be a point worthy of further investigation with respect to the optimal length of IPE.

3.7 Themes identified from the studies that may impact on interprofessional attitudes

In addition to the findings around interprofessional attitudes, education, and practice, several other key themes were identified from the studies. These themes can be viewed as influencing factors on interprofessional attitudes and important considerations in IPE and practice. As such, they are of particular interest to the present study.

3.7.1 Stereotyping

Stereotyping has already been mentioned in the previous section on positive changes in interprofessional attitudes. This theme is explored in further depth here, with both positive and negative examples of the possible interplay between stereotypes and IPE and attitudes given.

Many of the studies acknowledge that healthcare students enter their respective programmes of study with pre-conceived ideas and stereotypical notions about different professions and that this has an impact on them in IPE. Cooke *et al.* (2003) stated that students held stereotypical views about their own and other professions and that this was reflected in their behaviour initially when carrying out mock consultations with patients, with the nurse automatically assuming a supportive rather than equal role with the medic. Cooper *et al.* (2009) also noted that these pre-conceived ideas existed about students' own professions as well as others, but that these were challenged by the educational course. In particular, nursing, physiotherapy, and occupational therapy students thought of their role as less important than the role of a doctor. After participating in the study, they viewed their roles as important in

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their own right, rather than being more of a supplementary or supporting role to that of a doctor.

While Tunstall-Pedoe *et al.* (2003) acknowledged that students held both positive and negative stereotypes about healthcare professions; Leaviss (2000) found that the views held by students entering their course of education were mostly negative. They found that most professions already held negative views of medical students and that physiotherapists and occupational therapists held negative views about each other. They postulated that earlier IPE would challenge this formation of negative stereotypes, preventing them from becoming ingrained. Reeves (2000) said that stereotypical perceptions of professions appeared to be well formed when students entered their professional courses, which may make determining the most opportune timing for IPE difficult. Reeves also felt that not much was done in students' community placement to tackle the issue of stereotyping. By contrast Goelen *et al.* (2006) reported evidence that supported the view that the IPE experience had allowed for stereotypes to be challenged, similarly to Cooper *et al.* (2009). This highlights the importance of ensuring that educational interventions are equipped to deal with pre-existing negative views and are capable of challenging them.

Lindqvist *et al.* (2005b) also showed that that students entered the course of IPE with pre-existing views of professions, with the medics viewed as least caring and subservient, and nurses viewed at the opposite end of the spectrum. As was previously discussed, the same pattern was seen in the work of Ateah *et al.* (2010). Jacobsen and Lindqvist (2009) stated that this was due to the cultural heritage of different healthcare professions, with some seen as more prestigious than others. This is an area that was not explored in any depth in relation to interprofessional attitudes in the studies included in this review. Saini *et al.* (2011) presented

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data that followed the same patterns, with medics initially described as: intelligent, aloof, decision-makers, community leaders, paternalistic, knowledgeable, educated, and arrogant. Pharmacists were described as: knowledgeable, meticulous, professional, helpful, approachable, nerdy, boring and too serious, while nurses were described as; kind, caring, sympathetic, compassionate, having good communication skills, practical, hard-working, professional, dedicated, reliable, busy, and rushed. While these descriptors mirror the assumptions made about these professions in other studies, they also provide support for the notion that not all stereotypes are negative, particularly in the descriptors used for nurses.

One student in the study reported by Carpenter (1995a) thought that a way of overcoming stereotypes was to see each other as individuals. Viewing people as individuals, rather than as a label allows for a more personal connection leading to greater understanding of that individual, which may then allow for alteration of views held about that person's profession. Hope *et al.* (2005) felt that IPE allowed students to understand the perspectives of others better, and this helped to highlight how inaccurate stereotypes can be. A medical student in Parsell *et al.* (1998) commented that understanding the stereotypes other professions have about one's own profession makes it easier to understand why people may act as they do, allowing one to accommodate it rather than react negatively. Wright *et al.* (2012) reported that some students had their negative perceptions of professions unchallenged and even reinforced by what they observed during their shadowing exercise. This highlights the impact that qualified healthcare professionals can have as role models to students, and the importance of enduring that they set positive examples to emulate.

Lidskog *et al.* (2008) discussed auto and hetero-stereotypes and the discrepancy that sometimes exists between them. In their study the auto and hetero-stereotypes of nurses and occupational therapists were different. Student nurses saw themselves as focused on the patients' wellbeing, whereas others saw them as handling medical tasks and as occasionally infringing patient autonomy. Occupational therapists and nurses agreed that nurses were responsible coordinators. The occupational therapists did not view themselves as handling practical tasks or assisting other professionals, whereas nurses and social work students did view them as doing so. Occupational therapists viewed themselves as acting on the patients' wishes, whereas others saw them as focusing on the improvement of function over patient's wishes. All groups agreed that occupational therapists focused on patients' ability to manage in daily living. The view of social workers by nurses and occupational therapists changed and became more focused on their being bound by laws and guidelines. These disparities in how professions view themselves as compared with how other professions view them may be a source of tension during IPE.

3.7.2 Hierarchy

Elements of hierarchy are closely aligned with the historical development of the professions (Witz, 1990). In Ateah *et al.* (2010) the more traditional professions of medicine and pharmacy have lower scores for the "softer" skills of teamwork and interpersonal skills, whereas the newer professions such as nursing have lower scores on more dominant qualities such as leadership and confidence. This is reflective of the view that certain professions, the more established older professions are seen as leaders and the newer professions as team-members rather than leaders (Witz,

1990). Jacobsen and Lindqvist (2009) also state that the views on professions may be linked to the doctor being often seen as the default team-leader. They also hypothesised that the way in which students' post intervention views agree more on the extent to which professions are caring may be linked to equal status of students on the training ward. As previously mentioned, ensuring equality of status is an important factor in successful IPE to ensure that all members of groups feel valued. Carpenter (1995) emphasised that all participating students implicitly had equal status in programme because they were all first-years.

There were examples of both positive and negative outcomes regarding hierarchy. Cooper *at al.* (2009) provided a positive example of empowerment from a nursing student who said:

> *"I thought that nurses were kind of the bottom of the barrel when it comes to the chain but I found out now there isn't really a chain and my opinion on things can matter"*

Nevertheless, Reeves (2000) found that students' perceptions of a traditional hierarchy of professions remained unchanged by the module. These two opposing examples show that IPE is very variable in success of engagement with such issues. Engagement with hierarchy in IPE is important, as demonstrated by Cooke *et al.* (2003), where students identified hierarchy as a potential problem in their pre-course assessments for IPE. Wright *et al.* (2012) highlighted that qualified healthcare professionals can have an important role to play in this, as some students commented that during the shadowing they had expected to see traditional hierarchical relationships, but this was not always the case. Such role modelling is in itself a valuable educational method.

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3.7.3 Professional roles

Understanding professional roles appeared to be of importance to students, both as a way of engaging with IPE and as a learning outcome of participating. Cooke *et al.* (2003) recorded that students were keen to understand more about professional roles, but they had some difficulty in letting go of their own pre-conceived professional identity. Eventually though, students were able to see roles as more flexible than they did at the outset of the programme. In Lidskog *et al.* (2008) several students felt that working on the interprofessional training ward helped develop their own role identity, while Mellor *et al.* (2013) stated that, in addition to developing pride and ownership of their own profession, IPE led to a greater understanding of other professions. This is also expressed in the findings from Charles *et al.* (2011), in which students stated that they gained a deeper appreciation of the roles and responsibilities of other professions by sharing experience with them, rather than basing their ideas on preconceptions. All students in Parsell *et al.* (1998) felt that their course of IPE had increased their knowledge about the roles and duties of other professions, a finding echoed by Priest *et al.* (2008), who reported that students developed greater clarity about professional roles. A student in Carpenter (1995a) noted that nursing students gained more knowledge about the roles and duties of medics than the medical students did of nurses. One nursing student stated in the session evaluation that uncertainty about the role of other professions can lead to antagonism, highlighting the impact that understanding professional roles can have on interprofessional relationships and attitudes. Hope *et al.* (2005) reported that healthcare students entered the interprofessional course with a good understanding of the role of a doctor, but far less understanding of the roles of diagnostic imaging, midwifery, and

occupational therapy. Students' understanding of occupational therapy and midwifery improved the most, with physician assistants and medical students showing the greatest increase in understanding of other professions. Comparing the results of studies such as Carpenter (1995a) and Hope *et al.* (2005) shows that they both support the view that IPE can enhance understanding of professional roles but that it is not always the same professions that make the greatest change in their level of understanding. Participants in Leaviss (2000) felt that IPE helped slightly with role understanding, but generating greater understanding of roles should be a secondary priority to dispelling negative interprofessional attitudes. As Carpenter (1995a) pointed out, however, lack of understanding of roles and responsibilities can further antagonise interprofessional relations, so it is difficult to separate fully the two issues in IPE. In contrast to Leaviss (2000), respondents in Morison and Jenkins (2007) felt that IPE should teach them explicitly about the roles of different professions. Lin *et al.* (2013) suggested that during pre-registration may be an optimal time to tackle such issues, as the interactions between students may not be as intense as those between professionals given that they lack such a strong professional identity.

Ritchie *et al.* (2013) was one of the few studies to conduct a longer-term follow-up. In this study, dental and oral health students had either participated in a redesigned interprofessional curriculum or the traditional teaching format of the courses during their first year of study. At the end of the first year, both the traditional and intervention groups had improved in their understanding of roles and responsibilities, with the intervention group seeing the greater increase. At the start of the students' second year of study though, those dental and oral health students who had participated in the new integrated curriculum were shown to have a far better

understanding of shared care in both the dental and oral health students. This finding is interesting because it may indicate a sustained effect for IPE, with those who had participated in IPE retaining their understanding better than those who have not engaged in future training or practice. The shadowing exercise described in Wright *et al.* (2012) allowed students to compare their own professional role with the role of the profession they were observing, noting similarities, differences, and areas of overlap and demarcation. This format allowed for real-life comparisons to be made and for examples shown by healthcare professions to influence the opinions and practices of students. The concept of role models is discussed in greater depth in the section covering further possible areas of study.

3.7.4 Timing of IPE

This final theme gives a small insight into the conflicting points of view on when is the optimal time to introduce IPE. One school of thought is that IPE should be introduced early on in a student's education. Student participants in Saini *et al.* (2011) gave the reason for this as their assessment load was lighter in early years, allowing them to participate in IPE with minimal distraction from the demands of their uni-professional studies. Wamsley *et al.* (2012) specifically noted that medical students may benefit from earlier IPE or additional interprofessional exposure as they consistently rated criteria such as team efficacy and team value lower than the other professional groups did. The case for early IPE was supported by Cooper *et al.* (2009), who proposed that waiting until later allowed negative opinions and stereotypes to form. This view agreed with the evidence of Leaviss (2000), who felt that a

short interprofessional intervention in the final-year of study would not dispel already held negative views.

Conversely, two studies supported the notion of later IPE. While the students in Saini *et al.* (2011) felt that earlier IPE would fit in better with their studies, Kenaszchuk *et al.* (2012) found that students in higher years were more positive about IPE and in their own profession's confidence and autonomy. Tunstall and Pedoe *et al.* (2003) hypothesised that the negative outcomes seen in their study may have been because students at the beginning of their studies had not yet developed their professional identities, resulting in negativity towards the programme. In summary, the optimum time to introduce IPE appears to involve a very delicate balance between preventing the embedding of negative stereotypes and allowing the students to settle into their professional role and be confident working with others. If students are less confident in their own knowledge, role, and identity it is reasonable to suggest that they may be defensive about any perceived criticism or negative opinions expressed by others. Lin *et al.* (2013) stated that interactions among students may be less intense due to their lesser perception of professional culture than qualified professionals, which suggests that while there may not be a consensus on the best time to introduce IPE, during pre-registration training may be preferable to post-registration education.

3.8 Identified areas for further study

The question for the present study is how to build upon the work already done by the studies identified in this review and further our understanding of the relationship between IPE, interprofessional attitudes, and interprofessional practice and the factors that influence these phenomena. By looking at the identified studies, some areas of deficit are clear.

3.8.1 Longer-term follow-up

Most of the studies included in this review collected their data soon after the IPE intervention had finished, and did not follow-up with their participants as they moved on in their studies into practice. Several studies acknowledged this gap in the research. Both Cooke *et al.* (2003) and Cooper *et al.* (2009) explicitly identified the need for studies that included long-term follow-up of participants in IPE programmes. Charles *et al.* (2011) stated that, because of the lack of long-term follow-up in their study, they could not see if changes in attitudes had been sustained, a point that was also raised by Zucchero *et al.* (2010). Both Saini *et al.* (2011) and Wamsley *et al.* (2012) said that follow-ups were needed to see how learning gained from IPE courses translated into practice.

Two studies did conduct an element of long-term follow-up with their participants. The data presented by Morison and Jenkins (2007) were from a one year follow-up of participants in a pilot programme of IPE. Leaviss (2000) conducted telephone interviews with graduates who had taken part in a pilot study of IPE, but the time elapsed between participation and follow-up is not given, and the report by the author is very brief.

Longer-term follow-up of students who have participated in IPE will give more information around the sustained effects of such programmes. Looking at student cohorts at multiple points during their education will give more data about how their attitudes evolve during their studies. In order to gain information about how this learning affects the professional practice of individuals, it would be necessary to extend studies to include graduates who have taken part in the programme of IPE. This concept also falls under the next area of deficit.

3.8.2 Data from multiple groups

The collection of data from multiple groups within IPE can be considered in several different ways. Firstly, for intervention and control groups, consideration should be given to the range of professions included within a study and the variety of participants in a study at different stages of experience with IPE. This final group was alluded to previously, with the example of current students at different levels of training and graduates who have experienced the training and entered professional practice. This concept was taken further by Cooke *et al.* (2003), Reeves (2000), Lennon-Dearing *et al.* (2008), Lin *et al.* (2013), and Wamsley *et al.* (2012) who all collected some form of data from faculty and tutors who had been involved in the educational process. These data were often part of the programme evaluation, but they also focused on how the students participated in the educational experiences and the staff perceptions of how the students changed during the programme. This provides an interesting perspective on the educational programmes, looking at the experience from the opposite end to the students. If these data were from senior healthcare professionals who were aware of the educational programme, and

experienced in working with the relevant students and graduates, they might provide comparative data (of perceived benefits and drawbacks of interprofessionalism) from those not involved in the programme.

Cooke *et al.* (2003) raised the point of self-selection. People who self-select for a study tend not to be entirely representative of the population under study, as they are likely to have more extreme views towards the subject in question (Lavrakas, 2008). While the split between voluntary and compulsory IPE is relatively even, it is not entirely clear in some studies if the intervention was required or additional to students' studies. Collecting data from students who had not elected to participate in the IPE, but did so because it was mandatory, may give a more accurate picture of interprofessional attitude and attitude towards IPE and practice.

3.8.3 Meaningful integration of qualitative and quantitative data

Two studies advocated the use of both quantitative and qualitative data collection methods in a study to enrich data and generate stronger support for IPE: Cooper *et al.* (2009) and Jacobsen and Lindqvist (2009). Using quantitative and qualitative data in the same study and integrating the data in a mixed methods analysis process may allow for breadth and depth of enquiry and exploring the relationships between attitudes, education, and practice in much greater detail. By conducting focus groups and interviews with students, as well as collecting quantitative data about the changes in their interprofessional attitudes, it may be possible to understand why their attitudes have changed as they have. It should also illuminate how factors such as hierarchy, knowledge, stereotyping, and role models influence students throughout their educational journey. While many of the studies included in this

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review used both qualitative and quantitative data collection methods, none stated that they were taking a mixed methods approach. Many of the studies did not use these methods to explore different facets of the same phenomenon, but instead they were tools to explore multiple outcomes, such as attitudinal change and programme evaluation. A subject as complex and intertwined as the relationship between IPE, interprofessional attitudes, and interprofessional practice, and their influencing factors is more effectively studied using multiple methods of data collection and integrating the findings from the different data sources.

3.9 Summary

The main findings from this literature review highlighted that:

- The existing literature on IPE and attitudes is heterogeneous in nature, which makes conducting an effective literature review challenging

- The research identified in this review is far from unified in opinions about the best way to conduct IPE or in evidence about the impact of IPE.

- There are several interesting avenues of enquiry for future study, including the use of longer-term follow-up, data collection from multiple groups and meaningful integration of quantitative and qualitative data, which may shed further light on the interplay between attitudes, education, practice and the intrinsic and extrinsic influences upon them.

Chapter Four - Methodology and Research Methods

4.1 Researcher's personal stance

When approaching this study, it was important for the researcher to reflect upon her own experiences, values, and beliefs to understand better her motivations to carry out the study and acknowledge how her own attitudes may impact the project. The use of a reflective journal during the study aided this.

As a former participant in the IPL programme as a UEA student, the researcher reflected upon her experiences of the programme and the attitudes that she held towards both it and the concept of IPE more generally. Her attitudes and recollections were generally positive, which contributed towards her motivation to undertake this study.

Recognising the non-neutrality of her own opinions towards IPE and practice was imperative, and this increased the researcher's awareness of the importance of maintaining a personal distance when collecting and analysis data. The aim of this was to minimise the possibility of introducing a strong element of personal bias into the data collection or analysis process.

Considering her own attitudes towards other professions aided the researcher in identifying any possible areas of strong positive or negative bias. By reflecting on her own experiences with different health professionals in both personal and professional settings, the researcher was able to recognise that, while she had differing levels of knowledge about different professions, she did not hold strong, inflexible, or stereotypical views about any particular professional

group as a whole. This lack of strong opinion or judgement placed the researcher in a stronger position to analyse the data without seeking a specific outcome.

The researcher also reflected upon her professional identity as a physiotherapist, and how this may affect her work in the study. The main challenges that this presented were in interacting with focus group and interview participants. The researcher felt that if the participants were aware of her profession this may influence their responses to become more positive, or negative, depending on their personal views. It may also affect how she reacted to participants if they expressed positive or negative attitudes about physiotherapists. By not disclosing her professional identity to participants during the qualitative data collection, the impact on participants was reduced. In order to address her own reactions, the researcher decided to make a conscious effort to react in the same way when a participant disclosed a positive or negative attitude towards any profession, including her own. She also frequently reminded herself that the opinions expressed were not about her personally, and should not be taken as such. The outcome of these strategies is discussed further in Chapter 7, Discussion.

4.2 Research questions used in this study

The research questions were initially developed by the researcher from the aims expressed at the outset of the study. After conducting the literature review reported in Chapter Three, these questions were refined to provide more exact focus for the present study in light of areas of further research needed and existing studies. The final version of the research questions and sub-questions used to focus and develop the study design was:

- What effect does the IPL programme at the UEA have on the attitudes of healthcare students?
    - Are there any differences between the before and after scores of the AHPQ data from first-year students?
    - Do the findings differ between the intervention and control group?
    - What other factors influence students' interprofessional attitudes?

- How do the opinions of healthcare students towards interprofessionalism change over time?
    - Are the interprofessional attitudes of first- and final-year students different?
    - In what way do students' attitudes change once they graduate?
    - What factors contribute to these changes?

- What are the attitudes of students and professionals towards interprofessional interaction?
    - What are the opinions of students and qualified professionals about IPE?

o   What are the perceived benefits of interprofessional working?

o   What are the perceived barriers to interprofessional working?

When generating the above research questions the researcher referred back to the aims of the study to ensure that they would be met. The first question incorporates the aim of exploring the impact of the IPL programme on healthcare students as they progress through their studies. The second question addresses the second aim of analysing the influences on the interprofessional attitudes of healthcare students, and begins to address the aim of also exploring the interprofessional attitudes and views of professionals, by incorporating information from graduates. The final question also includes an element of the second aim, by including qualified professionals, not just graduates, in exploring their attitudes and opinions about interprofessional interaction. The final question also explores the final aim of the study, which is to explore the attitudes of students and professionals towards IPE and practice.

In order to answer the above questions fully, the use of both quantitative and qualitative methods is necessary. Together, the combination of both types of inquiry provides a broader view of the effects of participating in the IPL programme on students' interprofessional attitudes and a more in depth explanation of such attitudes. The following section explains how the researcher collated data mixing qualitative and quantitative research approaches.

4.3 Philosophical and methodological choices

There is a well-established traditional divide in academia between two predominant schools of thought: quantitative research, which follows the philosophical stance of positivism, or post-positivism; and qualitative research, which emerged later than quantitative research and adheres to constructivist or interpretive epistemology (Glaesser *et al.,* 2012).

The Incompatibility Thesis (and its refutation) and the alternative "third paradigm" (Johnson *et al.,* 2007) of pragmatism apply to combining into the same study various research methods commonly associated with each school of thought. Mixed methods studies are introduced and briefly explained.

4.3.1 The quantitative research tradition

The quantitative research tradition, underpinned originally by the positivist and more recently by the post-positivist philosophy was, up until the end of the twentieth century, the relatively unquestioned, dominant school of thought in social and behavioural research (Teddlie and Tashakkori, 2009). Simply put, quantitative research is most often associated with primarily numerical data, with a focus on proving or disproving research hypotheses (Teddlie and Tashakkori, 2009). As such, quantitative research in healthcare often focuses on the macro, looking for trends/patterns or associations or to prove the effectiveness of one healthcare intervention over another using methods such as randomised controlled trials (Concato *et al.,* 2000). Sample size is an important factor in designing a successful quantitative study, as without a sufficiently large and diverse study-population, the results of a study will not be generalisable to the wider population

(Colorado State University, 2015). With the focus on the whole rather than the individual, negative cases or those that deviate from the norm are often described as outliers (Campbell and Machin, 1999).

While methods of data collection are not specifically tied to either quantitative or qualitative research (an important point for mixed methods research), methods that are often associated with quantitative research tend to focus on the identification of causal relationships using objective measurement (Doyle *et al.*, 2009). Closed questionnaires and objective measurements of effect are two examples of such methods. Data analysis procedures are often concerned with exploring the general rather than the specific and so tend not to focus on individual cases, with the exception of explaining outliers (Teddlie and Johnson, 2009).

Quantitative research is most strongly associated philosophically with positivism historically and, since the twentieth century, with post-positivism (Johnson and Gray, 2010). Both of these philosophical positions maintain several values that guide and shape the way that quantitative researchers view their research and the world around them. Post-positivism is now the philosophy with which most quantitative researchers identify themselves (Teddlie and Johnson, 2009). Post-positivism was a response by quantitative researchers to the criticisms of positivism by those associated with the emergent qualitative research tradition. One of the most widely known of these criticisms was of the claim by positivists that their research was completely objective and value-free (Given, 2008). Post-positivists have accepted several new perspectives, leading to a more moderate form of positivism. These modifications are: a) theory-ladenness of facts; b) fallibility of knowledge; c) underdetermination of theory by fact; d) value-ladenness of facts; and e) social construction of parts of reality

(Johnson and Gray, 2010). Briefly, these modifications acknowledge that the research carried out by those subscribing to the quantitative tradition is not totally objective and value-free, but is influenced to some extent by the values and perceptions of the researcher and by the environments in which they operate.

Johnson (2009) in his comments on Howe (2009) suggests that some of the philosophical difficulties in reconciling quantitative research with qualitative research stem from some qualitative researchers still associating quantitative research with the more rigid positivism and not with the revised philosophy of post-positivism. In this piece, Johnson argued that while many qualitative researchers continue to associate quantitative researchers with positivism, quantitative researchers do not identify themselves as such, instead identifying with the more moderate post-positivist stance (Teddlie and Johnson, 2009), rendering the argument invalid, and the mixing of quantitative and qualitative methods less problematic.

Further discussion of the 'Incompatibility Thesis' (Howe, 1988) (the argument against the integration of qualitative and quantitative methods in the same study) is presented later in this chapter after the qualitative research tradition is explored in greater depth.

4.3.2 The qualitative research tradition

The qualitative research tradition differs from the quantitative tradition in many ways, and it can be regarded as being at the opposite end of the spectrum of research to quantitative research. In contrast to quantitative research, qualitative research has not been a dominant research tradition and its development only gained momentum during the twentieth century (Johnson and

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Gray, 2010). Qualitative research is most often associated with the use and interpretation of narrative data (Teddlie and Tashakkori, 2009). In contrast to quantitative research, qualitative research often focuses on the individual, be that a person, a group, or a community, and recognises that the information obtained is value-laden, and therefore it may not be applicable to a different population. Instead, readers of qualitative research may make connections between their experiences

There are many different ways of conducting qualitative research and, because of these differences in approach and focus, qualitative research is more of an umbrella term for studies that focus on narrative data (Denzin and Lincoln, 2013). This is the focus of 'qualitative research', rather than its being a research method in its own right. Indeed, the term groups all "non-quantitative" research together, despite their disparate methods.

During the 1970s to the 1990s, qualitative research became more popular as developments in the human sciences continued. The publication of the first 'Handbook of Qualitative Research' in 1994 edited by Denzin and Lincoln, eminent academics in the field, signalled a growing acceptance of qualitative research in social, behavioural, and educational research (Teddlie and Johnson, 2009).

Qualitative research uses a wide variety of data collection methods and analytical techniques, some of the most well-known being interviews, focus group interviews, and observation techniques. Like the methods often associated with quantitative research, the methods employed by qualitative researchers are not exclusive to qualitative research. Data analysis procedures are heavily dependent on the theoretical lens employed by the researcher and on the specific aims of the study (Denzin and Lincoln, 2013). In qualitative research, anomalous or negative cases are not viewed in

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the same way as they are in quantitative research, due to the acceptance of the subjectivity of truth in qualitative research, a markedly different position to the one espoused in quantitative research (Johnson and Gray, 2010).

While several paradigms associated with qualitative research exist, constructivism is the paradigm that appears to be the most frequently encountered in literature discussing qualitative research. This suggested that while there is no absolute consensus on the underlying paradigm of qualitative research, constructivism appears to be a philosophy upon which many qualitative researchers can agree. Constructivism differs from post-positivism in several fundamental ways. While post-positivism accepts that research cannot be totally objective and accepts that reality can be partially socially constructed, constructivism rejects the idea of objectivity entirely. Instead, it is claimed that reality is constructed both by the individual and socially (Teddlie and Johnson, 2009). Fundamental principles also include recognising that the researcher's observations are value-laden and pursuing 'empathetic understanding' of those under study (Teddlie and Johnson, 2009).

These differences between the underpinning philosophies of quantitative and qualitative research are the basis for the 'Incompatibility Thesis' (Howe, 1988). This concept is presented in the next section of this chapter. This idea of dualism and an 'either or' concept is contrary to the position occupied by mixed method researchers, many of whom prefer to see research on a spectrum, with qualitative and quantitative research at either end and mixed methods research occupying the middle. Research studies may fall anywhere along this spectrum, using exclusively quantitative methods, exclusively qualitative methods, or a mixture of the two to varying degrees. In some studies, the quantitative aspects may

be predominant; in others the qualitative or both aspects of the study may be viewed equally (Figure 2).
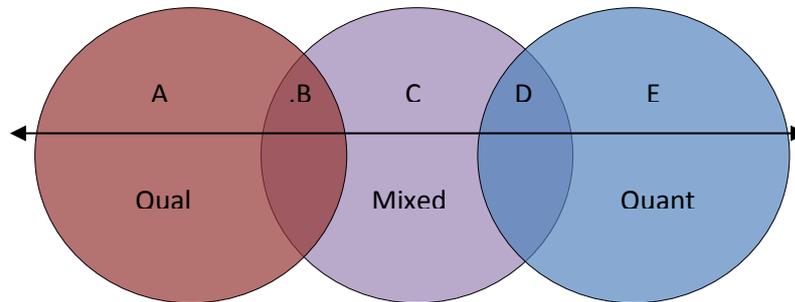
Figure 2. The qualitative – mixed methods- quantitative continuum. (Reproduced from Foundations of Mixed Methods Research, Teddlie and Tashakkori, 2009.

The lettered areas in Teddlie and Tashakkori's (2009) diagram (Figure 2) represent the continuum of research. Zone A represents entirely qualitative research and E entirely quantitative research. Zone B represents research that is predominantly qualitative with some quantitative elements, and Zone D represents the opposite. In the centre, Zone C represents entirely integrated mixed methods research. The arrow represents the continuum of research, with movement towards the middle indicating greater integration of research methods and sampling, whereas movement away denotes more distinct, or separated, research methods (Teddlie and Tashakkori, 2009).

This model refutes the idea that qualitative and quantitative research is inherently separate and cannot be combined into a single study. This latter stance is summarised in the Incompatibility Thesis, an argument against mixed methods research that is discussed in greater depth in the next section of this chapter.

4.3.3 The Incompatibility Thesis

The Incompatibility Thesis was referred to by Howe in 1988 as a way of discussing the argument put forward by some researchers that quantitative and qualitative research are not compatible on an epistemological level, and that the apparent mixing of the two is merely superficial. Howe counter-argued that on a practical level of conducting research, qualitative and quantitative research are inseparable and that differences in the designs and methods employed can be largely explained by different research interests and decisions about how best to explore those interests.

Johnson and Onwuegbuzie (2004) further emphasised the idea that quantitative and qualitative research are interlinked, with their exploration of the commonalities between the traditional paradigms. They were of the opinion that, in the focus on the differences between paradigms, acknowledgement of the similarities was often lost. Like Howe (1988), this paper focused on the practicalities of carrying out research and the intentions of the researcher. The authors argued that, at the most basic level, all researchers regardless of orientation "use empirical observations to address research questions"(p15) and that "epistemological and methodological pluralism should be promoted in educational research … ultimately, so that we are able to conduct more effective research" (p15) (Johnson and Onwuegbuzie, 2004).

The second argument that Howe put forth addresses the question of the fundamental differences between the underpinning philosophies of quantitative and qualitative research. Proponents of the Incompatibility Thesis state that the true problem with mixing qualitative and quantitative research is that, because the paradigms are incompatible, the methods used by those who subscribe to each paradigm are incompatible. The response given is

that paradigms should not solely dictate the research methods to be use, but should also respond to the successful use of research methods. Johnson and Onwuegbuzie (2004) elaborated further upon the idea that epistemology and methods are not inherently linked. It is stated that "the logic of justification does not dictate what specific data collection and data analytical methods researchers must use" (Johnson and Onwuegbuzie, 2004 p15).

The arguments put forth by authors against the Incompatibility Thesis, described by Howe (1988) as the Compatibility Thesis, led to the use of a new paradigm to guide the mixed methods movement – pragmatism – which will be discussed in more depth later in this chapter.

There have been some criticisms of Howe's Compatibility Thesis. Giddings (2006) postulated that mixed methods research does not follow a purely pragmatic paradigm but instead sits within a post-positive perspective. Giddings stated that the qualitative aspects of many mixed methods studies are "fitted in" and that the thinking behind most mixed method research is both positivist and pragmatic. This is reflective of the historically dominant position of quantitative research. Some qualitative researchers are thus concerned that mixed methods research is a way of reasserting that dominance over qualitative research (Giddings, 2006; Morse, 2005). While it appears that the compatibility of quantitative and qualitative research has been viewed warily by some, the emergence of both the Journal of Mixed Methods Research in 2007 and the Mixed Methods International Research Association, which held its inaugural conference in 2014, indicate a growing acceptance of mixed methods research as a legitimate form of enquiry.

Pragmatism as an underpinning philosophy was briefly mentioned previously in this section as a way of overcoming the epistemological differences between the quantitative and qualitative research traditions, allowing for successful integration of both methods into single studies. A greater understanding of pragmatism is necessary for successful design and implementation of a mixed methods study and an overview is presented in the next section of this chapter, prior to the discussion of mixed methods research in its own right.

4.3.4 Pragmatism

Pragmatism is a philosophical movement that originated in the USA in the later part of the 19th century. Charles Sanders Peirce (1839-1914) is widely regarded as the founder of pragmatism (Delanty and Strydom, 2003). Peirce's work was developed further by William James (1842-1910) and John Dewey (1859-1952). Together the three are regarded as the 'classical pragmatists'.

<u>Classical pragmatism</u>

The classical pragmatists, Peirce, James, and Dewey, are often regarded as a harmonious trio. Nevertheless, each had some differing views on the development and nature of pragmatism, and they developed sequentially upon the work of the other. The work of Peirce in the late 19th century was expanded upon by first James and then Dewey (Murphy, 1990). One of Peirce's many contributions to philosophy as a whole was his rejection of the principle of universal doubt as set forth by Descartes, the father of modern philosophy (Internet Encyclopedia of Philosophy, 2015). Peirce argued that universal doubt is not possible because doubt itself stems from our having prejudices and therefore we cannot

truly treat all things with scepticism due to our individually held beliefs. Instead, he proposed that one may have reason to question one's beliefs when presented with reason to do so but not otherwise (Murphy, 1990). Further to this principle was the belief that, rather than criticise the methods and methodologies of the natural sciences, philosophy should seek to emulate them, arguing that, by acting as a community and exploring multiple arguments, philosophical theories themselves would be stronger. Theories would be more akin to "a cable whose fibres may be ever so slender, provided they are sufficiently numerous and intimately connected" rather than "a chain which is no stronger than its weakest link" (Peirce, quoted in Murphy, 1990). Peirce's purpose was then to move past the metaphysical aspects of philosophy and to achieve progress through observational methods (Talisse and Aikin, 2008). This focus on the practical and tangible through exploring multiple arguments is a clear forerunner to modern-day pragmatism that can be used to underpin mixed methods research.

While Peirce may have founded pragmatism, it was James who was responsible for its proliferation. James continued to expand upon the work done by Peirce, incorporating the psychological effects of believing a proposition among its practical consequences (Murphy, 1990). He also posed the idea of pragmatism as a method of settling metaphysical disputes, which is in opposition to Pierce's view that pragmatism in itself cannot solve anything but simply identify the correct method by which to resolve the issue in question (Talisse and Aikin, 2008). While Pierce can be seen as more of a natural scientist in approach, James' approach is far more humanistic.

Dewey, despite being regarded as one of the founders of pragmatism was reticent about the term 'pragmatism' itself, and in some of his later works did not use the term at all (Jackson, 2006).

Much of Dewey's work centred on the concept of human experience (Murphy, 1990). Dewey appears to combine the scientific approach of Pierce and the humanistic approach of James, with a focus on experience as an entity separate from nature (Malachowski, 2010).

Despite these difficulties and disagreements, pragmatism today takes several of its key concepts from the classical pragmatists. The substitution of simpler concepts - such as 'what works' and 'what is of interest' for the complex and abstract philosophical questions - is the most obvious manifestation of this (Malachowski, 2010). Biesta, in Tashakkori and Teddlie (2010), further suggested that pragmatism should be seen as a 'set of tools' that can be used to address research problems, rather than a doctrine to be followed. This closely follows Dewey's thinking on not building systems or becoming entrenched in philosophical debate. This is not a universally accepted stance, with some urging caution towards the 'what works' approach and encouraging researchers to justify their selection of methods carefully (as is expected for a quantitative or qualitative study) (De Loo and Lowe, 2011).

Maudsley (2011) noted that while many researchers in the field of mixed methods research do advocate for the position of mixing methods without becoming entrenched in the quantitative versus qualitative debate, the literature in the field of mixed methods research with respect to medical education is fragmented and poorly indexed. This is a point of particular relevance to the present study. With little clear guidance or good quality examples, designing and conducting a mixed methods study in healthcare education is challenging.

As briefly mentioned previously, many authors in the field of mixed methods research have recommended that pragmatism be used as

the philosophical partner for mixed methods (Tashakkori and Teddlie, 2010; Migiro and Magangi, 2011). There are several reasons for this. Pragmatism allows the use of research methods associated with both quantitative and qualitative research in a single study, rejecting the Incompatibility Thesis (Maudsley, 2011). It also acknowledges the primary importance of the research question, that a practical research philosophy should guide methodological choice, and that metaphysical concepts such as truth and reality should be abandoned (Teddlie and Tashakkori, 2009).

The debate over the nature of reality is a major factor in the perceived incompatibility between qualitative and quantitative traditions (Creswell and Plano Clark, 2011). By abandoning this concept and instead using the principles of pragmatism to tackle problems, a great degree of flexibility in enquiry and research methods is possible (Maudsley, 2011).

Acceptance of pragmatism as the guiding philosophy of mixed methods research has not been universal. While pragmatism appears to be the favoured approach in the majority of the literature (Bryman, 2006), some authors have argued instead for a transformative perspective to be used, arguing that mixed methods research is ideally placed to tackle issues of social justice (Mertens, 2007). While this perspective may prove useful in some cases, it is not necessarily applicable to all studies seeking to use both quantitative and qualitative methods, as advocacy for a group may not be within the remit of the study. The present study is such an example. No particular group is requires advocacy; instead the aim is to provide insight into the attitudes of a group. This does not fit with a transformative perspective but aligns more closely with the pragmatic perspective of the research questions driving the choice of methods.

The use of a pragmatic approach in this study has allowed for greater freedom when selecting the methods of enquiry most appropriate to answer the research questions. With areas of interest being both broad (the general trend in attitudinal change of healthcare students) and specific (the reasons for and influences upon those attitudes of students and practitioners), this clearly requires the previously discussed strengths of both quantitative and qualitative research. In combination they can provide both breadth and depth in answering the research question. It is with these aims in mind that pragmatism is considered the guiding philosophy behind the present mixed methods study.

4.3.5 Mixed methods research

Mixed methods research has been defined in several different ways over the years of its development. The researcher has not found evidence of a universally accepted definition. Instead, the core characteristics of mixed methods research given by Creswell and Plano Clark (2011) have been used. These characteristics are outlined below.

In mixed methods, the researcher:

- collects and analyses persuasively and rigorously both qualitative and quantitative data (based on research questions);
- mixes (or integrates or links) the two forms of data concurrently by combining them (or merging them), sequentially (by having one build upon the other) or embedding one within the other;
- gives priority to one or both forms of data (in terms of what the research emphasises);
- uses these procedures in a single study or in multiple phases of a programme of study;

- frames these procedures within philosophical worldviews and theoretical lenses;
- combines the procedures into specific research designs that direct the plans for conducting the study"

(Creswell and Plano Clark 2011 p.5).

More simply, mixed methods research has been called 'the third research paradigm' (Johnson and Onwuegbuzie, 2004), indicating its independence from both quantitative and qualitative research. Due to the number of definitions available, mixed methods research can be seen as a rather broad concept, encompassing many possible combinations of data collection methods and analysis procedures. This is compatible with the tenets of pragmatism discussed in the previous section and as such provides justification for the use of pragmatism as a compatible philosophical partner.

The variety of possibilities and flexibility of designs in mixed methods research underpins part of its appeal to researchers. The value of mixed methods research lies in its ability to answer questions that quantitative or qualitative methods cannot answer alone, by drawing on the strengths of both approaches (Creswell and Plano Clark, 2011; Johnson and Onwuegbuzie, 2004; Malina *et al.,* 2011). Other reasons for using mixed methods research include: triangulation; completeness (providing a more complete picture of the phenomenon under study); offsetting weaknesses and strengthening inferences; explanation of findings and illustration of data; and hypothesis -or instrument development or- testing (Doyle *et al.,* 2009; Jick, 1979).

Other authors have proposed a different purpose for mixed methods research, which they refer to as crystallisation (O'Cathain

et al., 2007; Sandelowski, 1995). These authors argued that triangulation is a process that is carried out between research methods within either quantitative or qualitative research but not across them. Instead, the predominant purpose of triangulation is to provide greater evidence, or confirmation, of findings. Crystallisation is, however, a process that looks for convergence, divergence, and discrepancy (Sandelowski, 1995). This is particularly relevant to mixed methods research, as it allows for the different approaches taken by qualitative and quantitative methods to address research questions and the possibility of different outcomes. This is a suggestion that concurs with Teddlie and Tashakkori (2009) who stated that looking at the findings of a quantitative and qualitative strand of a study together may explain apparent differences in findings through bringing together and carrying out a meta-inference process. This process may generate findings that were not apparent from either strand of the study in isolation (Teddlie and Tashakkori, 2009) providing valuable new data.

Despite the apparent benefits of mixed methods research, the history and development of mixed methods research is complex and at times unclear. Formal recognition of mixed methods research is relatively recent, characterised by events such as the publication of the first edition of the Handbook of Mixed Methods Research in the Social and Behavioural Sciences in 2003 and the Journal of Mixed Methods Research in 2007 and the inception of the International Mixed Methods Conference in 2005. Despite this, mixed methods research has been carried out for much longer.

Campbell and Fiske (1959) are often credited with the first recognition of the formal use of multiple research methods in a single study in the social sciences (Johnson *et al.,* 2007), but it is possible that mixed methods research was being carried out before

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this, albeit in a more informal fashion. Throughout the latter half of the twentieth century, formal development and recognition of mixed methods research have continued. To list every development made in the last forty years is not the purpose of this chapter, and would be counterproductive when such summaries already exist. Creswell and Plano Clarke (2011) divided the development of mixed methods research into five stages:

1. The formative period between the 1950s and 1980s in which the use of mixed methods was first acknowledged.

2. The paradigm debate period during the 1970s and 80s, which saw the Incompatibility Thesis and its refutation.

3. The procedural development period from the late 1980s to the early 2000s, when the focus shifted to the hows and whys of conducting mixed method studies.

4. The advocacy and expansion period from the early 2000s until the present day. Numbers of mixed methods publications increased in this period, as did the recognition of mixed methods in academia and wider organisations.

5. The reflective period from the mid-2000s until present. This on-going period sees the assessment of the current state of mixed methods research and ideas for the future development of the field as well as constructive criticism of the current practices and methods.

For a novice researcher, an awareness of the possible pitfalls of conducting mixed methods research is essential and has helped to guide learning needs and development. A short explanation of common pitfalls of mixed methods research is presented below. Most of these problems have been identified by researchers at the forefront of mixed methods and are given as possible weaknesses of mixed methods research (Johnson and Onwuegbuzie, 2004).

By its very definition, mixed methods research requires the researcher to be proficient in both quantitative and qualitative methods of data collection and analysis and be able to then draw the findings of the two strands of the study together in a meaningful fashion (Creswell and Plano Clark, 2011). This presents a challenge, particularly for a novice researcher, in terms of learning the methods necessary to conduct the study and ensure that the research is of high quality. This is particularly the case during the mixed methods analysis stage. At present, there is little, unambiguous guidance on exactly how to go about analysing mixed methods research data that are truly mixed, especially in the event of divergent results. This apparent lack of guidance may result in valuable and interesting data being lost if researchers do not know how to analyse the data effectively and rigorously, present the findings, and produce meaningful conclusions.

To aid the process, Bazeley (2009) suggested that the researcher should look for patterns in the data and attempt to draw new hypotheses as to why the discrepancy exists, which may lead to further research questions. Other authors have provided some guidance as to how to integrate qualitative and quantitative findings (Bryman, 2006; Caracelli and Greene, 1993; Greene *et al.,* 1989; O'Cathain *et al.,* 2007).

With the continued proliferation of mixed method studies and methodological papers, greater insight into about the best analytical approaches should develop. It is the responsibility of those currently conducting mixed methods research to contribute to the knowledge and dissemination of best practice in this emergent field.

A possible reason as to why this has not happened as yet is linked to mixed methods studies tending to be more time- and resource-

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consuming than studies located within the traditional paradigms. As well as the additional knowledge needed about different research methods and the underlying principles of qualitative, quantitative, and mixed methods research, the design and conduct of a study that uses multiple diverse data collection are more complex. This complexity, when combined with the more practical challenges of obtaining ethical approval and participant recruitment, may explain why the literature in the field of mixed methods has taken longer to evolve.

Having considered the philosophy and practicalities behind conducting mixed methods research, this discourse now turns to the data collection methods for the present study.

4.4 Data collection methods

There are three separate data collection methods used in this study:

1. A quantitative questionnaire
2. Qualitative semi-structured focus groups
3. Qualitative semi-structured interviews

The quantitative questionnaire is the Attitudes to Health Professionals Questionnaire (AHPQ), forming the quantitative data collection strand of the study. The semi-structured focus groups and interviews form the qualitative data collection strand of the study. While the data collection strands are separate, and underwent separate analysis processes, a joint mixed methods analysis took place at a later stage.

The following sections will explain each data collection method and its use in this study in more detail.

4.4.1 Quantitative questionnaire: Rationale and key points

The quantitative data collection tool used in this study was the Attitudes to Health Professionals Questionnaire (AHPQ). The rationale for using this questionnaire was briefly discussed in Chapter Two, Background.

The AHPQ has been routinely administered to first and second-year students each year since the academic year 2003-2004. Students complete the AHPQ prior to taking part in IPL1, post-IPL1, and post-IPL2. The purpose of the questionnaire is to assess the interprofessional attitudes of healthcare students at the outset and how these attitudes change during the course of their studies.

The AHPQ is a validated questionnaire (Lindqvist *et al*., 2005a) comprising 20 items generated from an exercise based on Kelly's (1955) personal construct theory. The AHPQ consists of two components as determined by Principal Components Analysis (PCA): a 'caring' and a 'subservient' component. The principal components analysis involves a mathematical procedure that groups the items into a reduced number of uncorrelated variables called principal components. A main principal component and a number of succeeding components account for the remaining variability (Bryman and Cramer, 1997). The two components account for 50% of the total variance. The 'caring' component is the stronger of the two accounting for 39% of the variance and has good internal consistency (Cronbach's alpha coefficient > 0.93) and the 'subservient' component accounts for 11% of the total variance, with moderate internal consistency (Cronbach's alpha coefficient > 0.58). The Cronbach's alpha indicates to what extent the items associated with the main component are correlated with each other. The alpha coefficient ranges between 0 (no consistency) and 1 (total consistency) with values greater than 0.7 being deemed as reliable (McKinley *et al*., 1997). The internal consistency for the 20-item AHPQ was high (α > 0.87).

Each item is linked to a 10 cm visual analogue scale with two attributes, describing a construct, anchoring each end (e.g. approachable – not approachable). Students are asked to rate their views of a 'typical' example of a professional on each item. They are asked about their views on their own profession and three others that were part of their original IPL group. The list of items is as follows:

- Caring/non-caring
- Empathetic/non-empathetic
- Approachable/non-approachable

- Values team work/does not value team work

- Sympathetic/non-sympathetic

- Thoughtful/not thoughtful

- Flexible/not flexible

- Patient-centred/not patient-centred

- Not self-centred/self-centred

- Gentle/rough

- Not arrogant/arrogant

- Practical/theoretical

- Conciliatory/not conciliatory

- Vulnerable/confident

- Non-assertive/assertive

- Does not value autonomy/values autonomy

- Not technically focused/technically focused

- Not independent/independent

- Poorly paid/well paid

- Not confrontational/confrontational

(Lindqvist, 2009: pages 169-70)

The AHPQ was originally tested and validated with students from the UEA (Lindqvist *et al.,* 2005a), but has been successfully used in another study with a different population (Jacobsen and Lindqvist, 2009). This increases the potential transferability of the findings from the questionnaire. As the participant population in the study by Lindqvist *et al.* (2005a) was drawn from the same schools of study at the same university as the present study, the researcher was confident that the AHPQ could be used for its intended purpose within this study, and that the results may be transferable to other similar populations. The principal component analysis for the AHPQ component weighting was not re-run for this study, with the values calculated for the validated version of the questionnaire used. These can be seen later in this chapter.

Due to the imbalance of numbers of students in professional cohorts, the IPL groups do not include a student of every profession included within the IPL programme. For example, in the academic year 2010-2011, speech and language therapy students were only included in the Session A completion of the IPL programme (for explanation of the Session A, B and C system, please see Chapter Two). As students were asked to rate only the professions that were represented in their particular IPL group, no students from Sessions B and C provided data about their attitudes towards speech and language therapists, but Session A students did. This difference in responses is discussed further in the study design section of this chapter under the section about participants in the quantitative strand of the study.

In addition to the regular administrations of the AHPQ in the students' first year of study, pre- and post-IPL in this study, an additional data collection point was added. The initial collection of data pre-IPL1 is referred to as Round 1 data, the collection of data post-IPL1 are referred to as Round 2 data. The additional data were collected from students in their final year of study during the academic year 2012-2013 and are called 'final-year data'. At this additional data-point, it was not possible to ask the students to rate only the professions with which they had worked, as no IPL intervention had taken place in their final year. Instead, the students were asked to rate a random selection of three, or four, different professions.

Use of the AHPQ for this study is further justified because it is a familiar data collection tool to the final-year participants, who will have been asked to complete the AHPQ earlier in their pre-registration studies when participating in the IPL programme. Using this particular questionnaire is also logical given the existing infrastructure to collect the data from the first-year students.

The AHPQ allows for data to be collected from a large sample size of the population, as it is routinely administered to all first-year healthcare students at the UEA. While it is not compulsory to complete, it is encouraged before and after IPL, reducing concerns about recruitment and access to the population of interest. No additional ethical approval was needed to collect the data from first-year students as it is used to evaluate a teaching intervention and students are ensured confidentiality at all times (Appendix 1 – Faculty ethics approval).

The AHPQ was thus suitable for the quantitative strand of this study, especially when complemented by qualitative data collected by different methods – such as focus groups.

4.4.2 Focus groups

Focus groups were used in this study to obtain qualitative data on the experiences of first- and final-year students of IPE and the influences on their interprofessional attitudes. To enhance understanding of the use of focus groups in this study, a brief history of the development and use of focus groups will be given, followed by a description of their use in this study.

Focus groups were first described by Robert Merton, Marjorie Fiske, and Patricia Kendall in their 1956 book '*The Focused Interview'*. Since then, focus groups have had many uses both within academia and further afield, enjoying particular success in market research. Focus groups are a well-established way of obtaining data in social research and were chosen for use in this study for several reasons, which will be explored throughout this section. This interview technique has been used in market research for the last five decades, and since the 1980s has gained more

widespread acceptance in academic research (Krueger and Casey, 2009).

As a data collection tool, focus groups have been used widely in many different types of qualitative research (Morgan, 1996). The rules set out by Merton *et al.* (1956) have formed many of the common practices of how focus groups have been undertaken. When academic researchers began to use focus groups, they returned to this original work to inform their practices and to help develop a method that is distinct from the work of market researchers (Krueger and Casey, 2009).

Focus groups have several qualities that make them appropriate as a data collection tool for the present study. Part of the richness of the data from focus groups is in the interaction that occurs between participants (Barbour, 2007; Barbour and Kitzinger, 1998). By interviewing students in a group, members of the group were able to respond to both the researcher and prompts from each other. This characteristic of focus groups can enhance the richness of the data, and may allow for unexpected, or spontaneous, topics to emerge. A group environment is also a familiar environment for the students. The students are often taught in groups and take part in group work away from university. By taking part in research in a group environment, the students are more likely to feel at ease than if they were in an individual interview, which may feel more pressured and less informal and encourage them to disclose information (Krueger and Casey, 2009).

Participants were purposively selected by the researcher to ensure a mix of professions in each focus group. Focus groups are most successful when participants feel confident to express their opinions, but the purpose of focus groups is not to reach a consensus (Krueger and Casey, 2009). By including individuals in

each group who have had different experiences and taken part in different professional courses(but have the shared experience of the IPL programme), the students were able to prompt one another to share opinions and recollections that provided rich, multi-faceted data. Mixed professional groups allowed more in-depth discussion on interprofessional issues and for the students to discuss similarities and differences between the ways that interprofessionalism is viewed by members of their own professional groups. It also enabled students to explore their differing perspectives on professional roles and responsibilities.

To stimulate discussion in the focus groups, prompts of graphs showing examples of AHPQ data and two vignette scenarios (Appendix 2) were incorporated into the focus group schedule. The use of vignettes to prompt discussion is a well-recognised technique in focus group research (Ely *et al*., 1997). In this study, the stimulus material was used to keep the discussion on track and to prompt debate amongst participants, encouraging them to challenge one another on their views in a constructive fashion. This led to some of the most interesting discussion in the groups, and provided much of the data discussed in Chapter Six – Qualitative Findings.

Aside from focus groups, there are other data collection methods that could potentially have been used to gather qualitative data from healthcare students. Individual interviews are the most logical alternative method. While individual interviews have been used in another part of this study, it was felt that focus groups would be a more appropriate data collection method for use with healthcare students for several reasons. Individual interviews allow for collecting a large amount of in-depth data from an individual. The aim of this section of the study was to gain a broader understanding of the factors that affect the interprofessional

attitudes of healthcare students and their attitudes towards IPE and practice. While conducting individual interviews may have led to deeper understanding, it would have only been possible to speak to a smaller number of students due to time constraints and would not have allowed for the interactive element between participants to enrich the data.

Some criticisms of focus groups have been made, including the possibility of the group producing trivial results and the potential for dominant individuals to skew the results of the group (Krueger and Casey, 2009). The first concern is primarily related to the size of the focus group. Six to 12 participants was considered to be an optimum number by Stewart *et al.* (2007), whereas Krueger and Casey (2009) suggested that caution should be exercised with groups of ten or more, as the discussion may become superficial with so many voices to be heard. The lower limit proposed by Stewart *et al*. (2007) is suggested to prevent the discussion from becoming contrived or dull. By ensuring that the groups contain a manageable number of participants and over-recruiting slightly for each group to accommodate for drop-outs, the problem of group-size can be largely controlled.

The second issue of one or two participants dominating the group is for the interviewer to manage as part of facilitation. Encouraging hesitant participants to talk and steering the conversation to prevent others from dominating are skills to be developed, as discussed later (reflections in Chapter Eight). By effectively managing the focus group with a semi-structured interview guide (Appendix 3) and a non-confrontational, relaxed manner that encourages all participants to speak freely, the moderator can attempt to limit the effect of a dominant individual and promote a more equal and collaborative process (Powell and Single, 1996).

While focus groups may have been the optimal choice for data collection from the first- and final-year students in the study, this was not the case for the graduates and senior professionals. The reasons for this and the rationale behind selecting individual interviews for this part of the study are discussed below.

4.4.3 Individual Interviews

Individual interviews collected data from recent UEA healthcare graduates and senior professionals on their experiences and opinions of IPE and of the influences on their own interprofessional attitudes.

Like focus groups, interviews are a well-established technique in qualitative research. Interviews have a long history of development, with discussion of formalised approaches and techniques dating from the 1920s. There appears to no consensus in the literature about how interviews should be structured or conducted. Different authors advocate different approaches, e.g. structured, semi-structured, or unstructured interviews (Platt 2001). The decision about which type of interview to use is influenced by many factors, including the purpose of the interview, the subject of the interview, and the level of experience or skill of the interviewer (Gubrium and Holstein, 2002).

In this study, semi-structured interviews were used throughout. There are several reasons for this. Before commencing interviews, the researcher already had a clear idea of topics and subjects to cover. By writing an interview schedule, a technique first described by Odum and Jocher in 1929, the researcher had a guide of topics and possible questions to cover. This provided structure for the interview, ensuring that the necessary topics were covered yet

allowing for flexibility and spontaneous information volunteered by the participant. .

One of the main reasons for selecting individual interviews over focus groups to research graduates and senior professionals was that individual interviews were logistically considerably easier to organise with this group than focus groups would have been (See Appendices 4 and 5 for interview schedules)

The student participants were all UEA students. By scheduling focus groups for times when students would not be in lectures, e.g. Wednesday afternoons, or after six pm, it was possible to recruit enough participants to run each group. Conversely, organising focus groups with recent graduates who were based all across the country and working on very different work patterns to one another would have been nearly impossible. Similarly, senior healthcare professionals were geographically closer and had experience of working with UEA students (an inclusion criterion, p69) but were from a far smaller pool, with little time for focus groups.

The loss of the participant interaction seen in focus groups was the only substantial drawback to the use of individual interviews for this part of the study. In the focus groups, this interaction stimulated discussion and prompted participants to question one another and their own positions on issues, providing rich data on interprofessional attitudes and experiences of IPE. Without this dynamic to elicit data, the onus was placed directly upon the researcher to ensure sufficient depth of discussion was obtained.

Another major consideration when conducting individual interviews is the balance of power between the interviewer and interviewee. Unlike a focus group, where the researcher facilitates the discussion, in individual interviews the relationship between

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interviewer and interviewee is more formalised, with the structure of the interview dictated almost entirely by the researcher (Kvale, 2007). By using a semi-structured approach to the interview, a degree of freedom was allowed for the participant, who could expand on topics or explore tangents related to topics as necessary, with the interview kept on-track by the researcher (Drever, 2003).

Telephone interviews were used with some of the participants in this study. Comparative studies between in-person and telephone interviews are rarely carried out, and it is primarily up to the researcher to decide if telephone interviews are appropriate for that study (Shuy, 2003). While in-person interviewing allows for greater naturalness in conversation and for the power dynamic between the interviewee and researcher to be more equal, telephone interviewing allows for more uniform questioning, which is helpful when trying to find out the opinion of different participants about the same issues (Shuy, 2003). Novick (2008) suggests that telephone interviews are unjustly viewed as an inferior technique to in-person interviews and that there is no evidence that they produce lower quality data. Indeed, a telephone interview - while lacking the body language and nuance of an in-person interview - may allow the participant to feel more relaxed due to the lack of immediacy between them and the researcher. Therefore, the participant is encouraged to make greater disclosures than they would otherwise (Novick, 2008).

With no clear evidence on the superiority of either method, it was decided to follow the tenets of pragmatism when selecting the method of interview, for each graduate or senior professional. The most appropriate method was then selected for each individual situation, dependent on location and participant preference. Further discussion of the challenges and learning experiences of

carrying out the focus group and interview data collection is given

in Chapter Eight, Reflections and Conclusions.

4.5 Study design

In order to effectively address the research questions outlined at the start of this chapter, both quantitative and qualitative methods needed to be used. To understand participants' interprofessional attitudes the effect that IPE has on those attitudes, and why those attitudes are held in the first place, is a complex enquiry that is best answered using both quantitative and qualitative methods.

This is a convergent parallel mixed methods study (Figure 3). This means that the qualitative and quantitative elements of the study receive equal weighting of importance, with one not being developed from the other, and all data collection may run simultaneously. This study design was described by Creswell and Plano Clark (2011), and is one of the suggested typologies for mixed method study designs. The authors emphasised that these designs are not exhaustive and can be adapted to suit the purposes of the research, a principle that ties in closely with the principles of pragmatism.
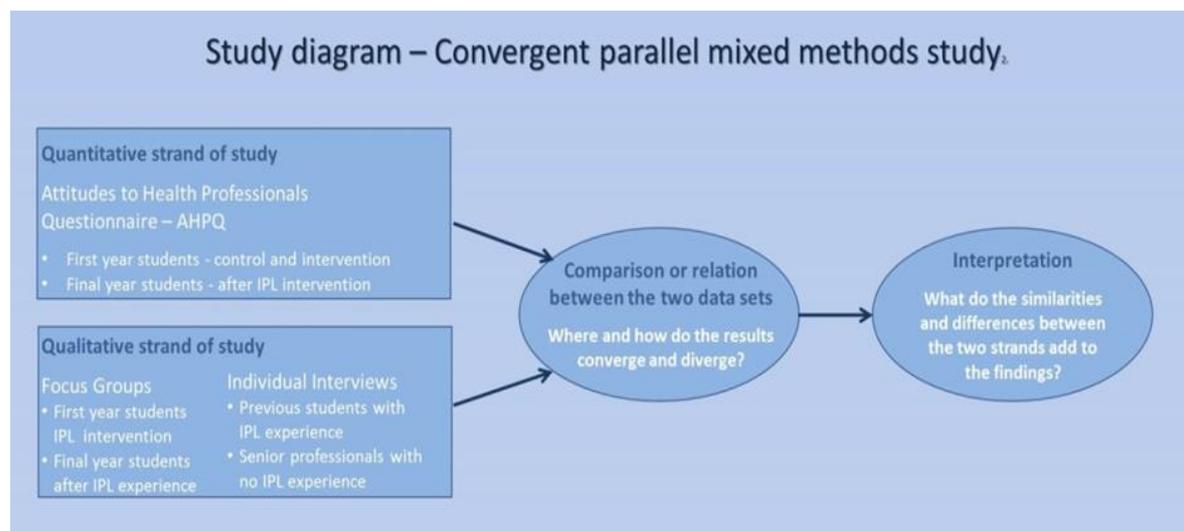
Figure 3. Study diagram, adapted from Creswell and Plano Clark (2011), of the use of the convergent parallel mixed methods design in the present study. IPL=Interprofessional learning

This design was used for several reasons. Neither the qualitative nor the quantitative strand of the study was seen as more important than the other, and neither needed to finish before the other could start. This is necessary in sequential studies where, for example, qualitative data might illuminate quantitative findings (an explanatory study) or vice versa, where quantitative data test, or extrapolate from, initial qualitative findings (an exploratory design) (Creswell and Plano Clark, 2011). The ability to carry out the strands of the study simultaneously in the convergent parallel design also provided a practical advantage in terms of time management, as the researcher could move freely between the quantitative and qualitative elements of the study, meaning that a delay in one strand would not necessarily bring the entire project to a halt.

The transformative perspective described in the previous section of this chapter (Mertens, 2007) gives rise to the transformative design of study, in which all decisions are made within the transformative framework (Creswell and Plano Clark, 2011). As the present study has no transformative position, this design was not considered. Equally, the embedded and multiphase study designs do not meet the needs of the study. According to Creswell and Plano Clark (2011), an embedded study involves a smaller quantitative or qualitative element embedded within a larger quantitative or qualitative study, where it aims to provide additional information or clarity to a topic. The embedded element is not a large enough part of the study to be considered a separate strand.

Several of the studies included within the literature review could be considered as being embedded (Ateah *et al.,* 2010; Carpenter, 1995; Goelen *et al.,* 2006; Lennon-Dearing *et al.,* 2008; Lindqvist *et al.,* 2005b; Lin *et al.,* 2013; Morison and Jenkins, 2007; Taylor *et al.,* 2004). In all these studies a large quantitative study included a small qualitative element to enhance its findings, but none

identified themselves as using an embedded mixed methods design or included this in their methods section, so cannot be labelled as such with certainty.

The study design was therefore a convergent parallel mixed methods study (Figure 4).
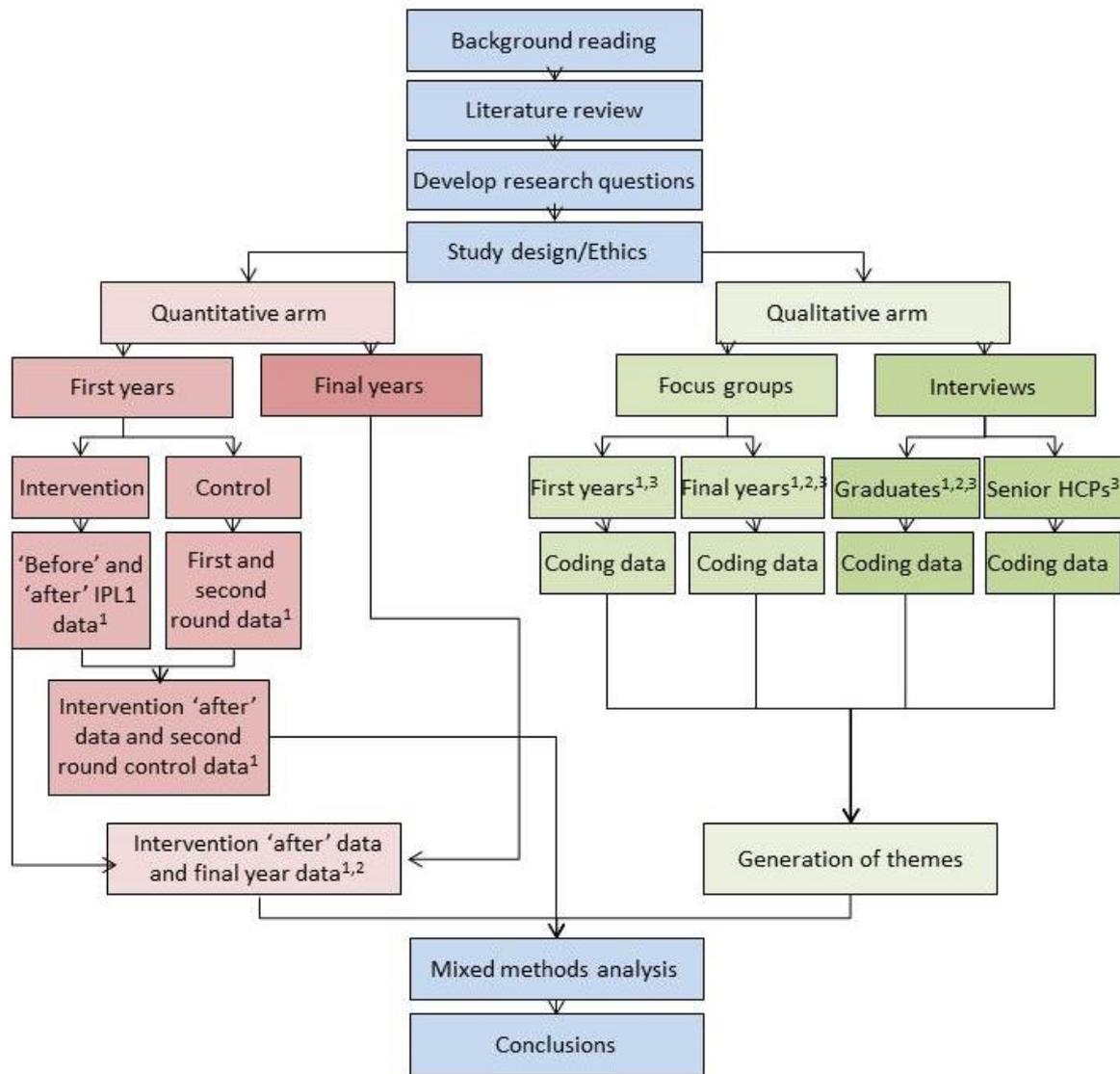
Key

1. Exploring the effect of the IPL programme on the attitudes of healthcare students

2. Exploring how interprofessional attitudes change over time

3. Exploring the attitudes of students and professionals towards interprofessional

Figure 4. Study overview diagram including mapping data collection and use

to the study aims[1]

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[1]Figure 4 gives an overview of the different strands of this study, and the points of comparison between different sets of data. The diagram shows the study process from beginning to end, from preparatory work, to data collection through to analysis and conclusions. Also indicated by numbers 1-3 on each data-set box in the diagram is the research question addressed by that data-set.

In the present study, the aim was not to use one set of findings to improve understanding of the other but to use both strands in parallel to draw inferences from one another, excluding the use of an embedded design from consideration. The multi-phase design was excluded because employing sequential and concurrent qualitative and quantitative strands of a study over time to evaluate a programme (Creswell and Plano Clark, 2011) did not resonate with the study aims or the logistical possibilities of the allotted timeframe. The aim of the present study was to understand more about why participants held the attitudes that they did and the effect of the IPL programme on those attitudes - rather than an evaluation of the programme itself.

The two strands of this study (Figures 3 and 4) do not converge until the mixed methods comparison stage, with data from each strand being analysed separately using the appropriate techniques and then compared for points of convergence and divergence. By looking at the analysed data in this way, it is possible to elicit a more holistic understanding than would be possible through looking at either strand in isolation. By comparing data across the quantitative and qualitative strands it is possible to increase understanding of students' interprofessional attitudes, why they hold these, and changes during pre-registration training, on graduation, and into professional practice.

Before describing exactly how the study was carried out using the convergent parallel design, an explanation of how the selected data collection methods were employed is necessary. As mentioned previously, the three data collection methods used in this study were: i) a quantitative questionnaire (the AHPQ); ii) semi-structured focus groups; and iii) semi-structured individual interviews. The selection and justification of the use of these methods has been discussed previously in this chapter so here the

procedures for their use are given and the analysis processes for each data-set explained.

4.5.1 Quantitative strand

Data on changes in interprofessional attitudes were obtained from first- and final-year healthcare students using the AHPQ, which is discussed in greater detail previously in this chapter and in Chapter Two, Background.

Data were obtained from first-year students during the academic year 2010 – 2011 and from final-year students during the academic year 2012-2013. As per previous use of the AHPQ by the CIPP at the UEA, first-year students were asked to complete the AHPQ before and after taking part in IPL1. The students are split into three groups for IPL that run consecutively throughout the academic year: Session A, Session B, and Session C. Normally, the Session A students would complete the AHPQ first, then the Session B students, and finally the Session C students. In this study, the Session B students were used as a control group. Rather than completing the AHPQ when they had completed IPL1, after the Session A students, the Session B students completed the AHPQ at the same times as the Session A students.

By comparing the control group data with the data from first-year students who have completed the IPL programme, it was possible to assess the direct effect of the IPL programme on the interprofessional attitudes of healthcare students. Aside from their participation or non-participation in the IPL programme, it was deemed reasonable to assume that the healthcare students had experienced similar exposure to other healthcare professions. It was therefore anticipated that any substantial differences in the

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responses between the control and intervention groups were due to the effect of the IPL programme.

The data collection from final-year students measured the interprofessional attitudes of healthcare students at UEA as they reached the end of their training. Comparing these results with those from first-year students post-IPL would generate understanding on the long-term effectiveness of the IPL. A lack of evidence for the long-term effectiveness of IPE was one of the gaps in current research identified in the literature review presented in Chapter Three.

Due to the differing numbers of students on the healthcare courses, it was not possible to ensure equal representation across the sessions of IPL1. The breakdown of professions represented in each session of IPL1 was as follows:

Session A

- Pharmacy students
- Medical students
- Nursing students
- Midwifery students
- Speech and language therapy students

Session B

- Pharmacy students
- Occupational therapy students
- Medical students
- Nursing students
- Physiotherapy students

Session C

- Medical students

- Nursing students

- Physiotherapy students

- Operating department practice (ODP) students

This disparity between student numbers is a factor outside of the control of the researcher. This issue is discussed further in Chapter Five. Sessions A and C formed the intervention group of first-year students, with session B comprising the control group. This meant that in addition to the disparity in numbers between some professions, midwifery, speech and language therapy and operating department practice students were not represented in the control group, and occupational therapists were not represented in the intervention group. Therefore no data were collected about the perception of a 'typical' member of these professions in a group from which they were absent. The effect that this may have had on the professional group analyses is considered in chapter five.

Due to the timeframe of this study, it was not possible to follow entirely the same cohort of students throughout their pre-registration training. The first-year data used in this study are collected from the 2010 cohort of healthcare students. The final-year data derive from the 2008 cohort of medical students, 2009 cohort of pharmacy students, the 2010 cohort of nursing and allied health students, and the 2011 cohort of ODP students. The use of data from different cohorts of students is necessary due to the differing lengths of professional courses. As the IPL programme had undergone no substantial changes during the time that participants were at UEA, the effect of including different cohorts in the final year is negligible.

Recruitment

It was not necessary to obtain additional ethical approval in order to research the first-year students, as these data are already

routinely collected by the CIPP at the UEA. The Faculty of Medicine and Health Sciences granted ethical approval for collecting AHPQ data from the final-year students (See Appendix 1).

As IPL1 is compulsory for all first-year pre-registration healthcare students, with the exception of occupational therapy students studying on the accelerated Master programme, it was not necessary to have a specific recruitment strategy for first-year students. Emails were sent out by the CIPP to all students enrolled on the IPL1 module at the appropriate stages to remind them to complete the AHPQ online, as per the usual procedure used each academic year. The AHPQ was made available to the students online for a period of six weeks before Round 1 data collection and six weeks post-IPL1 for Round 2 data collection.

Final-year students had never previously completed the AHPQ. As such, ethical approval was obtained from the Faculty of Medicine and Health Sciences (Appendix 1). Three emails were sent out at intervals during the academic year 2012-2013 by the CIPP to all final-year healthcare students asking them to complete the AHPQ for an additional time. As IPL is not compulsory in the final years of students' programmes, a lower response rate was anticipated than for the first-year students.

Incentives were used to encourage the students to complete the questionnaire. A prize draw of two £15 gift vouchers for first-year students and two for final-year students was conducted, with the winners selected by random number generator and notified by email.

Data storage

The data for the AHPQ were stored on an online questionnaire on the CIPP website and exported by the researcher from the website and downloaded into Excel. The data for first-year students were

listed as 2010-2011 Round 1 data, and the data for the final-year students were labelled 2008-2009, 2009-2010 or 2010-2011 Round 4 data. After this the data were analysed using the Statistical Package for the Social Sciences (SPSS) version 22.

<u>Data analysis</u>

The professions that students evaluated in the study were; pharmacist, occupational therapist, doctor, nurse, physiotherapist, midwife, speech and language therapist and ODP.

The first stage in the analysis of the data was to calculate the principal component scores from the data. As previously explained in Chapter Two, Background, the participants completed the AHPQ online and were asked to rate professions that they had encountered in their IPL1 group on a 10cm visual analogue scale (VAS), with a construct label anchoring either end of the scale. Twenty items were included in the questionnaire (Table 2).

Table 2. Attitudes to Health Professionals Questionnaire (AHPQ) items and principal component weightings

Item	Principal Component Score	
	C1: Caring	C2: Subservient
Technically focused/not technically focused	0.192	0.544
Values autonomy/does not value autonomy	-	0.554
Not patient-centred/patient-centred	0.755	-0.164
Assertive/non-assertive	-0.226	0.616
Arrogant/not arrogant	0.587	0.167
Not conciliatory/conciliatory	0.533	-
Well paid/poorly paid	0.488	0.490
Not thoughtful/thoughtful	0.792	-0.223
Theoretical/Practical	0.545	0.219
Self-centred/not self-centred	0.733	-
Confident/vulnerable	-0.265	0.644
Non-sympathetic/sympathetic	0.816	-
Flexible/not flexible	0.791	-
Does not value teamwork/values teamwork	0.823	-
Confrontational/not confrontational	0.225	0.319
Independent/not independent	0.131	0.521
Non-caring/caring	0.872	-
Non-empathetic/empathetic	0.839	-
Non-approachable/approachable	0.833	-
Rough/Gentle	0.673	-

The AHPQ data from the CIPP website were exported into Excel, where they were formatted for analysis in the Statistical Package for the Social Sciences (SPSS). Once the data were moved into SPSS, the score for the Caring and Subservient sub-scales for each round of the data were calculated for each subject profession using the overall principal component weightings (Table 3) (full formulae in Appendix 7). Once the scores for each component and profession had been calculated they were used to determine the effects of participating in the IPL programme. Descriptive statistics, normality tests, and comparative tests (paired sample t-tests, Wilcoxon signed-rank tests, independent sample t-tests, or Mann-Whitney U tests) were applied to the data. The choice of comparative test used was dependent upon the result of the normality tests carried out on each data-set and whether the data-sets being analysed were related samples or not. The round one and round two data from the first-year intervention group students were related samples, as were the round one and round two data from the control group students. This is because the comparative data in these cases were collected from exactly the same group of participants each time. The comparison of data between the first-year intervention and control groups and the first- and final-year students were not related samples, as each data-set in the comparison was from a different group of participants.

Round one and round two data from the first-year intervention group were compared and tested for statistically significant differences ($p < 0.05$) between the two sets of data, which gives an indication of the effect or lack thereof of the IPL1 programme on the interprofessional attitudes of students. The first-year control group round one and two data were then analysed in the same way, this time exploring if any change in attitudes occurred without having participated in the IPL programme. The second round results of the intervention and control group data were compared

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with one another to determine if the variable of participation in the IPL1 programme was a determining factor in any differences in the results between the intervention and control groups of students. Only the results for professions common to both the intervention and control groups were analysed in this comparison.

After analysis and comparison of the findings from the first-year data, the findings from the first-year intervention group students after their completion of the IPL1 programme were compared with data from final-year students. This comparison assessed any changes in the interprofessional attitudes of students just prior to completion of their studies, compared with just after completing the first level of the IPL programme. By analysing the attitudes of students at this stage, it was possible to evaluate any lasting effects of the IPL programme, though the lack of a control group of final-year students at this stage means that it is not possible to attribute any effects entirely to participation in the programme. By analysing the qualitative data though, a deeper understanding was provided.

Following the analysis of the data from all participants, each data-set was also explored using sub-group analysis. The findings of interest from these analyses are used to provide more in-depth understanding of the main findings of the AHPQ.

Due to the small number of certain professions involved, some of the data from different student professions have been merged. The professional groups used for this analysis are given below:

- Pharmacy students
- Medical students
- Nursing and midwifery students
- Occupational therapy, physiotherapy, speech and language therapy, and operating department practice students

These groupings of students are reflective of their respective professional registration bodies: the General Pharmaceutical Council (GPC), the General Medical Council (GMC), the Nursing and Midwifery Council (NMC), and the Health and Care Professions Council (HCPC). For clarity, when discussing the professional group analysis results, groups are referred to as "pharmacy students", "medical students" "NMC students" or "HCPC students".

In Chapter Five, the findings from students of all professional groups are presented for each point of comparison first, followed by the additional findings from each professional group

4.5.2 Qualitative strand

The qualitative strand of this study was split into three parts:

- Mixed profession focus groups with first- and final-year healthcare students.
- Individual interviews with previous healthcare students.
- Individual interviews with senior healthcare professionals within the local NHS.

First- and final-year healthcare students

The first two focus groups conducted were treated as pilot groups. The two groups did not run well or obtain sufficient information and some of the participants were familiar with the researcher. As such the decision was made by the researcher and supervisory team to treat them as pilot groups. The research ethics protocol allowed for a small number of extra focus groups to ensure adequate data saturation (Appendix 1). As the difficulty with the first two groups was due to the lack of experience of the researcher, it was deemed prudent to exclude the data from

analysis and instead use it as a learning experience. This approach allowed the researcher to refine the techniques and skills that are necessary to run a successful focus group and gain confidence. It also allowed adjustments to be made to the interview schedule and logistical considerations such as room layout and welcome procedure. This reflexive practice ensured adequate preparation for the remaining focus groups and interviews.

Seven focus groups were conducted for the study, four with first-year students and three with final-year students. The focus groups took place during the academic years 2011-2012 and 2012-2013. The focus group interviews lasted for up to one hour, and each group comprised five to eight participants. At least two different healthcare professions were represented in each group, with more if possible. A breakdown of participants is given in Chapter Six.

The focus groups followed a semi-structured format, using an interview schedule to help the researcher to remain focused on the topics under discussion (Appendix 3).

Recruitment

The inclusion criteria for focus groups were as per below.

Students studying:

- Pharmacy
- Occupational therapy
- Medicine
- Nursing
- Physiotherapy
- Midwifery
- Speech and language therapy
- Operating department practice

who had completed the IPL programme and were either in their first- or final-year of study at UEA were invited to join a focus group.

Students were invited via the university email system by the researcher. Following approval by each Head of School, the researcher emailed the gatekeepers for each school of study in the Faculty of Medicine and Health Sciences and the School of Pharmacy. This email was then disseminated by the gatekeepers and displayed on plasma screens in social areas around campus.

Student responses were collated by the researcher. A database of names and contact details was created and stored on a password-protected computer.

Healthcare graduates

Six semi-structured individual interviews were conducted with healthcare graduates from the Faculty of Medicine and Health Sciences and the School of Pharmacy. The inclusion criteria for the study were that graduates must have completed the IPL programme at UEA and be currently practising as a healthcare professional. The IPL programme began in 2003, so students who began their studies from this year onward were eligible for inclusion. Due to the differing lengths in courses, the eligible cohorts of students from each school were different. Graduates from the schools of Nursing Sciences and Allied Health Professions from the academic year 2005-2006 onward were eligible for the study, with the exception of students studying operating department practice and on the accelerated Master programmes, who were eligible for inclusion if they graduated in the academic year 2004-2005 onward. Pharmacy graduates were eligible if they graduated from 2006-2007 onward, and medical school graduates if they graduated from 2007-2008 onwards.

Recruitment

Participants were recruited via the UEA alumni association. This was because the researcher was not allowed to have access to lists of graduates due to data protection issues. An email was drafted by the researcher to be sent out to all eligible graduates by the Alumni association. Four rounds of emails were sent out over the course of the academic year 2012-2013.

The interviews conducted were with:

1. Midwife
2. Pharmacist
3. Doctor
4. Doctor
5. Occupational therapist
6. Physiotherapist

Participants were purposively selected by the researcher to include as many different healthcare professionals as possible. By exploring the different experiences of so many different healthcare professionals, it was hoped that a wider range of views on interprofessional attitudes and experiences of education and practice would be obtained, allowing for a richer pool of data. The aim of this part study was not to attempt to reach a unified picture of the opinions of different healthcare professionals, but to develop an understanding of the experiences and opinions of professionals who may have differing perspectives, due to their differing backgrounds and roles.

Interviews one to five were conducted by the researcher via telephone. The benefits and drawbacks of conducting interviews via telephone rather than in-person were discussed previously in this chapter.

<u>Senior professionals</u>

Six interviews were conducted with senior healthcare professionals within the local NHS. Senior professionals were defined as:

- Doctors at speciality registrar level or above
- Band 7 therapists, nurses, midwives and operating department practitioners
- Band 8 Pharmacists

Participants were recruited purposively from senior healthcare staff who had been involved in the training, or supervision, of healthcare students at UEA. This allowed an assumption of a level of familiarity with the IPL programme and the professional programmes of the students. As discussion of the training of students at UEA was a necessary part of the interviews, a pre-existing level of familiarity was necessary. Therefore only senior staff within the local area were approached.

Staff were recruited via email from the records of educational supervisors and mentors maintained by the schools of study and through publically available contact details. Emails were sent out during the academic year 2012-2013 by gatekeepers at the UEA and by the researcher to publically available addresses.

As with the recent graduates the participants were purposively selected by the researcher in order to ensure a mix of professions and in this case, levels of experience.

The interviews conducted were with:

1. Nurse
2. Nurse
3. Doctor
4. Occupational therapist

5. Occupational therapist

6. Speech and Language Therapist

All interviews were carried out face-to-face by the researcher with the exception of interview two, which had to be via telephone.

Analysis of qualitative data

All focus groups and Interviews were recorded using a Dictaphone and transcribed by the researcher. All audio files and transcripts were stored on a password-protected computer or in a locked filing cabinet for which only the researcher had the key.

There were six distinct stages to the qualitative data analysis process:

1. Transcribing the data

2. Initial read through of transcripts

3. Coding

4. Development of analytical units

5. Development of themes

6. Finalisation of themes

All the focus groups and interviews were transcribed verbatim by the researcher to ensure minimal data loss in the transfer of audio data to written data. This process allowed familiarisation with the data, which was of particular importance as all analysis was also carried out by the researcher. After completion, each transcript was read through to ensure accuracy and generate initial impressions from the data, but no formal analysis was carried out at this point.

All the qualitative data were analysed using a thematic analysis approach. Thematic analysis is a well-recognised form of both data

reduction and analysis, being particularly suitable when the researcher wishes to analyse the data without the use of any pre-existing themes or frameworks (Grbich, 2007). This approach allows for themes and sub-themes to emerge from the data that may not have been initially thought of by the researcher in the development of the research questions.

Once the transcription process was complete the data underwent coding. The purpose of a code is to use a word or short phrase to represent "a datum's primary essence or content" (Saldaña, 2009 p. 3). It also represents the beginning of the analysis process. Due to the large numbers of codes generated in this process, it is necessary to reduce the data further. This is described as second cycle coding and encourages the grouping of codes with commonality into smaller and more manageable units (Miles *et al.*, 2013). These are referred to as 'analytical units' throughout the rest of this chapter. During this process it was possible to observe the beginnings of relationships between these units, and thus begin to develop themes and sub-themes from the data. These themes were generated inductively from the data, and as such not all data identified was relevant to the research questions or further understanding of the topics explored in this study. Fortunately, these redundant data were minimal, often consisting of one-off statements that did not contribute to or affect the discussion between participants in the focus groups or between the participant and the researcher in the individual interviews.

Other data that emerged were not explored in sufficient depth during the focus group or interview to merit inclusion in the findings from this study, and as such have also been omitted. While this is a possible source of researcher bias in the findings, no data were omitted for reasons that they contradicted other data, and unreported data were still analysed. This approach allowed instead

for the recognition of possible areas of further research or topics that need to be studied in greater depth.

All the qualitative data were looked at concurrently when developing the analytical units, themes, and sub-themes during the analysis process. As part of the aim of the study was to develop understanding of the progression and changes in views and opinions from of healthcare students from first year to final year and into professional practice, it would have been illogical to develop these themes while separating the data. Furthermore, the data from the senior healthcare professionals allowed exploration of the issues raised by the data from a very different perspective. Incorporating these data into the overall analysis process further enriched the qualitative findings and ensured a coherent approach to data management.

4.5.3 Mixed methods comparison

The advice given by Creswell and Plano-Clark (2011) on how to work with qualitative and quantitative data in a project using a convergent parallel design guided this process. They described data analysis as occurring "at three distinct points in one phase of the research; with each data-set independently, when the comparison or transformation or the data occurs, and after the comparison or transformation is complete" (p221).

Neither the quantitative nor qualitative data were transformed for analysis. By leaving the data in their respective qualitative and quantitative forms, it ensured that no meaning or detail was lost in a transformation process (Sandelowski *et al.,* 2009). Due to the small sample sizes involved in the qualitative arm of the study, statistical analysis of the responses would be meaningless, and compromise the rigour and transferability of conclusions. Instead, a

narrative comparison of the points of convergence and divergence of the qualitative and quantitative data allowed greater understanding of each data-set, without compromising the integrity of either.

As previously mentioned, information on the mechanics of mixed methods analysis is still relatively sparse, with very few concrete examples or guides. Consequently, the analysis process in this study has developed as the study has progressed.

The process, which allowed the mixed methods comparison of the two strands in this study, involved three steps:

1. Analysis of the quantitative AHPQ data and the qualitative focus group and individual interview data separately.
2. A comparison of the finding of the two strands to answer the following questions: Do the data-sets agree? Are they contradictory? What additional information can the data-sets provide about one another? For example, does the qualitative data provide more information on why the responses given in the quantitative data follow the patterns that they do?
3. An interpretation of the meaning of the relationships between the data-sets. What do the comparisons made mean? For example, if the healthcare students report positive attitudes towards the IPL programme, does that mean that the AHPQ is an accurate representation of their views?

Through using the three steps outlined above in conjunction with careful consideration of the research questions set out at the start of this chapter, the mixed methods comparison of the different data-sets collected during this study has provided valuable

information in ways that that would not have been possible through analysis of either strand in isolation.

4.6 Summary

Key points to consider for the study design included:

- The importance of acknowledging the personal stance of the researcher in this project both as a former participant in the IPL programme and as a physiotherapist, and the strategies employed to reduce the potential element of bias this may introduce to the data collection and analysis processes.

- The historical and ongoing debates surrounding the quantitative, qualitative, and mixed methods research traditions present a challenge to the novice researcher in designing a study, as there are no definitive answers concerning how to go about conducting research. Instead, a high level of researcher discrimination is necessary.

- The research questions guiding this study are derived from the study aims expressed in Chapter One, and they are the main driving force in the design of the study. This is in keeping with the philosophy of pragmatism, a common philosophical partner to mixed methods research.

- This alignment with pragmatism has led to the selection of a convergent parallel mixed methods study design incorporating a quantitative questionnaire (the AHPQ), qualitative focus groups, and individual interviews.

- Data were obtained from first- and final-year healthcare students, recent graduates of UEA, and local senior professionals. By exploring data from these multiple groups at different stages of their careers, it is possible to begin to address the need for long-term follow-up and meaningful

integration of quantitative and qualitative data identified in

the literature review reported in Chapter Three.

Chapter Five– Quantitative Findings

Appendix 7 contains graphs of all 'all participants' analyses in this chapter.

5.1 First-year intervention group data

5.1.1 Participants in intervention group

The first-year intervention group included students studying the following healthcare professions:

- Pharmacy (Session A and C)
- Medicine (Session A and C)
- Nursing (Session A and C)
- Physiotherapy (Session C)
- Midwifery (Session A)
- Speech and language therapy (Session A)
- Operating department practice (Session C)

No occupational therapy students were included in the intervention group as they were assigned to Session B, which formed the control group.

5.1.2 Responses from first-year intervention group - all professions

In the intervention group, 351/456 (77%) students completed at least part of the AHPQ (Table 3).

Table 3. First-year intervention group: all participants – Number of responses about each profession

Profession (n=351)	Component	Round 1, n (%)	Round 2, n (%)
Pharmacist	1 – Caring	167 (47.6)	105 (29.9)
	2 - Subservient	169 (48.1)	106 (30.2)
Medic	1 – Caring	305 (86.9)	135 (38.5)
	2 – Subservient	305 (86.9)	136 (38.7)
Nurse	1 – Caring	298 (84.9)	137 (39.0)
	2 - Subservient	300 (85.5)	138 (39.3)
Physiotherapist	1 – Caring	106 (30.2)	26 (7.4)
	2 – Subservient	106 (30.2)	26 (7.4)
Midwife	1 – Caring	98 (27.9)	56 (16)
	2 – Subservient	99 (28.2)	56 (16)
Speech and language therapist	1 – Caring	161 (45.9)	93 (26.5)
	2 – Subservient	161 (45.9)	94 (26.8)
Operating department practitioner	1 – Caring	85 (24.2)	18 (5.1)
	2 - Subservient	85 (24.2)	18 (5.1)

A substantial drop in response rate between completions of the AHPQ is seen in Table 3. This has resulted in particularly low numbers of responses concerning operating department practitioners (n=85 to n=18) and physiotherapists (n=106 to n=26). The results from the first-year intervention group concerning the Caring component of the AHPQ appear below (Table 4) with commentary presented thereafter.

*Table 4. First-year **intervention group: all participants' views of a typical member of each profession on the Caring component** -Statistical analysis for significant difference in **Caring component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	Data collection round	Mean	Median	Standard deviation	Skewness	Mean difference in scores	Normality test (Shapiro-Wilk)	Normally distributed?	Paired samples t-test p-value	Wilcoxon signed-rank test p-value
Pharmacist	Round 1	66.21	65.50	15.92	-0.123	9.92	0.384	Yes	**0.000**	----
	Round 2	74.02	74.12	12.26	-0.656					
Medic	Round 1	67.27	67.27	15.89	0.140	8.08	0.000	No	----	**0.000**
	Round 2	73.48	76.09	15.23	0.209					
Nurse	Round 1	85.01	86.96	9.27	-0.863	1.78	0.000	No	----	**0.000**
	Round 2	86.48	89.12	10.03	-1.760					
Physiotherapist	Round 1	74.41	75.40	12.47	-0.319	6.17	0.084	Yes	**0.000**	----
	Round 2	81.12	81.29	10.89	-0.814					
Midwife	Round 1	85.56	87.58	8.80	-0.742	1.60	0.000	No	----	**0.002**
	Round 2	84.42	86.66	10.86	-0.764					
Speech and language therapist	Round 1	79.20	80.06	11.20	-0.514	4.53	0.000	No	----	**0.000**
	Round 2	82.36	85.00	12.69	-1.83					
Operating department practitioner	Round 1	67.37	66.67	16.20	0.082	4.40	0.383	Yes	**0.003**	----
	Round 2	72.03	69.04	14.53	0.267					

Statistically significant results are highlighted in bold

The intervention group data from all professions (Table 4) on the Caring component of the AHPQ were all statistically significant. The mean score for pharmacists increased from 66.21 to 74.02 (p=0.000), medics from 67.27 to 73.48 (p=0.000), nurses from 85.01 to 86.48 (p=0.000), physiotherapists from 74.41 to 81.12 (p=0.000), speech and language therapists from 79.20 to 82.36 (p=0.000) and operating department practitioners from 67.37 to 72.03 (p=0.000). The score for midwives decreased from 85.56 to 84.42 (p=0.002).

Before IPL, students rated pharmacists as the least caring profession, medics the second least, followed by operating department practitioners, physiotherapists, speech and language therapists, nurses, and midwives. After IPL, the order of the professions changed slightly, with operating department practitioners now scored as the least caring, followed by medics, pharmacists, physiotherapists, speech and language therapists, midwives, and nurses.

The largest mean increase in Caring component score was in the perception of pharmacists (9.92), followed by the increase in the score for medics (8.08). This suggests a more marked change in the perception of an 'average' pharmacist or doctor that for other professions.

The standard deviation values for the results concerning pharmacists (15.92 and 12.26), medics (15.89 and 15.23) and operating department practitioners (16.20 and 14.53) were larger than those for responses regarding other professions.

The results of the Subservient component data are presented below (Table 5).

*Table 5. First-year **intervention group: all participants' views of a typical member of each profession on the Subservient component** -Statistical analysis for significant difference in **Subservient component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	Data collection round	Mean	Median	Standard deviation	Skewness	Mean difference in scores	Normality test (Shapiro-Wilk)	Normally distributed?	Paired samples t-test p-value	Wilcoxon signed-rank test p-value
Pharmacist	Round1	9.76	9.82	4.00	0.142	-0.41	0.056	Yes	0.327	----
	Round 2	9.40	9.36	4.13	0.493					
Medic	Round1	6.37	6.22	3.73	0.373	0.58	0.000	No	----	0.079
	Round 2	6.60	6.33	3.85	0.859					
Nurse	Round1	13.81	13.44	5.37	0.203	-0.96	0.000	No	----	**0.001**
	Round 2	13.08	12.35	5.46	0.529					
Physiotherapist	Round1	10.01	9.84	3.86	0.126	-0.78	0.740	Yes	0.145	----
	Round 2	9.03	8.62	3.44	0.448					
Midwife	Round1	10.76	10.77	4.55	0.432	-0.54	0.093	Yes	0.255	----
	Round 2	10.37	9.93	4.26	0.385					
Speech and language therapist	Round1	11.02	11.15	4.34	0.306	0.24	0.061	Yes	0.583	----
	Round 2	11.80	12.19	4.52	-0.016					
Operating department practitioner	Round1	12.85	12.18	5.30	0.323	0.62	0.569	Yes	0.185	----
	Round 2	13.60	12.21	6.57	0.644					

Statistically significant results are highlighted in bold

The results for the Subservient component (Table 5) were less conclusive, with only the decrease in mean score for nurses (13.81 to 13.08, (p=0.001)) being statistically significant. Despite this, some useful observations were still made. Medics, (6.37 to 6.60, (p=0.079)), speech and language therapists, (11.02 to 11.80, (p=0.583)), and operating department practitioners, (12.85 to 13.60, (p=0.185)), were all viewed as more subservient after IPL1, but these finding were not statistically significant. Pharmacists, (9.76 to 9.40 (p=0.327)), physiotherapists, (10.01 to 9.03 (p=0.145)), and midwives, (10.76 to 10.37 (p=0.255)), were viewed as being less subservient following participation in IPL, but the differences observed were not statistically significant.

Nurses were viewed as the most subservient profession prior to students' participation in IPL, and while their decrease in this component is statistically significant, dropping them to second most subservient after operating department practitioners, the overall pattern of the results remains similar in both the 'before' and 'after' data. Medics are viewed as the least subservient profession both before and after participation in IPL, with pharmacists the second least subservient 'before' IPL, swapping places with physiotherapists in the 'after' IPL data. Midwives and speech and language therapists remain in fourth and third most subservient positions respectively.

The mean differences observed for the Subservient component were smaller than those for the Caring component, with the largest mean difference of -0.96 for nurses, compared with a mean difference of 9.92 for pharmacists in the Caring component data.

5.1.3 Discussion of findings from first-year intervention group data –
All participants

The reduction in completion rate between the first and second
rounds of data collection should be considered when interpreting
the results of the intervention group data. As the change in
attitudes is calculated from a much smaller percentage of students
in the second round of data collection than the first the second
round of data may not be as representative of the student
population as the first. This drop is particularly pronounced for the
responses in the second completion of the AHPQ concerning
physiotherapists (106 to 26) and operating department
practitioners (85 to 18). Any conclusions drawn about the findings
for these professions should be viewed with caution.

Caring component scores increased for the majority of professions
after completion of IPL, and all findings were statistically significant.
This suggests that after participating in IPL1 students generally view
healthcare professions as being more caring. It is not possible at
this stage to be certain that this trend is due to the effect of the IPL
programme, as other influences cannot yet be discounted or
recognised as having had an impact. Comparison with control group
data later in this chapter allows for further conclusions to be drawn
about the role of IPL in effecting these changes.

Midwives were the only profession seen as less caring after
students had participated in the IPL programme. Although this was
a statistically significant finding, it is possible that this was due to a
ceiling effect (Lewis-Beck *et al.,* 2004), as midwives were identified
as the most caring profession prior to participation in the IPL
programme.

The overall finding of a general increase in AHPQ scores on the
Caring component concurs with the findings of Jacobsen and

Lindqvist (2009), who, using the AHPQ, found that after participating in an IPE intervention on a training ward, healthcare students viewed all professions as being more caring. Viewing a profession as more caring was previously discussed as a positive outcome of IPE in Chapter Three, Literature Review. It is logical to suggest that viewing a profession as more caring equates to a more positive view of that profession, as being caring is generally seen as a positive attribute.

It is possible that differences between in-group and out-group attitudes contributed to the larger standard deviation values for the perception of pharmacists, medics and operating department practitioners in the Caring component data. Carpenter (1995a) stated that members of a profession tend to view themselves differently to those outside the profession, with the view of in-group members being more favourable than those of out-group members towards the same profession. As pharmacists, medics and operating department practitioners scored less highly than the other professions on the Caring subscale, this greater degree of deviation within the results may be reflective of the disparity of scoring between in-group and out-group members of the professions. This possibility is discussed further in the professional group analysis presented later in this chapter.

For both the Caring and Subservient components the overall pattern of the results was similar in both the 'before' and 'after' data. It appears that in general, medics, pharmacists and operating department practitioners are considered to be less caring, and nurses and midwives more so, with physiotherapists and speech and language therapists occupying the mid-range. Medics and pharmacists are seen as less subservient, with nurses and operating department practitioners at the opposite end of the scale in the findings of the subservient component.

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When viewing the results for both components it should be considered that the mean differences in scores are larger for the Caring component values. Together with the lack of statistically significant findings for the Subservient component this indicates that the either the effect of the IPL programme is not as great on the perceptions of Subservience, or that the AHPQ is not as sensitive in picking up changes on this dimension.

Several of the studies included in the literature review (Chapter Three) observed similar changes and patterns to those seen in this study. Ateah *et al.* (2010) noted that medicine, pharmacy and dentistry scored more highly than nursing, dental hygiene and occupational therapy on traits such as leadership and academic ability, with the reverse being true for traits such as teamworking ability and interpersonal skills. This corresponds to the findings seen in this study for the Subservient component, in which medics are viewed in a similar fashion. Nursing students were also rated more highly in the study by Ateah *et al.* (2010) on the traits of leadership and academic ability after participation in the IPE intervention, another similar finding to the Subservient component results in this study. The overall pattern of the respective order of professions for the results in Ateah *et al.* (2010) were also similar both before and after the students participated in their IPE intervention. Zucchero *et al* (2010) and Zucchero *et al.* (2011) found that the scores for physician centrality of the ATHCTS decreased after participation in IPE, a parallel finding to the increase in the score of subservience regarding a typical doctor seen in this study. While the participant demographics of these studies are not identical, the similarity of the findings supports the view that IPE can have an effect on how different professions are viewed, in this instance with particular respect to the positions of doctors, who

may be perceived as more engaged with the rest of the healthcare team post-intervention.

Ateah *et al.* (2010), Cooke *et al.* (2003), Cooper *et al.* (2009), Leaviss, (2000), Lindqvist *et al,* (2005b), Reeves (2000), Saini *et al.* (2011), and Tunstall-Pedoe *et al.* (2003) all noted that students have pre-exiting conceptions of different professions prior to entering their pre-registration training. When this information is considered with the findings of the present study and those of Ateah *et al.* (2010), Lindqvist *et al.* (2005b), and Jacobsen and Lindqvist (2009), it suggests that while views of professions may be augmented by IPE, the pre-existing views and opinions of each profession held by students are enduring, and not radically changed by IPE.

5.1.4 Responses from first-year intervention group - each professional grouping

This section of the chapter explores the changes in interprofessional attitudes of the intervention group students by each professional group.

The number and percentage of participants that provided data about each profession varied widely between professional groups (Tables 6, 7, 8 and 9).

Table 6. First-year intervention group: Pharmacy students. Number of responses about each profession

Profession (n=52)	Component	Round 1, n (%)	Round 2, n (%)
Pharmacist	1 – Caring	49 (94.2)	30 (57.7)
	2 - Subservient	50 (96.2)	30 (57.7)
Medic	1 – Caring	40 (76.9)	27 (51.9)
	2 – Subservient	40 (76.9)	27 (51.9)
Nurse	1 – Caring	36 (69.2)	26 (50)
	2 - Subservient	37 (71.2)	26 (50)
Physiotherapist	1 – Caring	-	-
	2 – Subservient	-	-
Midwife	1 – Caring	24 (46.2)	13 (25)
	2 – Subservient	24 (46.2)	13 (25)
Speech and language therapist	1 – Caring	43 (82.7)	27 (51.9)
	2 – Subservient	43 (82.7)	27 (51.9)
Operating department practitioner	1 – Caring	-	-
	2 - Subservient	-	-

52 pharmacy students provided data. No valid responses were obtained about physiotherapists or operating department practitioners. The number of responses concerning midwives was particularly low, dropping from n=24, to n=13 in the second round.

Table 7. First-year intervention group: Medical students. Number of responses about each profession

Profession (n=77)	Component	Round 1, n (%)	Round 2, n (%)
Pharmacist	1 – Caring	25 (32.5)	15 (19.5)
	2 - Subservient	25 (32.5)	15 (19.5)
Medic	1 – Caring	72 (93.5)	28 (36.4)
	2 – Subservient	72 (93.5)	29 (37.7)
Nurse	1 – Caring	65 (84.4)	25 (32.5)
	2 - Subservient	65 (84.4)	26 (3.8)
Physiotherapist	1 – Caring	32 (41.6)	7 (9.1)
	2 – Subservient	32 (41.6)	7 (9.1)
Midwife	1 – Caring	15 (19.5)	9 (11.7)
	2 – Subservient	15 (19.5)	9 (11.7)
Speech and language therapist	1 – Caring	24 (31.2)	13 (16.9)
	2 – Subservient	24 (31.2)	13 (16.9)
Operating department practitioner	1 – Caring	25 (32.5)	5 (6.5)
	2 - Subservient	25 (32.5)	5 (6.5)

77 medical students provided data. There was a marked drop in response rate for data concerning all professions, this is particularly pronounced for the data concerning physiotherapists (n=32 to n=7) and operating department practitioners (n=25 to n=5).

*Table 8. First-year intervention group: NMC students. Number of
responses about each profession*

Profession (n=160)	Component	Round 1, n (%)	Round 2, n (%)
Pharmacist	1 – Caring	66 (41.3)	48 (30)
	2 - Subservient	67 (41.9)	49 (30.6)
Medic	1 – Caring	140 (87.5)	61 (38.1)
	2 – Subservient	140 (87.5)	61 (38.1)
Nurse	1 – Caring	143 (89.4)	66 (41.3)
	2 - Subservient	144 (90)	66 (41.3)
Physiotherapist	1 – Caring	52 (32.5)	12 (7.5)
	2 – Subservient	52 (32.5)	12 (7.5)
Midwife	1 – Caring	42 (26.3)	27 (16.9)
	2 – Subservient	43 (26.9)	27 (16.9)
Speech and language therapist	1 – Caring	61 (38.1)	39 (24.4)
	2 – Subservient	61 (38.1)	40 (25)
Operating department practitioner	1 – Caring	43 (26.9)	9 (5.6)
	2 - Subservient	43 (26.9)	9 (5.6)

160 NMC students provided data. Similarly to the medical students
the number of responses by NMC students concerning
physiotherapists (n=52 to n=12) and operating department
practitioners (n=43 to n=9) decreased markedly.

Table 9. First-year intervention group: HCPC students. Number of responses about each profession

Profession (n=62)	Component	Round 1, n (%)	Round 2, n (%)
Pharmacist	1 – Caring	27 (43.5)	12 (19.4)
	2 - Subservient	27 (43.5)	12 (19.4)
Medic	1 – Caring	53 (85.5)	19 (30.6)
	2 – Subservient	53 (85.5)	19 (30.6)
Nurse	1 – Caring	54 (87.1)	20 (32.3)
	2 - Subservient	54 (87.1)	20 (32.3)
Physiotherapist	1 – Caring	22 (35.5)	7 (11.3)
	2 – Subservient	22 (35.5)	7 (11.3)
Midwife	1 – Caring	17 (27.4)	7 (11.3)
	2 – Subservient	17 (27.4)	7 (11.3)
Speech and language therapist	1 – Caring	33 (53.2)	14 (22.6)
	2 – Subservient	33 (53.2)	14 (22.6)
Operating department practitioner	1 – Caring	17 (27.4)	4 (6.5)
	2 - Subservient	17 (27.4)	4 (6.5)

62 HCPC students provided data. The decrease in response rate is considerable for most of the results, but is particularly pronounced in relation to the operating department practitioner (n=17 to n=4).

Caring component

The breakdown of the results from each of the professional groups concerning the Caring component of the AHPQ are presented (Tables 10, 11, 12, and 13) and discussed below.

*Table 10. First-year **intervention group: pharmacy students' views of a typical member of each profession on the Caring component**. Statistical analysis for significant difference in **Caring component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	Data collection round	Mean	Median	Standard deviation	Skewness	Mean difference in scores	Normality test (Shapiro-Wilk)	Normally distributed?	Paired samples t-test p-value	Wilcoxon signed-rank test p-value
Pharmacist	Round 1	79.28	81.79	11.91	-0.756	3.25	0.210	Yes	**0.000**	----
	Round 2	80.34	83.06	11.57	-0.828					
Medic	Round 1	74.56	76.82	14.59	-0.468	3.10	0.060	Yes	**0.000**	----
	Round 2	73.51	76.09	12.80	-0.243					
Nurse	Round 1	87.96	89.35	8.21	-0.724	0.70	0.300	Yes	**0.000**	----
	Round 2	87.22	89.16	8.99	-1.149					
Physiotherapist	Round 1	-	-	-	-	-	-	-	**-**	-
	Round 2	-	-	-	-					
Midwife	Round 1	86.46	87.32	8.66	-0.456	1.08	0.000	No	----	**0.034**
	Round 2	85.39	87.42	10.59	-0.561					
Speech and language therapist	Round 1	79.87	79.42	11.65	-0.346	3.82	0.000	No	----	**0.004**
	Round 2	80.23	80.93	12.75	-0.741					
Operating department practitioner	Round 1	-	-	-	-	-	-	-	**-**	-
	Round 2	-	-	-	-					

All statistically significant results highlighted in bold

All of the results from the data from pharmacy students (Table 10) were statistically significant. However, the trend of the results was slightly different to data from all professions. Medics (74.56 to 73.51 (p=0.000)), nurses (87.96 to 87.22 (p=.000)) and midwives (86.46 to 85.39 (p=0.034)) saw a small but statistically significant drop in their respective Caring component scores.

Pharmacy students rated their own profession post-IPL as more caring than speech and language therapists and medics (pharmacist=80.34, speech and language therapist=80.23, medic=73.51). This finding is slightly different to the results from participants of all professions, where prior to IPL pharmacists were regarded as the least caring profession overall and third least caring ahead of medics and operating department practitioners post-IPL.

Nurses were rated most caring before and after IPL, and midwives the second most caring. Medics were ranked as least caring before and after IPL (74.56 to 73.51 p=0.000)). This pattern is similar to the trend observed with the data from all professions.

The mean differences in scores across all professions are low compared to the results from all professions, with the largest being 3.82 regarding speech and language therapists for the pharmacy student group, and 9.92 regarding pharmacists for the data from all professions.

Further comparison of these results to the other professional groups is made in the discussion section. Results from the medical student group are presented below (Table 11).

*Table 11. First-year **intervention group: medical students' views of a typical member of each profession on the Caring component**. Statistical analysis for significant difference in **Caring component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	Data collection round	Mean	Median	Standard deviation	Skewness	Mean difference in scores	Normality test (Shapiro-Wilk)	Normally distributed?	Paired samples t-test p-value	Wilcoxon signed-rank test p-value
Pharmacist	Round 1	66.87	63.52	14.74	0.335	7.64	0.221	Yes	**0.003**	----
	Round 2	72.43	73.78	11.23	-0.525					
Medic	Round 1	78.58	81.22	10.93	-0.431	5.10	0.011	No	----	**0.000**
	Round 2	85.30	88.40	8.37	-0.710					
Nurse	Round 1	82.79	85.32	10.78	-0.871	3.21	0.542	Yes	**0.000**	----
	Round 2	84.91	87.48	11.01	-0.926					
Physiotherapist	Round 1	72..60	71.15	12.71	-0.906	5.48	0.992	Yes	**0.006**	----
	Round 2	84.80	84.10	7.76	0.121					
Midwife	Round 1	87.07	89.70	6.64	-0.686	0.59	0.592	Yes	**0.019**	---
	Round 2	80.77	81.25	12.27	-1.299					
Speech and language therapist	Round 1	80.87	82.17	11.20	-0.333	6.30	0.168	Yes	**0.000**	----
	Round 2	88.18	89.35	8.12	-1.319					
Operating department practitioner	Round 1	65.18	64.05	16.33	0.313	0.61	0.092	Yes	**0.001**	----
	Round 2	75.61	69.54	18.90	0.097					

All statistically significant results are highlighted in bold

All of the results from the data from medical students (Table 11) were statistically significant. Medical students viewed all professions as more caring after participating in IPL, with the exception of midwives, who decreased in mean score from 87.07 to 80.77 (p=0.019). The general increase in scores with a decrease for midwives is the same as the trend observed in the analysis of results from all participants.

There was more of a change in the respective rankings of professions in the 'before' and 'after' data from medical students than data from others. Before IPL, medical students ranked midwives as the most caring profession (87.07), followed by nurses (82.79), speech and language therapists (80.87), medics (78.58), physiotherapists (72.60), pharmacists (66.87), and operating department practitioners (65.18). After IPL, the order of professions had changed entirely, with speech and language therapists now scoring most highly (88.18), followed by medics (85.30), nurses (84.91), physiotherapists (84.40), midwives (80.77), operating department practitioners (75.61) and pharmacists (72.43). Medical students viewed medics as one of the most caring professions, contrary to findings from other professional groups and data from all professions, who consistently scored medics lowest or second lowest on the Caring component. Medical students ranked nurses and midwives lower following IPL compared to other professional groups.

The mean differences in scores given by medical students are generally larger than those from pharmacy students, with the largest mean difference given by pharmacy students being 3.82 concerning speech and language therapists, and the largest for medics being 7.64 concerning pharmacists.

The results for the Caring component data from NMC students are presented below (Table 12).

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*Table 12. First-year-**intervention group: NMC students' views of a typical member of each profession on the Caring component**. Statistical analysis for significant difference in **Caring component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	Data collection round	Mean	Median	Standard deviation	Skewness	Mean difference in scores	Normality test (Shapiro-Wilk)	Normally distributed?	Paired samples t-test p-value	Wilcoxon signed-rank test p-value
Pharmacist	Round 1	59.01	59.05	12.87	-0.184	13.99	0.380	Yes	**0.000**	----
	Round 2	71.17	72.88	12.72.	-0.892					
Medic	Round 1	61.99	61.63	15.27	-0.002	11.50	0.001	No	----	**0.000**
	Round 2	69.15	69.16	16.40	-0.516					
Nurse	Round 1	86.34	87.82	8.31	-0.915	2.53	0.003	No	----	**0.000**
	Round 2	87.96	90.65	8.83	-1.890					
Physiotherapist	Round 1	75.28	79.02	13.04	-0.490	5.59	0.492	Yes	**0.001**	----
	Round 2	82.79	87.72	12.40	-1.369					
Midwife	Round 1	84.52	87.67	10.01	-0.819	1.84	0.851	Yes	**0.000**	----
	Round 2	83.85	85.90	11.37	-0.526					
Speech and language therapist	Round 1	75.25	74.73	11.61	-0.171	4.73	0.000	No	----	**0.001**
	Round 2	80.23	83.26	14.46	-2.198					
Operating department practitioner	Round 1	68.84	68.84	14.17	0.054	4.56	0.568	Yes	**0.004**	----
	Round 2	71.71	73.84	11.67	-0.091					

All statistically significant results are highlighted in bold

All of the results for the NMC group concerning the Caring component (Table 12) were statistically significant. NMC students viewed all professions as more caring after IPL with the exception of midwives, the same trend observed from the medical student group and data from all professions.

The relative rankings of professions were underwent little change from 'before' IPL to 'after' IPL. Nurses were scored most highly (86.34 to 87.96 (p=0.000)), followed by midwives (84.52 to 83.85 (p=0.000)), physiotherapists (75.28 to 82.79 (p=0.001)), speech and language therapists (75.25 to 80.23 (p=0.001)) and operating department practitioners (68.84 to 71.71 (p=0.004). In the 'before' results, medics were ranked as the second least caring profession (61.99) and pharmacists the least (59.01), but their positions were reversed in the 'after' data, with pharmacist ranked second lowest (71.17) and medics lowest (69.15). The p-value was 0.000 for both sets of results.

The pattern of nurses and midwives scoring more highly on the Caring component and medics and pharmacists less is a similar pattern to the one observed in the analysis of data from all professions, but is quite different from the pattern seen in the 'after' data from medical students.

The increase in mean scores from 'before' to 'after' regarding medics and pharmacists is high compared to other professional groups, with average difference in scores of 11.50 for medics and 13.99 for pharmacists.

The results for the Caring component for HCPC students are presented below (Table 13).

*Table 13. First-year **intervention group: HCPC students' views of a typical member of each profession on the Caring component**. Statistical analysis for significant difference in **Caring component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	Data collection round	Mean	Median	Standard deviation	Skewness	Mean difference in scores	Normality test (Shapiro-Wilk)	Normally distributed?	Paired samples t-test p-value	Wilcoxon signed-rank test p-value
Pharmacist	Round 1	59.49	61.12	15.53	-0.182	14.21	0.018	No	----	**0.008**
	Round 2	71.62	70.58	8.01	0.352					
Medic	Round 1	60.36	57.69	13.69	0.382	9.00	0.005	No	----	**0.004**
	Round 2	69.91	68.16	13.96	-0.101					
Nurse	Round 1	82.19	82.46	9.29	-0.469	-0.55	0.000	No	----	0.709
	Round 2	82.63	85.01	12.87	-2.322					
Physiotherapist	Round 1	75.02	75.13	10.92	-0.312	2.70	0.123	Yes	0.052	----
	Round 2	74.58	76.27	9.00	-0.632					
Midwife	Round 1	85.52	85.40	7.71	-0.277	2.73	0.614	Yes	**0.001**	----
	Round 2	89.50	92.93	6.62	-0.996					
Speech and language therapist	Round 1	84.40	85.87	6.72	-0.867	3.99	0.954	Yes	**0.000**	----
	Round 2	86.99	88.62	7.94	-0.761					
Operating department practitioner	Round 1	66.89	65.46	20.91	0.059	8.78	0.980	Yes	**0.009**	----
	Round 2	68.25	65.12	17.80	0.961					

All statistically significant results are highlighted in bold

All of the results for the HCPC group Caring component data (Table 13) were statistically significant with the exception of the results concerning nurses ((82.19 to 82.63 (p=0.709)) and physiotherapists (75.02 to 74.58 (p=0.52)). HCPC students viewed all professions as more caring after IPL with the exception of physiotherapists. The overall trend of 'after' scores being higher than 'before' scores matches that of the other professional group analyses, (with the exception of the pharmacy students group), and the data from all professions.

The pattern of most to least caring profession was similar for the 'before' and 'after' data, with midwives seen as most caring in the 'before' data (85.52), followed by speech and language therapists (84.40), nurses (82.19), physiotherapists (75.02), operating department practitioners (66.89), medics (60.39) and pharmacists (59.49). The order changed only slightly in the after data, with midwives still seen as the most caring (89.50), then speech and language therapists (86.99), nurses (82.63) and physiotherapists (74.58). The order then changed, with pharmacists seen as the next most caring profession (71.62), then medics (69.91), and finally operating department practitioners (68.25).

The mean difference in scores for the perception of pharmacists was 14.21, which is considerably higher than the values for other professions in this data-set (with the next largest mean value being 9.00 for medics) and is reflected in the large difference in the 'before' and 'after ' scores for pharmacists. The standard deviation values for the data regarding operating department practitioners are also noticeably larger than those for other professions (20.91 and 17.80 respectively).

The previously observed pattern of professional groups seeing their own profession as more caring is more mixed here, with speech and language therapists identified as the second most caring

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profession, physiotherapists falling in the middle, and operating department practitioners falling from the middle in the 'before' data to the least caring profession in the 'after' data.

Subservient component

The results of the data for the Subservient component data by professional groups are presented below (Tables 14, 15, 16 and 17.

*Table 14. First-year **intervention group: pharmacy students' views of a typical member of each profession on the Subservient component** -Statistical analysis for significant difference in **Subservient component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	Data collection round	Mean	Median	Standard deviation	Skewness	Mean difference in scores	Normality test (Shapiro-Wilk)	Normally distributed?	Paired samples t-test p-value	Wilcoxon signed-rank test p-value
Pharmacist	Round 1	8.54	8.62	3.46	-0.307	0.46	0.003	No	----	0.785
	Round 2	8.35	8.18	3.36	-0.052					
Medic	Round 1	5.74	6.00	3.17	0.185	0.10	0.717	Yes	**0.001**	----
	Round 2	5.83	5.42	2.94	0.876					
Nurse	Round 1	15.23	14.36	6.06	0.412	-1.32	0.010	No	----	**0.024**
	Round 2	14.00	14.12	6.41	0.121					
Physiotherapist	Round 1	-	-	-	-	-	-	-	-	-
	Round 2	-	-	-	-					
Midwife	Round 1	13.13	12.32	4.57	0.631	-1.33	0.854	Yes	**0.038**	----
	Round 2	11.63	13.58	4.78	-0.384					
Speech and language therapist	Round 1	11.41	11.15	4.39	0.097	0.01	0.000	No	----	0.675
	Round 2	11.83	11.63	4.60	-0.158					
Operating department practitioner	Round 1	-	-	-	-	-	-	-		
	Round 2	-	-	-	-					

All statistically significant results are highlighted in bold

The data included in the Subservient component professional group analysis for pharmacy students (Table 14) yielded three statistically significant findings; an increase in how subservient medics are seen to be (5.74 to 5.83 (p=0.001)), and a decrease for nurses (15.23 to 14.00 (p=0.024)) and midwives (13.13 to 11.63 (p=0.038)). The results concerning the perception of pharmacists (8.54 to 8.18 (p=0.785)) and speech and language therapists (11.41 to 11.83 (p=0.675)) were not statistically significant.

The overall pattern of the results from pharmacy student group is similar to that of the analysis of the data from all participants. In the 'before' data from pharmacy students, nurses were viewed as the most subservient profession, followed by midwives, speech and language therapists, pharmacists, and medics. The only change in order of professions in the 'after' data was that speech and language therapists and midwives had swapped positions.

Pharmacy students viewed pharmacists as being slightly more subservient than they were seen by all participants, with a score of 8.54 in the first round, and 8.35 in the second, compared with 9.76 to 9.40 from the data from all participants. Despite pharmacy students viewing their own profession as more subservient than all professions did, pharmacists were still ranked as the second least subservient profession in this data-set, ahead of medics. The data from the medical student group is presented below (Table 15).

*Table 15. First-year **intervention group, medical students' views of a typical member of each profession on the Subservient component** -Statistical analysis for significant difference in **Subservient component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	Data collection round	Mean	Median	Standard deviation	Skewness	Mean difference in scores	Normality test (Shapiro-Wilk)	Normally distributed?	Paired samples t-test p-value	Wilcoxon signed-rank test p-value
Pharmacist	Round 1	11.08	11.58	3.93	0.219	0.106	0.069	Yes	0.594	N/A
	Round 2	11.64	10.80	5.21	0.485					
Medic	Round 1	7.19	6.98	3.05	0.234	0.700	0.043	No	N/A	0.264
	Round 2	7.56	6.76	3.43	0.629					
Nurse	Round 1	14.77	14.19	4.82	0.454	-0.366	0.002	No	N/A	0.664
	Round 2	13.91	12.59	5.26	1.165					
Physiotherapist	Round 1	11.49	11.77	3.93	-0.780	-1.389	0.330	Yes	0.212	N/A
	Round 2	8.48	8.34	1.38	-0.433					
Midwife	Round 1	11.79	11.02	5.61	0.647	-0.176	0.248	Yes	0.899	N/A
	Round 2	11.54	9.21	5.78	1.161					
Speech and language therapist	Round 1	11.30	10.05	5.30	1.083	0.327	0.229	Yes	0.673	N/A
	Round 2	12.64	12.36	3.62	0.099					
Operating department practitioner	Round 1	15.99	16.46	5.09	0.198	1.890	0.851	Yes	0.987	N/A
	Round 2	15.78	15.07	6.83	1.421					

All statistically significant results highlighted in bold

No statistically significant results were obtained from medical students concerning the Subservient component (Table 15). The changes in scores observed were generally small. In both the 'before' and 'after' data, operating department practitioners were seen as the most subservient profession (15.99 to 15.78 (p=0.987)) and medics the least (7.19 to 7.56 (p=0.264)).

In addition to the small changes in scores between data collections, several professions were scored similarly to one another. In the 'before' data, (from most to least subservient) midwives scored 11.79 (ranking them behind nurses and operating department practitioners), physiotherapists 11.49, speech and language therapists 11.30 and pharmacists 11.08. Small changes to these scores in the 'after' data resulted in a shift in the order of professions, with speech and language therapists scoring 12.64 (behind nurses and operating department practitioners), pharmacists 11.64, midwives 11.54 and physiotherapists seeing a larger decrease to 8.48.

The overall trend of medics seen as the least subservient profession, and nurses as one of the most subservient, is in keeping with the results from the pharmacy student group analysis, and the results from all professions. The view of operating department practitioners as more subservient and physiotherapists as less so is reflective of the findings from the round two data collection from all professions.

The scores for medics of 7.19 and 7.56 are higher than the scores given for medics in any other set of intervention group analyses. The Subservient component results of the NMC group are presented below (Table 16).

*Table 16. First-year **intervention group, NMC students' views of a typical member of each profession on the Subservient component -***Statistical analysis for significant difference in **Subservient component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	Data collection round	Mean	Median	Standard deviation	Skewness	Mean difference in scores	Normality test (Shapiro-Wilk)	Normally distributed?	Paired samples t-test p-value	Wilcoxon signed-rank test p-value
Pharmacist	Round 1	10.17	9.82	4.21	0.272	-1.24	0.896	Yes	0.060	----
	Round 2	9.10	8.01	4.05	0.432					
Medic	Round 1	5.85	5.77	4.14	0.601	0.99	0.015	No	----	0.082
	Round 2	5.95	4.73	4.28	1.183					
Nurse	Round 1	11.92	12.23	4.63	-0.292	-0.61	0.001	No	----	**0.034**
	Round 2	11.79	11.61	5.10	0.757					
Physiotherapist	Round 1	8.53	7.79	3.77	0.586	-0.82	0.355	Yes	**0.001**	----
	Round 2	8.45	6.79	4.39	0.661					
Midwife	Round 1	8.90	8.97	3.82	-0.073	-0.57	0.005	No	----	0.784
	Round 2	8.83	9.40	3.23	-0.548					
Speech and language therapist	Round 1	10.71	11.42	4.43	-0.029	0.50	0.405	Yes	**0.000**	----
	Round 2	11.46	12.47	4.92	0.017					
Operating department practitioner	Round 1	11.18	10.73	5.09	0.489	-0.49	0.681	Yes	**0.000**	----
	Round 2	10.83	9.07	6.68	1.500					

All statistically significant results highlighted in bold

In the NMC students group analysis (Table 16), the decreases in mean score for nurses (11.92 to 11.79 (p=0.034)), physiotherapists (8.53 to 8.45 (p=0.001)) and operating department practitioners (11.18 to 10.83 (p=0.000) were all statistically significant. The increase in score for speech and language therapists (10.71 to 11.46 (p=0.000)) was also statistically significant. The decrease in mean score for pharmacists (10.17 to 9.10 (p=0.060)) and midwives (8.90 to 8.93 (p=0.784)) and the increase in mean score for medics (5.85 to 5.95)) were not statistically significant.

The pattern observed in this data was similar to that for the data from all professions, with nurses scoring highest and medics lowest. Like all other sets of analyses there was a small increase in the score for medics, but in this group it was not statistically significant. Nurses were still viewed by NMC students as the most subservient group, but the scores given were lower than scores from other sets of analyses.

Midwives were seen as the third least subservient profession, followed by physiotherapists and medics. This perception of midwives tallies with that observed in the 'after' data from medics, but the scores given by NMC students for midwives were considerably lower, 8.90 to 8.83 (p = 0.754), compared to 11.79 to 11.54 (p=0.899) given by medical students. The position of physiotherapists as the second least subservient profession is also consistent with the 'after' data from students of all professions and the medial student group.

The respective ranking of professions remained the same in the 'before' and 'after' data, with the exception of operating department practitioners and speech and language therapists, who were, respectively, the second and third most subservient professions in the 'before' data, reversing those positions in the 'after' data. HCPC student results are presented below (Table 17).

*Table 17. First-year **intervention group, HCPC students' views of a typical member of each profession on the Subservient component-***Statistical analysis for significant difference in **Subservient component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	Data collection round	Mean	Median	Standard deviation	Skewness	Mean difference in scores	Normality test (Shapiro-Wilk)	Normally distributed?	Paired samples t-test p-value	Wilcoxon signed-rank test p-value
Pharmacist	Round 1	9.81	10.62	3.80	-0.229	-0.11	0.999	Yes	**0.044**	----
	Round 2	10.50	10.70	3.93	-0.026					
Medic	Round 1	7.08	6.87	3.56	0.289	-0.05	0.657	Yes	**0.000**	----
	Round 2	8.32	8.13	3.49	0.602					
Nurse	Round 1	16.74	16.46	5.55	-0.023	-2.14	0.226	Yes	**0.003**	----
	Round 2	15.10	15.37	4.86	-0.022					
Physiotherapist	Round 1	11.38	11.81	2.57	-0.295	-0.11	0.502	Yes	**0.036**	----
	Round 2	10.55	9.35	2.91	0.403					
Midwife	Round 1	11.17	10.26	3.44	-0.479	0.56	0.055	Yes	0.618	----
	Round 2	12.48	13.00	3.03	-0.127					
Speech and language therapist	Round 1	10.87	11.38	3.41	0.120	0.011	0.129	Yes	**0.004**	----
	Round 2	11.95	11.69	4.27	0.601					
Operating department practitioner	Round 1	12.47	12.11	4.22	0.146	1.51	0.021	No	----	0.068
	Round 2	17.10	16.50	4.07	0.857					

All statistically significant results highlighted in bold

The majority of the findings for the Subservient component from the HCPC students group (Table 17) were statistically significant, with the exception of the results concerning midwives (11.17 to12.48 (p=0.618)) and operating department practitioners (12.47 to 17.10 (p=0.068)). The same trend of nurses scoring highest (16.74 to 15.10 (p=0.003)) and medics lowest (7.08 to 8.32 (p=0.000)) was also observed in this group, as was the trend of a decrease in score for nurses and an increase for medics. Pharmacists were scored as the second least subservient profession (9.81 to 10.50 (p=0.044)) in both the 'before' and 'after' data collections. Physiotherapists were scored as the third most subservient profession in the 'before' data (11.38) with a statistically significant (p=0.036) decrease in score to 10.55 in the 'after' resulting in a change to third least subservient.

The scores for physiotherapists (11.38 to 10.55), speech and language therapists (10.87 to 11.95) and midwives (11.17 to 12.48) were similar, a trend also observed in the results for the medical student group analysis, resulting in changes in respective ranking even with a small increase or decrease in score.

The increase in score for operating department practitioners from 12.47 to 17.10 is large compared to other results from the Subservient subscale in these sets of analysis.

5.1.5. Discussion of findings from first-year intervention group – By professional groups

All professional student groups saw a large drop in response rates between completions of the AHPQ. This is particularly marked for the findings concerning students' ratings of physiotherapists and operating department practitioners. The small number of responses

concerning these professions in particular means that the results obtained should be treated with a high degree of caution. Such a low number of responses are unlikely to have yielded a representative view of these professions. This is particularly relevant when considering the large standard deviation values observed for the data concerning operating department practitioners for the Caring component, and the large change in mean score for the Subservient component in the HCPC group data. As only four responses were obtained, this data is not reliable.

The most striking finding from the Caring component data was the tendency of in-group members of the larger professional groups (medicine, nursing and pharmacy) to view their profession as more caring than out-group members did both before and after participating in the study. This effect is particularly noticeable in the results from pharmacy and medical students, who scored lowest on the caring component results from all professions. Medical students viewed a typical doctor as being more caring than any other profession in the 'after' data except speech and language therapy, a result markedly different from the data from the other groups. Pharmacy students and NMC students rated a typical doctor as the least caring of all of the professions included on the AHPQ in the 'after' data, and HCPC students rated medics as the second least caring.

These observations indicate a discrepancy in the attitude towards doctors between in-group and out-group members with the scores from out-group members remaining lower than for other professions even after participating in IPL. Hawkes *et al.* (2013) noted the same pattern of findings in the responses of pharmacy students, medical students and nursing students in their study, which was also conducted with students at the UEA using the AHPQ as an outcome measure. As well as confirming the consistency of

findings from the AHPQ, this demonstrates that such an observation is consistent across different cohorts of students at the same university.

Midwives, speech and language therapists, physiotherapists and operating department practitioners did not give the highest scores for their professions. Midwifery students did not constitute a majority in their group and the HCPC students are a less homogenous group than the other professional groups. Operating department practitioners were in fact ranked as the least caring profession by HCPC students in the 'after' data. As previously stated, the number of results about most of these professions were small, limiting the usefulness of the data.

McNair (2005), applying social identity theory to interprofessional interaction, states that identification with a particular group may influence interprofessional attitudes and interpersonal interactions. If the heterogeneity of the HCPC group is considered in this context it is possible that rather than producing a set of results with a clear pattern, the differing attitudes and identities of the professions included within the group may have moderated the results, resulting in a confused picture. The picture is slightly different in the NMC group. As the smaller group, the voice of midwives may have been drowned out by the far greater number of nursing students.

Despite the differences in how the professional groups perceived some of the professions included on the AHPQ, the general results of the professional group analyses for the Caring component were similar to those for the data from all professions. Most professions were seen as more caring after students had participated in the IPL programme, with the majority of findings being statistically significant. Medics and pharmacists were predominantly ranked

lowest in relation to the other professions, with nurses and midwives ranked more highly. The notable exception to this trend was in the results from medical students, who as previously discussed ranked their own profession far higher respectively than other professional groups did. Changes in mean score for the Caring component were more pronounced in the medical, NMC and HCPC student groups than the pharmacy student group. This may suggest that the effect of the IPL programme is not as pronounced for pharmacy students or that the views of pharmacy students are more strongly held. Further comparison with control group data is needed to identify if the IPL programme is the main influence on changes in perception.

Slightly more statistically significant results were observed in the professional group analysis for the Subservient component than the analysis for all professions, with the exception of the results from medical students where no statistically significant results were seen. The changes observed in the values for the Subservient component are much smaller than those observed for the Caring component. This should be considered when drawing conclusions about the Subservient component data as the small numerical changes seen may not represent large shifts in attitudes in real terms. However these data do still give a clear pattern of change, which does indicate some shift in the views of how subservient professions are seen to be.

The general trend of the results of the professional group analyses is similar to the findings from the data from all professions. The overall trend of the results showed nurses and operating department practitioners to be seen as the most subservient professions, and pharmacists, physiotherapists, and medics as the least subservient. This trend was noted in all of the professional group analyses.

Like the results from all participants, most professions saw a decrease in Subservience score, but medics were considered to be more subservient after students had participated in IPL. When looking at the professional group analyses all professions scored their own profession lower on subservience both before and after IPL than other professions scored them, with the exception of medical students, who scored medics more highly than other professions scored them. This tallies with the findings from Hawkes *et al.* (2013). NMC students also scored nurses lower than any other professional group did. A disparity between how a profession views themselves and how they are viewed by others may lead to tension in working relationships (Carpenter, 1995b).

This view of nurses as a more subservient profession by non-NMC respondents may stem from the historical perception of nurses as the handmaidens of doctors (Bridges, 1990), a view that is not an accurate representation of modern nursing, but appears to persist in popular culture. The view of doctors as less subservient may also be attributable to historical perceptions. The doctor is frequently viewed as the most important member of the healthcare team and therefore as the leader (Baxter and Brumfitt, 2008; Hall, 2005; Horsburgh et al., 2006). The pervasiveness of this perception may explain why the views of medical students about doctors on the subservient subscale are not wholly dissimilar to the views expressed by other professions. The polarisation of nurses as more subservient and medics as less in all of the data from the intervention group may be due to some extent to the perception of the relative power and status of each profession, as discussed by Baker *et al.* (2011) and Baxter and Brumfitt (2008), with doctors viewed as a higher status profession, and nurses as lower status. This is again reminiscent of the historical perceptions of these professions (Witz, 1990; Hall, 2005; Horsburgh *et al.,* 2006).

The few exceptions to this pattern of more extreme views held about one's own profession came from the HCPC group, where students did not rate physiotherapists, speech and language therapists or operating department practitioners lower on subservience after IPL than other professions rated them. This is possibly due again to the heterogeneous collection of professions diluting any visible difference of opinion about a student's own profession The same observation was not made about midwifery students in the NMC data, which may indicate that nursing and midwifery students have more similar view of the level of subservience of midwives than the level of caring of midwives. The low numbers of responses for these professions in all professional groups make drawing firm conclusions difficult.

Looking at both the Caring and Subservient component data together, a general trend is visible. A higher score on the caring subscale may be associated with a lower score on the subservient subscale. The notable exception to this pattern in the data obtained in this study is in the results for operating department practitioners, who were scored highly on the Subservient results, and near the bottom on the Caring results, but low response rates for this profession make drawing conclusions difficult.

The polarisation of medics and nurses at opposite ends of both the Caring and Subservient results indicate that healthcare students have stronger views about these professions than others, a point that will be discussed further in Chapters Six, Qualitative Findings and Seven, Mixed methods results.

5.2 Control group findings and comparison with intervention group

5.2.1 Participants in control group

The professions in included in the control group of students were;

- Pharmacy students
- Occupational therapy students
- Medical students
- Nursing students
- Physiotherapy students

No midwifery, speech and language therapy or operating department practice students were included in the control group as they were all assigned to Sessions A and C which formed the intervention group

5.2.2 Responses from first-year control group students: all professions

As with the students in the intervention group, completion of the AHPQ was encouraged in the control group but was not compulsory, resulting in a less than 100 percent completion rate. 188/247 (76.1%) students completed at least part of the AHPQ in the control group (Table 18).

Table 18. First-year control group: all participants - Number of responses about each profession

Profession (n=188)	Component	Round 1, n (%)	Round 2, n (%)
Pharmacist	1 – Caring	120 (64.2)	85 (45)
	2 - Subservient	120 (64.2)	87 (46.5)
Occupational therapist	1 – Caring	101 (54)	73 (39.0)
	2 – Subservient	102 (54.5)	74 39.6)
Medic	1 – Caring	105 (56.1)	73 (39.0)
	2 - Subservient	105 (56.1)	73 (39.0)
Nurse	1 – Caring	111 (59.4)	84 (44.9)
	2 – Subservient	112 (59.9)	84 (44.9)
Physiotherapist	1 – Caring	62 (33.2)	47 (25.1)
	2 – Subservient	64 (34.2)	48 (25.7)

Similarly to the data from the intervention group there is a drop in the number of responses between completions of the AHPQ. The decrease in response rates between the data collection rounds for the control group is not as pronounced as for the intervention group.

The statistical comparison between the intervention and control group data included data about the professions common to both the intervention and control groups: pharmacists, medics, nurses and physiotherapists.

5.2.3 Control group results and comparison with intervention group data: all professions

The breakdown of the results from the first-year control group concerning the Caring component of the AHPQ appear below (Table 19).

*Table 19. First-year **control group: all participants' views of a typical member of each profession on the Caring component -***Statistical analysis for significant difference in **Caring component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	Data collection round	Mean	Median	Standard deviation	Skewness	Mean difference in scores	Normality test (Shapiro-wilk)	Normally distributed?	Paired samples t-test p-value	Wilcoxon signed-rank test p-value
Pharmacist	Round 1	67.42	69.18	17.12	-0.512	1.09	0.000	No	----	0.052
	Round 2	66.46	65.12	16.75	-0.135					
Occupational therapist	Round 1	81.35	81.64	10.84	-0.804	1.14	0.000	No	----	**0.001**
	Round 2	81.05	81.91	11.21	-0.706					
Medic	Round 1	65.60	65.91	17.69	-0.284	1.87	0.000	No	----	0.081
	Round 2	67.71	69.00	16.04	-0.306					
Nurse	Round 1	84.82	86.63	10.67	-1.036	0.3046	0.000	No	----	**0.013**
	Round 2	83.69	85.00	11.86	-1.086					
Physiotherapist	Round 1	75.16	75.51	13.75	-0.306	1.61	0.000	No	----	**0.041**
	Round 2	73.37	68.06	12.45	0.455					

All statistically significant values highlighted in bold

Control group participants viewed nurses as the most caring profession in both completions of the AHPQ (84.82 to 83.69 (p=0.013)), followed by occupational therapists (81.35 to 81.05 (p=0.001)), and physiotherapists (75.16 to 73.37 (p=0.041)). In the first round of data collection pharmacists were the second lowest ranked profession (67.42 to 66.46 (p=0.052)), swapping with medics (65.60 to 67.71 (p=0.081)) to become the lowest ranked profession in the second round. Of these changes, the decreases in scores between the data collection rounds for occupational therapists, nurses and physiotherapists were statistically significant.

The majority of the scores decreased between completions of the AHPQ, with the exception of medics, but the increase in mean score was not statistically significant. This trend in results is different to the near universal statistically significant increases in scores between AHPQ completions for the Caring component observed in the intervention group data.

The mean differences in scores observed in the control data were small, with the largest being 1.87 for medics. The change in mean scores for medics (1.87) and pharmacists (1.09) in particular are much smaller than those observed in the intervention group (pharmacists = 9.92 and medics = 8.08).

Despite these differences, the overall pattern of professions, with nurses ranked most caring, therapy professions falling in the middle and pharmacists and medics scoring lowest is similar to that if the intervention group.

The comparison of the Caring component 'after' data from the intervention group to the second round data from the control group is presented below (Table 20).

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*Table 20. Comparison of the **intervention (I) and the control (C) group: all participants' views of a typical member of each profession on the Caring component -**Statistical analysis for significant difference in **Caring component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	Data collection round (Intervention (I) or control (C)	Mean	Median	Standard deviation	Skewness	Normality test (Shapiro-wilk)	Normally distributed?	Independent samples t-test p-value	Mann-Whitney U test p-value
Pharmacist	Round 2 (I)	74.02	74.12	12.26	-0.656	0.008	No	----	**0.001**
	Round 2 (C)	66.46	65.12	16.75	-0.135	0.161	Yes		
Medic	Round 2 (I)	73.48	76.09	15.23	0.209	0.000	No	----	**0.011**
	Round 2 (C)	67.71	69.00	16.04	-0.306	0.152	Yes		
Nurse	Round 2 (I)	86.48	89.12	10.03	-1.760	0.000	No	----	0.102
	Round 2 (C).	83.69	85.00	11.86	-1.086	0.000	No		
Physiotherapist	Round 2 (I)	81.12	81.29	10.89	-0.814	0.204	Yes	----	**0.006**
	Round 2 (C)	73.37	68.06	12.45	0.455	0.003	No		

All statistically significant results highlighted in bold

The comparison of the intervention and control group data for the Caring component (Table 20) yielded three statistically significant results; pharmacists (Intervention=74.02, Control=66.46 (p=0.001)), medics (Intervention=73.48, Control=67.71 (p=0.011)), and physiotherapists (Intervention=81.12, Control=73.37 (p=0.006)). The result for nurses (Intervention=86.48, Control=83.69 (p=0.102)) was not statistically significant. All of the mean Caring component scores were lower for the control group data.

That all of the control group scores were lower and three of them statistically significant suggests that that participation in the IPL programme increases participants' perception of how caring professions are seen to be.

The significance of these results is explored following the presentation of the Subservient component data for the control group (Table 21).

*Table 21. First-year **control group: all participants' views of a typical member of each profession on the Subservient component** -Statistical analysis for significant difference in **Subservient component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	Data collection round	Mean	Median	Standard deviation	Skewness	Mean difference in scores	Normality test (Shapiro-wilk)	Normally distributed?	Paired samples t-test p-value	Wilcoxon signed-rank test p-value
Pharmacist	Round 1	10.64	10.71	4.20	0.007	-0.77	0.002	No	----	**0.023**
	Round 2	10.18	9.72	4.19	0.525					
Occupational therapist	Round 1	11.37	11.00	4.92	04.74	-0.80	0.000	No	----	**0.034**
	Round 2	11.16	10.38	4.54	0.545					
Medic	Round 1	5.48	5.38	3.96	1.77	-1.25	0.000	No	----	0.996
	Round 2	5.44	5.67	2.80	0.387					
Nurse	Round 1	13.61	13.21	5.50	0.633	-0.50	0.000	No	----	0.472
	Round 2	12.82	12.23	5.36	0.723					
Physiotherapist	Round 1	9.34	9.28	3.88	0.352	-0.41	0.018	No	----	0.071
	Round 2.	9.67	9.06	3.84	0.630					

All statistically significant results highlighted in bold

Control group participants viewed nurses (13.61 to 12.85 (p=0.472)) as the most subservient profession in both data collection rounds, followed by occupational therapists (11.37 to 11.16 (p=0.034)), pharmacists (10.64 to 10.18 (p=0.023)), physiotherapists (9.34 to 9.67 (p=0.071)), and medics (5.48 to 5.44 (p=0.996)). Only the decreases in mean score for pharmacists and occupational therapists were statistically significant.

While the overall respective rankings of professions remained the same in both data collections, all professions, with the exception of physiotherapists, were viewed as less subservient in the round two data. That medics were also seen as less subservient, while not statistically significant, does shows a difference from the intervention group, where medics were seen as more subservient post-IPL (6.37 to 6.60 (p=0.047)).

The overall magnitude of change in mean scores is low for the Subservient component, similarly to the changes observed for the Subservient component in the intervention group. The comparison between the intervention and control group data Subservient component data is presented below (Table 22).

*Table 22. Comparison of the **intervention (I) and the control (C) group: all participants' views of a typical member of each profession on the Subservient component -**Statistical analysis for significant difference in **Subservient component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	Data collection round (Intervention (I) or control (C)	Mean	Median	Standard deviation	Skewness	Normality test (Shapiro-wilk)	Normally distributed?	Independent samples t-test p-value	Mann-Whitney U test p-value
Pharmacist	Round 2 (I)	9.40	9.36	4.13	0.493	0.066	Yes	0.200	----
	Round 2 (C).	10.18	9.72	4.19	0.525	0.108	Yes		
Medic	Round 2 (I)	6.60	6.33	3.85	0.859	0.000	No	----	0.059
	Round 2 (C).	5.44	5.67	2.80	0.387	0.347	Yes		
Nurse	Round 2 (I)	13.08	12.35	5.46	0.529	0.021	No	----	0.575
	Round 2 (C).	12.82	12.23	5.36	0.723	0.018	No		
Physiotherapist	Round 2 (I)	9.03	8.62	3.44	0.448	0.516	Yes	0.476	----
	Round 2 (C).	9.67	9.06	3.84	0.630	0.147	Yes		

All statistically significant results highlighted in bold

There were no statistically significant findings from the Subservient component data comparison between the intervention and control groups. Nurses were seen as most subservient in both (Intervention=13.08, Control=12.82), and medics least (Intervention=6.60, Control=5.44).

There does not appear to be a statistically significant difference in the Subservient component data between the intervention and control groups, but the data from both groups demonstrated the same overall pattern regarding order of professions.

5.2.4 Discussion of findings from first-year control group and comparison with intervention group data – All participants

The professions included in the intervention and control groups are not exactly the same, limiting direct comparison to the results for pharmacists, medics, nurses, and physiotherapists. The intervention group consisted of Sessions A and C and the control group of only Session B, resulting in smaller number of responses. Despite this, the overall drop in completion between data collections was less substantial than that observed in the intervention group. This resulted in a higher number of responses concerning physiotherapists in the second round control group data than in the 'after' intervention group data (Intervention=26, Control=47/48 (Caring/Subservient)). It is not clear why the response rates are markedly different between the groups, but it may mean that the control group second completion of the AHPQ is more representative of the wider population than the results from the intervention group.

The results from the control group differ from those from the intervention group. For the Caring component, the control group

results show a general decrease in how caring professions are seen to be. This decrease was statistically significant for results concerning physiotherapists (p = 0.041), nurses (p = 0.013) and occupational therapists (p = 0.001). The small increase in score for medics was the exception to the trend (65.60 to 67.71 (p=0.081)). This result, however, was not statistically significant, suggesting that the passing of time does not have a strong notable effect. The increase in score may be due to a floor effect (Hurst, 2013). With so many of the data-points clustered around the bottom end of the scale a small amount of deviation could be explained this way.

These results suggest that over time, without participating in the IPL programme, the views of healthcare students generally change to viewing professions as less caring, rather than more caring, as is the case with the students in the intervention group. As the changes in mean scores from the Caring component in the control group were smaller than the intervention group, this effect is not as marked. This finding is the opposite to that of the study by Tunstall-Pedoe *et al.* (2003), who noted that students' negative views of one another were exaggerated after participating in their IPE programme. Without a control group it is not possible to determine the effects of non-participation in the programme described by Tunstall-Pedoe *et al.* (2003). This observation between the two studies suggests that while a successful IPE intervention such as the IPL programme has a positive effect on interprofessional attitudes, with non-participation resulting in a slight decline in the views of professions, an unsuccessful programme may magnify this negative trend.

Statistical analysis of the Caring component intervention and control group data confirm the differences between the two data-sets. All of the values from the intervention group are higher than those from the control group, indicating that the IPL programme

does have an effect on the perception of how caring professions are seen to be, with participation in IPL associated with a higher score. The overall pattern of the results from the control group and intervention group are similar indicating that the relative perception of professions is largely the same in both the intervention and the control groups.

There is very little difference in the scores for nurses between the groups (Intervention=86.48, Caring=83.69 (p=0.102)). That this finding was not statistically significant may indicate that there is a particularly strong association of "caring" with the profession of nursing. The same overall pattern of professions combined with the similarity of the results for nurses suggests that student's views about other professions are already well formed by the time they begin their training, an assertion that has been made in previous studies in this area (Carpenter, 1995b; Hall, 2005; Hean *et al.,* 2006; Tunstall-Pedoe *et al.,* 2003).

The results of the control group Subservient component analysis also demonstrated a different trend to the results seen in the intervention group. The intervention group viewed medics as being more subservient, although the finding was not statistically significant (p =0.079). In the control group data medics were seen as less subservient in the second round of data collection which was not statistically significant (p = 0.996). The comparison between the intervention and control group Subservient data for medics, while not statistically significant is the finding closest to statistical significance, with a p-value of .059. This suggests that the IPL programme may have a weak effect upon the perception of medics, bringing the perception of how subservient they are slightly more in line with other professions.

This finding could be compared with the physician centrality subscale on the ATHCTS (Heinemann *et al.,* 1999), which assesses the perception of the doctor as the leader of the healthcare team. A lower score on the subservient component of the AHPQ could be interpreted as medics being seen in more of leadership role than as an equal member of the healthcare team (Baker *et al.,* 2011). This effect appeared to be reduced slightly in the intervention group, but the differentiation from other professions was still present.

Only physiotherapists saw an increase in score for the Subservient component in the control group, but as the change was very small (9.34 to 9.37) and the finding not statistically significant (p =0.071), it can be seen as variance in the data rather than a true effect. It is difficult to determine if any changes seen in the control group are sustained or magnified over time, as there is no corresponding group in the final-year of students with which to compare the findings.

The findings from the control group in this study are slightly different to the findings by (Lindqvist *et al.,* 2005b), who noted that the results from their own control group indicated an overall null effect of non-participation in the IPL programme. These data were collected in 2002, so are eight years older than the data obtained in this study. The IPL programme has changed slightly over the years, meaning that these two groups of students did not experience exactly the same version of the programme. However the cohort composition remains largely the same and the aims of the programme have not deviated over time, making the comparison with the present study still useful. With only the results from this study and the one by Lindqvist *et al.* (2005b) to compare to one another it is not clear if a lack of participation in the IPL programme will result in a drop in the perception of how caring professions are seen to be, or if a null effect is the more common outcome. Further

analysis of control group data from future years of the IPL programme is needed to draw firmer conclusions about the effect of non-participation in the IPL programme.

Other studies included within the literature review that used similar control groups (Morison and Jenkins 2007; Ateah *et al.,* 2010; Kenaszchuk *et al.,* 2012; Wamsley *et al.,* 2012) reported that students who had participated in IPE interventions displayed generally positive changes in interprofessional attitudes, with the control groups showing less noticeable changes, suggesting that participation in IPE has a greater effect on student attitudes than non-participation. The long-term effects of participation or non-participation in IPE are not clear from these studies, but further exploration of data from the final-year students and recent graduates in this study later in this chapter and in Chapters Six and Seven may provide some insight into this.

5.2.5 Responses from first-year control group students: each professional grouping

This section of the chapter explores the differences in the changes in interprofessional attitudes of students within each group. There were no midwifery students included within the control group, so the NMC students group was comprised solely of nursing students. To prevent confusion this group will still be referred to as NMC students rather than nursing students. The HCPC students group was the most changed, being comprised of only physiotherapy students and occupational therapy students in the control group.

As with the data from all participants, the number of respondents from each professional group and the number and percentage of

participants within those groups that provided data about each

profession varied widely (Tables 23, 24, 25, and 26).

Table 23. First-year control group: Pharmacy students. Number of responses about each profession

Profession (n=53)	Component	Round 1, n (%)	Round 2, n (%)
Pharmacist	1 – Caring	44 (83.0)	28 (52.8)
	2 - Subservient	44 (83.0)	28 (52.8)
Occupational therapist	1 – Caring	25 (47.2)	16 (30.2)
	2 – Subservient	25 (47.2)	16 (30.2)
Medic	1 – Caring	30 (56.6)	21 (39.6)
	2 - Subservient	30 (56.6)	21 (39.6)
Nurse	1 – Caring	27 (50.9)	20 (37.7)
	2 – Subservient	27 (50.9)	20 (37.7)
Physiotherapist	1 – Caring	16 (30.2)	12 (22.6)
	2 – Subservient	16 (30.2)	12 (22.6)

53 pharmacy students provided data. The loss to follow-up observed between completions of the AHPQ for control group pharmacy students are comparable to those observed for all professions (Table 18), but the number of responses concerning physiotherapists (n=16 to n=12) and occupational therapists (n=16 second round) were small.

Table 24. First-year control group: Medical students. Number of responses about each profession

Profession (n=31)	Component	Round 1, n (%)	Round 2, n (%)
Pharmacist	1 – Caring	18 (58.1)	18 (58.1)
	2 - Subservient	18 (58.1)	18 (58.1)
Occupational therapist	1 – Caring	13 (41.9)	17 (54.8)
	2 – Subservient	13 (41.9)	17 (54.8)
Medic	1 – Caring	20 (64.5)	19 (61.3)
	2 - Subservient	20 (64.5)	19 (61.3)
Nurse	1 – Caring	14 (45.2)	17 (54.8)
	2 – Subservient	15 (48.4)	17 (54.8)
Physiotherapist	1 – Caring	9 (29)	6 (19.4)
	2 – Subservient	9 (29)	6 (19.4)

31 medical students provided data. There was little decrease in response between rounds, with the number of responses concerning occupational therapists increasing from n=13 to n=17, and nurses from n=14/15 to n=17. Responses concerning physiotherapists were few (n=9 to n=6).

Table 25. First-year control group: NMC students. Number of responses about each profession

Profession (n55)	Component	Round 1, n (%)	Round 2, n (%)
Pharmacist	1 – Caring	34 (61.8)	20 (36.4)
	2 - Subservient	33 (60)	22 (40)
Occupational therapist	1 – Caring	34 (61.8)	19 (34.5)
	2 – Subservient	34 (61.82)	20 (36.4)
Medic	1 – Caring	28 (50.9)	13 (23.6)
	2 - Subservient	28 (50.9)	13 (23.6)
Nurse	1 – Caring	41 (74.5)	24 (43.6)
	2 – Subservient	41 (74.5)	24 (43.6)
Physiotherapist	1 – Caring	16 (29.1)	15 (27.3)
	2 – Subservient	18 (32.7)	15 (27.3)

55 NMC students provided data. The completion rates for this group (Table 25) reduced more noticeably for some professions between completions of the AHPQ than for other groups in this set of analyses. This is most pronounced for data concerning medics (n=28 to n=13) and nurses (n=41 to n=24). While this drop in response is slightly larger than the other professional groups, the overall number of responses is similar.

Table 26. First-year control group: HCPC students. Number of responses about each profession

Profession (n=41)	Component	Round 1, n (%)	Round 2, n (%)
Pharmacist	1 – Caring	24 (58.5)	19 (46.3)
	2 - Subservient	25 (61)	19 (46.3)
Occupational therapist	1 – Caring	29 (70.7)	21 (48.8)
	2 – Subservient	30 (73.2)	21 (48.8)
Medic	1 – Caring	27 (65.9)	20 (48.8)
	2 - Subservient	27 (65.9)	20 (48.8)
Nurse	1 – Caring	29 (70.4)	23 (56.1)
	2 – Subservient	29 (70.7)	23 (56.1)
Physiotherapist	1 – Caring	21 (48.8)	14 (34.1)
	2 – Subservient	21 (48.8)	15 (36.5)

41 HCPC students provided data. The decline in responses for the HCPC student group (Table 26) is comparable to the majority of those observed in the other control professional groups. Control group HCPC students in the second round of data collection provided a greater number of responses about each profession than the intervention group HCPC students (Table 9).

5.2.6 Control group results and comparison with intervention group data: by professional groups

<u>Caring component</u>

The Caring component findings from pharmacy students are presented below (Table 27).

*Table 27. First-year **control group: pharmacy students' views of a typical member of each profession on the Caring component**. Statistical analysis for significant difference in **Caring component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	Data collection round	Mean	Median	Standard deviation	Skewness	Mean difference in scores	Normality test (Shapiro-Wilk)	Normally distributed?	Paired samples t-test p-value	Wilcoxon signed-rank test p-value
Pharmacist	Round 1	80.52	80.21	9.31	-0.199	1.54	0.732	Yes	**0.027**	----
	Round 2	79.85	80.10	11.92	-0.519					
Occupational therapist	Round 1	80.97	81.64	12.66	-0.852	0.59	0.017	No	----	0.110
	Round 2	80.97	81.64	12.66	-0.852					
Medic	Round 1	68.38	68.86	15.09	-0.120	0.69	0.019	No	----	0.796
	Round 2	72.04	72.16	12.00	-0.188					
Nurse	Round 1	84.39	86.06	10.02	-0.814	1.23	0.371	Yes	0.203	----
	Round 2	84.63	85.77	11.97	-1.128					
Physiotherapist	Round 1	73.75	71.63	11.00	0.907	0.94	0.019	No	----	0.263
	Round 2	69.22	67.22	9.59	0.876					

All statistically significant results highlighted in bold

From the Caring component data from pharmacy students only the decrease in mean score for pharmacists was statistically significant. Pharmacy students saw nurses as the most caring profession in both sets of data collection (84.82 to 84.63 (p=0.203)), followed by occupational therapists (80.97 to 80.97 (p=0.110)) and pharmacists (80.52 to 79.85 (p=0.027)). Physiotherapists were rated second least caring in the first round data (75.16 to 73.37 (p=0.263)), exchanging places with medics (65.60 to 67.71 (p=0.796)) in the second round data.

The changes in mean score are smaller than those from the intervention pharmacy group (see Table 10), and there is no clear trend in the data, with the mean scores for nurses and medics seeing a small increase, the scores for occupational therapists remaining the same, and those for pharmacists and physiotherapists exhibiting small decreases.

Overall the order of professions is similar to the results observed from the intervention professional group data, with pharmacy students viewing their own profession as more caring than others viewed them. The perception of nurses as the most caring profession and medics the least is also in keeping with the data from the intervention group, and from all professions in the control group.

The statistical comparison of the pharmacy student group intervention and control data is given below (Table 28).

*Table 28. Comparison of the **intervention (I) and the control (C) group: pharmacy students' views of a typical member of each profession on the Caring component -***Statistical analysis for significant difference in **Caring component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	AHPQ data collection round (Intervention (I) or control (C)	Mean	Median	Standard deviation	Skewness	Normality test (Shapiro-wilk)	Normally distributed?	Independent samples t-test p-value	Mann-Whitney U test p-value
Pharmacist	Round 2 (I)	80.34	83.06	11.57	-0.828	0.025	No	----	0.901
	Round 2 (C).	79.85	80.09	11.92	-0.519	0.095	Yes		
Medic	Round 2 (I)	73.05	76.09	12.80	-0.243	0.023	No	----	0.655
	Round 2 (C).	72.04	72.16	12.00	-0.188	0.833	Yes		
Nurse	Round 2 (I)	87.22	89.17	8.99	-1.149	0.018	No	----	0.506
	Round 2 (C).	84.63	85.77	11.97	-1.128	0.036	No		
Physiotherapist	Round 2 (I)	-	-	-	-	-	-	-	-
	Round 2 (C).	69.22	67.35	9.59	0.876	0.264	Yes		

All statistically significant results highlighted in bold

The overall pattern of most to least caring was the same in both the intervention and control data. Nurses were seen as most caring (Intervention =87.22, Control =84.63 (p=0.526)), then pharmacists (Intervention =80.34, Control=79.85 (p=0.901)) and medics (Intervention =73.05, Control =72.04 (p=0.655)). None of the differences were statistically significant, but all of the results from the control group were lower than those from the intervention group.

The caring component results for the medical student group for the control group (Table 29) is given below.

*Table 29. First-year **control group: medical students' views of a typical member of each profession on the Caring component**. Statistical analysis for significant difference in **Caring component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	Data collection round	Mean	Median	Standard deviation	Skewness	Mean difference in scores	Normality test (Shapiro-Wilk)	Normally distributed?	Paired samples t-test p-value	Wilcoxon signed-rank test p-value
Pharmacist	Round 1	66.34	67.37	13.15	-0.278	-3.04	0.041	No	----	0.515
	Round 2	59.54	58.58	17.63	0.329					
Occupational therapist	Round 1	81.66	82.52	6.62	-0.249	2.18	0.477	Yes	**0.003**	----
	Round 2	79.02	79.44	9.10	-0.288					
Medic	Round 1	77.10	83.45	13.00	-0.742	3.76	0.000	No	----	0.**013**
	Round 2	75.74	78.73	77.57	-0.914					
Nurse	Round 1	79.10	78.55	10.46	-1.154	1.67	0.285	Yes	0.211	----
	Round 2	83.97	83.25	8.35	-0.145					
Physiotherapist	Round 1	75.07	76.66	12.40	-0.443	-3.73	.	.	----	0.655
	Round 2	66.81	65.69	5.54	1.373					

All statistically significant results highlighted in bold

Medical students viewed occupational therapists as the most caring profession in the first round data, with a decline in mean score (81.66 to 79.02 (p=0.003)) resulting in an exchange of ranking with nurses (79.10 to 83.87 (0.211)) in the second round of data collection. Medics were viewed as the third most caring profession in both rounds (77.10 to 75.71 (p=0.013)) followed by physiotherapists (75.07 to 66.81 (p=0.655)) and finally pharmacists (66.34 to 59.54 (p=0.515)). In this group all professions bar nurses were seen as less caring in the second round of data collection. Only the results for occupational therapists and medics were statistically significant.

Similarly to the control data from all professions and the pharmacy student group, the mean changes in scores are smaller than those observed in the intervention group data (Table 11). The largest mean difference in score in the intervention medical student group was 7.64 concerning pharmacists, whereas in the control group it was 3.76, concerning medics.

As with the intervention medical student group, medics were scored more highly on the Caring component than they were by other professional groups or by all participants. Viewing nurses as more caring, and physiotherapists and pharmacists as less is consistent with data from the intervention medical student group. Statistical analysis of the intervention and control medical student group data is presented below (Table 30).

*Table 30. Comparison of the **intervention (I) and the control (C) group: medical students' views of a typical member of each profession on the Caring component -***Statistical analysis for significant difference in **Caring component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	Data collection round (Intervention (I) or control (C))	Mean	Median	Standard deviation	Skewness	Normality test (Shapiro-wilk)	Normally distributed?	Independent samples t-test p-value	Mann-Whitney U test p-value
Pharmacist	Round 2 (I)	72.43	73.78	11.23	-0.525	0.673	Yes	**0.020**	----
	Round 2 (C).	59.54	58.58	17.63	0.329	0.703	Yes		
Medic	Round 2 (I)	85.30	88.40	8.37	-0.710	0.072	Yes	**0.002**	----
	Round 2 (C).	75.74	78.73	11.57	-0.914	0.144	Yes		
Nurse	Round 2 (I)	84.91	87.48	11.01	-0.925	0.048	No	----	0.497
	Round 2 (C).	83.97	83.25	8.34	-0.145	0.828	Yes		
Physiotherapist	Round 2 (I)	84.80	84.10	7.76	0.122	0.926	Yes	**0.001**	----
	Round 2 (C).	66.80	65.69	5.54	1.37	0.356	Yes		

All statistically significant results highlighted in bold

Like the data for intervention and control group comparison for all professions, all the results from the medical student group were statistically significant with the exception of the data concerning nurses. Nurses scored highest in both data-sets (Intervention=84.91, Control=83.97 (p=0.497)), followed by medics (Intervention=85.30, Control=75.74 (p=0.002), physiotherapists (Intervention=84.80, Control=66.80 (p=0.001)), and pharmacists (Intervention=72.43, Control=59.54 (p=0.020)).

This suggests that medical students who participate in the IPL programme view professions as more caring post-IPL than those who do not.

The results of the control NMC student group for the Caring component are presented below (Table 31).

*Table 31. First-year **control group: NMC students' views of a typical member of each profession on the Caring component**. Statistical analysis for significant difference in **Caring component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	Data collection round	Mean	Median	Standard deviation	Skewness	Mean difference in scores	Normality test (Shapiro-Wilk)	Normally distributed?	Paired samples t-test p-value	Wilcoxon signed-rank test p-value
Pharmacist	Round 1	56.39	56.21	18.31	0.103	2.07	0.005	No	----	0.272
	Round 2	57.35	57.62	14.04	-0.628					
Occupational therapist	Round 1	76.72	77.18	11.28	-0.420	0.42	0.029	No	----	0.300
	Round 2	78.93	81.63	9.98	-0.241					
Medic	Round 1	51.11	51.08	15.49	-0.284	1.79	0.170	Yes	0.577	----
	Round 2	48.97	51.12	12.22	0.464					
Nurse	Round 1	86.86	88.49	10.44	-1.343	-1.00	0.000	No	----	0.173
	Round 2	84.78	87.23	10.56	-0.913					
Physiotherapist	Round 1	66.65	67.84	16.24	0.208	5.22	0.015	No	----	0.091
	Round 2	72.78	68.22	12.35	0.272					

All statistically significant results are highlighted in bold

None of the results from the NMC group were statistically significant. The respective ranking of professions did not change between the first and second rounds of data collection. Nurses were viewed as the most caring profession (86.86 to 84.78 (p=0.173)), followed by occupational therapists (76.72 to 78.93 (p=0.300)), physiotherapists (66.65 to 72.78 (p=0.091)), pharmacists (56.39 to 57.35 (p=0.272)) and medics (51.11 to 48.97 (p=0.577)).

The mean scores for medics and nurses both decreased between data collections, and the scores for the other professions increased. The overall pattern of the order of professions from most to least caring is very similar to that observed from the intervention NMC group, with nurses and therapy professions seen as more caring, and medics and pharmacists less so.

As with previous control group data, the mean differences in scores between data collections were smaller than those for the intervention professional groups. The most striking example is the mean difference between the data collections concerning pharmacists, (Control group=2.07, Intervention group=13.99).

NMC students did not score nurses as substantially more caring than they were seen to be by other professional groups or all professions in the control group, similarly to the data obtained in the intervention group analyses.

The statistical comparison of the NMC student group intervention and control data is presented below (Table 32).

*Table 32. Comparison of the **intervention (I) and the control (C) group**: NMC students' views of a typical member of each profession on the Caring component -Statistical analysis for significant difference in **Caring component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	Data collection round (Intervention (I) Control (C))	Mean	Median	Standard deviation	Skewness	Normality test (Shapiro-wilk)	Normally distributed?	Independent samples t-test p-value	Mann-Whitney U test p-value
Pharmacist	Round 2 (I)	71.18	72.88	12.72	-0.892	0.018	No	----	**0.000**
	Round 2 (C)	57.35	57.62	14.04	-0.628	0.572	Yes		
Medic	Round 2 (I)	69.15	69.16	16.40	-0.516	0.033	No	----	**0.000**
	Round 2 (C)	48.97	51.12	12.22	0.464	0.594	Yes		
Nurse	Round 2 (I)	87.96	90.66	8.83	-1.89	0.000	No	----	0.205
	Round 2 (C)	84.78	87.23	10.56	-0.913	0.080	Yes		
Physiotherapist	Round 2 (I)	82.78	87.72	12.40	-1.368	0.056	Yes	**0.047**	----
	Round 2 (C)	72.78	68.22	12.35	0.272	0.322	Yes		

All statistically significant results highlighted in bold

Like the results for all professions and the medical student group comparison of the intervention and control group data, all the results for the NMC group were statistically significant with the exception of the findings for nurses. Nurse were scored as the most caring profession (Intervention=87.98, Control=84.78 (p=0.205)), followed by physiotherapists (Intervention=82.78, Control=72.78 (p=0.047)), pharmacists (Intervention=71.18, Control=57.53 (p=0.000), and medics (Intervention=69.15, Control=48.97 (p=0.000).

These findings show that NMC students who have participated in the IPL programme generally view professions as statistically significantly more caring than those who have not.

The data from the control HCPC student group are presented below (Table 33).

*Table 33.First-year **control group: HCPC students' views of a typical member of each profession on the Caring component**. Statistical analysis for significant difference in **Caring component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	Data collection round	Mean	Median	Standard deviation	Skewness	Mean difference in scores	Normality test (Shapiro-Wilk)	Normally distributed?	Paired samples t-test p-value	Wilcoxon signed-rank test p-value
Pharmacist	Round 1	59.83	61.92	13.30	-0.514	2.24	0.034	No	----	0.272
	Round 2	62.89	61.57	15.75	0.502					
Occupational therapist	Round 1	86.98	88.05	7.40	-0.783	1.58	0.455	Yes	**0.030**	----
	Round 2	88.15	89.68	7.44	-0.787					
Medic	Round 1	68.54	67.22	16.37	0.011	1.79	0.005	No	----	0.256
	Round 2	67.71	64.50	16.64	0.136					
Nurse	Round 1	85.10	87.62	11.17	-1.193	0.16	0.007	No	----	0.163
	Round 2	81.56	84.87	15.27	-1.032					
Physiotherapist	Round 1	82.75	83.82	10.32	-0.407	0.70	0.269	Yes	0.292	----
	Round 2	80.38	83.87	14.34	-0.440					

All statistically significant results are highlighted in bold

Only the increase in score for occupational therapists was statistically significant in the data from the HCPC students group. The respective rankings of professions did not change between data collections, with occupational therapists seen as the most caring profession (86.98 to 88.15 (p=0.030)) followed by nurses (85.10 to 81.58 (p=0.163)), physiotherapists (82.75 to 80.38 p=0.292)), medics (68.54 to 67.71 (p=0.256)) and pharmacists (59.83 to 62.89 (p=0.272)).

Only the mean scores for occupational therapists and pharmacists increased between completions of the AHPQ, a different pattern to the findings of the intervention HCPC group, where the mean scores for all professions except physiotherapy increased (Table 13). The general decline in mean score on the Caring component is consistent with the other findings from the control group data.

Also similarly to previous findings the mean differences in scores are smaller than those observed in the intervention group. The mean difference in score for pharmacists was largest in both the intervention and control professional group analyses, but was 14.21 in the intervention group, and 2.24 in the control.

HCPC students scored occupational therapists and physiotherapists higher than other professional groups did. This finding is in keeping with those from the medical student and pharmacy student groups, who also scored their own professions more highly on the Caring component. It is however different from the finding of the intervention HCPC student group. This may be reflective of the altered professional compositions of the groups.

The statistical comparison of the intervention and control HCPC student group data is given below (Table 34).

*Table 34. Comparison of the **intervention (I) and the control (C) group**: HCPC students' views of a typical member of each profession on the Caring component -Statistical analysis for significant difference in **Caring component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	Data collection round (Intervention (I) or control (C))	Mean	Median	Standard deviation	Skewness	Normality test (Shapiro-wilk)	Normally distributed?	Independent samples t-test p-value	Mann-Whitney U test p-value
Pharmacist	Round 2 (I)	71.62	70.59	8.01	0.352	0.991	Yes	**0.043**	----
	Round 2 (C)	62.89	61.58	12.75	0.502	0.586	Yes		
Medic	Round 2 (I)	69.91	68.16	13.96	-0.101	0.423	Yes	0.659	----
	Round 2 (C)	67.71	64.50	16.64	0.136	0.506	Yes		
Nurse	Round 2 (I)	82.63	85.01	12.87	-2.322	0.000	No	----	0.903
	Round 2 (C)	81.59	84.87	15.27	-1.032	0.063	Yes		
Physiotherapist	Round 2 (I)	74.58	76.27	9.01	-0.632	0.753	Yes	0.343	----
	Round 2 (C)	80.38	83.87	14.34	-0.440	0.122	Yes		

All statistically significant results highlighted in bold

HCPC students viewed nurses as the most caring profession in both the intervention and control data (Intervention=82.63, Control=81.59 (p=0.903)) followed by physiotherapists (Intervention=74.58, Control=80.38 (p=0.343)). Pharmacists were seen as second least caring in the intervention data and least caring in the control (Intervention=71.62, Control =62.89 (p=0.43)), changing places with medics (Intervention=69.91, Control=67.71 (p=0.659)). Only the result for pharmacists was statistically significant.

Unlike all other professional group analyses, HCPC students scored physiotherapists more highly in the control group than the intervention group. This may be due to the different compositions of the HCPC student groups. With the exception of the results for pharmacists, the IPL programme does not appear to have a significant effect on how caring HCPC students consider professions to be.

The discussion for the Caring component professional group analyses is presented following the data concerning the Subservient component.

Subservient component

The Subservient component analysis from the control Pharmacy student group data is presented below (Table 35).

*Table 35. First-year **control group: pharmacy students' views of a typical member of each profession on the Subservient component**. Statistical analysis for significant difference in **Subservient component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject professions	Data collection round	Mean	Median	Standard deviation	Skewness	Mean difference in scores	Normality test (Shapiro-Wilk)	Normally distributed?	Paired samples t-test p-value	Wilcoxon signed-rank test p-value
Pharmacist	Round 1	9.87	10.35	4.20	-0.144	-0.64	0.044	No	----	0.205
	Round 2	9.22	8.52	3.71	0.492					
Occupational therapist	Round 1	12.57	11.64	4.86	0.226	-0.13	0.097	Yes	0.824	----
	Round 2	11.93	11.04	3.75	0.773					
Medic	Round 1	5.18	5.52	2.71	-0.225	0.57	0.062	Yes	0.233	----
	Round 2	5.61	6.06	2.38	-0.580					
Nurse	Round 1	15.18	15.18	5.95	-0.085	0.29	0.803	Yes	0.659	----
	Round 2	15.75	15.13	5.81	0.148					
Physiotherapist	Round 1	12.32	12.98	3.92	-1.174	-0.18	0.257	Yes	0.828	----
	Round 2	12.35	13.29	2.88	-0.922					

All statistically significant results are highlighted in bold

Nurses were seen as the most subservient profession in both data collection rounds (15.18 to 15.75 (p=0.659)), followed by occupational therapists (12.57 to 11.93 (p=0.824)) in the first round, who exchanged places with physiotherapists in the second (12.32 to 12.35 (p=0.828)), with pharmacists (9.87 to 9.22 (p=0.205)) and medics (5.18 to 5.61 (p=0.233)) remaining fourth and fifth in both rounds. There is no clear pattern to the data, with pharmacists and occupational therapists scoring lower in the second round, and all other professions higher.

None of the results were statistically significant, and the changes in score are extremely small, indicating an overall null effect. Pharmacy students scored pharmacists as less subservient than all professions did, as did the intervention group of pharmacy students.

The statistical comparison of the intervention and control Subservient component data for this group is presented below (Table 36).

*Table 36. Comparison of the **intervention (I) and the control (C) group: pharmacy students' views of a typical member of each profession on the Subservient component -**Statistical analysis for significant difference in **Subservient component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	Data collection round (Intervention (I) or control (C))	Mean	Median	Standard deviation	Skewness	Normality test (Shapiro-wilk)	Normally distributed?	Independent samples t-test p-value	Mann-Whitney U test p-value
Pharmacist	Round 2(I)	8.35	8.18	3.36	-0.050	0.758	Yes	0.349	----
	Round 2(C)	9.22	8.52	3.71	0.492	0.167	Yes		
Medic	Round 2(I)	5.83	5.42	2.94	0.876	0.124	Yes	0.776	----
	Round 2(C)	5.61	6.06	2.38	-0.580	0.263	Yes		
Nurse	Round 2(I)	14.00	14.13	6.41	0.121	0.966	Yes	0.345	----
	Round 2(C)	15.75	15.13	5.81	0.148	0.610	Yes		
Physiotherapist	Round 2(I)	-	-	-	-	-	-	-	-
	Round 2(C)	12.35	13.29	2.88	-0.922	0.126	Yes		

All statistically significant results highlighted in bold

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None of the results of the intervention and control group comparison were statistically significant. Nurses were seen as most subservient in both data-sets (Intervention=14.00, Control=15.75 (p=0.345)), then pharmacists (Intervention=8.35, Control=9.22 (p=0.349), and medics (Intervention=5.83, Control=5.61 (p=0.776)).

This suggests that participation in the IPL programme does not have an effect on pharmacy students' views of how subservient professions are. The results of the medical students group for the Subservient component are given below (Table 37).

*Table 37. First-year **control group: medical students' views of a typical member of each profession on the Subservient component**. Statistical analysis for significant difference in **Subservient component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Variable	Mean	Median	Standard deviation	Skewness	Mean difference in scores	Normality test (Shapiro-Wilk)	Normally distributed?	Paired samples t-test p-value	Wilcoxon signed-rank test p-value
C2PH1	10.20	10.02	3.84	0.077	-0.32	0.515	Yes	0.540	----
C2PH2	11.64	12.58	4.84	-0.067					
C2OT1	11.16	12.73	6.59	0.007	0.72	0.185	Yes	0.183	----
C2OT2	14.04	12.63	4.49	0.073					
C2ME1	6.53	4.78	5.98	2.124	-1.34	0.000	No	----	0.477
C2ME2	5.78	5.68	3.43	0.771					
C2N1	14.71	12.64	7.35	1.097	-1.57	0.000	No	----	0.441
C2N2	12.17	12.51	6.00	0.239					
C2PT1	10.97	11.04	5.58	-0.418	-0.63	.	.	----	0.180
C2PT2	11.23	9.91	4.02	1.939					

All statistically significant results highlighted in bold

None of the results from the medical student group are statistically significant, and due to the small changes between data collection rounds, there is no clear pattern of results, except that medics are viewed as the least subservient profession overall (6.53 to 5.78 (p=0.477)), scoring noticeably lower than other professions, whose scores range from 10.20 to 14.71 in the before data, to 11.23 to 14.04 in the after data.

This is different to the intervention group group data, where medics saw all professions as less subservient after IPL, except medics and pharmacists.

The statistical comparison of the intervention and control Subservient component data for this group is given below (Table 38).

*Table 38. Comparison of the **intervention (I) and the control (C) group**: **medical students' views of a typical member of each profession on the Subservient component -***Statistical analysis for significant difference in **Subservient component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	Data collection round (Intervention (I) or control (C))	Mean	Median	Standard deviation	Skewness	Normality test (Shapiro-wilk)	Normally distributed?	Independent samples t-test p-value	Mann-Whitney U test p-value
Pharmacist	Round 2 (I)	11.64	10.80	5.21	0.485	0.568	Yes	1.00	----
	Round 2 (C)	11.64	12.58	4.84	-0.067	0.960	Yes		
Medic	Round 2 (I)	7.56	6.76	3.43	0.629	0.193	Yes	0.086	----
	Round 2 (C)	5.78	5.68	3.43	0.771	0.578	Yes		
Nurse	Round 2 (I)	13.91	12.59	5.26	1.17	0.019	No	----	0.385
	Round 2 (C)	12.17	12.51	6.00	0.239	0.925	Yes		
Physiotherapist	Round 2 (I)	8.48	8.34	1.38	-0.429	0.638	Yes	----	0.116
	Round 2 (C)	11.23	9.91	4.02	1.94	0.033	No		

All statistically significant results highlighted in bold

None of the results in this comparison were statistically significant. Nurses were seen as most subservient in both data-sets (Intervention=13.91, Control=12.17 (p=0.385)), followed by pharmacists (Intervention=11.64, Control=11.64 (p=1), physiotherapists (Intervention=8.48, Control=11.23 (p=0.116)) and medics (Intervention=7.59, Control=5.78)).

This suggests that there is no statistically significant difference in the views of medical students between the intervention and control groups for the Subservient component, despite medics viewing their own profession as more subservient in the intervention group.

The control group Subservient component results for the NMC group are given below (Table 39).

*Table 39. First-year **control group: NMC students' views of a typical member of each profession on the Subservient component**. Statistical analysis for significant difference in **Subservient component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	Data collection round	Mean	Median	Standard deviation	Skewness	Mean difference in scores	Normality test (Shapiro-Wilk)	Normally distributed?	Paired samples t-test p-value	Wilcoxon signed-rank test p-value
Pharmacist	Round 1	12.30	11.62	4.64	-0.138	-1.49	0.612	Yes	0.233	----
	Round 2	11.04	10.04	4.71	0.653					
Occupational therapist	Round 1	10.90	10.47	4.29	0.364	-0.82	0.011	No	----	**0.026**
	Round 2	9.05	9.28	3.92	0.488					
Medic	Round 1	5.92	6.03	3.87	1.258	0.03	0.933	Yes	0.960	----
	Round 2	4.99	5.11	1.66	0.723					
Nurse	Round 1	12.73	12.86	4.76	-0.024	-0.92	0.121	Yes	0.146	----
	Round 2	10.99	11.08	3.67	0.017					
Physiotherapist	Round 1	8.35	8.12	2.50	-0.215	-0.38	0.119	Yes	0.294	----
	Round 2	8.88	8.82	3.00	1.237					

All statistically significant results highlighted in bold

The NMC student group viewed nurses (12.73 to 10.99 (p=0.146)) as the most subservient profession in the first round of data collection, swapping places with pharmacists in the second (12.30 to 11.04 (p=0.233)). Occupational therapists were ranked third (10.90 to 9.05 (p=0.026)), followed by physiotherapists (8.35 to 8.88 (p=0.294)) and medics (5.92 to 4.99 (p=0.966)). Only the finding for occupational therapists was statistically significant.

NMC students gave lower scores to nurses than other professional groups did, consistent with findings from the NMC intervention group. The decrease in score for medics is opposite to the finding for the intervention group, but both results were not statistically significant.

The statistical comparison of the NMC group intervention and control data for the Subservient component is presented below (Table 40).

*Table 40. Comparison of the **intervention (I) and the control (C) group**: NMC students' views of a typical member of each profession on the Subservient component -Statistical analysis for significant difference in **Subservient component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	Data collection round (Intervention (I) or control (C))	Mean	Median	Standard deviation	Skewness	Normality test (Shapiro-wilk)	Normally distributed?	Independent samples t-test p-value	Mann-Whitney U test p-value
Pharmacist	Round 1 (I)	9.10	8.01	4.05	0.431	0.186	Yes	0.081	----
	Round 2 (C)	11.04	10.04	4.71	0.653	0.382	Yes		
Medic	Round 1 (I)	5.95	4.73	4.28	1.184	0.001	No	----	0.815
	Round 2 (C)	4.99	5.11	1.66	0.723	0.340	Yes		
Nurse	Round 1 (I)	11.79	11.62	5.10	0.757	0.013	No	----	0.729
	Round 2 (C)	10.99	11.08	3.67	0.017	0.521	Yes		
Physiotherapist	Round 1 (I)	8.46	6.79	4.38	0.661	0.113	Yes	0.776	----
	Round 2 (C)	8.88	8.82	3.00	1.237	0.132	Yes		

All statistically significant results highlighted in bold

None of the findings for the intervention and control comparison of the Subservient component were statistically significant. Nurses were scored as most subservient in the intervention group and second most in the control group (Intervention=11.79, Control=10.99 (p=0.729)), a switch with pharmacists (Intervention=9.10, Control=11.04 (p=0.081)). Physiotherapists were ranked third in both (Intervention=8.46, Control=8.88 (p=0.776)), and medics as least subservient (Intervention=5.95, Control=4.99 (p=0.815)).

This indicates statistically significant effect of the IPL programme on NMC students' perceptions of professions subservience.

The control group Subservient component results for the HCPC student group are given below (Table 41).

*Table 41. First-year **control group: HCPC students' views of a typical member of each profession on the Subservient component**. Statistical analysis for significant difference in **Subservient component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	Data collection round	Mean	Median	Standard deviation	Skewness	Mean difference in scores	Normality test (Shapiro-Wilk)	Normally distributed?	Paired samples t-test p-value	Wilcoxon signed-rank test p-value
Pharmacist	Round 1	10.11	9.81	3.36	-0.238	-0.64	0.055	Yes	0.278	----
	Round 2	9.20	9.11	3.13	0.053					
Occupational therapist	Round 1	11.00	11.00	4.92	1.244	-1.84	0.000	No	----	0.113
	Round 2	10.25	9.88	4.61	1.142					
Medic	Round 1	4.58	3.67	3.30	-0.004	-0.27	0.041	No	----	0.256
	Round 2	5.23	5.85	3.23	0.161					
Nurse	Round 1	12.81	12.30	4.77	1.31	-0.13	0.152	Yes	0.512	----
	Round 2	12.55	11.80	5.31	1.725					
Phaysiotherapist	Round 1	7.23	7.31	2.06	0.130	-0.58	0.023	No	----	0.139
	Round 2	7.70	7.01	4.02	1.747					

All statistically significant results highlighted in bold

HCPC students viewed nurses as the most subservient profession (12.81 to 12.55 (p=0.512)), followed by occupational therapists (11.00 to 10.25 (p=0.113)), pharmacists (10.11 to 9.20 (p=0.278)), physiotherapists (7.23 to 7.70 (p=0.139)) and medics (4.58 to 5.23 (p=0.256)). Physiotherapists and medics, the two least subservient professions increased in score while the other professions decreased, but none of the results were statistically significant.

HCPC students scored physiotherapists as less subservient than other professional groups did, but occupational therapists were viewed more similarly. The statistical comparison of the HCPC student intervention and control group data is presented (Table 42) below.

*Table 42. Comparison of the **intervention (I) and the control (C) group**: **HCPC students' views of a typical member of each profession on the Subservient component -***Statistical analysis for significant difference in **Subservient component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	Data collection round (Intervention (I) or control (C))	Mean	Median	Standard deviation	Skewness	Normality test (Shapiro-wilk)	Normally distributed?	Independent samples t-test p-value	Mann-Whitney U test p-value
Pharmacist	Round 2 (I)	10.50	10.71	3.93	-0.026	0.683	Yes	0.316	----
	Round 2 (C)	9.20	9.11	3.13	0.053	0.554	Yes		
Medic	Round 2 (I)	8.32	8.13	3.49	0.602	0.608	Yes	**0.007**	----
	Round 2 (C)	5.23	5.85	3.23	0.161	0.866	Yes		
Nurse	Round 2 (I)	15.10	15.37	4.86	-0.021	0.508	Yes	----	**0.032**
	Round 2 (C)	12.55	11.80	5.31	1.725	0.007	No		
Physiotherapist	Round 2 (I)	10.55	9.35	2.91	0.404	0.409	Yes	----	**0.026**
	Round 2 (C)	7.70	7.01	4.02	1.75	0.019	No		

All statistically significant results highlighted in bold

The results for all professions except pharmacists were statistically significant in the HCPC group intervention and control comparison. This finding is very different from other professional groups, where none of the Subservient component results were significant. HCPC students viewed nurses as most subservient in both data collection rounds (Intervention=15.10, Control=12.55 (p=0.032)), physiotherapists second in the intervention data (Intervention=10.55, Control=7.70 p=0.026)), swapping with pharmacists to third in the control data (Intervention=10.50, Control=9.20 (p=0.316)) and medics least (Intervention=8.32 Control=5.23 (p=0.007)).

All professions were viewed as less subservient in the control group data. As medics, pharmacists and physiotherapists were generally seen as less subservient in other analyses, IPL may have an effect on the views of HCPC students, causing them to view these professions as more subservient after participation. The data for nurses does not follow previous patterns, and it is not clear why.

5.2.7 Discussion of findings from first-year control group and comparison with intervention group data – By professional groups

The distribution of responses from each professional group was more even, but lower, in the control group than the intervention group. Particular care should be taken when considering the views from pharmacy, medical and NMC students towards physiotherapists and occupational therapists, as these responses were particularly low in number, and possibly not representative.

Like the data from all professions, very few of the results from the control professional groups were statistically significant, indicating a far lesser effect than for the students who had participated in the

intervention group. The smaller magnitude of the observed changes further confirms an overall null effect.

As with the intervention professional groups, students scored their own professions on the Caring component more highly than others did. The view of one's own profession as more caring appears to be constant regardless of participation in the IPL programme. The intervention professional groups, however, are more likely to have further increased the score allocated to their own profession, whereas the control professional groups predominantly show a drop in the score for the caring component. The views of medics are most divergent between in-group and out-group members. Like the intervention professional groups, medical students viewed medics as the second-most caring profession, in contrast to the views of the other professional groups, who viewed medics as the least or second-least caring profession. Another example of this is the view of physiotherapists, who scored higher in the HCPC students' group than in the other professional groups. This result may be clearer here due to physiotherapists making up a greater proportion of the control HCPC group than the intervention HCPC group. These disparities in in- and out-group views may result in tensions between professional groups. (Carpenter, 1995a; Lidskog *et al.*,2008). This may be relevant to the increase in the perception of how caring one's own profession is after participating in IPL. With the majority of professions already viewing their own profession as more than others do, a further increase in the perception of how caring one's own profession is considered to be may increase this disparity in views further. This may have negative consequences for future further interprofessional interaction if other professions are not also seen as more similar to one's own.

The intervention and control professional group analysis for the Caring component presents a mixed picture, with the majority of

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the data from medical and NMC students being statistically significant and very few for pharmacy students and HCPC students being so. The results showed that all professions were seen as more Caring in the intervention group results than the control group results, with the exception of the result for physiotherapists from HCPC students. This difference may be due to the altered composition of the HCPC student group, with the control group having a higher proportion of physiotherapists, thus skewing the data. It appears that while HCPC students have been grouped together to provide greater statistical power when exploring the results of this study, the heterogeneity of the group may have led to a slightly more confused picture when examining the findings.

One explanation for the lack of statistically significant findings for the intervention and control comparison of pharmacy student data is that the IPL programme did not have as great an effect on pharmacy students, a finding that was also seen in the intervention group data for pharmacists. The idea that the IPL programme may have more of an effect on some professions than others may be worthy of further investigation in the future

None of the professional groups recorded a statistically significant difference in the perception of nurses. This is most likely due again to a ceiling effect (Lewis-Beck *et al.,* 2004), as nurses are consistently rated highly on the caring subscale for both intervention and control groups. This reinforces the idea that the association of 'caring' with nurses is particularly strong regardless of IPL.

Only one statistically significant result was seen in the control professional group analysis for the Subservient component; NMC students viewing occupational therapists in the second round data. The results for this component were very mixed, with no clear

picture gained from comparison of the professional group results. The general trend of medics scoring lowest and nurses highest remains the same as other analyses, but whether they are seen as more or less so in the second round varies between professional groups. This lack of a strong upward or downward trend in the results of both the all professions combined and professional group analyses suggests that there is no effect on the perception of how subservient professions are seen to be in the intervening weeks between the first and second completions of the AHPQ in the control group.

One of the most prominent findings of the intervention group, that medics were considered slightly more subservient after participation in the IPL programme was not seen in the control group findings. This indicates that medics may be perceived as being less dominant after students have participated in IPL, a finding shared by Hawkes *et al.* (2013) and Lindqvist *et al.* (2005b). All professional groups, with the exception of pharmacy students, scored medics a lower score in the second round data. While none of these findings were statistically significant in the control or intervention and control professional group comparisons, a weakly downward trend was observed, which contrasts with the weakly positive trend observed in the intervention group. The change seen in the results of the intervention group bring the perception of medics slightly closer to how the other professions are viewed. This small change may be helpful, as a sense of equality among group-members has been stated as a necessary condition for successful interprofessional interaction (Bridges and Tomkowiak, 2010; Hean and Dickinson, 2005; Pettigrew, 1998) This small finding may be influenced by the experience of working with medical students within a team, whereas the control group have no such experience. Instead this group may be basing their opinions on preconceptions

held about medics prior to entering their training(Hall, 2005; Hean *et al.,* 2006).

5.3 Intervention and final-year group data

5.3.1 Participants in final-year group

The final point of comparison is that of the 'after' intervention group data and the final-year data to see how attitudes develop between completion of IPL1 and the end of students' study. The professions included in this comparison are:

- Pharmacists
- Medics
- Nurses
- Physiotherapists
- Midwives
- Speech and language therapists
- Operating department practitioners

The lack of occupational therapists in the intervention group prevented any comparison with data from final-years concerning the profession.

5.3.2 Responses from final-year group students: all professions

The number of responses from final-years (Table 43) was considerably lower than the number of responses from the first-year intervention group. This may be because at the time of this study AHPQ data was not routinely collected from final-year students, and there was no compulsory IPL in students' final year of training. 146 final-year students completed the AHPQ to some degree, compared with 351 in the first-year intervention group (Table 43). The completion rates within the final-year group, however, were significantly higher than the rates within the first-year group for some professions.

Table 43. First-year intervention group and final-year group: all participants - Number of responses about each profession

Profession (n first-year int = 351, n final-years = 146)	Component	First-year Int, n (%)	Final-years, n (%)
Pharmacist	1 – Caring	105 (29.9)	92 (63.0)
	2 - Subservient	106 (30.2)	92 (63.0)
Medic	1 – Caring	135 (38.5)	127 (87)
	2 – Subservient	136 (38.7)	128 (87.7)
Nurse	1 – Caring	137 (39.0)	120 (82.2)
	2 - Subservient	138 (39.3)	120 (82.2)
Physiotherapist	1 – Caring	26 (7.4)	39 (26.7)
	2 – Subservient	26 (7.4)	39 (26.7)
Midwife	1 – Caring	56 (16)	24 (16.4)
	2 – Subservient	56 (16)	24 (16.4)
Speech and language therapist	1 – Caring	93 (26.5)	29 (19.9)
	2 – Subservient	94 (26.8)	29 (19.9)
Operating department practitioner	1 – Caring	18 (5.1)	21 (14.4)
	2 - Subservient	18 (5.1)	21 (14.4)

The percentage of responses from final-year students concerning medics (87%/87.7%), nurses (82.2%), and pharmacists (63%) were particularly high, resulting in comparable numbers with the intervention group (Table 43). Final-years provided more responses than first-years regarding physiotherapists (n=39 and n=26 respectively) and operating department practitioners (n=21 and n=18 respectively), but far fewer regarding midwives (n=24 and n=56 respectively) and speech and language therapists (n=29 and n=93 respectively) (Table 43). The findings of the Caring component comparison of the intervention second round data and final-year data for all participants are given below (Table 44).

*Table 44. Comparison of the **intervention and final-year groups: all participants' views of a typical member of each profession on the Caring component** - Statistical analysis for significant difference in **Caring component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	Data collection round (Intervention or Final)	Mean	Median	Standard deviation	Skewness	Normality test (Shapiro-wilk)	Normally distributed?	Independent samples t-test p-value	Mann-Whitney U test p-value
Pharmacists	Intervention	74.02	74.12	12.26	-0.656	0.008	No	----	**0.007**
	Final	65.83	66.74	17.99	-0.261	0.061	Yes		
Medics	Intervention	73.48	76.09	15.23	0.209	0.000	No	----	**0.005**
	Final	65.81	67.63	17.77	0.859	0.080	Yes		
Nurses	Intervention	86.48	89.12	10.03	-1.760	0.000	No	----	0.065
	Final	84.03	86.23	11.08	-0.936	0.000	No		
Physiotherapists	Intervention	81.12	81.29	10.89	-0.814	0.204	Yes	**0.027**	----
	Final	74.59	73.31	12.99	0.186	0.545	Yes		
Midwives	Intervention	84.42	86.66	10.86	-0.764	0.006	No	----	0.098
	Final	79.09	80.12	13.73	-0.517	0.112	Yes		
Speech and language therapists	Intervention	82.36	85.00	12.69	-1.83	0.000	No	----	**0.005**
	Final	67.02	70.98	16.42	-0.195	0.001	No		
Operating department practitioners	Intervention	72.03	69.04	14.53	0.267	0.474	Yes	0.958	----
	Final	69.21	69.41	16.73	-0.770	0.235	Yes		

All statistically significant results highlighted in bold

All of the scores given by final-year students for the Caring component data were lower than those for the first-year intervention group. The respective ranking of professions differed in each data set. The first-year intervention group scored nurses highest (86.68), followed by midwives (84.42), speech and language therapists (82.32), physiotherapists (81.12), pharmacists (74.02), medics (73.48) and operating department practitioners (72.03).Final-years also scored nurses highest (84.03), followed by midwives (79.09), then the order changed with physiotherapists ranked third (74.59), followed by operating department practitioners (69.21), speech and language therapists (67.02), pharmacists (65.83) and medics (65.81).

All of the scores from final-year students were lower than the results from the first-year intervention group, and the differences for pharmacists (p=0.007), medics (p=0.005) physiotherapists (p=0.027) and speech and language therapists (p=0.005) were statistically significant.

The scores for nurses (First–year intervention=86.48, final-years=84.03 p=0.065)) and operating department practitioners (First-year intervention=72.03, final-years=69.21 (p=0.958)) were similar in both sets of data collection, and the score for midwives (First-year intervention=84.42, final-years=79.09 (p=0.098)) only slightly less so.

The results of the first-year intervention and final-year group data for the Subservient component (Table 45) are given below.

*Table 45. Comparison of the **intervention and final-year groups: all participants' views of a typical member of each profession on the Subservient component** -Statistical analysis for significant difference in **Subservient component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	Data collection round (Intervention or Final)	Mean	Median	Standard deviation	Skewness	Normality test (Shapiro-wilk)	Normally distributed?	Independent samples t-test p-value	Mann-Whitney U test p-value
Pharmacists	Intervention	9.40	9.36	4.13	0.493	0.066	Yes	0.159	----
	Final	10.27	10.05	4.16	0.124	0.274	Yes		
Medics	Intervention	6.60	6.33	3.85	0.859	0.000	No	----	0.723
	Final	6.28	6.04	3.26	0.261	0.070	Yes		
Nurses	Intervention	13.08	12.35	5.46	0.529	0.021	No	----	0.363
	Final	13.99	12.99	5.05	0.690	0.002	No		
Physiotherapists	Intervention	9.03	8.62	3.44	0.448	0.516	Yes	0.180	----
	Final	10.50	10.45	4.50	0.263	0.728	Yes		
Midwives	Intervention	10.37	9.93	4.26	0.385	0.678	Yes	0.144	----
	Final	12.05	10.73	5.74	0.568	0.138	Yes		
Speech and language therapists	Intervention	11.80	12.19	4.52	-0.016	0.600	Yes	0.168	----
	Final	12.79	12.42	3.76	-0.503	0.149	Yes		
Operating department practitioners	Intervention	13.60	12.21	6.57	0.644	0.383	Yes	0.314	----
	Final	11.81	11.71	4.62	-0.479	0.474	Yes		

All statistically significant results are highlighted in bold

None of the differences between the first-year intervention group and final-year data for the Subservient component were statistically significant. The respective rankings of professions was altered between the two groups due to the fact that operating department practitioners were seen as the most subservient profession by the first-year intervention group, and the fourth most by the final-years (First-year intervention=13.60, final-year=11.81 (p=0.314)), and physiotherapists were ranked as the second-least subservient profession by first-years and the third-least by final-years (First-year intervention=9.03, final-years=10.50 (p=0.180)). Otherwise nurses (First-year intervention=13.08, final-years=13.99 (p=0.363)) and speech and language therapists (First-year intervention=11.80, final-year=12.79 (p=0.168)) were seen in both groups as more subservient, and pharmacists (First-year intervention=9.40, final-year= 10.27 (p=0.159)) medics (First-year intervention=6.60, final-year=6.28 (p=0.723)) less so. Midwives occupied the mid-range in both sets of results (First-year intervention=10.37, final-year=12.05 (p=0.144)).

Final-years scored medics and operating department practitioners lower than first-years, and all other professions higher, though as with findings from other analyses, the differences in scores were all much smaller than those seen in the Caring component.

5.3.3 Discussion of comparison between first-year intervention group and final-year data – All participants

Final-year students scored all professions lower on the Caring component than first-year intervention group students did. In the case of the results concerning pharmacists, medics, physiotherapists and speech and language therapists these differences were statistically significant, representing a shift in

perception of these professions. By contrast the results for nurses, midwives, and operating department practitioners are similar in both groups, but still saw a decrease in score.

The scores given by the final-year students for all professions are lower than those given by the first-year intervention group students prior to participating in IPL1. As all professions are scored lower by final-year students than first-year students, it does not appear that as students have progressed through their studies that any one profession in particular is now seen as far less caring, but rather that all professions are not thought to be as caring at the end of students' training as they were at the outset. This trend is less pronounced for the results concerning nurses, midwives and operating department practitioners. To understand why this change in score has occurred more information is needed.

The previously noted trend of medics and pharmacists viewed as the least caring professions, and nurses and midwives as the most is also seen in the final–year data, reflecting patterns seen earlier in this study, and in previous studies using the AHPQ, (Jacobsen and Lindqvist, 2009; Lindqvist *et al.,* 2005b; Hawkes *et al.,* 2013). The order in which physiotherapists, speech and language therapists and operating department practitioners appear has changed slightly, due to the larger drop in scores seen for speech and language therapists and physiotherapists, and the sustained score for operating department practitioners.

Speculatively, the drop in score may be due to the fact that students in their final-year of study have had more exposure to healthcare professionals in practice and more time in which to build an opinion about healthcare professionals that is based more in fact than in the notions that they had about different professions when they entered their respective courses. If this theory is correct,

however, then it would seem that rather than students' post-IPL1 views of professions are slightly tempered by their experiences between their first-year experiences of IPE and reaching the final stages of their training. The scores for nurses and midwives may have been less affected due to the particularly strong association with caring for these professions discussed previously. It appears that the effects of the IPL programme on the perception of caring are not wholly sustained into students' final year

Very few studies exist on the longitudinal results of a programme of IPE, a need for further research that was identified in the literature review (Chapter Three). The study by Coster *et al.* (2008) presents the findings of a longitudinal study on students' attitudes towards IPE, which reinforced the idea that students enter their training with a strong sense of professional identity, but that it declined over time. They also noted that students who were least ready for IPE exhibited the most dramatic drop in their attitudes towards IPE. While these findings do not directly correspond to the pattern seen in the results of the present study, it may be worth considering that if they were negatively disposed towards IPL, the lower views of the final-year students could be due to a reverse Hawthorne Effect (Zdep and Irvine, 1970). In this case, a participant chooses to express their displeasure with something by displaying the opposite behaviour expected of them. Pollard and Miers (2008) also stated that students who participated in IPE became less positive as they progressed through their training.

When completing the AHPQ students are able to see the previous scores that they have given. If students were dissatisfied with their experiences of IPE it is possible that they could have used the additional completion of the AHPQ to vent some of their frustrations in a consequence-free way. As the AHPQ is anonymous and their departure from the university was imminent, students

may have felt more confident in expressing a negative opinion without any fear of reprisal or negative outcome.

The Subservient component comparison yielded no statistically significant results. With the exception of medics and operating department practitioners all professions were seen as more subservient by final-year students than first-year intervention group students. The changes in score for medics was small, a decrease of .32, an almost negligible result. The change for operating department practitioners was larger, with a decrease of 1.79, but only 18 first-years and 21 final-years provided data about this profession. It is therefore not possible to draw any firm conclusions regarding operating department practitioners.

The differences between the data collection rounds were small, as was previously seen for Subservient component results, meaning that small changes can cause changes in respective rankings easily, but may not translate to a large shift in real-world attitudes. The pattern of nurses being seen as one of the most subservient professions, and medics as the least observed throughout the AHPQ analyses is observed here also, suggesting that views about these professions are most constant.

The positive changes in score are relatively small, but do indicate a trend. Previously it was hypothesised that students' lower scores for the Caring component may be due to their greater practical experience with interacting with healthcare professionals, and it is possible that the higher scores for the Subservient component are due to the same phenomenon. With greater exposure to working in healthcare teams on practical placements by their final year, students have had a chance to observe real-world healthcare practice and the interactions between staff of different professions. With this experience it is possible that students' opinions of

professionals' teamworking ability has improved to the point that is has altered their responses concerning the second component of the AHPQ. Hylin *et al.* (2007) noted that students who had participated in a two-week interprofessional learning course on a training ward that focused on teamworking were more positive about interprofessional working and actively encouraged teamwork in their current practice.

If the final-year students who completed the AHPQ in this study had experienced positive examples of teamwork in their training then it is possible that it may have translated into higher scores for the healthcare professions seen in the Subservient component results. This finding is in direct contrast to the majority of the other findings for the Subservient component, where there has been either no discernible trend, or a weak trend towards most professions being seen as less subservient, except for medics.

It is difficult to explain with great confidence precisely why the results for the final-year students exhibits a different trend from the results obtained from the first-year students, but the most likely explanation is due to final-year students' increased practical experience of interprofessional interaction and observation. If medics are seen as increasingly less subservient than other professions by final-year students, this could have implications with respect to interprofessional teamworking, as a sense of equality among group members is a necessary pre-requisite for success (Bridges and Tomkowiak, 2010; Hean and Dickinson, 2005; Hewstone and Brown, 1986; Pettigrew, 1998).

5.3.4 Responses from final-year group students: by professional groupings

The professional groups for this analysis were the same as those for all previous analyses of the AHPQ data. The only difference was that the final-year HCPC students group was comprised of all the professions that had been previously included in the intervention and the control groups: occupational therapists, physiotherapists, speech and language therapists and operating department practitioners. The first-year intervention HCPC group did not include occupational therapists.

The number of respondents from each professional group and the number and percentage of participants within those groups that provided data about each profession varied considerably (Tables 46, 47, 48 and 49).

Table 46. First-year intervention group and final-years: pharmacy students – Number of responses about each profession

Profession (n first-years =52, n final-years =27)	Component	First-year Int, n (%)	Final-years, n (%)
Pharmacist	1 – Caring	49 (94.2)	26 (96.3)
	2 - Subservient	50 (96.2)	26 (96.3)
Medic	1 – Caring	40 (76.9)	21 (77.8)
	2 – Subservient	40 (76.9)	21 (77.8)
Nurse	1 – Caring	36 (29.2)	20 (74.1)
	2 - Subservient	37 (71.2)	20 (74.1)
Physiotherapist	1 – Caring	-	8 (29.6)
	2 – Subservient	-	8 (29.6)
Midwife	1 – Caring	24 (46.2)	5 (18.5)
	2 – Subservient	24 (46.2)	5 (18.5)
Speech and language therapist	1 – Caring	43 (82.7)	7 (25.9)
	2 – Subservient	43 (82.7)	7 (25.9)
Operating department practitioner	1 – Caring	-	-
	2 - Subservient	-	-

52 first-year and 27 final-year students provided data. The numbers of responses from final-years concerning physiotherapists (n=8), midwives (n=5) and speech and language therapists (n=7) were very low. First-year students did not provide any valid responses concerning physiotherapists and neither group provided any valid responses concerning operating department practitioners.

Table 47. First-year intervention group and final-years: medical students – Number of responses about each profession

Profession (n first-years = 77, n final-years = 47)	Component	First-year Int, n (%)	Final-years, n (%)
Pharmacist	1 – Caring	25 (32.5)	30 (63.8)
	2 - Subservient	25 (32.5)	30 (63.8)
Medic	1 – Caring	72 (93.5)	46 (97.9)
	2 – Subservient	72 (93.5)	46 (97.9)
Nurse	1 – Caring	65 (84.4)	44 (93.6)
	2 - Subservient	65 (84.4)	44 (93.6)
Physiotherapist	1 – Caring	32 (41.6)	16 (34.)
	2 – Subservient	32 (41.6)	16 (34.)
Midwife	1 – Caring	15 (19.5)	9 (19.2)
	2 – Subservient	15 (19.5)	9 (19.2)
Speech and language therapist	1 – Caring	24 (31.2)	8 (17.)
	2 – Subservient	24 (31.2)	8 (17.)
Operating department practitioner	1 – Caring	25 (32.5)	2 (4.3)
	2 - Subservient	25 (32.5)	2 (4.3)

77 first-year and 47 final-year students provided data. The number of responses from final-years concerning physiotherapists was low (n=16), and those concerning midwives (n=9), speech and language therapists (n=8) and operating department practitioners (n=2) were very low.

Table 48. First-year intervention group and final-years: NMC students – Number of responses about each profession

Profession (n first-years = 160, n final-years = 58	Component	First-year Int, n (%)	Final-years, n (%)
Pharmacist	1 – Caring	66 (41.3)	31 (53.5)
	2 - Subservient	67 (41.9)	31 (53.5)
Medic	1 – Caring	140 (87.5)	52 (89.7)
	2 – Subservient	140 (87.5)	53 (91.4)
Nurse	1 – Caring	143 (89.4)	56 (96.6)
	2 - Subservient	144 (90)	56 (96.6)
Physiotherapist	1 – Caring	52 (32.5)	21 (36.2)
	2 – Subservient	52 (32.5)	21 (36.3)
Midwife	1 – Caring	42 (26.3)	8 (13.8)
	2 – Subservient	43 (26.9)	8 (13.8)
Speech and language therapist	1 – Caring	61 (38.1)	10 (17.2)
	2 – Subservient	61 (38.1)	10 (17.2)
Operating department practitioner	1 – Caring	43 (26.9)	14 (24.1)
	2 - Subservient	43 (26.9)	14 (24.1)

160 first-years and 58 final-years provided data. Due to the much smaller group of final-years all responses were fewer, but those for midwives (n=8), speech and language therapists (n=10) and operating department practitioners (n=14) were particularly low.

Table 49. First-year intervention group and final-years: HCPC students – Number of responses about each profession

Profession (n first-years = 62, n final-years = 14)	Component	First-year Int, n (%)	Final-years, n (%)
Pharmacist	1 – Caring	27 (43.5)	5 (35.7)
	2 - Subservient	27 (43.5)	5 (35.7)
Medic	1 – Caring	53 (85.5)	9 (64.3)
	2 – Subservient	53 (85.5)	9 (64.3)
Nurse	1 – Caring	54 (87.1)	10 (71.4)
	2 - Subservient	54 (87.1)	10 (71.4)
Physiotherapist	1 – Caring	22 (35.5)	2 (14.3)
	2 – Subservient	22 (35.5)	2 (14.3)
Midwife	1 – Caring	17 (27.4)	2 (14.3)
	2 – Subservient	17 (27.4)	2 (14.3)
Speech and language therapist	1 – Caring	33 (53.2)	4 (28.6)
	2 – Subservient	33 (53.2)	4 (28.6)
Operating department practitioner	1 – Caring	17 (27.4)	5 (35.7)
	2 - Subservient	17 (27.4)	5 (35.7)

62 first-year and 14 final-year HCPC students provided data. Due to the low number of HCPC student responses for final-years, response rates concerning all professions were very low (pharmacists=5, medics=9, nurses=10, physiotherapists=2, midwives=2, speech and language therapists=4, operating department practitioners=5).

Caring component

The Caring component data from the comparison first- and final-year pharmacy student groups is presented below (Table 50).

*Table 50. Comparison of the **intervention and final-year groups: pharmacy students' views of a typical member of each profession on the Caring component -**Statistical analysis for significant difference in **Caring component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	Data collection round (Intervention or Final)	Mean	Median	Standard deviation	Skewness	Normality test (Shapiro-wilk)	Normally distributed?	Independent samples t-test p-value	Mann-Whitney U test p-value
Pharmacists	Intervention	80.34	83.06	11.57	-0.828	0.025	No	----	0.908
	Final	81.51	83.51	9.35	-0.617	0.585	Yes		
Medics	Intervention	73.51	76.09	12.80	-0.243	0.023	No	----	0.076
	Final	65.95	64.89	11.98	0.264	0.617	Yes		
Nurses	Intervention	87.22	89.16	8.99	-1.149	0.018	No	----	0.535
	Final	85.35	87.70	9.12	-0.610	0.069	Yes		
Physiotherapists	Intervention	-	-	-	-	-	-	-	-
	Final	74.43	73.30	7.40	1.312	0.252	Yes		
Midwives	Intervention	85.39	87.42	10.59	-0.561	0.426	Yes	0.185	----
	Final	76.10	71.55	17.71	-0.148	0.714	Yes		
Speech and language therapists	Intervention	80.23	80.93	12.75	-0.741	0.103	Yes	0.299	----
	Final	74.68	75.64	10.63	-0.707	0.746	Yes		
Operating department practitioners	Intervention	-	-	-	-	-	-	-	-
	Final	-	-	-	-	-	-		

All statistically significant results are highlighted in bold

None of the results from the pharmacy student group comparison were statistically significant. First-year intervention group students viewed nurses as the most caring (87.22), followed by midwives (85.39), pharmacists (80.34), speech and language therapists (80.23), and medics (73.51). Final-year students viewed nurses as the most caring (85.35), followed by pharmacists (81.51), midwives (76.10), speech and language therapists (74.69), physiotherapists (74.43) and medics (65.95). All of the scores from final-year students were lower than those from first-year intervention group students with the exception of the score for pharmacists, which was slightly higher. Results concerning physiotherapists could not be compared due to the lack of data from first-years.

Omitting the final-year data for physiotherapists, the overall ranking of professions is the similar in both data-sets, with the only change being that pharmacists are ranked second most caring in the final-year data, rather than third as in the first-year data.

As with the previous data, pharmacy students scored their own profession more highly in both data-sets than other professional groups scored them.

The comparison of Caring component data from the first- and final-year medical student groups is presented below (Table 51).

*Table 51. Comparison of the **intervention and final-year groups: medical students' views of a typical member of each profession on the Caring component**
-Statistical analysis for significant difference in **Caring component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	Data collection round (Intervention or Final)	Mean	Median	Standard deviation	Skewness	Normality test (Shapiro-wilk)	Normally distributed?	Independent samples t-test p-value	Mann-Whitney U test p-value
Pharmacists	Intervention	72.43	73.78	11.23	-0.525	0.673	Yes	**0.004**	----
	Final	58.86	60.71	15.18	-0.418	0.469	Yes		
Medics	Intervention	85.30	88.40	8.37	-0.710	0.072	Yes	**0.001**	----
	Final	76.28	77.58	11.92	-0.172	0.806	Yes		
Nurses	Intervention	84.91	87.48	11.01	-0.925	0.048	No	----	0.072
	Final	79.90	81.33	11.96	-0.612	0.111	Yes		
Physiotherapists	Intervention	84.80	84.10	7.76	0.122	0.926	Yes	----	0.053
	Final	74.30	66.75	12.91	1.015	0.009	No		
Midwives	Intervention	80.77	81.25	12.27	-1.299	0.212	Yes	----	0.354
	Final	79.54	78.05	13.56	-0.572	0.730	No		
Speech and language therapists	Intervention	88.18	89.35	8.12	-1.319	0.098	Yes	**0.014**	N/A
	Final	79.00	80.51	6.55	-0.944	0.349	Yes		
Operating department practitioners	Intervention	75.62	69.54	18.90	0.097	0.695	Yes	----	0.571
	Final	67.94	67.94	23.45	.	.	.		

All statistically significant results highlighted in bold

As with the previous analyses in this section, all of the scores given by the final-year students for the Caring component are lower than those given by the first-year intervention group. The respective order of professions was very different between the first- and final-year data collections. First-year intervention group medical students scored speech and language therapists highest (88.18), followed by medics (85.30), nurses (84.91), physiotherapists (84.80), midwives (80.77), operating department practitioners (75.62) and pharmacists (72.43). Final-year medical students ranked nurses as most caring (79.90), followed by midwives (79.54), speech and language therapists (79.00), medics (76.28), physiotherapists (47.30), operating department practitioners (67.94), and pharmacists (58.84). The difference in scores between data-sets for pharmacists (p=0.004), medics (p=0.001) and speech and language therapists (p=0.014) were statistically significant.

The trend of final-year scores being lower than first-year scores is the same as other analyses in this set of comparisons. Medical students scored medics as more caring than other professional groups did in both data-sets, despite the statistically significant lower score for medics in the final-year data. The change in respective order of professions for the final-year group brings the views of medics more in line with those of other professional groups in scoring nurses and midwives as most caring, and medics less so. Final-year medical students still scored medics as more caring than other professional groups did, but this difference was less pronounced in the final-year data, with medics now ranked fourth rather than second most caring.

The comparison of the NMC student first-year intervention and final-year student Caring component data is given below (Table 52).

*Table 52. Comparison of the **intervention and final-year groups: NMC students' views of a typical member of each profession on the Caring component** - Statistical analysis for significant difference in **Caring component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	Data collection round (Intervention or Final)	Mean	Median	Standard deviation	Skewness	Normality test (Shapiro-wilk)	Normally distributed?	Independent samples t-test p-value	Mann-Whitney U test p-value
Pharmacists	Intervention	71.18	72.88	12.72	-0.892	0.018	No	----	**0.008**
	Final	62.27	60.09	17.50	0.460	0.073	Yes		
Medics	Intervention	69.15	69.16	16.40	-0.516	0.033	No	----	**0.003**
	Final	58.32	55.89	19.41	0.062	0.271	Yes		
Nurses	Intervention	87.96	90.66	8.83	-1.89	0.000	No	----	0.853
	Final	88.32	90.01	8.45	-1.40	0.000	No		
Physiotherapists	Intervention	82.79	87.72	12.40	-1.368	0.056	Yes	0.093	----
	Final	73.85	74.98	15.19	-0.06	0.367	Yes		
Midwives	Intervention	83.85	85.90	11.37	-0.526	0.118	Yes	0.863	----
	Final	84.63	85.14	10.74	-0.781	0.363	Yes		
Speech and language therapists	Intervention	80.22	83.26	14.46	-2.198	0.000	No	----	**0.033**
	Final	73.89	73.74	7.93	-0.079	0.751	Yes		
Operating department practitioners	Intervention	71.71	73.84	11.67	-0.092	0.808	Yes	0.598	----
	Final	67.93	69.99	18.91	-0.661	0.376	Yes		

All statistically significant results highlighted in bold

First- and final-year NMC students viewed nurses as the most caring profession (First-year intervention=87.96, final-year=88.32 (p=0.853)), followed by midwives (First-year intervention=83.85, final-year=84.63 (p=0.863)). The order then differed slightly with first-years viewing physiotherapists as third most caring (First-year intervention=82.79, final-year=73.85 (p=0.093)), and final-years ranking them fourth behind speech and language therapists, who were ranked fourth by first-years (First-year intervention=80.22, final-year=73.89 (p=0.033)). Both first- and final-year students then ranked operating department practitioners fifth (First-year intervention=71.71, final-year=67.93 (p=0.598)), followed by pharmacists (First-year intervention=71.18, final-year=62.27 (p=0.008)) and medics (First-year intervention=69.15, final-year=58.32 (p=0.003)).

The scores for nurses and midwives were higher in the final-year data than the first-year data. Final-year scores for all other professions were lower than first-year scores, and these differences were statistically significant for the results concerning pharmacists, medics and speech and language therapists. The respective order of professions from most to least caring is almost identical in both data-sets, with very close scores for physiotherapists and speech and language therapists in the final-year data resulting in an exchange of respective places.

NMC students viewed nurses as more caring than other professions did in both data-sets, but midwives were scored more highly by pharmacy and HCPC students than NMC students in the first-year data. In the final-year data, NMC students scored midwives more highly than all other professional groups did.

The comparison of first-year intervention and final-year Caring component HCPC students data is presented below (Table 53).

*Table 53. Comparison of the **intervention and final-year groups: HCPC students' views of a typical member of each profession on the Caring component** -*

*Statistical analysis for significant difference in **Caring component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	Data collection round (Intervention or Final)	Mean	Median	Standard deviation	Skewness	Normality test (Shapiro-wilk)	Normally distributed?	Independent samples t-test p-value	Mann-Whitney U test p-value
Pharmacists	Intervention	71.62	70.59	8.01	0.352	0.991	Yes	0.058	----
	Final	48.29	43.77	20.01	0.256	0.861	Yes		
Medics	Intervention	69.91	68.16	13.96	-0.101	0.423	Yes	**0.027**	----
	Final	55.26	61.8	18.28	-0.937	0.176	Yes		
Nurses	Intervention	82.63	85.01	12.87	-2.322	0.000	No	----	0.147
	Final	75.50	77.40	13.52	-0.001	0.357	Yes		
Physiotherapists	Intervention	74.58	76.27	9.01	-0.632	0.753	Yes	----	0.079
	Final	85.40	85.40	4.15	.	.	No		
Midwives	Intervention	89.50	92.93	6.62	-0.966	0.124	Yes	----	0.242
	Final	75.86	75.86	20.69	.	.	No		
Speech and language therapists	Intervention	86.99	88.62	7.94	-0.761	0.064	Yes	0.899	----
	Final	87.55	89.72	6.48	-1.461	0.227	Yes		
Operating department practitioners	Intervention	68.25	65.12	17.80	0.960	0.736	Yes	0.589	----
	Final	73.30	69.41	8.47	0.519	0.486	Yes		

All statistically significant results highlighted in bold

First-year intervention group HCPC students viewed midwives as the most caring profession (89.50), followed by speech and language therapists (86.99), nurses (82.63), physiotherapists (74.58), pharmacists (71.62), medics (69.91) and operating department practitioners (68.25). Final-year HCPC students viewed speech and language therapists as the most caring profession (87.55), followed by physiotherapists (85.40), midwives (75.86), nurses (75.50), operating department practitioners (73.30), medics (55.26) and pharmacists (48.29).

HCPC students scored physiotherapists, speech and language therapists and operating department practitioners more highly in the final-year data than the first-year post-IPL data. All other professions scored lower in the final-year data, and the only statistically significant result was for the difference in scores for medics (p=0.027). HCPC final-year students did not rate nurses and midwives as the most caring professions, unlike the majority of other professional groups.

HCPC students in the first-year intervention group did not follow the trend of scoring their own professions more highly than other professional groups did, instead seeing mixed results. In the final-year data physiotherapists, speech and language therapists and operating department practitioners were all scored more highly by HCPC students than they were by other professional groups.

Subservient component

The comparison of the Subservient component data from first- and final-year pharmacy students is given below (Table 54).

*Table 54. Comparison of the **intervention and final-year groups: Pharmacy students' views of a typical member of each profession on the Subservient component -**Statistical analysis for significant difference in **Subservient component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	Data collection round (Intervention or Final)	Mean	Median	Standard deviation	Skewness	Normality test (Shapiro-wilk)	Normally distributed?	Independent samples t-test p-value	Mann-Whitney U test p-value
Pharmacists	Intervention	8.35	8.18	3.36	-0.050	0.758	Yes	0.341	----
	Final	9.31	8.49	4.14	0.643	0.216	Yes		
Medics	Intervention	5.83	5.42	2.94	0.876	0.124	Yes	----	0.701
	Final	5.73	4.33	3.34	0.787	0.026	No		
Nurses	Intervention	14.00	14.12	6.41	0.121	0.966	Yes	0.085	----
	Final	17.34	19.05	6.32	-0.310	0.364	Yes		
Physiotherapists	Intervention	-	-	-	-	-	-	-	-
	Final	13.13	12.96	2.57	-0.318	0.749	Yes		
Midwives	Intervention	11.63	13.58	4.78	-0.385	0.118	Yes	0.217	----
	Final	15.32	15.00	7.14	-0.920	0.631	Yes		
Speech and language therapists	Intervention	11.83	11.63	4.60	-0.158	0.411	Yes	0.903	----
	Final	11.61	11.30	2.72	0.591	0.564	Yes		
Operating department practitioners	Intervention	-	-	-	-	-	-	-	-
	Final	-	-	-	-	-	-		

All statistically significant results are highlighted in bold

No statistically significant findings were obtained from the comparison of the pharmacy student first-year intervention group data and the final-year data on the Subservient component. First-year students scored nurses highest (14.00), followed by speech and language therapists (11.83), midwives (11.63), pharmacists (8.35) and medics (5.83). Final-year students scored nurses highest (17.34), followed by midwives (15.32), physiotherapists (13.13), speech and language therapists (11.61), pharmacists (9.31) and medics (5.73). Nurses and pharmacists were seen as more subservient by final-year students, with medics, midwives and speech and language therapists seen as less so. The final-year data for physiotherapists could not be compared due to a lack of data from the first-year students.

If the final-year data regarding physiotherapists is discounted, then the only change in respective rankings is that midwives are ranked second most subservient in the final-year data, instead of third behind speech and language therapists in the first-year data. Pharmacists viewed their own profession as less subservient than other professional groups viewed them in both data-sets.

The comparison of the Subservient component data for the first- and final-year medical student groups is presented below (Table 55).

*Table 55. Comparison of the **intervention and final-year groups: medical students' views of a typical member of each profession on the Subservient component -**Statistical analysis for significant difference in **Subservient component** scores between completions of the Attitudes to Health Professionals*

Subject profession	Data collection round (Intervention or Final)	Mean	Median	Standard deviation	Skewness	Normality test (Shapiro-wilk)	Normally distributed?	Independent samples t-test p-value	Mann-Whitney U test p-value
Pharmacists	Intervention	11.64	10.80	5.21	0.485	0.568	Yes	0.820	----
	Final	11.33	11.35	3.81	0.121	0.847	Yes		
Medics	Intervention	7.56	6.76	3.43	0.629	0.193	Yes	0.179	----
	Final	6.56	6.43	2.91	0.398	0.282	Yes		
Nurses	Intervention	13.91	12.59	5.26	1.165	0.019	No	----	0.488
	Final	14.29	13.11	4.60	1.142	0.005	No		
Physiotherapists	Intervention	8.48	8.34	1.38	-0.429	0.638	Yes	**0.022**	----
	Final	12.62	10.95	4.27	0.824	0.280	Yes		
Midwives	Intervention	11.54	9.21	5.78	1.16	0.141	Yes	0.956	----
	Final	11.69	11.63	6.06	0.794	0.541	Yes		
Speech and language therapists	Intervention	12.64	12.36	3.63	0.99	0.972	Yes	0.289	----
	Final	10.88	11.47	3.51	-1.522	0.175	Yes		
Operating department practitioners	Intervention	15.78	15.07	6.83	1.421	0.695	Yes	----	0.245
	Final	17.17	17.17	1.20	.	.	.		

All statistically significant results are highlighted in bold

First-year medical students scored operating department practitioners highest (15.78), followed by nurses (13.91), speech and language therapists (12.64), pharmacists (11.64), midwives (1.54), physiotherapists (8.48) and medics (7.56). Final-year medical students scored operating department practitioners highest (17.17), followed by nurses (14.29), physiotherapists (12.62), midwives (11.69), pharmacists (11.33), speech and language therapists (10.88), and medics (6.56). Pharmacists, medics and speech and language therapists were seen as less subservient by final-year students than first-year intervention group students, and nurses, physiotherapists, midwives and operating department practitioners as more so. Only the change in score for physiotherapists was statistically significant (p=0.022).

The data does not show any clear pattern, and the majority of the changes in values are small, with the exception of the higher score for physiotherapists in the final-year group data. Medical students viewed medics as more subservient than other professional groups (with the exception of HCPC students) in both data-sets.

The comparison of the first-year intervention and final-year data from NMC students is given below (Table 56).

*Table 56. Comparison of the **intervention and final-year groups: NMC students' views of a typical member of each profession on the Subservient component** -Statistical analysis for significant difference in **Subservient component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	Data collection round (Intervention or Final)	Mean	Median	Standard deviation	Skewness	Normality test (Shapiro-wilk)	Normally distributed?	Independent samples t-test p-value	Mann-Whitney U test p-value
Pharmacists	Intervention	9.10	8.01	4.05	0.431	0.186	Yes	0.310	----
	Final	10.09	10.01	4.47	-0.018	0.246	Yes		
Medics	Intervention	5.95	4.73	4.28	1.184	0.001	No	----	0.435
	Final	6.10	6.11	3.41	0.057	0.719	Yes		
Nurses	Intervention	11.79	11.62	5.10	0.757	0.013	No	----	0.391
	Final	12.63	11.42	4.48	0.648	0.124	Yes		
Physiotherapists	Intervention	8.46	6.79	4.38	0.661	0.113	No	----	0.940
	Final	8.17	7.51	4.19	0.470	0.430	Yes		
Midwives	Intervention	8.83	9.40	3.23	-0.549	0.607	Yes	----	0.582
	Final	10.63	9.87	4.33	1.966	0.015	No		
Speech and language therapists	Intervention	11.46	12.47	4.92	0.018	0.541	Yes	0.678	----
	Final	10.77	11.14	3.56	-0.607	0.396	Yes		
Operating department practitioners	Intervention	10.83	9.07	6.68	1.50	0.091	Yes	0.811	----
	Final	11.43	11.52	5.15	-0.488	0.485	Yes		

All statistically significant results are highlighted in bold

None of the results from the comparison of first-year intervention and final-year NMC student group data on the Subservient component were statistically significant. First-year students scored nurses as the most subservient profession (11.79), followed by speech and language therapists (11.46), operating department practitioners (10.83), pharmacists (9.10), midwives (8.83), physiotherapists (8.46), and medics (5.95). Final-year students scored nurses highest (12.63), followed by operating department practitioners (11.43), speech and language therapists (10.77), midwives (10.63), pharmacists (10.09), physiotherapists (8.17), and medics (6.10).

Physiotherapists and speech and language therapists were seen as less subservient by final-year students than by first-year students. All other professions were seen as more subservient by final-years. NMC students viewed nurses and midwives as less subservient than other professional groups did. NMC students were the only professional group to view medics as more subservient in the final-year data.

The comparison of the Subservient component data from HCPC first-year intervention group and final-year students is given below (Table 57).

*Table 57. Comparison of the **intervention and final-year groups: HCPC students' views of a typical member of each profession on the Subservient component -**Statistical analysis for significant difference in **Subservient component** scores between completions of the Attitudes to Health Professionals Questionnaire*

Subject profession	Data collection round (Intervention or Final)	Mean	Median	Standard deviation	Skewness	Normality test (Shapiro-wilk)	Normally distributed?	Independent samples t-test p-value	Mann-Whitney U test p-value
Pharmacists	Intervention	10.50	10.71	3.93	-0.026	0.683	Yes	0.868	----
	Final	10.14	11.28	4.20	-0.700	0.761	Yes		
Medics	Intervention	8.32	8.13	3.49	0.602	0.608	Yes	0.439	----
	Final	7.15	7.36	4.07	0.207	0.116	Yes		
Nurses	Intervention	15.10	15.37	4.86	-0.021	0.508	Yes	0.411	----
	Final	13.56	12.00	4.54	0.972	0.237	Yes		
Physiotherapists	Intervention	10.55	9.35	2.91	0.404	0.409	Yes	----	0.143
	Final	7.45	745	.63	.	.	No		
Midwives	Intervention	12.48	13.00	3.03	-0.129	0.887	Yes	----	0.770
	Final	11.18	11.18	7.49	.	.	No		
Speech and language therapists	Intervention	11.95	11.69	4.27	0.600	0.859	Yes	0.415	----
	Final	10.06	10.49	2.35	-0.801	0.671	Yes		
Operating department practitioners	Intervention	17.10	16.50	4.07	0.855	0.533	Yes	0.017	----
	Final	10.73	0.29	1.91	0.253	0.718	Yes		

All statistically significant results are highlighted in bold

None of the results from HCPC students were statistically significant. First-year students viewed operating department practitioners as the most subservient profession (17.10), followed by nurses (15.10), midwives (12.48), speech and language therapists (11.95), physiotherapists (10.55), pharmacists (10.50) and medics (8.32). Final-year students viewed nurses as the most subservient profession (13.56), followed by midwives (11.18), operating department practitioners (10.73), pharmacists (10.14), speech and language therapists (10.06), physiotherapists (7.45) and medics (7.15). All professions were viewed as less subservient by final-year students than by first-years.

Physiotherapists were viewed as more subservient by HCPC students in the first-year data than they were by other professional groups, but less subservient in the final-year data, as were operating department practitioners. Speech and language therapists were seen as more subservient by HCPC students in the first-year data than by all other professional groups except NMC students, and but as less subservient in the final-year data.

The difference in scores for operating department practitioners between first-years (17.10) and final-years (10.73) is very large compared to other findings from the Subservient component data.

5.3.4 Discussion of comparison between first-year intervention group and final-year data – By professional groups

The majority of the professional group analyses for these data-sets did not produce any statistically significant results. The professional groups that did, medical students and NMC students were by far the largest groups for both the first-year intervention group and the final-year groups of students. The change in score for medics on the

Caring component seen in the HCPC student group is the only exception to this. The lack of any statistically significant findings from the comparison of pharmacy student data further reinforces the previously discussed possibility that the views of pharmacy students may be more consistent or less easily influenced than others.

The number of final-year responses concerning physiotherapists, midwives, speech and language therapists, and operating department practitioners were very low across all professional groups. It is inadvisable to draw firm conclusions from this data for these professions, as it is very unlikely to be representative of the wider population. The results of the HCPC students sub-group analysis should be viewed with particular caution as only 14 final-year HCPC students completed the AHPQ. This resulted in extremely low numbers of responses regarding all professions, particularly for physiotherapists and midwives, where only two participant provided data. As such the views of final-year HCPC students are not generalizable to the wider population.

The majority of the professional group analyses display the same pattern for the Caring component as the results from students of all professions. Most professions are generally seen as less caring by the final-year professional groups, except their own. The exception to this trend was for final-year medical students, who viewed medics as less caring than the first-year intervention group respondents did. This finding sheds new light on the perception of in-groups and out-groups (Carpenter,1995a) as students progress through their course. With the exception of medical students it appears that students maintain and slightly increase their views of how caring their own profession is, while simultaneously decreasing their perception of how caring other professions are seen to be, though the majority of findings were not statistically significant. The

lower values observed for medics were statistically significant in all professional groups except for pharmacists, and the lower values for pharmacists and speech and language therapist were both statistically significant in the medical and NMC student groups. If as they progress to their final-year of study students view their own profession as more caring their own profession and others as less so, any disparity between in-group and out-group views may increase. Such outcomes have been expressed as undesirable in studies focusing on stereotypes and perceptions of different professions, as they result in frustration and misunderstanding (Ateah *et al.,* 2010; Carpenter,1995b; Hean *et al.,* 2006). The increases in scores for student's own professions, however, were largely small with the exception of the possibly inaccurate HCPC student data for physiotherapists and operating department practitioners. These observations show that the previously noted decline in perception of how Caring professions are seen to be in final-year student data is largely observed in the scores for professions different to students' own, a phenomena not clear from the data obtained from all profession.

The results regarding the Subservient component are more mixed in the sub-group analyses than in the analysis of all professions. The trend for professions to be seen as more subservient by final-years is not universally observed, with most sub-groups showing quite split results. The results from the HCPC students show the opposite of the previously observed trend, with all professions seen as less subservient by final-year students. As previously, however, the very small numbers of responses limit the usefulness of this data.

The only statistically significant result seen in the Subservient component analysis was in the medical students group, where the final-year score for physiotherapists was statistically significantly higher. Given that 16 responses regarding physiotherapists were

gained from final-year medics, this observation should be viewed with caution. As with previous analyses of the Subservient component, there is a far less obvious trend than for the Caring component. This may indicate that the AHPQ is not as sensitive at detecting change on this component, or that student attitudes towards the concept of Subservience are more constant than those they hold regarding the Caring component. Further research and refinement of the AHPQ is needed to assess this.

5.4 Summary

In summary, the main points elicited from the quantitative findings were that:

- The data from the first-year intervention group indicates that participation in the IPL programme does have an impact on the interprofessional attitudes of healthcare students, with professions generally viewed as more caring after students have taken part in IPL1. That medics are viewed as more subservient and other professions as less so following participation may indicate an increased perception of the teamworking skills of medics and the leadership skills of nurses in particular.

- The results of the control group show a weakly negative effect, with most professions seen as less caring in the second completion of the AHPQ. This difference from the intervention group is confirmed by a high number of statistically significant results of the second round scores for both data-sets. It can be concluded that the IP1 has a positive effect on the interprofessional attitudes of healthcare students, and non-participation may not result in a null effect, but in a negative outcome regarding the Caring component.

- These effects do not appear to be entirely sustained into students' final-year, and the perception of how caring professions are is reduced, with the exception of the views for students' own professions.

- In-group members generally view their own professions as more caring and less subservient than out-group members do, with the exception of medical students, who view

medics as more subservient than other professional groups do.

- Nurse and midwives are generally seen as the most caring professions, and medics and pharmacists the least. Nurses are generally viewed as the most subservient profession and medics the least, with some variation in analyses by professional groups. This did not alter substantially in the intervention, control or final-year data.

- The data in all data-sets concerning pharmacists, medics and nurses are more reliable than the data for other professions, as far more respondents provided data concerning pharmacists, medics and nurses. This is an inherent problem due to disparity in cohort sizes.

These data are explored further alongside the qualitative findings in Chapter Seven.

Chapter Six - Qualitative Findings

6.1 Participants

A purposively-sampled mixture of professions was included in the qualitative strand. Overall, of 55 participants, 41 were female, and the most represented professional group (n=23) were medical student/doctors, but seven professions were represented (Table 58).

Table 58. Participant characteristics, qualitative strand

	Participants					
	1	**2**	**3**	**4**	**5**	**6**
First-year focus groups	Female nurse 1 Female nurse 2 Female nurse 3 Female medic 1 Female medic 2 Female medic 3 Female SLT 1	Female medic 1 Female medic 2 Female medic 3 Female OT 1 Female SLT 1 Female SLT 2	Male medic 1 Male medic 2 Female medic 1 Female medic 2 Female medic 3 Male pharmacist 1			
Final-year focus groups	Male medic 1 Female medic 1 Female medic 2 Female SLT 1 Female SLT 2 Male pharmacist 1 Female pharmacist 1	Female medic 1 Female medic 2 Female PT 1 Male pharmacist 1 Female pharmacist 1	Male nurse 1 Female nurse 1 Male medic 1 Male medic 2	Male medic 1 Male medic 2 Female OT 1 Female PT 1 Female PT 2 Female PT 3 Female SLT1		
Graduate interviews	*Female midwife* *Qualified 1 year* *Rotational post*	*Female pharmacist* *Qualified 1 year* *Community locum*	*Female doctor* *Qualified 4 years* *Obstetrics/Gynaecology*	*Female doctor* *Qualified 2 years* *Foundation Year 2*	*Female OT* *Qualified 5 years* *Psychological therapist*	Male PT Qualified 1 year Telephone triage/Musculoskeletal
Senior interviews	Male nurse Advanced nurse practitioner Renal unit	*Female nurse* *Senior sister* *Intensive care*	Male doctor Consultant anaesthetist	Female OT Band 7 Acute medicine	Female OT Band 7 Acute medicine	Female SLT Band 7 Learning disability

Telephone interviews are highlighted in italics

OT= Occupational therapist   PT= Physiotherapist   SLT= Speech and language therapist

6.2 Main themes arising from the data

Three main themes arising from the data are discussed in this section:

1. Valuing interprofessionalism
2. Influences on interprofessional attitudes
3. Professional roles and hierarchy

While these themes represent the broad categories characterising the data, it is important to acknowledge the relationships that exist between them. For example, it could be argued that participants' opinions about professional roles and hierarchy have a directly affect their interprofessional attitudes. It could equally be argued that this topic directly relates to valuing interprofessionalism. The rationale for including it as a separate theme in its own right is just that. It is not clear which of these two other themes professional roles and hierarchy would fit Keeping it as a separate theme also allows for the inclusion of data that would otherwise have been omitted, as it falls under neither influences on interprofessional attitudes or valuing interprofessionalism. Due to this, references are made where appropriate to points of influence or overarching theory linking aspects of these themes.

Together, these three themes represent a comprehensive analysis of the relationship between IPE, interprofessional attitudes, and interprofessional practice, as seen by the sample of participants in this study. The limitations of the generalisability of these findings are discussed in the summary section of this chapter.

The aim of this section is to present the commonalities and divergences in the data from each participant-group within each theme. As such, the findings are not presented separately by first-years, final-years, etc., but as one. Comparison of the findings is

thus easier as is appreciation of the evolution of attitudes and opinions that occurs as perspectives change and experiences are gained. The discussion is broken into three sections by theme, with each sub-theme discussed in turn within these sections.

6.2.1 Valuing interprofessionalism

Valuing interprofessionalism includes the sub-themes of:

- Justification and timing of IPE
- Experience of the IPL programme
- Views of interprofessional practice

This theme was generated from data from all participant-groups and was the most frequently occurring theme that emerged from the data. The term "interprofessionalism" is used here as a descriptive term for the interprofessional mixing, cooperation, and collaboration necessary for IPE and practice to take place. In the context of this study, this can be seen as the "culture" that underpins interprofessional working and practice.

Justification and timing of IPE

This sub-theme focuses on the more general views of IPE expressed by the participants. Three topics are discussed in turn within this theme: attitude to IPE, timing of IPE, and greater appreciation later in career.

The attitudes expressed by participants about the concept of IPE were generally positive. IPE was viewed as a way of understanding the purpose and functioning of the multi-disciplinary team, and as a way of improving knowledge of other healthcare professions. Some students particularly identified the benefit of mixing with other

professions for those whose professional role can sometimes be seen as somewhat isolated. Male pharmacist 1 from first-year focus group 3 identified IPE as a way for professions that can sometimes be viewed as less central to be involved in activities with other professions:

> *"I think it's like, an excellent idea, especially like for some of us who aren't always in the centre of patient care, it's really good for us to sort of get involved"*

> *First-year focus group 3, Male pharmacist 1*

> *"I think it's definitely a good idea, because otherwise you wouldn't understand who would work in an MDT team, because apart from IPL I've never worked with a pharmacy student"*

> *Final-year focus group 1, Female PT 1*

In both of the quotations given above, pharmacy students were identified as being seen as slightly separated from other students. This opinion may be partially because at the UEA, pharmacy students are not part of the Faculty of Medicine and Health Sciences but instead included within the Faculty of Science. This separation may be further highlighted in the differences in practice placement provisions between pharmacy students, who undertake experience days in community healthcare and secondary care settings, and other students who have a far more extensive practical placement schedule. Pharmacy students are able to undertake more extensive placements, but these are organised by themselves in their own time, rather than as an integrated part of the curriculum. This difference in course structure and location within the university faculty system may serve to create a sense of

difference between pharmacy students and other healthcare students.

The opportunity to undertake IPE may therefore provide a valuable opportunity for interprofessional interaction for students who may not otherwise have the chance for such experiences on a regular basis. Hall (2005) noted that limited opportunities for interprofessional interaction prevent the development of positive interprofessional relationships. The responses gained from students regarding the value of interprofessional interaction appear to echo this sentiment. The interaction between students of professions that otherwise would hardly meet is an enjoyable factor in the experience. This also fits with the conditions for adult learning; if students find the process of learning enjoyable, they are more likely to feel motivated and therefore engage with the learning process effectively (Taylor and Hamdy, 2013).

The benefits of interprofessional interaction at pre-registration level were also recognised by recent graduates, who felt that IPE helped to increase appreciation for the abilities of other professions.

> *"So I definitely think it's positive, um because otherwise you end up with people, you know in their little boxes and not having an appreciation of what else is going on, um and they're kind of um, I think it would be easy to get a bit self-important as one type of professional over your own little domain if you didn't from time to time stop and think or maybe have the, the learning experience to show you what it is that everyone else um brings to the party so to speak, um, so yeah, it's, it's very important"*
>
> *Graduate 6 PT*

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These findings concur with the results of the study by Parsell *et al.* (1998). In this study 96% of respondents felt that participating in the two-day pilot IPE programme would influence their future interprofessional relationships. While there is no further information provided on the exact nature of this influence, students did expand in their open-ended questions that finding out more about the roles of other profession increased their respect and appreciation for them. This may translate in the future to more positive interprofessional working relationships. It is necessary to acknowledge that the first two levels of the IPL programme experienced by the respondents in this study are different from the programme reported by Parsell *et al.* (1998), but they did follow a similar format of small-groupwork and case-based tasks, albeit for a longer time-frame than the much shorter pilot programme. If such a short programme can have positive effects in this area, it is logical to suggest that a longer programme may have a greater effect, a more lasting effect, or both.

The potential for IPE to help create positive professional relationships in practice is also recognised by the senior professionals interviewed, who took a universally positive stance towards IPE. This view is encapsulated by Senior 4 (OT), who stated:

> *"I think it's really important and to start their working life knowing about being part of an MDT, the problems with communicating with each other um, otherwise it makes their job quite difficult when they begin work"*

Very little literature was found that explored the views of senior healthcare professionals to IPE for pre-registration healthcare students, and none from professionals who were not directly involved in the delivery of such programmes. From the studies that did collect data from facilitators and programme leaders (Cooke et

al., 2003; Lennon-Dearing et al., 2008; Lin et al., 2013; Reeves, 2000; Wamsley et al., 2012), the data obtained were often part of a programme evaluation. While these findings were generally positive towards IPE, there is no exploration of the impact of IPE into professional practice, a research need identified by Wamsley *et al.* (2012). By including data from recent graduates, this study should start to fill that gap.

While views towards the concept of IPE in this study were relatively positive, students and graduates stated that IPE was not accorded the same level of importance as other aspects of students' uni-professional courses. This was a concern of one of the senior professionals, Senior 3 (Doctor) who, when referring to the perception of IPE by students, stated that:

> *"the formalised er interdisciplinary learning, it may be that, that I've always wondered this, um not being very involved much from the outside and hearing the, bits and so on from the outside, is how much they understand how important this sort of thing is"*

While the previous statements attesting to the generally positive view of the concept of IPE suggest that students are not necessarily unwilling to participate in IPE, statements were made from first- and final-year students and graduates confirming that IPE was not as much of a priority for them as other studies.

> *"I suppose in a way it was a chore for all of us because we were all thinking we're just starting, we want to know about our subject, I want to know about the jaw, the mouth how you produce these sounds, how you record these sounds I don't wanna be talking about teamwork or whatever, so it was a bit of a chore for everyone"*

And learning what other professions do, having an awareness of what they do, if you do it later on in your course of study I think you've got other priorities as well it's gonna be a case of "Oh no, not IPL again" whereas, you've got something else more major that you need to be thinking about at that time with deadlines and those sort of things

Final-year focus group 4, Female PT 1

The two quotations above demonstrate that the problem valuing IPE as being equally important as uni-professional aspects of the curriculum is not limited to either the beginning or end of the students' study. The first quotation states that, at the outset of their studies, students are keen to focus on acquiring profession-specific knowledge. This may be seen as important in order to establish a stronger professional identity. The second quotation, by the final-year student, suggests that IPE is seen as less valuable in later years as the academic pressures of uni-professional studies increase. It is suggested that IPE in seen as less important than uni-professional studies both at the outset of study and at the final stages, but for slightly different reasons.

This viewpoint is further confirmed by statements made by graduates. Graduate 4 (Doctor) also expressed the opinion that, at the time, participating in the IPL programme was seen as a

"distraction from what we were there to do"

Graduate 6 (PT) stated that during his training, IPE was seen as

> *"a kind of formality (rather) than something necessary, cos as a physio cohort you'd always look at the physio lectures as the important ones".*

These attitudes were also observed by Reeves (2000), who reported that students regarded an interprofessional community based placement as a "low-status activity" when compared with their studies in their respective individual professions. In the study by Reeves (2000), it was the medical and dental students who influenced the other students into accepting this view of the educational intervention.

It appears from the above that IPE is not viewed as equally important as other aspects of curricula during basic training; this view appears to change as students reach the end of their training and enter professional practice. While some students highlighted that IPE was not perceived to be as important as other subjects, final-year students did acknowledge that their appreciation of the concept of IPE had increased.

> *"We had a one-day session in the second year with education, erm, but I found that I think I would have appreciated it more now in the third year, because it was so early on in the course, it was in the first semester that I did mine, erm that it was hard to kind of, see the big picture of how it was all relevant so early in the course whereas now I think it would be useful"*

> *Final-year focus group 1, Female Medic 2*

> *"So do you think you understood the purpose of it at the time?"*

> *Researcher*

> *"(Sigh) Not, not really, I mean I suppose I could see that one day I'm gonna be perhaps working with a team of people, like we would be working with a team of people and need to know how, the different roles and things, erm but I think it would have been more useful later in the course"*

> *Final-year focus group 1, Female medic 2*

This exchange suggests that a lack of understanding about how IPE fitted into the context of wider study was a contributing factor to a less appreciative opinion in the earlier years of study. After gaining more experience and knowledge about healthcare systems and encountering other professions, students may be able to understand the context and purpose of IPE more readily. Another participant echoed these views and explained that the ability to see the bigger picture in other aspects of their studies was a key factor in changing their perception:

> *"I think yeah, you much more appreciate it after being on placement, you actually saw actually people do work in a team and not just a single, pillar"*

> *Final-year focus group 1, Female PT 1*

Curran *et al.* (2008) reported in their study on the attitudes of students towards interprofessional teamwork and education that senior undergraduate students across all professions had significantly more positive attitudes towards interprofessional healthcare teams than junior students. The study also found that students with previous experience of IPE were not necessarily more positively inclined towards it than those without, but they were more positive about interprofessional teamwork. When compared with the findings from the present study, this may suggest that IPE does improve views towards interprofessional teams, but

experiencing or observing interprofessional practice may improve attitudes towards IPE. This highlights the symbiotic nature of the relationship between the educational system and the professional system and the importance of ensuring positive experiences and examples in both.

Graduates also stated that they appreciated IPE much more at this stage than they did when they were students. Gaining more lived experience of interprofessional interaction appears to increase the value that is placed upon IPE.

> *"In hindsight it was relevant and I can certainly see and I could learn things from it er, and it also actually made me much more aware, how can I put it, I guess at the time, when I was doing it, I didn't appreciate really truly how multidisciplinary your working needs to be, um so when you're on a ward, on inpatients and every day there can be a physio um, a dietician, there's a whole bunch of different people and you really are only one wheel in the cog"*

> *Graduate 3 (Doctor)*

Similarly to the statement made by Female PT 1 from final-year focus group 1, this statement also supports the idea that experiencing or observing interprofessional working has a positive effect on the perception of IPE, though it is not clear if Graduate 3's views were changed during her pre-registration training or in professional practice.

Another graduate commented on the difference between herself and colleagues who had not experienced the same IPE:

> *"Looking back on it now, I think it was a very good programme erm, cos I have met people who haven't done IPL in the same way and they don't understand the roles of*

other professionals as much as I gained from that. So I do think it's a very good course"

Graduate 2 (Pharmacist)

By comparing her own knowledge gained from participating in IPE with the perceived lack of knowledge on the behalf of her colleagues, Graduate 2's view of the value of IPE was enhanced.

None of the graduates in this study reported that their attitudes to IPE worsened over time, which is in direct contrast to the findings by Pollard and Miers (2008). They reported that attitudes towards IPE became more negative after nine to twelve months in professional practice, but that participants were also more positive about interprofessional interactions. It is important to note that Pollard and Miers (2008) was a much larger study. It may be that that in the present study the graduates who participated in the interviews may not have been a representative sample of recent graduates who have experienced IPE. Given their self-selection, they may have held stronger views. It is also important to note that the study by Pollard and Miers (2008) and the present study were carried out at different academic institutions, with different programmes of IPE. It is not possible therefore to compare directly the two studies, making it difficult to draw firm conclusions about whether graduates are universally more likely to be more positive or negative about IPE post-qualification. Of further interest to the question of valuing IPE are the findings of Hylin *et al.* (2007) who reported on a two-year follow-up of graduates who had participated in a two-week interprofessional course on training ward during their pre-registration training. While their questionnaire response rate was 55%, 92% of respondents encouraged interprofessional teamwork in their current practice, and 90% were in favour of retaining the course on the training

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ward. While it is not clear from this study if these views have altered since students participated in the experience initially, it does demonstrate that a course of IPE can have lasting effects on participants into interprofessional practice. While the IPE interventions in Pollard and Miers (2008), Hylin *et al.* (2007) and the present study were different, the professional groups of students included were similar, with medical, nursing, physiotherapy, and occupational therapy students common to all three studies. This makes comparison of the effect of IPE on these groups of healthcare students more plausible.

An issue closely related to that of attitudes towards IPE in relation to uni-professional studies is the timing of IPE. While in this case it seemed to be that respondents were more positive about IPE later on in their careers, they did acknowledge that the IPE they experienced earlier on was ultimately a positive thing. This was further expressed in their comments about the need for early IPE, despite its being easier to participate at a later stage.

After expressing the opinion that IPE may be better later in the curriculum, final-year focus group 4 were questioned further on the issue, leading to this exchange:

"Do you think that there might be any drawbacks to having IPL later in the course of study?"

Researcher

"Um, well you don't have the experience initially then, I suppose, do you?"

Female PT 3

"I suppose it's good to highlight it that early on cos then you've got it in your head"

Female SLT1

"I think the misconceptions you have are already made if you have it

later on as well"

Male medic 2

(Agreement from rest of the group)

It has been reported that students enter their respective professional courses with already well-formed views of professions (Hall, 2005). Placing IPE earlier on in the curriculum affords greater opportunity to address any negative views that students may hold. Conversely, early IPE may reinforce negative views held, particularly in light of the previously stated information regarding valuing IPE more later on in training or practice. A negative view of IPE may in turn reinforce negative views of other professions. The issue of professionalization was also brought up by graduates, who felt that allowing students to assimilate into their professional groups without experiencing any IPE would inhibit future working relationships.

"I think maybe going back to what I said about trying to mould people early I think that's possibly, and I mean that's just my interpretation of things that maybe if you didn't do it at that stage and you maybe leave it til the end, that people have already become quite defined in their role without having the ability to work with other people, having the appreciation for what other people can do, for you and for patients, so I think that you do need it at that early stage"

Graduate 4 (Doctor)

This view was shared by the senior professionals, who advocated strongly for IPE in pre-registration training.

> *"I guess, pre-registration, I think the sooner you start, the more it's embedded into the individual and it's seen as part of the course as opposed to something that's been nailed on at the end or at the beginning really, it becomes embedded within that course really and of course there's that, as the years go by, it becomes more and more embedded"*
>
> *Senior 1 (Nurse)*
>
> *"I think installing that at an earlier stage, cos I think once you start you're influenced by other factors too that come into play, but if you've got the building blocks of, of respect and knowledge for each other then yeah, that's a huge thing"*
>
> *Senior 4 (OT)*

These quotations express the opinion that early IPE allows a culture of interprofessionalim to become embedded within a student's view of healthcare practice. Ensuring that students are working from a common understanding early on in their careers makes sure that they are working towards a shared goal during their development and transition into professional practice (Bridges *et al.,* 2011).

The data showed that healthcare students are largely positive about the concept of IPE but gain a greater appreciation for their experiences in their senior years and into professional practice. While students may not fully grasp the need for IPE earlier in their professional development, both the findings of this study and others confirm that developing an awareness of interprofessional practice from the outset is easier than attempting to change more deeply engrained prejudices later.

<u>Experience of the IPL programme</u>

The experience of the IPL programme sub-theme looks at three topics concerning data explicitly about the IPL programme at UEA: attitude to the IPL programme, time-burden of IPL, and purpose of the IPL programme. As the senior healthcare professionals have not participated in the IPL programme, no data from them were included in this theme.

The IPL programme forms the vast majority of the IPE that the student and graduate participants in this study had experienced, and as such was a major topic of discussion during the focus groups and interviews. The overall attitude towards the IPL programme was mixed. While students and graduates recognised the necessity of having IPE, they were less positive about the format and content of the IPL programme itself. First-year students gave the greatest volume of information about their opinions on the IPL programme and the graduates the least. This is probably because the programme was more immediate in the minds of the first-year students (as they had most recently participated in the compulsory first level of IPL). The final-year students and graduates had had the opportunity to participate in the non-compulsory third and fourth levels of IPL, but not all of them had done so. The opinions of students and graduates towards the different levels of the IPL programme are also reported in this section.

Most students and graduates reported mixed attitudes towards their experiences of the IPL programme. The students' opinions of the programme appear to be heavily linked to their interactions with other members of the interprofessional group to which they were assigned. The first-year students particularly focused on describing their experience of the programme in terms of the

groups to which they were assigned more than the content of the programme itself.

> *"I've had a really positive IPL experience, everyone got on really well and then the people that were quiet were sort of encouraged to speak up a bit and have a good input"*
>
> *First-year focus group 1, Female Nurse 3*

> *"I think it depends a lot on your group. I know a lot of people who had a lot of the, as well as the stress of the actual work they had to do, the scheduling, the stress of trying to get people to work and just everyone's different attitudes, but our group worked really well"*
>
> *First-year focus group 2, Female OT 1*

The above two quotations show are an example that a positive experience with the members of the IPL group leads to a more positive overall experience of the IPL learning programme. This was also true though for more negative examples. These were reported with much less frequency than positive or mixed examples but appear to have left just as lasting an impression.

> *"I personally didn't find it helpful at all, in fact I found it quite the opposite, because as I said we got on really well as a group to begin with and then it just fell apart at the end and, actually, because it was right at the end we kind of went away with much more negative feelings about the whole situation whereas if, if it had been much more positive thing right the way through, we probably would have become very happy about the whole idea of working together with different disciplines and stuff"*

"Um, I agree with what (Male medic 1) said in that it really does depend who's in your group cos I don't know like, it felt sometimes that you were just forced to, kind of like, in the situation rather than it happening naturally like you were forced to be in the group you were forced to work with each other"

First-year focus group 3, Female medic 2

While these types of opinions were less common, it is important to consider the impact that a negative experience of IPE may have on a student's later practice. A study that reported almost entirely negative changes in interprofessional attitudes is Tunstall-Pedoe *et al.* (2003), where at the completion of a ten-week common foundation programme for all healthcare students, all professional groups reported more negative interprofessional attitudes than at the outset. Despite this, students did, however think that the programme would result in improved interprofessional working. These results appear to be contradictory, but do suggest that even if students have a negative experience of IPE, they do remain open to the concept of interprofessional working.

In the case of the participants in this study, while several expressed some negative opinions about the IPL programme itself, all remained open to the concept of IPE as a whole. Far fewer students gave their views on interprofessional practice, which is most likely due to a lack of experience. Issues around interprofessional practice are explored later in this section.

Most students had a mixed view of the IPL programme, predominantly that it was a good idea in theory, but that this had not translated into practice.

> *"I think it's a good thing because you get to, you do get to be aware of different people's roles but I don't think the way that we do IPL is necessarily the best way"*
>
> *First-year focus group 1, Female medic 2*

> *"I think the idea of it is good, and the concept of it is good and is necessary to a degree, but I think the way they go about it doesn't really work entirely"*
>
> *Final-year focus group 1, Male medic 1*

This mixed view of the IPL programme was also the most frequently expressed viewpoint of the graduates.

> *"I was fairly ambivalent and I thought that the style could change a bit; I thought that it was a good idea"*
>
> *Graduate 3 (Doctor)*

> *"I thought it was good, um, it definitely highlighted kind of some potential issues, but I think, I remember thinking that it was a lot of the aspects of the things that I was talking about and that we were dealing with were things that either seemed quite common sense or seemed like you would pick them up through placement learning and that kind of thing um, so things like teamwork and just having to delegate duties between team-members and that kind of thing it was, it was a useful exercise just as a teamwork exercise but in*

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terms of specifically you know, um, what I learned about how to work with other professionals, there wasn't a huge amount that I thought I took from it"

Graduate 5 (OT)

Most of the students and graduates were of the opinion that the skills and information gained from the IPL programme could be disseminated to them in an easier or more enjoyable way. A preference for practical elements of education was the strongest suggestion, with learning from qualified professionals in practice rather than other students in a classroom setting. This is summed up by the quotations below:

"The problem that I have with all this, with IPL, it's all a bit vague, it's… and that's why I'd be much more in support of practical, actually just doing, if everybody just did what they were supposed to do then nobody could say, you know nobody could make any narrow-minded comments then like. If we went down to the ward and we had seen, rather than having tutors and stuff having people who do the job, like a doctor, an OT, an SLT, a nurse etc. all there, and then say, run the scenario with them doing it"

Final-year focus group 4, Male medic 1

"I think they could use the opportunity much better instead of just sitting in the classroom like, we've got an education centre in the hospital where we could run through scenarios such as like emergency care for patients where you need to delegate, and you could do practical scenarios where we could all learn our jobs better, such as doctors with nurses, you know, with er, CPR stuff like that, or doctors and physios

with discharging patients and occupational therapists as well, speech and language when they're appropriate and do like, run through scenarios like we do with everything else, but IPL just seemed to go, er we never even talk about it you know, it doesn't really hit home"

Final-year focus group 3, Male medic 2

This may be an example of using a "high-status" activity to reduce resistance to IPE, integrating IPE with an activity that is more valued by students, such as practical experiences (Freeth *et al.,* 2008).

An organisational challenge that affected the views of those that participated in the study was that of the time-burden of the IPL programme. This is a continuation of the idea raised previously that IPE is a "low-status" activity compared with other aspects of students' studies. The predominant opinion was that the IPL programme was an additional problem in an already crowded timetable. This extended to clashes with professional placements and additional workloads at times when students already felt under pressure to complete assignments for their respective individual courses. This view is typified by this quotation from Female physio 1 from first-year focus group 1.

"Everyone's got deadlines like half our group are on placement. We have load of deadlines coming up; it's such bad timing more than anything else"

This highlights the impact that logistical difficulties can have on the student experience. When running an IPE course for a large number of healthcare professions (in this case eight professions who at the time were organised across four schools of study and two university faculties), timetable issues are inevitable. Coordination across

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departments is critical to the success of an IPE initiative and can be a major barrier to such programmes (Barker *et al.,* 2005).

The final aspect of the IPL programme relates to the students' and graduates' perception of the purpose of the IPL programme. First- and final-year students primarily identified the purpose of the programme as providing an opportunity to practice teamwork skills and learn about different professional roles.

> *"I guess that there's something about understanding and being able to interact with people from different disciplines and hear conflicting views and er, yeah, practice sort of team dynamics in a relatively safe environment maybe"*
>
> *First-year focus group 2, Female medic 2*

> *"I think that it's something that everyone sort of has to go through to be able to appreciate and work in a team with other people, erm of different healthcare professions you know, it's important to know what they do as well"*
>
> *Final-year focus group 1, Male pharmacist 1*

While graduates also identified learning about professions and practising teamwork, three of the six (Graduate 1, Midwife, Graduate 4, Medic, and Graduate 5, OT) also identified raising awareness of and practising communication skills in preparation for future interprofessional practice. The views of the graduates are more focused on the outcomes of IPE for professional practice, while the students were more focused on the outcomes for their immediate academic learning. This represents an evolution of views alongside the transition from student to qualified professional. The identification of learning about professional roles and the

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importance of communication skills in IPE correspond to the study by Suter *et al.* (2009), in which the same topics were identified as core competencies for collaborative practice by healthcare providers.

Two of the first-year students expressed a more cynical view of the purpose of the programme, as a "box-ticking" exercise. This may also be linked to the valuing of IPE, with it deemed as having a lower status than uni-professional studies and, therefore, being simply an activity to satisfy a quota or requirement rather than being a meaningful learning activity in its own right.

> *"I think it was almost, the task, it felt almost wasted, I don't know about everybody else but I kind of, we felt, we knew what they wanted to read or what they wanted to hear so it was very much a process of jumping through hoops or ticking boxes about how well we worked as a team and all the problems, we talked them over and smoothed them out"*

> *First-year focus group 2, Female medic 3*

> *"Yeah, I suppose there was less discussion cos you knew what, you knew what they wanted, everybody in the group knew what they wanted, so it was just a matter of getting it done there wasn't much thought or discussion or arguments or anything it was just, doing"*

> *First-year focus group 2, Female medic 1*

Graduate 6 (PT) also picked up on this concept, but he stated that it was other members of the group who felt that way, not himself.

> *"I mean at the time I think a lot of people on the course would kind of talk about it like, oh, why are we doing this, like it's a tick a box kind of exercise"*

It is difficult to assess how prevalent this view is as it was not mentioned by other participants. This could have been because they disagreed with this viewpoint or were reluctant to voice it themselves. Every effort was made at the start of each focus group or interview to encourage participants to speak truthfully, and it was made clear that there would be no repercussions for negative views expressed in the confidential focus group or interview. As previously mentioned, participants self-selected for the study and, as such, may not be a representative cross-section of the participants in the IPL programme. Another statement did suggest, however, that this negative view may be more widespread than these focus groups and interviews suggested.

> *"Having run um, med student representation for a while, it's a favourite medic whinge is how much they hate IPL, which is why so much change is happening to it I think. I think it has got a lot better since we did it; it was very limited and the major problem of having it in first year, um, but yeah, I think people thought it was a waste of time on the whole"*
>
> *Final-year focus group 3, Male medic 2*

This statement should be treated with caution, as it is the recollection of one individual about the opinions of others that cannot be verified. It is worth noting this response though, so as not to make the possibly misguided assumption that all students participating in the IPL programme have positive to moderate views about the programme itself.

<u>Views of interprofessional practice</u>

The final sub-theme explores views of interprofessional practice and consists of three topics: attitudes to interprofessional practice, practice boundaries and interprofessional working, and impact on patient care. This sub-theme focuses on both experiences of professional practice and opinions expressed by participants on the concept of interprofessional practice. Whereas the previous sub-theme comprised data from students and graduates, this sub-theme predominantly arose from data from graduates and senior professionals. Final-year students provided few data but first-years provided none. Obviously the greater experience of graduates and senior professionals in professional practice is the most likely cause of this disparity. Final-year students have also had more experiences with practical placements than first-year students, so they may have felt more confident in expressing an opinion, though all but one of the four statements were from the fourth final-year group, who were at the closest to graduation and, therefore, the most experienced students interviewed.

The attitude to interprofessional practice expressed by graduates was positive, with participants seeing it as necessary to their current practice. Graduate 1 (Midwife) was particularly emphatic in this regard:

> *"Ok, do you actually want to be working interprofessionally in your current role?"*
>
> *Researcher*
>
>> *"Yeah, I, I find it stimulating to work with other people"*
>>
>> *Graduate 1 (Midwife)*

> *"And so you think it's something that should be encouraged?"*
>
> *Researcher*
>
> *"Well it's necessary, you know it's just, there's no question that, we just can't work on our own, full stop"*
>
> *Graduate 1 (Midwife)*

All the senior professionals included in the study expressed positive attitudes towards interprofessional working. Similarly to Graduate 1 (Midwife), Senior 3 (Doctor) also emphasised the importance of interprofessional practice to his work in an acute hospital, explaining that he saw it as both essential and normal:

> *"I couldn't do the work unless I had that interprofessional, you know that, it's, it's been one of those things that is the norm for me, it's never not been the norm for me, I mean right from, right from when I qualified...so for me it's been a norm rather than an occasional thing"*

Senior 6 (SLT) also stated the vital nature of interprofessional practice in a complex field such as adult learning disabilities, stating:

> *"I don't think you could possibly survive with just taking somebody and just dealing with them ourselves, unless there's a very specific problem that doesn't need much input"*

The statements from these three participants, who work in very different fields of healthcare, show that interprofessional practice occurs in both acute and community settings and in the care of a diverse range of service users. This provides additional rationale for the inclusion of IPE at a pre-registration stage of training rather

than waiting until qualification. If interprofessional practice is such an important aspect of a wide spectrum of healthcare, it is logical to encourage the development of positive interprofessional attitudes as early as possible in a student's career.

Graduate 4 (Doctor) was the only participant who reported that she was not working in an environment that encouraged or facilitated interprofessional practice. For her, this had highlighted the value of interprofessional practice further:

> *"I'm actually like, seeking it out because at the moment I do feel quite isolated and I hadn't realised how much I do enjoy working as part of a team and having other people to bounce ideas off while trying to plan things, so I'm sort of trying to seek that out because I'm just this like little isolated person and everyone else is up above me....I don't think I could do my job without sort of talking to other people and working with them"*

This statement also touches on the issue of hierarchy, which as it was such a prevalent finding throughout the focus groups and interviews is reported separately later in this chapter.

Both graduates and seniors acknowledged that one of the key benefits to interprofessional working was that it allows for the differences between professions to be strengths for providing best care for the patient.

> *"Dieticians will have a slightly different point of view from nurses who will have a slightly different point of view from medics. We can all bring different points of view to the table really when we're talking about one patient in particular erm, you know, er it, you could argue that er, the consultant who doesn't see very much of the patient apart from in*

clinic, which is a fairly false atmosphere really, you know erm you know that a nurse can bring a very different viewpoint when you're talking about long-term care"

Senior 1 (Nurse)

"I think there's no doubt that we can get different perspectives on things. We can give people different perspectives, we can um, if I go and see them and then (Name) goes and sees them or vice versa or if (Name) goes and sees them and she's got a problem or yeah, this is out of her depth, you know, we can share things like that, I'll send them, I've got somebody, maybe some woman who's, some young woman who's got maybe um, who's got a pain in her pelvis and it's clearly a sexual problem I might sort of, will send them to one of my colleagues to, one of the nurses to be to work with, you know, and finding an appropriate person, and I think having an interdisciplinary group like this does allow us to, to um, get patients to the right person for them"

Senior 3 (Doctor)

Capitalising on the different strengths of professions requires a good understanding of the remit and skills of each profession within the team. The statement by Senior 3 (Doctor) particularly highlights the patient-centred nature of interprofessional care and choosing the professional most appropriate to the patient, rather than following a linear process of treatment. This process was explained further by Senior 3 (Doctor) in this extract:

"We manage the patient in an interdisciplinary way um, and we sort out, well this patient looks best to see a nurse, see

the occupational therapist, physio, no this one needs to go and see one of the consultants and so on like that, so we have that triage process, (Location) they're, they just have a linear triage process which is, you come in, you see the senior physiotherapist, if they, if she feels you need a scan she'll send you off for a scan, that, if from that you need a surgeon, then she'll send you off to a surgeon, of not she'll send you back to the GP, so it's just a linear process rather than a networked sort of mish-mash, and the surgeons like it over here cos they know the only patients they're going to see are, are those that have been completely worked up"

This statement highlights the potential time and financial benefits of interprofessional practice. By assessing each patient on an individual basis as an interprofessional team, each patient is put on the most appropriate treatment pathway for that person without having to go through multiple treatment pathways first. In the final portion of the quotation it is also indicated that staff find this method of working more satisfactory, as they know that the patients being referred to them will benefit from their skills.

The impact of interprofessional practice on patients was also discussed by other graduates and senior professionals. Patient-centred care is identified as a key reason for engaging in interprofessional practice (D'amour and Oandasan, 2005) and, as such, it is rational that this topic should be brought up by these participants. One of the benefits to patients of interprofessional practice identified at both graduate and senior level is the reassurance that the patient may gain from not having to relay the same information to different members of the healthcare team on multiple occasions.

"I think when it's done well it can really help patient care and also help the patient feel that they are a priority because if every time they see a different department they have to explain their whole story and department A doesn't know what department B thinks, they can just feel that they're not being valued, whereas if the multidisciplinary process is in place and everyone is actually talking and the patients' different teams are actually talking then actually a holistic view can be taken rather than a doctor or a team just looking at their problem in isolation of the rest of the patient"

Graduate 2 (Pharmacist)

"I think well as I've said really, I think that if erm they are able to say something just the once rather than having to replicate the information to a whole team of people, certainly in, I'm thinking about patients who we see who are palliative, who are very poorly, who we are discharging home for them to die, well, you're not going to want ten different members of staff going in there and asking them the same thing about where they want to die, how they want to die, like the, if you have that interprofessional working erm, then a patient can say that the once and it's all done for them and all sorted and with as little distress as possible"

Senior 5 (OT)

With the UK drive for greater patient advocacy and joint working (between the health and social care and within healthcare (Department of Health, 2000)), practitioners and students alike

must recognise the positive impact of interprofessional practice. The data from the graduates and seniors in this study support the view that interprofessional working is valued in many different areas of practice.

All the senior professionals except Senior 2 (Nurse) spoke about interprofessional working and professional boundaries. The information gained was that, for effective interprofessional working to occur, professionals need to know and respect professional boundaries. Graduate 1 (Midwife) was the only graduate to comment on this topic, stating:

> *"There's a big difference between blurring the boundaries and working interprofessionally. I think the boundaries are always made very clear, for example we thought that one lady was quite likely to go for a caesarean section, but, it didn't happen to me, but somebody told me this story, and they then said to the lady that she shouldn't eat, she should be nil by mouth, because they were quite sure that she was going for a caesarean section and when the consultant heard that the midwives had done that, although that lady did go for a caesarean section, the consultant sort of, you know told the midwives off for sort of pre-empting"*

In this example, it is suggested that a perceived intrusion into another profession's remit can result in tension. This is further explored in an example given by Senior 5 (OT):

> *"I had just started working here um, and I was very keen for interprofessional working, coming in to a joint team of OT and physios um, and including social workers into that and thinking I was making their life easier, I'd ring up and said, so and so needs to be seen, I feel that they might be appropriate for such and such a care package, and the social*

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worker snapped at me, was very unprofessional and said
'that's not your role to make that decision, that's mine' so
that was quite, um an eye opener (laughs) shall we say, and
obviously a very different attitude to how you know I am"

The above quotations suggest that the aggrieved parties felt that their professional role had been challenged, and had reacted negatively as a consequence. This was a view shared by Senior 5 (OT):

"What do you think are the challenges of implementing
interprofessional practice?"

Researcher

"Erm, I think those people who perhaps are resistant to it
and are worried about emerging roles and losing their
identity or that of a profession, I think that's probably the
challenge you know that you might come up against erm,
and perhaps people that think, I don't, yeah, I think people
who are quite precious about their role, I think they might
you know, have quite a hard time about interprofessional
working"

Senior 5 (OT)

Senior 6 (SLT) also identified the need to avoid conflict in interprofessional working by knowing one's own professional boundaries:

"I think people need to know where their boundaries are and
not impinge on other people's… knowledge and, and just
areas of expertise really"

Perceived challenge to professional roles has been identified as one of the barriers to successful interprofessional practice (Hall, 2005).

To overcome this, clear communication and knowledge of the roles of colleagues have been identified as key ways of avoiding such confrontations (Suter *et al.,* 2009). The topics of professional identity and understanding of professional roles are discussed further later in this chapter.

Senior 1 (Nurse) and Senior 4 (OT) both stated that knowing where the boundaries lie and engaging the knowledge of others, where appropriate, enhances patient safety;

> *"Well, um we all have different skill sets really um, I'm a firm believer in if you can't do it then you pass it on to somebody else that can. You can put patients into potential problems or danger by trying it yourself really, so that's what I mean by reliant really, um, I have a lot of trust in the people around me um, and I'm very willing to tap their knowledge when I feel that it's starting to get outside my area"*
>
> *Senior 1 (Nurse)*

> *"I guess it's being aware of your barriers as well and knowing what your role is and where to draw the line, so when you're working closely together who, you still sort of have to know who does what and what tasks you can do jointly together safely, so you have to be really clear about that"*
>
> *Senior 4 (OT)*

These statements emphasise the importance of keeping the patient central to practice. By knowing where professional boundaries lay and which profession is most suitable for a task or situation, the patient is kept safer.

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Summary

The predominant attitudes of participants in this study towards IPE and practice are positive. IPE is viewed as a way of improving understanding of professional roles, which in turn is a pre-requisite for interprofessional practice. Despite these positive attitudes, IPE is often viewed as less valuable or secondary to uni-professional studies, particularly by first-year students. This view appears to change as students progress through their studies and into practice, with final-year students expressing slightly more positive views and graduates universally acknowledging that they value their IPE experiences more once in professional practice. The senior professionals in this study were very positive about IPE, seeing it as key to a successful career in healthcare. It is necessary to note that all the participants in this study were self-selected, and as such, are more likely to hold opinions that are more polarised than those who did not elect to participate (Lavrakas, 2008). These findings cannot be generalised to all healthcare professionals, but do provide a useful insight into the lived experiences of these particular individuals, who represent a range of professions and levels of experience and seniority.

Regarding findings about the IPL programme, it seems that the pattern of increasingly positive opinion as individuals progress through their studies and into practice is also seen here. It may be that the value of the IPL programme as a form of IPE may not become clear until a chance to employ the skills learned in a real-life context arises. The comparison of the data from the students about the IPL programme and the results of the AHPQ data from first- and final-year students is given in Chapter Seven, Mixed Methods Findings.

A factor that made the discussion of perceptions of interprofessional practice more difficult is the lack of literature exploring the views of practising professionals on interprofessional practice. The existing literature focuses predominantly on views towards IPE, so comparing the findings from this study with others is difficult. No studies were identified that focused primarily on the attitudes and opinions of qualified staff about interprofessional practice. While small, this study may provide a useful foundation from which to continue further exploration of these attitudes in other works.

6.2.2 Influences on interprofessional attitudes

"Influences on interprofessional attitudes" includes the sub-themes of:

- Stereotyping
- Exposure to other professions
- Impact of the individual

All the participants in this study gave information on some of the influences on their own interprofessional attitudes. The studies included in the literature review focused on changes in interprofessional attitudes as an outcome measure of the effect of their respective IPE interventions, but the findings concerning the factors that influenced these attitudes towards different professions were not explored in great depth. By exploring the factors that have shaped the interprofessional attitudes of students and professionals, it is possible to understand better why they express the attitudes that they do. This is explored in further depth in Chapter Seven, Mixed Methods Findings, where the results of the

AHPQ from first- and final-year students at UEA are examined in conjunction with the findings from the qualitative data.

Participants in the study were questioned directly about the influences on their interprofessional attitudes (See Appendix 3, 4 and 5 for focus group and interview schedules) to ensure that data on this topic were obtained. Due to the semi-structured nature of the focus groups and interviews, participants also spontaneously gave information on this topic, and in these instances the researcher encouraged the line of discussion rather than break the flow of the conversation.

Finally, the impact of the individual sub-theme further examines the more uncontrollable factors that influence perceptions of professions: personal relationships, personality, and their respective influences on the perception of professions as a whole. Awareness of these influences is important for a full understanding of the complex and multi-faceted factors that influence interprofessional attitudes.

Stereotyping

The stereotyping sub-theme explores the stereotypes that are held about different professions, what influences their formation, and how they can be addressed in education and professional practice. Data from all participant-groups are included in this, but most data came from students, with less from graduates, and less data again from senior professionals. This may indicate that, as individuals progress through their career, they are less likely to use stereotypes to inform their interprofessional attitudes, as speculation is replaced by experience. There is also the possibility that expressing stereotypical opinions about a profession is seen as unprofessional

behaviour, making qualified practitioners less likely to express such opinions.

Several studies in the literature review identified that students enter their professional courses with pre-conceived stereotypical views about different healthcare professions (Ateah *et al.,* 2010; Cooke *et al.,* 2003; Cooper *et al.,* 2009; Leaviss, 2000; Lindqvist et al., 2005b; Reeves, 2000; Saini et al., 2011a; Tunstall-Pedoe et al., 2003). The general view across these studies was that the more historically prestigious professions, such as medicine and pharmacy, were viewed as more aloof than other professions, with a greater emphasis on leadership and academic ability. Professions such as nursing, occupational therapy, and midwifery conversely were viewed as more caring, with stronger correlations towards attributes such as teamworking and practicality.

As previously stated, most data on stereotypes came from students, who reported on how stereotyping affected their interactions during their participation in the IPL programme. Almost all of the exchanges in the first- and final-year focus groups about stereotyping and IPL groups concerned the perception of medics. All of the statements made about the perception of medics by first-year students were made by medical students themselves.

> *"Some people really don't like doctors either from experience elsewhere or something, but they seemed to have this idea that I was just gonna blaze over everyone and just ignore everyone before they'd even met me, so I just thought that, well I agree to be honest"*
>
> *First-year focus group 3, Female medic 2*

"When it came to choosing the chair in our group, I think I was the loudest in our group just because nobody really wanted to talk and, when it came to choosing the chair, it was really awkward because everyone just shut up and looked at me straightaway because I was the only medic in the group and I was like, 'I don't mind being chair', but it was just kind of, I think everyone thought oh because I was the medical student, and everyone else was either nurse, doctor, sorry, nurse, OT, midwife they all just looked at me straightaway and I was just like,' I don't particularly want to be chair but I don't mind'. It was just kind of assumed"

First-year focus group 3, Female medic 3

This quotations show that the presumption made in both instances was that a medical student would assume leadership of the group. In the first quotation it appears that this would be regardless of the feelings of the rest of the group. In the second it was the assumption of the group, but it was not an inherently negative situation.

The assumption of medic dominance in the IPL programme was also referred to by the final-year students;

"Well, sorry, doctors, but everyone always thinks they're going to be the ones that are like the forefront, but I didn't think that but that's what other people might have thought, and that comes across sometimes in IPL, in the, it's quite negative isn't it?" (General agreement)

Final-years focus group 4, Female PT 3

This came from a physiotherapy student, suggesting that it may not only medics who believe that other students expect them to be dominant. These statements are suggestive of a divide between

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how medics are perceived and how everybody else is perceived. The reason for this apparent divide is not entirely clear. Is it due to the negative perception of medics by other professions, or is it the assumption by medical students that other professions hold negative opinions towards them? This was made clear in a discussion in the fourth final-year focus group. After reading two fictional scenarios of an IPL group interaction, one positive and one negative, with no professions mentioned in either, the group was asked if they had made any assumptions about the professions involved in the scenarios. The purpose of this exercise was to cause debate and encourage participants to discuss their views directly. One medical student stated, however, that he believed the person exhibiting a poor and dismissive attitude in the negative scenario was designed to target medical students.

"I think it's written, I think you wrote this so that people would think medical students"

Male medic 1

"You think?"

Researcher

"Yeah I think so (General laughter) I think that, it's just the bits... Again I think it's a pre-conceived idea of medical students again, I think it's just this whole thing, erm, obviously I hope nobody would ever be like that I really do"

Male medic 1

"Some people are though"

Male medic 2

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"God, I hope not you know, not generally, do you think?"

Male medic 1

"I've had younger medical students come up to me and kind of, give it all that, you know"

Male medic 2

"That's the thing you know, and I think that's the point, they come in, they've achieved really highly you, know, which they have, perhaps they don't realise you know that they're just at the bottom, you know, they're just you know, just like everybody else, just starting out, and I think they just have to mature you know, just as individuals, but no profession should condone that kind of behaviour at all, but it sounds, you know, I'm not accusing you at all, but it sounds like a pre-conceived idea about medical students again, you know"

Male medic 1

While this exchange suggested that medics may display arrogance because of their high academic achievement for entry to medical school, it is noteworthy that it was the medical students who made and confirmed the negative assumptions. A further statement made immediately after the final statement by Male medic 1 in final-year focus group 4 puts a different perspective on the situation;

"This is maybe a problem with our IPL though, the fact that the rest of the professions here didn't necessarily pick a

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group as to who's being discussed or who's being talked about, the fact the we didn't really say "Oh, this is a medical student" or "this is a nurse" or whoever, and it's the medics who think they are, we're being sort of, thought about here, this is about us"

Female physio 1

"True, true"

Male medic 1

"Maybe is that one of the problems we have that we come up with a general idea, that involves everybody or is, is just general, and then you go " Ah, well, oh you're getting at us" maybe is that one of the problems we've got?"

Female physio 1

"Yeah, that's an interesting point you've got"

Male medic 1

This idea that the view held about medics by others is not the same as the view medics believe other professions to hold about them is an interesting concept. If a group believes that another group holds negative ideas about them, it is reasonable to assume that they may be defensive when interacting with the other group. This defensiveness may then lead the other group to think more negatively, creating negative attitudes where before there may not have been such strength of opinion.

This apparent disparity of views ties closely with the concept of auto- and hetero-stereotypes, the former being the views of one group towards itself and the latter being the views of one group towards another group. For positive interprofessional interaction to

occur, the auto- and hetero-stereotypes of a professional group should be largely the same, a concept known as "mutual intergroup differentiation" (Carpenter, 1995a). In the example given previously, if medics believe that other professions hold more negative opinions about them than they do then, even if the other professions hetero-stereotypes of medics are similar to medics' auto-stereotypes, it will not aid interprofessional interaction unless professions are able to clarify their views with one-another in a non-confrontational way. Only one non-medic participant made a direct statement confirming the medic-held view that other professions had negative attitudes towards them.

> *"Yes, certainly in our first year group erm, I think a lot of us thought that so we didn't realise some of the roles but also we were kind of expecting the med students to be a bit more arrogant cos you get that impression that doctors are going to be arrogant and so on, so we were actually stereotyping ourselves"*

> *Graduate 2 (Pharmacist)*

There is insufficient evidence in this study to confirm or disprove the view of the medical students that the other professionals hold negative views towards them, as very few of the non-medic participants expressed a view. This is an interesting finding that may be worthy of further exploration. It is possible that the expectation of medical students that other professions hold negative opinions of them is part of a cyclical process of the perception of medics by other students. From this study it is not clear whether medical students' perceptions of what other students think of them is accurate or if medical students' defensive behaviour is causal in developing or confirming these negative views.

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Given that almost all of the statements concerning the effect of stereotypes on interprofessional interaction concern medics, this indicates that the image of a doctor is more pervasive than the image of other professionals, an idea that is further explored in the findings concerning how professionals come to hold the stereotypical views of professions that they do.

While it has been identified that healthcare students enter their training with pre-conceived ideas about different healthcare professions (Ateah *et al.,* 2010; Cooke *et al.,* 2003; Cooper *et al.,* 2009; Leaviss, 2000; Lindqvist *et al.,* 2005b; Reeves, 2000; Saini *et al.,* 2011; Tunstall-Pedoe *et al.,* 2003), how these stereotypes come to be held in the first place is not always clear.

One possible factor identified by first- and final-year students is the perception of the professional/patient relationship. These findings emerged from the discussion surrounding some example data from the 'caring' scale of the AHPQ. The graph itself was used to stimulate discussion around the differences in perceptions of healthcare professions. Participants expressed the view that the more 'quality time' and rapport a profession was perceived as having with their patients, the more caring a profession is seen to be.

> *"I think it kind of fits in to the kind of amount, as you were saying, the amount of time people do spend, and the importance of the situations that, er like, they're in, like the midwife, the birth of a child and stuff it's obviously very, an emotional time, nurses usually spend a heck of a lot of time with the patient compared to a medic these days, and so I think it does fit in, and it's like with the OT and stuff again, it's kind of like the emotional response again I think, so it kind of fits into that"*

"I'm not sure if it's actually, maybe directly reflective of how much time is spent with the patient but how people perceive how much time is spent with the patient, because if you think a pharmacist, all day if they are dispensing or whatever could be seeing people, just constantly throughout the day but I, I don't think people see that as necessarily as caring in the same what that a nurse would care at a bedside perhaps, so I think it's more of just people thinking stereotypically, of people thinking how much time is spent with someone, but in fact all of these people all day spend time with patients"

First-year focus group 2, Female medic 3

This perception of the relationship between how caring a profession is seen to be and the time that they spend with patients ties in very closely with the nature of different professional roles. In the second quotation by Female medic 3 from first-year focus group 1, her view is that pharmacists are not seen as being as caring as nurses due to the differences in their interactions with patients. This correlation between professional role and the perception of how caring a profession is explored further in the "Professional roles and Hierarchy" theme.

The other factor aside from perception of professional role that appears to influence stereotypes of different healthcare professions is the media. It was noted by one final-year student and one senior healthcare professional that the focus of the media is predominantly on doctors and nurses and other "frontline" professions.

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"They focus on, they do don't they, they focus on the main roles you don't ever understand what, the media wouldn't ever portray… what kind of OT, physio, speech and language therapy maybe do, it's all paramedics or frontline or something like that"

Final-year focus group 4, Female physio 1

"I think it's always the case of doctors and nurses isn't it, that whenever anything comes up about health it's always doctors and nurses and people don't really think of physiotherapists or occupational therapists, they're very much an afterthought"

Senior 6 (SLT)

This lack of exposure may have a knock-on effect on interprofessional attitudes, due to a lack of knowledge about other professional groups, as understanding professional roles is identified as a key competency for successful interprofessional practice (Suter *et al.,* 2009).

Participants noted that the portrayal of professions in the media, in addition to being predominantly of doctors and nurses, reinforced stereotypical views.

"I think television as well, well you could be watching Casualty and you'll have this doctor barking, this dramatic storyline with this doctor barking at the nurses, and then the nurses will get all upset and that sort of thing, so like dramas on television and things like that"

First-year focus group 2, Female SLT 1

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"I think a lot of it er, sort of the dominance idea, the media has no small power in showing that, things like House, and thinks like that (General laughter), will portray that the doctor, the doctor's always right, even if he's a bit of a jerk"

Final-year focus group 1, Male pharmacist 1

Both of these statements support the notion that media portrayals of healthcare professions reinforce the view that the doctor is dominant and can be arrogant, and the first statement that the nurse is subservient and meek. The portrayal of healthcare professions in the media may largely be unhelpful in dispelling negative stereotypes.

The data from this study suggest that, for the most part, stereotypes of healthcare professions are not conducive to interprofessional practice. It may be necessary to challenge these views in order to allow students and professionals to engage in constructive interprofessional relationships. One student expressed the difficulty of challenging the predominant view of doctors in particular:

"Probably the most difficult thing is how, how you break that stereotype, because now we're having a lot of teaching about sort of agreeing with the patient and forming a mutual diagnosis and a mutual treatment and we're getting a lot of teaching on sort of being more caring, if you can teach that, so it's going to be difficult I think to break that doctor stereotype because it seems theirs is quite a big one and, and I don't know where you'd really begin sort of getting the other professions maybe to break down the

> *barriers and realise that we're not all that bad, and we don't*
>
> *want to be that"*
>
> *First-year focus group 2, Female medic 1*

While this quotation states that how to break down stereotypes is unclear, several participants identified IPE as a way to do so.

> *"I actually think that on some level IPL has managed to*
> *break down stereotypical view that medics are dominant*
> *and that we are actually nice people as well, so I think you*
> *know, it's given us that sort of understanding we don't need*
> *to make stereotypical views all the time of what everyone is*
> *like"*
>
> *Final-year focus group 1, Female medic 2*

> *"I was guilty of it and maybe sometimes still am of this is*
> *what a doctor does, this is what a nurse does, this is what a*
> *speech and language therapist does, this is what an OT*
> *does, this is the kind of person they are, this is what they*
> *must be and by introducing interprofessional learning or*
> *working with other people I suppose you hope to challenge*
> *that a little bit and say actually, this isn't necessarily what*
> *that person is like or what that person, um how they conduct*
> *themselves um and that you hope that you positively change*
> *someone's opinion if their stereotype is negative, um, or*
> *whether they, whether they've got one at all just to be a bit*
> *more sort of open to things"*
>
> *Graduate 4 (Medic)*

The effect of IPE on interprofessional attitudes is examined in greater depth in the next section of this chapter. Female medic 3

from first-year focus group 2 also picked up that IPE is unlikely to be a 'quick fix' solution:

> "I guess you won't know if this IPL thing works for years and years and years yet, cos it's going to take a while for everyone to filter through the system"

The discussion in the previous chapter about attitudes towards IPL becoming more positive as students progress through their studies and into professional practice is an example of this. It will also take time for those in leadership positions to have experienced IPE during their pre-registration training, and as such hopefully encourage positive interprofessional attitudes in more junior staff.

Exposure to other professions

The exposure to other professions sub-theme includes participation in IPE, observing professional practice, and personal experiences outside of professional practice. This sub-theme explores the influence of exposure to other professions in addition to IPE that have influenced the views of individuals to other healthcare professions. This topic is under-researched and gives insight into how other, uncontrolled interprofessional interactions influence attitudes.

Exposure to other professions was identified by all participant-groups as a substantial factor in influencing interprofessional attitudes. As discussed in previous chapters, the theoretical basis for using exposure as a way of tackling negative views and encouraging positive interaction between different groups is the contact hypothesis (Allport, 1979), which has been proposed as compatible with the aims of IPE for professions to learn with, from, and about each other (Hean and Dickinson, 2005).

The IPL programme is an example of using exposure to students from other healthcare professions to facilitate positive interprofessional attitudes. Data from first- and final-year students and graduates suggest that participating in the IPL programme may have had some impact on their interprofessional attitudes. The impact of the IPL programme on the understanding of professional roles is discussed in depth under the "Professional roles and Hierarchy" theme.

Most of the student data on this theme centred again on the discussion around the before and after IPL data in the AHPQ graph that was shown to the students during their focus group. Most of the students were of the opinion that, although the scores for each profession on the caring scale had increased after the IPL intervention, the overall pattern of the data, with medics as less caring and nurses as the most caring, had not changed. This indicates that IPL augments rather than fundamentally changes interprofessional attitudes, as demonstrated by this exchange from the first first-year focus group:

> *"It shows that when people have actually met and mixed, their estimation goes up a little bit from what it was in the first place"*
>
> *Female medic 2*
>
> *"I think it goes up but it still stays, it's not really different"*
>
> *Female OT 1*
>
> *"Yeah, it's the same pattern"*
>
> *Female medic 1*

This view was shared by final-year students, who felt that the lack of levelling out of the results demonstrated that preconceptions

about professions remain as demonstrated in this extract from final-year focus group 4:

> *"I think it doesn't; it shows exactly what my colleague here was saying, that it hasn't changed opinions at all, slightly augmented them maybe but it hasn't changed you know the spread of it"*
>
> *Male medic 1*

> *"It hasn't levelled it out or anything; they are still maybe those pre-conceived ideas of what maybe those people are like"*
>
> *Female PT 1*

The student data indicated that, while they felt that IPL programme had led to an increase in the perception of how caring professions are, the overall trend of attitudes remains the same. The students attributed this increase in positive perceptions of professions to increased understanding of the profession itself and their investment in the care of patients.

> *"If they're bringing in, everyone is like bringing in different specialties they're bringing in like, good valid points and you'll be like, yeah yeah, I really understand what you're doing and you really are interested in the care of the patient so, that would mark them up a bit I suppose"*
>
> *First-year focus group 3, Female medic 3*

> *"I guess with increased understanding you probably would think that people, the profession's more caring"*
>
> *Final-year focus group 2, Female medic 1*

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The quotation from Female medic 3 from first-year focus group 3 indicates that this change or augmentation of attitude is most likely to happen if the IPL experience was positive, which refers back to the impact of a positive IPE experience as discussed in "Valuing Interprofessionalism". Graduate 1 noted that a negative experience in IPE could reinforce already held negative views:

> *"Sometimes it actually… does the opposite, as I said very early on about medical students feeling like they have to take the lead, and then that leads to the others, say nurses, thinking 'Oh that's typical, always the medical students, always the medical students taking the lead'"*

The data presented here show that, while the IPL programme may not have drastically reshaped interprofessional attitudes, the effect that contact between different professional groups has is dictated by whether the experience was positive or negative.

Observing professional practice was also identified as having a major influence on interprofessional attitudes. Students in particular singled out their experiences on practice placement as having an effect on their interprofessional attitudes, often in the context of supplying a real-life example on which to base their opinions, rather than working from assumptions and stereotypes.

> *"Yeah, cos I hadn't really come into contact with OTs and physios before placement, I er, I had the opportunity to spend quite a lot of time with them, so I could actually, you know, properly erm, score them as such"*
>
> *First-year focus group 1, Female nurse 1*

The above quotation refers to the completion of the AHPQ before and after participating in IPL1. In this instance, the student felt that if she had been on placement before participating in IPL in her first

year she would have been more able to give an accurate view of her interprofessional attitudes when completing the questionnaire.

Practice placement was also viewed as a way of dispelling any negative views that had been gained from a poor group experience in the IPL programme:

> *"I was quite open-minded erm, about all the other professions but then as I said with the roles and the personalities and everything like that sometimes you then, you then start getting more negative opinions and you have to go on placement to realise that they're not actually necessarily true"*

> *Final-year focus group 4, Female physio 2*

The reverse was also occurred though, with negative experiences on placement leading to a less constructive environment in IPL:

> *"See my opinion changed of opinion- of how people see me as like a physio, cos the nurses were very like, cos they'd been on placement like recently, like "Oh the nurses- the physios are very confrontational" and I could feel the way they were kind of reacting to me as if I was going to be confrontational about the IPL experience, which I thought was really strange, er I was a bit like " Er, OK then" er, I think it's interesting how other people perceive you, and I got that from IPL, as well as how I perceive"*

> *First-year focus group 1, Female physio 1*

The above extract is also an example of disparity between how a profession believes they are viewed, and how they are actually viewed by out-group members, which was examined in more depth

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regarding medical students and their views of how other professions see them in the previous section.

In the "Valuing Interprofessionalism" theme, IPE was not viewed as being as important as other uni-professional aspects of students' studies, and therefore it was viewed as a "low-status" activity. Using existing practice placements may be a way of including an interprofessional element in a "higher-status" activity, as reported by Takahashi *et al.* (2010). That this intervention was included as part of existing professional placements may partially explain why students felt that it had been a useful experience that would aid them in their future practice. This contrasted with Reeves (2000), who reported on a community placement specifically designed as an IPE intervention. There was no significant change in students' interprofessional attitudes after participating in the study, and students deemed the experience to have been a low-status activity in comparison with other aspects of their studies. Combining elements of IPE with aspects of their studies that students value such as practice placement may mean that students are more receptive to the ideas and aims of IPE, including fostering positive interprofessional attitudes. This may also reduce the perception explored in the "Valuing Interprofessionalism" theme that IPE detracts from other seemingly more important aspects of study.

Graduates gave examples of how the observations of professional practice that they had made post-qualification had influenced their attitudes. Seeing different professions in action and learning more about what they do led to an increase in respect for that particular profession, as evidenced by:

> *"I'd kind of always had an opinion, erm, er, completely*
> *unbased on fact that they don't really do that much and it's*
> *more of a dietician role whereas actually erm, when I spent*

some time with the nutrition pharmacist and went round with the nutrition team I saw just how complicated a role it is trying to work out how much nutrition someone needs when they can't take it orally and just how they have to work erm, and TPN's, only certain numbers of TPNs can be made so, how do they assign that, and so that was actually quite interesting"

Graduate 2 (Pharmacist)

"I think they've probably just become a bit more real because you're seeing it in action everyday um and I think I, I appreciate more of what they do, because some of it I really don't understand um, like swallowing assessments with barium and taking photos and seeing a report and thinking oh, wow, I know nothing about this and without this person I still would know nothing and they can sort of give me the report and translate it for me tell me the outcome and then together we can work on a suitable option for the patient as a result of that um, so I think yeah, seeing it in action probably just made me more respectful and more sort of appreciative of the fact that you've got those people to go"

Graduate 4 (Doctor)

These statements show that observing professional practice is valuable to qualified staff as well as pre-registration students in informing their interprofessional attitudes and learning about different professional roles.

Impact of the individual

Finally, the impact of the individual sub-theme further examines the more uncontrollable factors that influence perceptions of professions: personal relationships, personality, and their influence of the perception of professions as a whole. Awareness of these influences is important for a full understanding of the complex and multi-faceted factors that influence interprofessional attitudes.

Personal relationships in this instance refer to friendships between persons of different healthcare professions. Interactions of this kind were mentioned most frequently by graduates, with a small number of statements from students. Friendships between members of different professions were universally stated as having a positive effect on interprofessional attitudes. The value of friendships developed in IPE were recognised by Hean and Dickinson (2005) in their ability to generate empathy and positive associations. This was corroborated in a statement by Male nurse 1 from final-year focus group 3, who stated:

> *"I've learnt a lot more about certainly the erm, education that medical students go through, because in speaking to people who are friends and learning it that way rather, and then I appreciate the stresses, that they have and what they're going through much more that way and through the people I meet through IPL socially rather than the actual IPL programme and the group work itself"*

In this instance, the less formal aspects of IPE were highlighted as having had a greater impact than the course content itself. The above statement also highlights that relationships developed outside of IPE can improve attitudes by increasing awareness and appreciation of other professional courses. While friendships were highlighted as improving interprofessional attitudes, by contrast, a

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fractious relationship was identified as having the possibility to foster negative attitudes:

> *"If you've lived with someone in your halls who was like, a nurse or whatever and you didn't like them, you're probably going to put a negative attitude towards that"*

> *Female medic 1, First-years focus group 1*

While this was not identified by any of the participants as having been experienced personally, it is worth considering that while positive relationships may support the development of positive interprofessional attitudes, negative interactions may have the opposite effect. This possibility is also explored by Senior 2 (Nurse), who commented on the possibility of both positive and negative experiences with individuals affecting the view of a profession as a whole:

> *"You can have many feelings about that profession as a whole, so you have a good experience with one physiotherapist so you think you know, that, that influences how you view their department. Equally you could have a bad impression from one person who's having a bad day and that equally might influence your attitude from there on"*

The positive effect of learning about different professions through friends was also expressed by Graduate 4 (Medic) who recognised that friendships developed during university had had a positive effect on their attitudes:

> *"I think quite a few of the friends that I erm had through university through other people erm were in other professions um, which when you see how hard they work and what they do and how much more anatomy they know than you erm, probably on a personal level gives you erm,*

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not necessarily more respect but it helps with your pre-conceived attitudes that you may have had previously erm, so yeah I think those personal factors have probably helped positively"

The increased knowledge and understanding gained about different professions through friendships appears to be a key element in the improvement of interprofessional attitudes.

The other topic that emerged as part of this theme is that of focusing on the personal over the professional. Even outside of developing friendships with people of other professions, the data suggested that getting to know someone on a more personal level can influence interprofessional attitudes and interactions. The importance of seeing a person as an individual rather than defining him/her by the respective professional label was identified predominantly by final-year students, graduates, and senior professionals, but the capacity of interaction on an individual basis to overcome pre-existing prejudices was identified by first-year students also:

"People kind of like judge other people before you meet them, and then you think they're a lot nicer after you meet them"

Female medic 1, First-year focus group 2

The above quotation is non-specific as to the nature of the meeting of people from different professions, but was in reference to the stimulus AHPQ graph data on the view of how caring different professions are. What this extract does show is that meeting and interacting with people on a more personal level appear to improve views of the professions in question as a whole. A specific example

of this occurring during the IPL programme is given by Female SLT 2 in final-year focus group 1:

> *"I suppose that varies erm, from group to group erm, that if you have a positive experience, I mean you only meet a handful of people don't you and if you have a positive experience with those individuals then it changes your perception of that role as a whole"*

This extract suggests that interprofessional attitudes may be quite heavily influenced by the experience of interacting with a small number of people. The experience of each participant in the IPL programme is unique, and the relationships formed between different members of the groups, positive or negative, represent an opportunity for interprofessional learning. This is a concept that has been explored by Hovey and Craig (2011) in their paper on "Understanding the relational aspects of learning *with, from* and *about* the other". The idea that each unique interaction represents an opportunity for interprofessional learning links closely with the notion that each interaction can therefore affect interprofessional attitudes.

The discussion around interactions with individuals from different professions and their respective impact on attitudes has so far alluded to personality as a defining factor in forming opinions and attitudes, but this was also explicitly stated by several graduate and senior participants as an important aspect in interprofessional working relationships within a team. This was most clearly stated by Graduate 5 (OT) who, when discussing her own interprofessional practice stated:

> *"Yeah, I think, my general feeling was it doesn't really matter what profession someone is, it's more their*

personality that makes a difference in terms of how you

liaise and work together"

This was expanded upon further by Graduate 6 (PT) who expressed that personality affected his interaction with others as much as the profession of the other person:

"It depends on what they are like as a person as much as

their profession so I think there's, there's general kind of

interpersonal skills that um, that you have to apply to

working with each professional, whatever profession they're

in"

Senior 5 (OT) expressed a stronger view on the impact of personality over professional identity in interprofessional practice, stating:

"Certainly on a personal level I like to judge someone by the

person …you know I think it is down to a personal

relationship that you have with someone, whether you find

someone approachable or not you know indeed, like a

medical, or a doctor um, you know there are some doctors

who are not approachable and will not listen to you and will

not kind of take your opinion on but I'm not saying well,

that's the same, that's everybody you know that's all

doctors"

The above statement also articulates the view that whilst some interprofessional interactions may be negative, that will not necessarily affect one's view of the profession as a whole but be associated with those particular individuals. This is in contrast to the views given by Female SLT 2 (final-year focus group 1) and Female medic 1 (first-year focus group 1), who stated that negative interactions with people from other professions may lead to more

negative views about that profession in general. This difference in view between students and senior professionals may reflect their respective levels of experience with working with members of other professions. Students may have had only a very limited number of interactions upon which to base their attitudes, whereas senior healthcare professionals will have interacted and worked with a great number of people from many different professions. The greater variety of examples seen by seniors may lead to a less black and white view of professions as a whole, and more emphasis on treating each person as an individual rather than a definitive representation of their profession.

Summary

The influencing factors on the development of interprofessional attitudes are myriad and complex. Most of these factors are not controllable as variables in IPE, with the possible exception of exposure to other professionals. Even in this instance it would not be possible or necessarily desirable to control every exposure to other healthcare professions that occurs. Stereotyping is a societal influence that extends into interprofessional interactions, as evidenced by the experiences of the students quoted previously in this section. The pervasive nature of stereotypes makes this a powerful influence particularly on the less experienced students' preconceptions of different professions. For negative stereotypes, these may need to be directly addressed in order to allow for successful interprofessional interaction to occur.

Exposure to other professions, particularly the opportunity to see professions or unfamiliar aspects of professions, presents a valuable learning opportunity, both in terms of knowledge and in developing a greater appreciation and respect for the profession in question. Spending time with different professions was seen as a

way of creating more accurate interprofessional attitudes and increasing appreciation of different aspects of the interdisciplinary team. Negative experiences were highlighted by students as having a potential impact on their interprofessional interactions.

The perceived effect that an individual can have on the interprofessional attitudes of another, especially during their more formative training years should be noted from these data. A negative experience early in training may influence attitudes in an unwanted fashion, leading to difficulties later in pre-registration training, or in early professional practice. Later, with greater experience, negative instances may be more likely to be attributed to the individual in question, rather than seen as a reflection of the profession in question as a whole.

The evolution of views from students, to graduate, to seniors appears to be predominantly affected by experience. Working from a smaller amount of exposure and experience and a greater amount of speculation and societal influence, students appear to associate individual experiences more strongly with their views of professions as a whole. In contrast, graduates appear more fluid in their views, and seniors similarly so, with greater emphasis on seeing each person as an individual and not forming sweeping views of professions as a whole from the actions of an individual or a few. This pattern can be summed up as an increasing flexibility in attitude, with a greater emphasis on a positive or negative view of the individual, rather than their profession as whole.

6.2.3 Professional roles and hierarchy

The professional roles and hierarchy theme includes the sub-themes of:

- Understanding of professional roles

- Professional identity

- Hierarchy

This theme emerged through data from all participants in the study and explores the perception and knowledge of different professional roles by participants, the development of and changes to professional identity, and the perceived effect of hierarchy on interprofessional interactions.

<u>Understanding of professional roles</u>

To explore participants' knowledge of different professional roles and their perceptions of the differences in professional roles, findings from the focus groups and interviews citing examples of a lack of understanding and the influence of the IPL programme on participants' knowledge about roles are discussed and explored.

The data on the perceived differences between professional roles were almost exclusively from first- and final-year students. As stated in the previous theme "Influences on interprofessional attitudes", understanding different professional roles is a key competency in IPE (Suter *et al.,* 2009). Being at the outset of their careers, it is reasonable to assume that, during this time, students are learning about different professions, and that the differences between professions would be a topic of interest and relevance to them. This may explain why the bulk of these data were generated from the focus groups with students, rather than the interviews with graduates and senior professionals. As more experienced professionals at a more advanced stage in their careers, it is likely that the graduate and senior participants in this study have had time to accrue the necessary knowledge about different professional roles in their own training and practice and, as such,

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this topic was not as relevant to them as it was to the student participants.

Much of the discussion around the perceived differences between professions in the focus groups with students was stimulated by the graphs of the AHPQ caring subscale results that were given to the students during the focus groups. The students discussed what the meaning of the word "caring" meant in this context and how it related to the scores given to each profession shown in the graphs. The general discussion centred around the roles of the professions seen as "less caring" (according to the graph) being professions that did not take a caring role in their day-to-day practice, namely medics and pharmacists. This was not necessarily seen however as an indicator that those professions were less empathetic or patient-focused, but that they did not provide personal care to the patient. This was noted by several participants who identified that medics and pharmacists instead may have different priorities and responsibilities.

> *"Yeah, but I'm not saying it's a bad thing, I mean you wouldn't necessarily expect a pharmacist or a medic to be erm… not not like, empathic, I mean you'd expect them to be understanding but, you expect them to be more sort of, impassive, making a judgement, you know cool, professional judgement, although the others are doing that, they're also, doing their day-to-day encouraging, warm, touchy feely side of things, so it's not, I don't think it's a bad thing it's just a difference in… what's needed of them, perhaps"*
>
> *Female SLT 2, First-year focus group 1*

This view was also expressed by Female SLT 1 from the same focus group, who said:

"I think like, aside from pharmacy and medicine the others are kind of seen as more holistic professions anyway, and kinda, in medicine and pharmacy you're coming from, well obviously, from a very medical or scientific model of like health, whereas in the other healthcare professions you're taught more about the social model of health and using like, loads of aspects of the international classification of functioning… maybe that looks less caring than being involved in the whole of their life, like a more holistic viewpoint, so might be coming from the model, and it's the model that has to be used I suppose for the profession so, but it probably affects what people think about them"

The opinions expressed in these quotations are not that attitudes towards medics and pharmacists are more negative than those towards other professions, but instead that they are viewed as being slightly different from the other professions represented on the graph (nurses, physiotherapists, and occupational therapists) in their professional duties and priorities. The perception of a division between doctors and other professions was previously discussed in the "Influences on Interprofessional Attitudes" theme with the data suggesting that medical students may be of the opinion that other healthcare professions hold more negative attitudes towards them. Instead, it is possible that these differences of perception are a reflection of the separation of medicine from other healthcare professions that has occurred since the professionalization of medicine in 1848 in the UK (Waddington, 1990).

As the oldest and most established profession, medicine in particular may be seen as inherently different from other healthcare professions, which have had comparatively recent journeys to professional status. Medicine is still seen as the dominant profession of the health and social care professions,

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which may contribute to the perception of a difference in the role of doctors compared to other professions (Reeves *et al.,* 2010a). This separation is mentioned in the above quotation by Female SLT 1 from First-year focus group 1 who mentions the differing traditional philosophical backgrounds of the professions, the underpinning medical and scientific models of medicine and pharmacy, and the more recently developed biopsychosocial model that informs nursing and allied health education.

The perception of pharmacists as less caring than the other professions is slightly more difficult to explain, as the role of pharmacists in comparison with the role of other healthcare professionals appears to be less clear-cut than the relationship between doctors and the wider healthcare team. To speculate, it may be that pharmacists are viewed as being more scientific and less patient-focused than other professions. This view may be compounded at the UEA due to the School of Pharmacy being part of the Faculty of Science, rather than the Faculty of Medicine and Health Sciences, further segregating pharmacy students from the rest of the healthcare students. It is possible that, if all the students were within the same faculty, there would be greater sense of unity and belonging. The previously mentioned anecdotal comments from pharmacy students in the "Valuing Interprofessionalism" theme about the much less extensive nature of their practical placements in comparison with other healthcare students may serve to highlight further this perceived difference. With the roles of medics and pharmacists seen as more scientific than the other healthcare professions, and pharmacists further separated by being in a different faculty, it is possible that other students do not feel that "caring" is an accurate descriptor of their roles.

The perception of this difference in how caring a profession is seen to be, and how that may not necessarily be a negative thing is demonstrated in this exchange from final-year focus group four:

"Well maybe it's like something to do with perceptions of it as well, whereas, whilst the medics are, have got their job of the diagnostic and of treatments, which is obviously a really important role, and for the patient it's getting them better, but whereas the OT maybe they're doing something that really improves a patient's life, maybe they can see it a bit more"

Female PT 1

"It's how people see what caring is"

Male medic 1

"Yeah, maybe that's what it is, whilst you're cured or you've had treatment for a specific illness or whatever you've got maybe it's seen as more caring in the fact that they've been shown a way of improving a certain aspect of their activities of daily living or something like that I mean maybe that's what they see"

Female PT 1

According to these quotations the perception of doctors and pharmacists as being less caring than other healthcare professions, and whether this is negative or not, may depend upon the meaning that is assigned to the word "caring". If the meaning is viewed as how much a profession cares about their patients then it can indeed be seen as a negative. If it is it seen, however, as to what extend a profession takes a caring role, then it may not necessarily be a negative opinion. Further discussion of this point is given in

Chapter Seven, Mixed methods findings, but this is not a question that this study could fully answer, but is an area of interest that may warrant further future enquiry.

This sense of the separation of medical students from other healthcare professions is reflected in some of the literature on IPE. Jacobsen and Lindqvist (2009) and Lindqvist *et al.* (2005b) both reported that medics were seen as less caring and subservient than other professions, who are more closely clustered together, both before and after participating in IPE, than other professions. In other studies medics are often seen as less adept at teamworking or more likely to take on a leadership role (Ateah *et al.,* 2010; Cooke *et al.,* 2003; Reeves, 2000). Additionally, the use of certain measures such as the ATHCTS with its "Physician centrality" subscale reinforces the idea that doctors, and by extension medical students, are in some way different from other healthcare students. The way in which Tunstall-Pedoe *et al.* (2003) handled their data may be further evidence of this perceived separation. In their study, they analysed data from medical students regarding the other professions separately from the data from radiography, nursing, and physiotherapy students, the data from whom were combined into a single group. It is possible that this was due to the much larger group of medical students compared with the other three professions, but even when added together the number of respondents from the non-medical students was far smaller. This may then be an indication that medical students were perceived as being sufficiently different from the other students to warrant this separation.

The results for pharmacists in the studies by Jacobsen and Lindqvist (2009) and Lindqvist *et al.* (2005b) were more closely aligned to those of medics than to other professions. This may suggest that pharmacy, a profession with another long and respected history

(Royal Pharmaceutical Society, 2015), is viewed as closer in attributes to medicine than to other more modern professions. Whether this is due to their shared history as the two prestigious and respected professions is a matter for further investigation and constitutes speculative reasoning at this stage. The view of pharmacists as being less 'hands on' and more scientific than patient-focused is the most likely cause for the perception of pharmacists as slightly less caring. A possible reason for the perception of medics and medical students as less caring may be because doctors are still expected to take the lead in high pressured situations, such a breaking bad news or a resuscitation attempt. This leadership role may imply a degree of detachment from the situation, as tough decisions will need to be made.

If doctors and pharmacists are seen as separate from other healthcare professions by students, and those who educate them, then this would have obvious implications for interprofessional interactions. If all group-members are not seen as equal in an interprofessional context, then positive, functional relationships may be more difficult to cultivate. One of the main underpinning conditions for IPE to occur is a sense of equality among the participants in the group (Hewstone and Brown, 1986). While professions clearly have different roles and responsibilities, all members of the IPE group need to feel that they have equal status with one another in this context.

The professional subcultures of students may also have an influence on the understanding of professional roles, with nursing students viewing patient care as a more collective effort, and medical students viewing it as a more individualistic one (Horsburgh *et al.,* 2006). The emphasis on individual responsibility by medical students can be seen as a legacy of medicine's dominant history over the other healthcare professions, in the assumption of

leadership over patient care (Cooper *et al.,* 2009). This difference in perception between professions of the fundamentals of healthcare may serve to create divisions between professions if they are considered to be contradictory or undermining of other professions' efforts and practices.

Hall (2005) noted that, traditionally, medical students work relatively independently in a competitive academic environment, whereas by contrast nurses are encouraged to work together in a team to share information and solve problems. The dichotomy of individualism versus collectivism may act as a source of contention in a situation in which proponents of the two approaches are required to learn and work together, such as in IPE and practice. The differences in the underpinning values of healthcare courses and the differences in teaching models used may make understanding the roles of others more difficult, with the worldviews of professions differing considerably.

A lack of understanding of professional roles was identified by students and senior healthcare professionals as a topic of interest during focus groups and interviews. A dearth of understanding was given as a source of tension and difficulty in interprofessional relationships and interprofessional practice.

Across students, graduates, and senior professionals interviewed as part of this study, there was a perception that medical students and doctors had the least knowledge about other professional roles. The perceived difference between doctors and other professions has previously been discussed with regard to the apparent differences in their role when compared with other professions, but this finding links more closely with that of medical students' beliefs that others hold more negative opinions of them, as reported in "Influences on interprofessional attitudes". The findings given

below may partially explain why medical students expressed the views that they did in the previous theme. It is important to note however that one of the opinions specifically concerning medical students came from a medical student themselves.

> *"Well, well um the medics in my group and the nurses in my group didn't realise that physios were independent practitioners and erm, one of the doctors at some point said " And I would send for a physiotherapist" and I was like "Mate, that's not how it works" (General laughter) erm, er, I think they were just a bit confused about the fact that we are independent practitioners and that, they, don't tell us what to do as much, and er, the nurses thought that, the nurses thought the same as the medics really"*
>
> *First-year focus group 1, Female PT 1*

This quotation mentions nursing students as well as medical students in the context of knowledge about the role of physiotherapists. The specific interaction relayed, however, in this extract was between a medical student and Female PT 1. Another example of lack of knowledge of the roles of allied health professionals was given by Female medic 2 in final-year focus group 1;

> *"There is a bit of a reputation that medical students can be a bit arrogant and not really appreciate, you know, what OTs do, what physios do and how much they have to study and I think it's good for people to know that from early on so they can sort of appreciate everyone's role in healthcare"*

This opinion about medical students and doctors having less knowledge about other professions was also expressed by Senior 4, OT in the following exchange;

"Do you think there's anything else that affects the relationships between different professions?"

Researcher

"Erm, it can also be education of the doctors on what we do as well…the FY1s that come on we try and do a little talk with them and give them some information about our role to help because they often don't know what we can offer, for instance like the cognitive assessment, they're completely unaware that we can do those and just generally about our role"

Senior 4 OT

The lack of understanding of professional roles by doctors may have a larger impact on patient care than if another profession had a similar lack of understanding. This is similar to an opinion expressed by Graduate 6, Physio, who felt that a negative opinion about another profession from a doctor would have greater impact because of his/her status than an opinion expressed by a different member of staff. In the context of understanding professional roles, the doctor is still most often seen as the leader of a healthcare team (Cooper *et al.,* 2009), with many decisions about the treatment of a patient requiring their approval or initiation. If a doctor does not fully understand the abilities and capabilities of the other professions in that healthcare team then it is possible that the patient may not receive the full benefits of the skills and knowledge of those caring for and treating them. This is an issue closely aligned with the topic of hierarchy, which is explored further as the final sub-theme of this section.

The influence of the IPL programme on knowledge about professional roles was a subject that was brought up predominantly

by first-year students and recent graduates. As previously mentioned, at the outset of their learning, healthcare students may be particularly focused on gaining more knowledge about other professional roles in IPE as they have had little prior practical experience of interacting with other professions. Graduates were asked about what they remembered from participating in the IPL programme and if it had had any effect upon them. While most of the views expressed were that the IPL programme had improved participants' knowledge about the roles of other professions, some first-year students did not feel that that was the case:

> *"We don't feel like we've learned anything new about anyone's profession, we've not really found out anything new"*

> *Female physio 1, First-year focus group 1*

> *"You don't feel like you have learned that much because we are all doing a discharge plan so we are all just doing our own role instead of inter-relating what everyone else did. We just do our own job and then just put it together and set it out; that's how it was"*

> *Female medic 1, First-year focus group 3*

It is clear from the above quotation that the medic from focus group 3 felt that the content and structure of the IPL programme was hindering her learning about other professions. Learning about the roles of professions was identified from the literature review as something that was of particular importance to healthcare students as part of their learning from IPE (Charles *et al.,* 2011; Lidskog *et al.,* 2008; Mellor *et al.,* 2013; Parsell *et al.,* 1998; Priest *et al.,* 2008). With this in mind, if students do not feel that the IPL programme is providing them with learning that they deem important then they

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may be more likely to hold negative views about the programme or be more reluctant to engage with it. It is reasonable to suggest that an early negative experience with IPE may affect the long-term attitudes of a student towards interprofessional practice in an adverse way (Pollard and Miers, 2008). Extrapolating from this theory, if students have a negative view of interprofessional interaction early on in their careers then it is possible that they may feel negatively towards such interaction in the future, with detrimental effects on interprofessional working.

The number of comments about the IPL programme not enhancing students' understanding of professional roles was outnumbered by those stating that the programme did improve their understanding, some of which are presented below. As one of the aims of IPE as defined by CAIPE (2002) is to encourage participants to learn "with, from and about the other", it is positive that more participants than not appear to feel that the IPL programme allowed them to learn about other professional roles.

Comments expressing the opinion that the IPL programme did influence students' understanding of professional roles were predominantly made by first-year students and recent graduates. Whilst it is not possible to determine exactly why this may be so with less exposure to healthcare professionals in a practice environment, the IPL programme may provide a useful setting for this exploration.

> *"I personally found it really helpful to find out the job roles of everybody else cos I was a bit unsure, a lot, a lot of people in the group were as well "*

> *Female medic 2, First-year focus group 1*

"I think I definitely became more aware of the other professions and what they do…It was good to see everyone's roles though that was pretty useful"

Male medic 2, First-year focus group 3

These comments made by first-year students express the view that learning about professional roles as part of their IPL experience was helpful. The first comment particularly emphasised that this learning addressed a gap in the knowledge of the student about professional roles. These comments from the first and third focus groups carried out with first-year students are in direct contrast to the quotations by other members of the same focus groups that are given previously regarding the lack of impact that the IPL programme had on their knowledge of other professions. This variation in comments between members of the same focus groups highlights that the experience of the programme varies between individuals substantially. This may be due to the level of knowledge that individuals had before participating in the programme, or due to the differing experiences of individual IPL groups, all of whom will have explored the programme in a slightly different way.

It is also possible that the timing of participation in the IPL programme may have had some effect on the amount of knowledge students gained about other professions. The following extract from the second first-year focus group expresses more of a mixed attitude towards the effect of the IPL programme on the student's knowledge of professional roles:

"I thought it was quite, helpful, in meeting the other professions and I, I think I was the second group, we started just before Christmas, sort of either side of the Christmas holidays, erm, and I thought we did to some extent learn a bit about each other's role, you know, being given a scenario

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and all having to chip in with what we thought we would
do and I think some of us felt a bit lost about what we
would actually do because we were just at the beginning of
the course but, we could all give each other a bit of an idea
about what we were doing"

Female SLT 2, First-year focus group 2

That this student was in the second session of IPL students highlights that those students who participate in the programme earlier than others may find it more difficult to contribute to the learning of other members of the group about the role of their own profession. It is likely that this effect would be magnified for earlier sessions and reduced for later sessions, by when students will have learnt and experienced more about their own profession the further they advance in their course.

If learning about professional roles is something that is valued and seen as important by students, it may be advantageous to place emphasis on this, particularly early on in students' training, which may need more input from facilitators and educators to provide the necessary knowledge. Such information would meet the aim of IPE, i.e. to learn with, from, and about other professions. With facilitators supporting the learning of students, rather than didactically disseminating information, the emphasis would remain on the participants to make enquiry and discuss their knowledge of roles in a supportive environment.

Recent graduates also commented that they had learned more about the roles of other professions through their participation in the IPL programme.

"For the earlier years it was really interesting to find out
what the other professions did erm, especially some of the

professions I hadn't come across before such as speech and language therapy and occupational therapy"

Graduate 2, Pharmacist

"It made me a lot more aware of everybody's, for example, personally I didn't know that pharmacists worked in the hospital, I you know, it never really occurred to me, which now when I think about it is really stupid cos I do see pharmacists go round and you know, check everybody's drug chart and things like that"

Graduate 1, Midwife

Both of the above quotations highlight that the IPL programme allowed these two participants to expand their knowledge of other professions by providing an opportunity for interaction with different professions that they had not encountered previously in their training. The second quotation particularly demonstrates that this exposure provided valuable insight into the roles and responsibilities of others that may not be common knowledge to those outside the profession. Before commencing professional practice, the IPL programme provides some of the main opportunities for interaction with members of other professions. This interaction may prove valuable when beginning professional practice, as individuals may be able to use the skills and abilities of others more effectively from the outset, rather than having to learn such things 'from scratch' in challenging circumstances. The importance of this exposure to a successful transition into professional practice is further emphasised by Graduate 5, OT, who stated that:

"Er, yeah, er probably yeah I think it just raises awareness if nothing else yeah"

Graduate 5, OT

"And so what do you mean by awareness?"

Researcher

"Awareness of their roles and the importance to liaise"

Graduate 5, OT

By realising the need for and importance of successful communication between professionals at this early stage of training, students may be more able to start their professional careers predisposed towards collaborative practice, ensuring that the skills and abilities of all professions are used to provide maximum benefit to the patient.

The focus on professional roles by student participants in this study emphasises the importance of addressing this topic within IPE. In the previous section on the influences on interprofessional attitudes, stereotyping was mentioned as a source of influence on the perceptions of other professions. Providing education on the roles of other professions early in the education of healthcare students may be a way of preventing negative or inaccurate views of professions from becoming entrenched and providing a firm foundation upon which to build positive, informed future interprofessional working relationships.

<u>Professional identity</u>

Professional identity is the second sub-theme that falls under the professional roles and hierarchy theme. It is a much smaller sub-theme and serves primarily to shed some further light and understanding on the complexities of professional roles and the accompanying expectations.

Most of the quotations about the behavioural expectations that come with a professional identity concern the role of medics and medical students. This may indicate a particular level of expectation and assumption about the role of medics, which ties in with the perception of the role of medics as being slightly different from other professions, as discussed in the previous sub-theme. Most of the quotations concerning medics focused on the expectation of medical students to lead in a group environment:

> *"There was a lot of um, people expecting people because of their profession, so the medics were expected to lead it um, and everyone kind of fitted into their roles um, which was strange given that we'd only been doing them for 2 months and yet we were still expected to adhere to that professional model*

> *So you said that idea of pressure, do you think that put a lot of pressure on you as a medical student?*

> *Erm, not personally I don't, erm, I think it was expected of us and we accepted our, lot, and we got on with it"*

> *Final-year focus group 3, Male medic 2 and Researcher*

The above quotation demonstrates that despite the students described in the exchange above having only been at university for a short time, there was already an assumption and an expectation that the medical students in the IPL group would assume a leadership role. It is unclear from whom this expectation comes in the above example, but the discussion with Graduate 1, Midwife, provided some further information.

> *"What I heard from other groups was that usually... everybody that's not a doctor or you know, a medical student, they're very quiet and they just sit there and say nothing... and then the doctors feel that they sort of have to take the lead and take over, but then all, everybody else like the nurses and um, the other professions then then say 'Oh, look at the doctors, They always take the lead and they think they're cleverer than the others'"*

What is interesting about this particular quotation is that the onus on the medical students to take charge appeared to come from the other students in the group, who then became hostile once the medics did take over leadership roles. A slightly different version of events was given by Graduate 3, Medic;

> *"I know that we worked on a team-based project erm, and some other things I recall, is we seemed to have more scheduled teaching, and our time was just more precious so we were just keen to just get on with the work and get it done, and I was just conscious that we were already, even in 1st and 2nd year, doing what doctors do and just rushing and hurrying and focusing on the next thing, and some of the others were a bit more laid back and a lot more woolly and we wanted to get to the facts"*

Both of the above quotations demonstrate that there appeared to be a difference in approach to the IPL programme between medics and non-medics. This difference in approach appears to centre on the role of the leader in the IPL group, with the medical students either assuming or becoming by default the leaders of the group. This issue may be related to the acceptance of the doctor as the default leader of the team (Baxter and Brumfitt, 2008) and a desire to approach the task of the IPL programme slightly differently. This

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difference in approach may be due to the differing cultures and backgrounds of professions (Hall, 2005; Horsburgh *et al.,* 2006), which appear in this case to be a stumbling-block for some IPL groups. The perception by Graduate 3, Medic was that the reason that the medical students in her group were keen to progress and finish the task is that the time of the medical students was more precious than the time of others. After further inquiry about that statement, she replied with:

> *"I was doing the IPL, you know, we were the doctors, we had to be the leaders and again I say that because everyone would have liked to have sat there for 3 hours and talked about things, but we had an hour before we had another assignment due, and other things doing, we had quite a tight deadlines for a lot of our coursework and other things"*
>
> *Graduate 3, Doctor*

While this does not fully clarify why the medical students' time in particular was more precious than the other students, it may indicate that this particular individual viewed IPL as less of a priority than her other academic commitments. The use of the word "we" in this statement may indicate that this is not an isolated view, and that it may be an opinion held by others. Reeves (2000) reported that some students perceived IPE to be a low-status activity when compared with their other academic work, and that this was a view shared particularly among medical students and dental students in the study and less so by nurses.

If a similar pattern is being observed in the findings from the present study, it may indicate that at least some medical students view the IPL programme as a lower-status activity and, as such, may be keen to progress as rapidly through the work as possible. This might cause tension in IPL groups, as illustrated in the quotation by

Graduate 1, Midwife about other professions in the group becoming agitated with the medical students, who felt compelled to take leadership of the group even as a novice.

This concept leads into another idea that was mentioned by some of the graduate participants in the study, which is the tendency of some participants in the IPL programme and in the wider world of healthcare to be very narrowly focused on their own role.

> *"I think people who have not, who haven't had any you know, they come fresh from school or they were housewives or whatever, they very much grow into that role and it becomes their exclusive role, so they, they grow into that profession and they're very much that profession and they identify with it very strongly… that in a way is important, but I think some people it becomes so important that they sort of forget what's around them"*

> *Graduate 1, Midwife*

When exploring the idea of engagement with the IPL programme and the reactions that some people have to being expected to participate in it, Graduate 4, Medic made this statement:

> *"I think some people never saw the benefit of it and would, would have always felt, well, this is my job and as long as I know what I'm doing then it doesn't really matter because they know what they're doing and that's fine. I think some people, and some people still are you know, I see it every day, they are quite resistant to realising that other healthcare professionals or other people can be helpful to them, and can sort of fill in the gaps of their knowledge and experience, and I think that maybe that starts early on, and*

> *the hope with IPL is that you try and bash it out early, but I*
> *think that some people will always be like that"*

These two comments show a slightly different aspect to the idea of professional identity. Rather than falling into an expected pattern of behaviour as was expressed in the previous section of this sub-theme, some people make a deliberate and concerted effort to immerse themselves in their own profession, at times to the detriment of others and themselves. Several other studies have stated that students enter their respective training programme with strong views about different professions (Ateah *et al.,* 2010; Carpenter, 1995a), and it is logical to assume that these views extend to their own profession. If students immerse themselves too far into their own role, it appears that it can lead to negative repercussions for their interprofessional relationships. From the data underpinning this sub-theme, it would appear that striking a balance between knowing one's role and willingness to learn about the role of others is key to positive and constructive interprofessional relationships.

Hierarchy

The final sub-theme in this section is that of hierarchy. One of the main points that emerged from the discussion around hierarchy is the perception of the dominance of medics. This subject occurred in first- and final-year focus groups and in both graduate and senior interviews, suggesting that it is a topic of universal relevance to the majority of the participants in this study. For some of the student participants, this hierarchy began with the entry requirements for the different programmes of study:

> *"I think if, erm, you were set to get higher grades you would*
> *be assumed that if you wanted to go into a healthcare*
> *profession that you'd want to do the one with the highest*

erm, grade entry, so if you were destined for 3 As or 4 As or whatever, that you'd choose medicine over physio or something like that, that was just the perception at my college yeah, and it was only if you, if you couldn't get into one level then you'd go for the next one until you found the one that you could get into"

Final-year focus group 4, Female physio 2

Cos you think things like medics, you know they'd have to have done chemistry and biology, and they'd have to have got As, and they're so clever, whereas like I know, just from interprofessional like AHP like we all know that there's a division between the PTs and the OTs, because PTs like, I mean they have to have biology to get in whereas the OTs don't and it's like, you know the differences between the courses, even though they're completely irrelevant once we're in the place of work. While we're still here, say like, you guys did IPL right at the beginning of the year, you're still kind of in A-level mode or wherever you've just come from mode

First-year focus group 1, Female physio 1

The knowledge of the different entry requirements for the different healthcare professional courses appears to set a precedent for ranking professions according to the academic level required to gain entry to the course, i.e. the more difficult the entry requirements, the more highly ranked the profession. This immediately sets a status by which medicine is seen as the "top" profession, with others ranking below. The potential for this to be

seen as a source of tension is clear, and is summed up by Female medic 1 from First-year focus group 1:

> *" I don't think this but lots of people say like, and I know lots of my friends say it like "Oh pharmacists are people who didn't get into medical school" so if you go in with that attitude there's already tension between you"*

This overt hierarchy of professions at the outset of students' training has the potential to cause problems with the running of IPE initiatives. Equality between group-members is a key concept in IPE (Bridges and Tomkowiak, 2010; Hean and Dickinson, 2005; Hewstone and Brown, 1986; Pettigrew, 1998), and if students are entering their IPE modules with clearly defined hierarchies in mind based on the entry requirements for different professions, then it may be difficult to achieve a sense of equality. This may have an effect on the outcomes of their IPE.

Participants in the study did go on to expand further upon the theme of hierarchy and how it appears to be well established that doctors are the dominant profession in healthcare (which is attributable primarily to the role they occupy in the wider healthcare team).

> *"I mean ultimately the doctor makes the assessment and he refers to you (Female physio 3: Yeah) to you know, to your various departments so it's like that is the way, there is no other way, you know, the doctor makes the diagnosis and he says "Oh I don't understand this area properly I'll refer them to the physiotherapy or the occupational therapy or speech and language therapy department" but he is the first line always for a patient, you know. I think that's that's the way"*
>
> *Final-year focus group 4, Male medic 1*

The above quotation reflects the traditional structure of a healthcare team in which the doctor will normally be the first point of contact for a patient, then making the decision as to who the patient will see next, and the treatment pathway. The medic-centric decision-making process is still the norm in many ways but, with the increase in nurse practitioners and extended scope practitioners in other professions, this may not always be the case for a patient anymore. The example given by the student in the above quotation was backed further by a statement made by Graduate 3, Medic, who said:

> *"I don't think that one is better than the other, but I do think that sometimes things do fall under, you know, on the head of the, on our head. For example we can say that a patient is fit for discharge on a Monday and they're still there 2 weeks later, they're still our patient and we're still the leader of their care even if we know that they're fit for discharge. We don't need anything more to do with them, they're waiting on social care or they're waiting for the um occupational therapy, I don't know, gadgets to be put in, um, there, there must be something there cos we're still seen as the leaders. They're still admitted under our care, and our consultant is responsible for that patient"*

This is supported by a statement from Senior nurse 1, who said:

> *"Ultimately things lie with them um, I, I call them my patients because I take ownership of them, but ultimately the person in charge of that care is the consultant um, it's not the nurse, it's not the dietician um, and they take that obviously very seriously so um, but er I work with a couple of consultants who take their roles very seriously but they're*

> *equally willing to take on board and accept differing points of view"*

The idea of responsibility leading to seniority and the impact that this can have on the other members of the healthcare team is a concept also spoken about by Graduate 6, Physiotherapist:

> *"It's nice when you have a consultant or a doctor or someone like that who gets on well and is kind of friendly with the team and respects everyone else's professional abilities um, you know that ultimately things come back to them, so they then have to be that kind of um, slightly higher on the hierarchy type of position, so I think that's, you know it's er, sometimes it goes too far and that consultant or doctor or whoever can be dismissive and self-important but um, again, I think that's a very personal, or interpersonal distinction, when that goes from being a good thing to a bad thing"*

This mentions that doctors, particularly senior doctors, sit atop the hierarchy (because of their level of responsibility), but this position of power has a great deal of potential to have either a positive or a negative impact on the rest of the healthcare team. The idea that the doctor has a greater impact on the healthcare team than other members is also reported in the literature surrounding interprofessional relationships. Baker *et al.* (2011) reported that the doctor set "the tone" of a healthcare team and that other team-members would have to organise themselves around the doctor, rather than the doctor assimilating into the team. Rose (2011) noted that, if junior team-members feel unable to approach or challenge senior team-members, then communication failures or errors in care are more likely to occur. It is therefore important that doctors and medical students have a good understanding of the

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professional roles of others and that they are open to discussion and debate with other members of the healthcare team.

The final point on hierarchy is that several participants identified that, while some form of hierarchy is necessary for a team to function, it is a difficult balance to strike.

> *"There has to be somebody that the buck stops with, somebody that directs things and has overarching responsibility and control over things erm, but I think if you're talking in terms of working together, too much of a hierarchy is just a barrier and prevents things from moving forwards because it, it just doesn't make people feel like they're useful, like they're needed like they've got the respect that they maybe would like um, and it just seems to prevent people from either wanting to have anything to do with it or from going that extra sort of bit further to make things run smoothly"*

> *Graduate 4, Doctor*

This quotation neatly encapsulates the challenge of hierarchy in healthcare. It is necessary to have a person in charge, but that does not mean that the other members of the team should not feel just as valuable in the care of patients. This appears to be the point at which healthcare students can become unstuck or frustrated, a point raised by Female physio 1 in final-year focus group 4, who described her experience of reconciling her professional role and the role of other non-medical professions with that of medics, saying:

> *"I was thinking that, I don't know how to say it… like, maybe our professions aren't as good or aren't as important or aren't as, have as big a role in the whole process"*

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It is easy to see that a hierarchy could become a rigid and limiting structure to those not at the top of it. The necessity of a team-leader, however, appears to be universally agreed by participants. It also appears that the responsibility to ensure that each profession is used to its maximum potential most often falls to doctors because, apparently by default, they are deemed to be the head of the healthcare team.

<u>Summary</u>

The findings about professional roles, identity, and hierarchy are extensive and complex. The interplay between the three sub-themes is difficult to untangle, and all three elements of this theme appear to have a strong impact on the interprofessional relationships of participants in this study.

By understanding the professional roles of others, it appears that it becomes easier to forge positive interprofessional relationships and engage with members of other professions both in educational and professional environments. These principles appear to be particularly important for medical students and doctors, who are often placed in a position of power over other professions, be it as team-leaders in an IPL group or as consultants on a hospital wards. To ensure that the hierarchy inherent in healthcare is a tool for effective patient care and not a source of restriction for members of the healthcare team appears to be a difficult balance. This appears to fall largely upon doctors to achieve.

6.4 Summary of qualitative findings

In summary, the main points elicited from the qualitative findings were that:

- Most participants were positive towards the concepts of IPE and interprofessional practice, but students felt that it was less valuable than their uni-professional studies. Participants' views towards interprofessional interaction become more positive as they progress through their studies, and into professional practice. Senior healthcare professionals were particularly positive

- Factors that influence interprofessional attitudes are complex and not always controllable in an IPE setting. Stereotyping is a powerful and pervasive influence, particularly for less experienced students. As participants progress through their studies they are more likely to see the actions of an individual as specific to that person and not indicative of a profession as a whole. Exposure to other professions is a valuable learning opportunity, but a negative experience can have a lasting impact on perceptions of a profession

- Understanding professional roles allows better interprofessional relationships to be formed; the more knowledge individuals have the more productive their interactions with others. Achieving a balance between restrictive hierarchy and effective leadership is challenging, particularly for medical students and doctors due to their greater level of influence within the healthcare team.

These findings are discussed further in Chapter Seven – Mixed Methods Findings.

Chapter Seven – Mixed Methods Findings

7.1 Introduction

In order to engage effectively with both the quantitative and qualitative data, the process of "crystallization" (O'Cathain *et al.,* 2007; Sandelowski, 1995) was used. This describes the process of comparing data, not necessarily to provide further, more in-depth evidence for a theory or to cross-verify findings, but to highlight new aspects. This process allows for findings to emerge from the data that may not have been apparent if the data-sets were viewed in isolation. This process can produce more in-depth understanding of the issues and topics raised in the study.

This comparison of quantitative and qualitative data addresses a research need identified in the literature review presented in Chapter Three. This was for studies exploring IPE and attitudes to attempt meaningful integration of quantitative and qualitative data in order to explore the relationships between attitudes, education and practice in greater depth (Cooper *et al.,* 2009; Jacobsen and Lindqvist, 2009).

7.2 Points of discussion

The main points for discussion in this section are:

- The effect of the IPL programme on students' attitudes and student perceptions of the IPL programme
- The perception of the concept of 'caring' by healthcare students
- Attitudes towards medical students and doctors

These three discussion-points are the findings that are most enhanced when viewing the quantitative and qualitative data-sets together. By considering the AHPQ findings plus the student data from focus groups, it is possible to understand better the students' questionnaire responses, and their overall opinions and attitudes towards the IPL programme, something that the AHPQ was unable to illuminate.

An area raised for discussion in the focus groups was the perception of the word 'caring' and what it meant in the context of the AHPQ. Revisiting this discussion and looking at the AHPQ more closely further gave insight about the attitudes towards different professions.

This discussion leads into the final point, which dominated much of the discussion within the focus groups and interviews. The perception of doctors and their role within the healthcare team appears to be an important topic to the participants in the focus groups and interviews, and this discussion allows for greater understanding of the dynamics within the IPL programme. The effect that this may have had on the outcomes of the AHPQ is considered throughout this section.

7.2.1 The effect of the IPL programme on students' attitudes and student perceptions of the programme

The AHPQ data shows several trends throughout the different comparison groups:

- After participating in the IPL programme, first-year intervention group students appeared to view professions as more caring and all professions with the exception of medics and operating department practitioners as less subservient

- First-year control group students showed a different trend in results, with all professions except medics being viewed as less caring and all professions except physiotherapists as more subservient

- First-year intervention group students and final-year students showed a decrease in how caring professions were perceived to be between completing the IPL programme in first-year and completing pre-registration training and an increase in how subservient, except for medics and operating department practitioners, professions were seen to be.

At first glance, it appears that the IPL programme is successful at improving interprofessional attitudes in the first-year of students training but that the effect is not sustained in the longer-term. Looking at the qualitative data in conjunction with these findings allows for a more in-depth and nuanced understanding of the effects of the IPL programme and of students' opinions and attitudes towards it.

Most students who participated in the focus groups and graduates who took part in the interviews had mixed feelings about the IPL programme. While most students were positive about the general

concept of IPE, the overall attitude towards the IPL programme itself was more lukewarm.

> *"I think it's a good thing because you get to, you do get to be aware of different people's roles but I don't think the way that we do IPL is necessarily the best way"*
>
> *First-year focus group 1, Female medic 2*

> *"I think the idea of it is good, and the concept of it is good and is necessary to a degree but I think the way they go about it doesn't really work entirely"*
>
> *Final-year focus group 1, Male medic 1*

> *"I was fairly ambivalent and I thought that the style could change a bit; I thought that it was a good idea"*
>
> *Graduate 3 (Doctor)*

The above quotations that were first given in Chapter Six are indicative of the general opinion among students towards the IPL programme, i.e. idea of IPE is good, but they did not feel that the IPL programme was the best way to go about it. IPL on the whole appeared to be seen as a relatively low-status activity in the scheme of students' academic pursuits, a finding that has been seen in the wider literature surrounding IPE (Freeth et al., 2008; Reeves, 2000). This may account for the generally ambivalent reception that the programme gained, as students felt that they had more important aspects of their academic work to pursue.

When looking at these quotations in conjunction with the findings of the first-year intervention and control groups, it would appear that, despite student reservations about the programme, it is successful in improving interprofessional attitudes. This is worth considering for future evaluations of the IPL programme. A less than enthusiastic response from students does not necessarily mean that the programme is ineffective, but it may mean that students are more negatively pre-disposed to IPE in the future having not enjoyed their IPL programme experience (Pollard and Miers, 2008).

Some graduates acknowledged that, although they did not appreciate the IPL programme at the time, they have developed more of an understanding and appreciation of the programme as they have moved into professional practice:

> *"Looking back on it now I think it was a very good programme erm, cos I have met people who haven't done IPL in the same way and they don't understand the roles of other professionals as much as I gained from that. So I do think it's a very good course"*
>
> *Graduate 2 (Pharmacist)*

It appears that the IPL programme prompts the curious reaction of initially seeming to be successful in improving students' interprofessional attitudes, despite the sometimes lukewarm reception from students, with the effect lessening as students progress. A new-found appreciation for and understanding of the programme appears once they begin professional practice.

The use of a control group in this study makes it easier to be sure that the effect seen is due to participation in the IPL programme rather than other factors such as practice placement or interactions

with other students and professionals outside of the IPL programme. The consistency of these findings with those from other studies using the AHPQ (Jacobsen and Lindqvist, 2009; Lindqvist *et al.,* 2005a; Lindqvist *et al.,* 2005b and Hawkes *et al.,* 2013) adds further reliability.

Looking at the AHPQ results from the first-year intervention group students and the final-year students, it appears that the effect seen in the first-year intervention group is not sustained into the final year of students' training. The perception of how caring professions are seen to be has reduced, with the scores similar or to or lower than the baseline measurements taken at the outset of the IPL1 programme. The results for the Subservient component have also apparently changed by then though, with most professions now seen as more subservient than they were at the end of students' IPL1 experience. This is another change in trend from previous completions of the AHPQ, indicating that there is something different about the perceptions of final-year students and first-year students.

Exposure to other professions was seen by students and professionals as a way of improving one's understanding of the roles of different healthcare professions. It is an extrapolation from the data, but the drastically different trend in data from the final-year completion of the AHPQ may be due in part to their greater level of exposure to other professions in a professional environment. By their final year of study, these students have had the opportunity to observe professionals in practice in a variety of settings and shed their pre-conceived notions about different professions (Ateah *et al.,* 2010; Horsburgh *et al.,* 2006). This greater understanding may have caused a shift in how they view professions in relation to their dealings with other professionals, which is the attribute that the Subservient scale of the AHPQ

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measures most closely. Further research is needed to explore this speculative interpretation. Some possibilities as to how this could be achieved are considered in Chapter Eight.

7.2.2 The perception of the concept of 'caring' by healthcare students

Establishing what students understand by the concept of 'caring' to be is important to understand better the students AHPQ responses. The key to the apparent confusion felt by students about why certain professions are seen as less caring than others may lie in the questions that are asked in the AHPQ. Empathetic/non-empathetic, sympathetic/non-sympathetic, and thoughtful/arrogant are some of the anchor items for the constructs that make up the AHPQ and load on to the Caring subscale. Other items that load on to this subscale are flexible/rigid and practical/theoretical. When completing the AHPQ, students are unaware of the component loadings and the two subscales of the AHPQ. All they can see when they complete the questionnaire are the anchor items that make up the constructs and the ten-centimetre visual analogue scale between them for each profession.

Given this information, it is possible that there is a disparity between what students consider to be caring vs caring as defined by the constructs of the AHPQ. This was a discussion that was stimulated in the focus groups by students being presented with some results from a previous year's completion of the AHPQ. They expressed some concern over the low scores that medics and pharmacists in particular received. For clarity, the quotations chosen to illustrate this point in Chapter Six were:

"Yeah, but I'm not saying it's a bad thing, I mean you wouldn't necessarily expect a pharmacist or a medic to be erm… not not like, empathic, I mean you'd expect them to be understanding but, you expect them to be more sort of, impassive, making a judgement, you know cool, professional judgement, although the others are doing that, they're also, doing their day to day encouraging, warm, touchy feely side of things, so it's not, I don't think it's a bad thing it's just a difference in… what's needed of them, perhaps"

Female SLT 2, First-year focus group 1

"I think like, aside from pharmacy and medicine the others are kind of seen as more holistic professions anyway, and kinda, in medicine and pharmacy you're coming from, well obviously, from a very medical or scientific model of like health, whereas in the other healthcare professions you're taught more about the social model of health and using like, loads of aspects of the international classification of functioning… maybe that looks less caring than being involved in the whole of their life, like a more holistic viewpoint, so might be coming from the model, and it's the model that has to be used I suppose for the profession so, but it probably affects what people think about them"

Female SLT1, First-year focus group 1

Taking a caring role is very different from caring or not caring about patients. As students have gained more practical experience and real-life interactions with members of different professions, they have improved their understanding of the roles and responsibilities of each profession and how they compare with others. As the above quotations demonstrate, it does not appear to be the case that students feel that doctors and pharmacists do not care about

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their patients or are not empathetic people, they just have a different focus to a profession such as nursing, which has a clearly defined and practical caring role with patients.

This distinction is an important one to make when drawing conclusions from the AHPQ data. While medics and pharmacists are consistently rated as the 'least caring' professions on the AHPQ, it may not be that students believe that medics or pharmacists are unkind or callous but that instead they have a different professional role and set of priorities to other healthcare professions.

7.2.3 Attitudes towards medical students and doctors

Sub-group analysis of the first-year intervention and control groups revealed that medical students rate medics as more caring than other professions do. This is an example of a mismatch between the in-group and out-group views of a professional group, which has been suggested as a source of tension between professional groups (Carpenter, 1995a). This same discrepancy in views was seen in Hawkes *et al.* (2013), who noted in a similar sub-group analysis that medical students held quite different views about their own profession from the other professional groups.

Discrepant views of medics between medics and other professions may explain some of the tensions observed by students in the interactions in their IPL groups. One example of such was that medics were expected to lead the discussion in the IPL groups; the two examples presented earlier are repeated here for clarity:

> *"There was a lot of um, people expecting people because of their profession so the medics were expected to lead it um, and everyone kind of fitted into their roles um, which was strange given that we'd only been doing them for 2 months*

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and yet we were still expected to adhere to that professional model

Final-year focus group 3, Male medic 2

"What I heard from other groups was that usually... everybody that's not a doctor or you know, a medical student they're very quiet and they just sit there and say nothing... and then the doctors feel that they sort of have to take the lead and take over, but then all, everybody else like the nurses and um, the other professions then then say "Oh, look at the doctors they always take the lead and they think they're cleverer than the others""

Graduate 1, Midwife

The assumption made by medics that other professions have a less favourable view of them may be more justified in light of the professional group analysis conducted with the AHPQ data from intervention group students, and with the second quotation above. It appears from these two quotations that there may be a cyclical process occurring in the perception of medical students. It appears that, while the medics were not necessarily intending to take charge of the group, the expectation was placed upon them to do so by the other group-members. It also appears that, when the medical students do then take on their expected role, they can be met with hostility from other members of the group. Other group-members assuming that medical students will take a leadership role in an IPL group becomes self-fulfilling, and further reinforces the view of medics as the dominant healthcare profession. This cycle of behaviour may be detrimental to the aims of IPE, as it is deemed necessary for all participants in the group to consider themselves on an equal footing with others (Bridges and Tomkowiak, 2010;

Hean and Dickinson, 2005; Hewstone and Brown, 1986 and Pettigrew, 1998).

This is an issue that may need to be addressed directly by those responsible for running the programme in order to ensure that the principles of IPE are upheld. Group interactions should be positive and constructive as opposed the potentially tense situations described in the quotations given above.

There does appear to be a slight shift in how medical students view medics in the final-year data. Rather than scoring medics as the most caring profession, they are now scored above only pharmacists and physiotherapists. This represents a considerable shift in attitude, and it is not immediately clear why this may have occurred. No medical students or graduates made explicit reference to viewing medics as less caring later on in their study or into professional practice, and other professions are more consistent in their view of medics, ranking them as the least caring or second least caring profession consistently throughout the intervention, control and intervention, and final-year student comparisons.

One possible explanation for this shift in attitude by medics is a decline in sense of professional identity. It is well established that students enter their courses with preconceptions about professions, including their own (Ateah *et al.,* 2010; Carpenter,1995b.). It has also been reported that the strength of a student's professional identity declines over time (Coster *et al.,* 2008). If medical students are experiencing a decline in their professional identity during the course of their training, then it is possible that they may alter their views of medics and doctors as a profession. As previously mentioned, by the time student have entered their final year of training, they have had the opportunity to experience working in the healthcare system on practice

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placement, and they have had more time to interact both formally and informally with members of their own profession and others. It has been previously hypothesised in this study that this exposure may have an effect upon the attitudes of students towards their own profession and the professions of others. It is possible that this effect is greater for medical students than other students, as they have had five years of this interaction and exposure, rather than the 2-4 years that other students have had by the time they completed the AHPQ as final-years. This extra exposure and time to learn and reflect may explain why medical students appear to change their opinion more drastically than other professions.

7.3 Summary

The main points drawn from looking at findings from the qualitative and quantitative data-sets were that:

- While the quantitative data indicated that the IPL programme does positively affect the attitudes of first-year students, the qualitative data indicated that students were mostly ambivalent towards IPL, suggesting they do not fully appreciate its effects.

- Final-year students and graduates expressed greater appreciation for IPE, but the AHPQ data from final-year students on the Caring component showed a decline in how caring professions were seen to be. This suggests that, while the effects of the IPL programme may not be fully maintained into students' final year, they are more receptive to interprofessional interaction at the outset of their careers than at the beginning of their studies.

- Students may view the term 'caring' as more of a role descriptor than an attribute. This should be borne in mind when interpreting data from the Caring component of the AHPQ, as a lower score may represent a difference in role perception, rather than a negative view.

- The discrepancy between the in-group and out-group views of medics in both the AHPQ and qualitative data may explain some of the tension observed in IPL groups. Medical students may feel obliged to act in a way that fulfils group expectations, which in turn fuels those discrepancies, creating a self-fulfilling prophecy.

Chapter Eight – Discussion and Summary

8.1 Study findings in context

The findings from this study indicate that IPL1 has an impact on the interprofessional attitudes of healthcare students, resulting in an increased perception of how caring professions are seen to be, particularly those which previously were viewed as less so (medics and pharmacists). Students also viewed professions as more similar in their relative levels of subservience, with the scores for nurses (seen as most subservient) reducing, and scores for medics (seen as least subservient) increasing. These findings were similar to those from Hawkes *et al.* (2013); Jacobsen and Lindqvist (2009) and Lindqvist *et al.* (2005b), who observed such trends when exploring student attitudes using the AHPQ. Comparison with control-group data confirmed the statistically significant effect of participation in IPL.

Despite evidence for an initial impact on student attitudes, students were largely ambivalent about the IPL programme and tended to view their uni-professional studies as more important. This view of IPE as a less-important aspect of a students' course was also seen in the studies by Freeth *et al.* (2008) and Reeves (2000). Students also indicated that an early negative experience with interprofessional interaction, be that through IPL or on practice placement can leave a lasting impact on interprofessional attitudes, and of the perception of interprofessional collaboration in general, a finding substantiated by Tunstall-Pedoe *et al.* (2003).

Almost opposite results were observed when looking at data from final-year students. The effect of the IPL programme does not appear to be completely sustained into students' final-year, with

final-years scoring professions lower on the Caring component of the AHPQ than first-years, and a mixed picture developing for the Subservient component. It is not immediately clear why this is so. No studies have been found that included long-term follow up on the effect of IPE on interprofessional attitudes, so it is not possible to compare these findings with others. Final-year (and graduate) participants were, however, more appreciative of interprofessional collaboration and the role that IPE has in encouraging it. This finding was shared by Morison and Jenkins (2007), one of the few studies identified in the literature review that carried out any long-term follow-up of IPE. Senior professionals in the present study viewed interprofessional working as key to a successful, collaborative workforce, echoing the statements of previous government policy documents (Department of Health 2000, 2008), which identified better communication and interprofessional working as ways to meet the demands facing the NHS. More recently, the Berwick Report (Berwick, 2013) and Keogh Review (2013) placed further emphasis on the need for healthcare professionals to work collaboratively, and not in academic or professional isolation in order to improve patient safety and the management of patient with complex needs. IPE is one method to help foster this culture of collaboration, but the IPL programme at UEA may need further refinement, and more data are required to assess its effectiveness in preparing the healthcare professionals of the future.

Overcoming stereotypes, expanding knowledge of professional roles, and ensuring all team-members felt valued were identified by qualitative strand participants as key in building successful interprofessional relationships, findings seen in multiple studies in the literature review (Ateah *et al.,* 2010; Cooke *et al.,* 2003; Cooper *et al.,* 2009; Hope *et al.,* 2005; Jacobsen and Lindqvist, 2009;

Lindqvist *et al.,* 2005b; Reeves, 2000). A rigid hierarchy in working environments was seen as unhelpful in promoting interprofessional interaction, as it may prevent more junior members of the team from speaking up and contributing, another concern of Berwick (2013) and Keogh (2013). The issue of hierarchy was identified by participants in Cooke *et al.* (2003) as a concern ahead of participation in IPE. Medicine is still viewed as the most dominant profession, reflected in both the consistent lower scores on the Subservient component of the AHPQ (also seen in the data from Jacobsen and Lindqvist (2009) and Lindqvist *et al.* (2005b)) and their identification by qualitative participants as the default leader of the healthcare team, also seen by Reeves (2000). Much of the responsibility, therefore, for ensuring that a flexible and receptive leadership structure rather than a dictatorial hierarchy is encouraged in healthcare is likely to fall to doctors.

The implications of the findings of this study and considerations that need to be made in further research, future versions of the IPL programme, and wider interprofessional education are discussed at the end of this chapter.

8.2 Progress made in addressing research questions

8.2.1 What effect does the IPL programme at the UEA have on the attitudes of healthcare students?

This question was broken into three sub-questions:

- Are there any differences between the before and after scores of the AHPQ data from first-year students?
- Do the findings differ between the intervention and control group?
- What other factors influence students' interprofessional attitudes?

The first sub-question was answered appropriately for the scope of this study through the collection of data from both the intervention and control groups of first-year students, and the comparison of the two rounds from each. Along with previous work using the AHPQ with students at UEA (Hawkes *et al.,* 2013; Lindqvist *et al.,* 2005), this study provides further evidence of the positive effect of participation in the IPL programme. The weakly negative findings concerning the Caring component from the control group warrants further investigation, particularly as they differ from those of Lindqvist *et al*. (2005). The details of this are discussed later in this chapter.

The second sub-question was answered by the statistical comparison of the first-year intervention and control group data, indicating that there is a significant difference in how caring professions are seen to be by students who have participated in IPL1 compared with students who have not. The intervention group scored professions more highly in the second round of data collection than the control group did, indicating that the IPL programme is the most likely cause of this difference. The data for

the Subservient component are less conclusive, but there may be a weak (not statistically significant) trend towards medics being seen as more subservient in the intervention group data, and less so in the control group. This question was answered as far as possible within the scope of this study and further implications of these findings for future research is discussed later in this chapter.

The final sub-question was answered using qualitative data from students and graduates, providing greater insight into factors such as stereotyping, knowledge of professional roles, and the influence of others (particularly role-models) and perceived hierarchy on student attitudes in addition to the influence of the IPL programme. The exploratory nature of this inquiry is appropriate to this study, and the implications of these findings for the IPL programme and wider IPE are discussed later in this chapter.

8.2.2 How do the opinions of healthcare students towards interprofessionalism change over time?

This question was broken into three sub-questions:

- Are the interprofessional attitudes of first- and final-year students different?
- In what way do students' attitudes change once they graduate?
- What factors contribute to these changes?

The first sub-question was answered using a combination of the comparison of first-year intervention and final-year AHPQ data, and the qualitative data from first-and final-year focus groups. While these findings indicate that there is a difference in the interprofessional attitudes of first- and final-year students (see chapters Five, Six and Seven for further details), it is not entirely

clear why. To fully understand why these attitudes appear different, and if these findings are accurate, further research is needed. The qualitative data showed that final-year students have more understanding of and are more positive about interprofessional working than first-years, but the reason for their seemingly less positive AHPQ results is not clear. This lack of clarity suggests that the sub-question was only partially answered, and suggestions for ways to improve the methods used to provide more information are given later in this section.

The second sub-question was answered using the interview data from graduates. This is the first example of such an exploration concerning graduates have participated in the IPL programme. As such, this aspect of the research question was answered to an appropriate level for the exploratory nature of this study, but more in-depth and larger-scale work is needed to draw definitive conclusions about the development of graduates' interprofessional attitudes and attitudes towards interprofessional education and practice, and how they inter-relate.

The final sub-question covered similar ground to the previous final-sub-question. Qualitative data about increasing knowledge of professional roles, experience of different working environments, and real-life experience of interprofessional working provided good exploratory information on the factors influencing attitudes towards interprofessionalism over time. This is appropriate for the small-scale exploratory nature of this study but, as with the previous point, larger-scale work is needed to give more definitive answers.

8.2.3 What are the attitudes of students and professionals towards interprofessional interaction?

The three sub-questions were:

- What are the opinions of students and qualified professionals about IPE?
- What are the perceived benefits of interprofessional working?
- What are the perceived barriers to interprofessional working?

These three sub-questions were answered using data solely from the qualitative strand of the study, as the AHPQ is unable to detect changes in attitudes towards interprofessional education and practice. As with previous data from the qualitative strand, they were appropriate to the small-scale initial inquiry approach of this study. The data provided on improvements in working relationships from greater interprofessional practice, and the difficulties of overcoming entrenched systems in order to work interprofessionally provide new insight into the wider issues surrounding interprofessional education, and useful impetus for possible future research. The data demonstrating that attitudes towards IPE become more positive as students progress into practice and are more positive still in senior professionals are, in the researcher's opinion, one of the most interesting findings of the study. It is an intriguing answer to the first sub-question of this research question and worthy of future further enquiry.

8.3 Strengths and limitations

8.3.1 Strengths and limitations of the quantitative strand

The AHPQ is the only validated questionnaire to focus purely on changes in interprofessional attitudes (see Chapter Two for details of other questionnaires frequently used in IPE research). This specific focus, along with its being already in regular use with the target population made it a suitable choice for use in this study. This pre-existing regular use allows for comparison of results from this study with other data-sets, enabling informed judgements to be made about the effect of any changes to the IPL programme on the interprofessional attitudes of students. This will be particularly useful in evaluating long-term trends in results, a research need identified from the literature review (Cooke *et al.,* 2003; Cooper *et al.,* 2009; Saini *et al.,* 2011; Wamsley *et al.,* 2012).

The primary supervisor of the research project was instrumental in the original design and validation of the AHPQ. This expert support has reduced the likelihood of errors in analysing and interpreting the data. Further analytical support came from statistical experts as the researcher recognised that her understanding of the analysis process of the AHPQ was limited at the outset of the study. Learning from and consulting the analyst responsible for maintaining the online version of the AHPQ and a statistician in Norwich Medical School ensured that the data analysis was carried out correctly. Checking statistical procedures and interpretation assured the mathematical rigour of the quantitative findings.

The AHPQ is not without its limitations. Participants can see their previous responses, which introduces the possibility of a Hawthorne or reverse Hawthorne effect (Zdep and Irvine, 1970), where students may have expressed more positive or negative

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views in the knowledge that they are being observed. This may have potentially affected the aim of the study to explore changes in interprofessional attitudes of healthcare students, by allowing participants to measure their second response against their first. In future uses of the AHPQ, ensuring that students cannot see their previous scores would help reduce this risk and make the data collections process more methodologically sound.

The major limitation of the AHPQ is the lack of robust data from the Subservient component. Revisiting the principal component analysis procedure to identify new construct pairings to increase the variance accounted for by the Subservient sub-scale would improve the validity of findings drawn from it. The name 'Subservient' is also problematic, implying that some professions are subordinate to others, reinforcing inaccurate and outdated views, particularly concerning nurses and doctors (Witz, 1990). Redeveloping the second sub-scale into a 'Teamworking' component would reduce this issue while retaining the attributes measured and creating the possibility for further refinement. Improvement of the AHPQ would enhance future research on the IPL programme and provide a valuable tool to other researchers and educators looking to assess changes in interprofessional attitudes.

Obtaining basic demographic data for AHPQ respondents would allow for greater depth and more nuanced evaluation of results. Presently, assumptions have to be made about professions as a homogenous group. By obtaining data on confounders such as age, gender, socioeconomic status etc. it may be possible to identify other trends in the data. Reviewing the composition of the professional groupings for sub-group analysis is also necessary, as the HCPC student group did not appear to be sufficiently

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homogenous in the analysis process, which may have affected reliability and accuracy of the results.

8.3.2 Strengths and limitations of the qualitative strand

Several steps were taken to ensure that the analysis process was as rigorous as possible. All data were transcribed verbatim by the researcher to allow for familiarisation and immersion (Hardy and Bryman, 2009; Miles *et al.,* 2013). This aided in gaining an in-depth understanding of the data that may not have been possible through outsourcing the transcription process. Both the secondary supervisor and a member of CIPP coded sections of data separately from the researcher and one another. The researcher then reviewed the separate coding for points of agreement and disagreement, a process of triangulation (Sandelowski, 1995). This process allowed the researcher to assess the extent of agreement between the coders, a way of reducing researcher bias in the analysis process. While it was possible to carry out this procedure on a small amount of data, it was not possible to apply to the entire data-set because of the other two coders' time constraints. While this may have increased the amount of researcher bias in the analysis of the data, the small examples of independent coding carried out were valuable in helping the researcher to develop her technique and acknowledge the importance of not placing meaning on data that is not explicitly clear from the data itself.

The availability of participants set the order of the focus groups and interviews, but the researcher made the conscious decision to approach the focus groups first, as this was the area in which she felt most confident. After gaining more experience and knowledge, the researcher then progressed to face-to-face interviews and then telephone-interviewing. The lack of ability to see one another adds

an extra dimension of challenge to telephone interviewing (Novick, 2008). In the face-to-face interviews, the researcher was able to pick up on non-verbal cues from the participant about how to direct the interview, whereas the telephone interviews required a greater level of anticipation. By treating the two initial focus groups as pilots and organising the data collection in order of increasing complexity, the researcher has ensured that she has been adequately prepared for the challenges of data collection.

The use of mixed-profession focus groups enhanced the discussion of topics, as students were able to share their differing perspectives to promote further debate. Medics were the most represented profession in the majority of the focus group, which may have resulted in an over-representation of their views, but drew attention to the dynamic between medics and other professions effectively, resulting in interesting and meaningful data. Not all healthcare professions trained at UEA were represented in the focus groups and interviews, a limitation of the study. It is unclear what effect this may have had, if any, on the results.

The qualitative strand of the study was reliant on volunteers, introducing the possibility of self-selection bias (Braver and Bay, 1992) in which those who volunteer to take part in a study are not necessarily representative of the wider population as a whole. Those who self-select for a study are inherently different to those that do not, as they have a motivation for taking part. It is possible that the views of the students, graduates, and seniors reported in this study are not entirely representative of the wider populations sampled. This is the case, however, with all studies that use a self-selected sample, and does not diminish the importance of the findings, merely reminding the researcher that the data should not be accepted as absolute truth for the wider population, even if it is absolute truth for those who have participated in the study

8.3.3 Strengths and limitations of the mixed methods design

To ensure that the study was underpinned philosophically, it was necessary learn about the basics of existing research traditions and the philosophical underpinnings of those traditions. To ensure that the design of the study was appropriate for the aims of the study, the researcher engaged in discussion with her supervisors, other academic staff, and other research students at the UEA about research methods and study design. Attendance at the International Conference of Mixed Methods Research in the first-year of study provided invaluable guidance. Building on this, in-house training sessions, supervisory guidance, and existing literature allowed the researcher to develop a robust and feasible study design to address the research questions developed from the study aims.

The main challenge regarding the mixed methods aspect of the study was in meaningfully integrating the quantitative and qualitative data. Very little information was available, with the guidance for the selected study design simply stating that the researcher needs to decide how the data would be compared (Creswell and Plano-Clark 2011). As such, it is nearly impossible to assess the rigour of the comparison of the quantitative and qualitative data in this study. By looking for patterns in each data-set, and if they converged or diverged with observations from the other, it was possible to engage with the process of "crystallization" (O'Cathain *et al.,* 2007; Sandelowski, 1995). By viewing the two data-sets together it was possible to highlight new aspects, such as the discrepancy between in-group and out-group views of medics possibly translating into fraught interprofessional interactions. This analysis process has been organic, but it has been effective in

addressing the aims of this study. Comparison of the methods used in this study with future mixed methods analyses concerning similar data may provide belated insight into the rigour and effectiveness of methods used in this study.

8.3.4 Generalisability and transferability

The transferability of the conclusions drawn from this study is crucial when considering its value to the evidence-base. The inclusion of nursing, medicine, and pharmacy students makes comparison between this study and other studies of healthcare students' interprofessional attitudes more feasible, due to the frequent inclusion of these professions in such studies. The loss to follow-up observed between data collections and the low numbers of responses concerning physiotherapists, midwives, speech and language therapists, and operating department practitioners, discussed in more depth in Chapter Five, must be acknowledged as a limitation to the generalisability of these findings, as must the small number of findings from HCPC students in particular. As was recognised in Chapter Five, the views obtained about the aforementioned professions, or from the HCPC student group, are unlikely to be representative of the wider population, limiting their usefulness.

The relatively large numbers of students involved in the 'all professions' analyses of the AHPQ data-sets increase the generalisability of the findings to a wider population of healthcare students, as it is reasonable to assume that the large numbers of students involved are a sufficiently representative sample of the wider population. With demographic data about the respondent and non-respondent groups, it would be possible to assess if this were the case.

The context of the study should be considered when assessing generalisability. This study was carried out in a UK institution with a population of students that may differ from the socioeconomic, ethnic, age, and gender make-up of other institutions. It is not possible to make an informed judgement on this, due to the aforementioned lack of demographic data. This therefore should be considered a caveat on interpreting the data and applying it to other settings.

The findings from the focus group and interview data are more context-bound than the findings of the AHPQ, as they are an in-depth exploration of the experiences and opinions of particular individuals. This makes direct comparison with other studies more difficult. It is possible, however, to compare these findings with the findings of other studies with similar aims and context, such as Leaviss (2000), who was interested in graduates' attitudes towards their IPE experiences after starting professional practice. This comparison is termed transferability rather than generalisability, as the aim in comparing the data is not to generalise to a wider population but to develop understanding and gain knowledge about a particular phenomenon. Further developments in the wider IPE literature on the in-depth experiences of programme participants will afford more opportunity for this data to prove useful.

8.4. Reflexive aspects

The professional stance of the researcher and strategies taken to minimise the researcher's influence on the data were outlined in Chapter Four and are revisited here along with other reflexive issues.

As a physiotherapist and former healthcare student at the UEA, the insight into both the IPL programme and the experience of working as a healthcare professional has been invaluable in understanding the issues raised in this study. Through facilitating the IPL programme, this understanding has been extended from a student's perspective to the perspective of those running and organising the programme. This presented some challenges, as the researcher felt positively inclined toward both the IPL programme and those who ran it. Recognition of this predisposition aided in attempting to minimise bias when interpreting data. By acknowledging her feelings the researcher was very conscious not to dismiss seemingly negative data or data that appeared contradictory to her opinions in either strand of the study.

Neutrality regarding one's own profession, views of other professions, and the IPL programme (as identified in Chapter Four) was particularly important when carrying out focus groups and interviews. Maintaining a neutral and non-judgemental presence was key in minimising researcher influence over the responses given by participants. It is not possible to eliminate the influence of the researcher on the interview process (Appleton, 1995), but ensuring that the researcher did not express a preference for her own profession or react negatively to criticism or dismissive comments was effective in maintaining neutrality.

Instead of using challenging language when speaking with participants who expressed negative views regarding

physiotherapists or the IPL programme, the researcher simply asked them to explain their views (as was done for positive sentiments). This approach helped to ensure that participants did not anticipate a negative response from the researcher at any stage. The researcher also stated at the outset of each focus group or interview that she sought no outcome other than the participants' genuine opinions, so they should speak freely. This allowed the collection of data that spans both the positive and the negative, enriching and enlivening the information gained about participants' experiences and attitudes towards IPE and practice. The decision not to disclose her profession (see Chapter Four) or history with the IPL programme aided in establishing a neutral presence. Occasionally the researcher was questioned about her background, but this invariably happened at the end of the process and, as such, the researcher felt that the disclosure of this information at that point would not be detrimental to the research process.

In order to practise reflexivity in research, the researcher kept a private and informal research journal, in which she detailed challenges, successes, and learning points encountered. By looking for areas that required further improvement and gaps in her knowledge, the researcher was able to identify resources that would aid her in becoming a better researcher. An example of the challenges faced are the initial difficulties that the researcher experienced in carrying out the focus groups and interviews (detailed in Chapter Four). An example of acting to address areas of deficit is the undertaking of three Master-level modules during the project that introduced research methods, and then building upon this learning with further quantitative and qualitative modules. By reflecting on the personal struggle with the terminology and research methods associated with qualitative and quantitative

research, the researcher was able to engage with a reflexive process of learning throughout the project. This informed the development of the questioning schedules for the focus groups and interviews (as newer versions were developed after piloting) and analysis of AHPQ data (after discussion and deliberation with the statistics experts).

8.5 Contribution to the evidence-base

This study has made a small but valuable contribution to the evidence base on the exploration of interprofessional attitudes, practice, and education. The first of these has been in beginning to address the need for long-term follow-up studies in the field of IPE, as identified from the literature review (Cooke et al., 2003; Cooper et al., 2009; Saini et al., 2011; Wamsley et al., 2012). By exploring data from first- and final-year students, graduates, and senior professionals, new insight into the development of interprofessional attitudes over time has been gained. This is relevant to other researchers and educators in planning and developing studies that explore this topic and programmes of IPE. The identification that the effects of IPL are not fully sustained into later years of study, and that participants in this study and others considered IPE to be a low-status activity (Reeves, 2000) contributes to the evidence base. While IPE may be seen as effective in the short-term, more work is needed to develop programmes that have long-term positive effects and are well-regarded by participants.

Another research need identified from the literature review was the necessity of collecting data from multiple participant-groups. Several studies included in the literature review collected data from students in different years of study. or from staff members who had been involved in the training of students, as a form of programme evaluation (Cooke et al., 2003; Lennon-Dearing et al., 2008; Lin et al., 2013; Reeves, 2000; Wamsley et al., 2012). None of the studies in the literature review, however, collected data on the interprofessional attitudes and views about IPE and practice of present students, former students, and senior healthcare professionals in the same study. The present study has begun to explore the progression of views about IPE and practice as students

progress through training and into practice. Including senior professionals with experience of mentoring UEA students and graduates allows for the more experienced views of those in professional practice to be heard, and topics for future exploration are identified. Exploring these views side-by-side has provided unique insight into the different perspectives of these groups on the same fundamental topics not previously seen in the literature.

The final point identified as a gap in existing literature was the need for studies on IPE and attitudes to include both quantitative and qualitative data to enrich findings (Cooper et al., 2009; Jacobsen and Lindqvist, 2009). As previously noted in the literature review, studies that did use multiple methods of data collection did not identify themselves as doing so purposefully, and most used the different data collection methods to explore different aspects of the study, e.g. changes in attitudes and programme evaluation. In the present study the quantitative and qualitative methods were both used to enhance understanding of the changes in attitudes of students and the factors that influence that change. Through this technique it is possible to explore both how and why participants hold certain attitudes, and to develop a more nuanced understanding of the complexity of the relationship between IPE, attitudes, and practice. This study contributed to the evidence base by demonstrating the value of such an approach.

8.6 Further research and future development of IPE

8.6.1 Further research

Since this study began, the AHPQ has been routinely administered to final-year students by CIPP and, as such, the possibility of comparing results from final-year students across cohorts is forthcoming. Comparing final-year student data in this study with data from other cohorts would help to determine if the findings of this study (that the effects of IPL are not fully sustained), arean anomaly or a pattern. More long-term follow-up data would also provide further valuable information to the evidence-base on the sustained effect of IPE on interprofessional attitudes.

The IPL programme has altered slightly recently, with IPL1 now comprising a single session focusing on teamworking, IPL2 incorporating roles and responsibilities as well as communication, and a new compulsory level for final-year students. This is called IPL5, and includes fourth year medical students and fourth year pharmacy students, with another aspect of IPL5 for fifth year medical students and third year nursing students. Several students and graduate thought that they would have preferred IPL later in their training. Final-years and graduates were also increasingly positive regarding interprofessional collaboration. Collection of AHPQ and qualitative data from students experiencing the new curricula would provide insight into if these attitudes are still held, and if, by engaging with students when they are more receptive, attitudinal change is sustained throughout training and into practice.

To take the comparison of views across groups using the AHPQ further, the questionnaire could be disseminated to graduates. The difficulty would be in obtaining enough responses to make the

statistical comparison meaningful, but it could potentially provide a useful data-point to show how students' interprofessional attitudes develop as they enter professional practice. Larger-scale exploration of graduate views on interprofessional attitudes would result in findings that are more generalizable to the wider population, providing increasingly robust evidence regarding the long-term effects of IPE on interprofessional attitudes.

Further insight into other factors that influence interprofessional attitudes and the opinions that students and graduates hold about IPE and practice could be gained by replicating focus groups and interviews with a greater number of participants. To reach a wider group, a qualitative questionnaire based on the data from the interviews and focus groups in this study could be designed and disseminated. While it would not be as in-depth as carrying out a focus group or interview, it would present a more practical option when reaching out to a larger group of people. This would also provide more robust evidence for any observable trends, such as the influence of stereotyping seen in this study, and it would aid education professionals in the designing effective IPE programmes. Continuing the investigation with healthcare students and graduates of UEA would provide a more robust evidence-base for the IPL programme and valuable information on how the programme could be improved further.

Taking elements of this project further afield would be ambitious but would provide data that would help determine if certain attitudes or behaviours are common across different educational settings. Replicating the focus groups and interviews (or using the previously suggested qualitative questionnaire) would allow for direct comparison between different groups of students. The AHPQ has been used outside of UEA (Jacobsen and Lindqvist, 2009) and so could also be used at different educational institutions to provide

data that would be comparable across multiple studies. With the refinements suggested earlier in this chapter, the AHPQ could be developed into a very robust measurement tool for changes in interprofessional attitudes that if used widely would help eliminate some of the frustrations in synthesising the heterogeneous literature on IPE.

8.6.2 Implications for education and practice

Much of the data from this study are relevant to those designing and running IPE initiatives. The identification of the enduring influence of stereotypes and hierarchy on attitudes indicates that a focus on addressing these issues directly in IPE would be beneficial in improving outcomes. Increasing students' knowledge of professional roles and positive role-modelling by those in positions of influence were identified in this study as ways of ensuring positive change in interprofessional attitudes and practice. These observations may be of particular use to educators planning an IPE intervention early in students' training, as data from the focus-groups indicated that first-year students are more heavily influenced by stereotypes due to their lack of practical experience.

Incorporating IPE within a perceived 'high-status' activity such as professional skills or practice placement may be a way to improve student perceptions and engagement. Further research on the new levels of the IPL programme will provide greater insight into this. Improving student attitudes towards IPE may result in students engaging more effectively with the intervention. This in turn, providing the intervention is effective, should result in improved interprofessional attitudes and attitudes towards interprofessional working. If these effects can be sustained throughout students' training and into professional practice, then the use of such

practical-based activities may prepare students well for the necessity of interprofessional working in clinical practice.

Data from the present study suggest that medical students are viewed quite differently from other healthcare professions, with the leadership role within a group often defaulting to them. Medical students reported that they felt obliged to live up to the expectations of other students in taking the lead in IPE, but when they did so, this was used as a reason to be more hostile toward them. The perception of medics as the default leader of the healthcare team in also seen in the studies by Ateah *et al.* (2010) and Baker *et al.* (2011). The use of the physician centrality subscale on the ATHTCS is further evidence of this widespread belief. There is truth in the view that medics are the dominant healthcare profession, and as such the burden falls to educators in IPE to ensure that this dynamic within groups remains constructive, and the conditions of equal status of group members necessary for successful group interaction (Hewstone and Brown, 1986). Encouraging medical students to take a collaborative, rather than dominant role in the group (and for other group members to be more assertive and contribute to discussion) may aid in developing skills necessary for future leadership that is respectful of all team members. In turn, other group members may feel more confident to speak up and express their views, a condition necessary for effective collaborative working in today's healthcare system (Berwick, 2013; Keogh 2013).

8.7 Conclusion

The main conclusions from this study are:

- The IPL programme does have a positive effect on interprofessional attitudes, but it is not sustained into students' final-year of practice.

- Stereotyping, hierarchy, and lack of knowledge of professional roles have a profound, often negative effect on the interprofessional attitudes of students.

- Students better understand the relevance of IPE as they progress through their studies into professional practice, despite viewing it as less important than their uni-professional studies, and interprofessional practice is generally viewed positively by all participants

- IPE is a viable way of improving students' interprofessional attitudes. By directly addressing stereotyping, rigid hierarchy, and lack of knowledge of other professions and by requiring students to engage with and value IPL (e.g. via practical placement), graduates will be better equipped for interprofessional working, and positive changes in attitudes may be sustained into professional practice. This will be beneficial to patient safety and complex case management, reflecting the evolving needs of the health service (Berwick, 2013; Department of Health, 2008; Keogh;2013)

The original contribution of this study to the IPE evidence-base is:

- The long-term follow-up of a programme of IPE, addressing an identified gap in existing literature.

- The collection of data from multiple participant groups to provide multi-faceted data on interprofessional attitudes, education and practice.

- An attempt at meaningful integration of qualitative and quantitative data in a study on IPE through the process of crystallization (O'Cathain *et al.,* 2007; Sandelowski, 1995), resulting in the identification of concepts that were not readily apparent in either strand in isolation.

The main learning points for the researcher concerned:

- Exploring the integration of quantitative and qualitative aspects into a single mixed methods study design.

- The development of skills in data collection and analysis using both traditionally quantitative and qualitative methods.

- Improvement of critical thinking and reflexive practice to improve and develop aspects of the study.

- Recognizing and consciously acknowledging the possible impact of one's own biases and beliefs, and employing strategies to minimize their impact.

The relationship between IPE, interprofessional attitudes, and interprofessional practice is complex and multi-factorial. IPE is able to effect change in interprofessional attitudes, with the aim of enhancing professional practice. Interprofessional attitudes are influenced by many different factors, some of which have an effect on engagement with IPE and in interprofessional practice. The aims of this study (to explore the effect that the IPL programme has upon the interprofessional attitudes of healthcare students and how this changes over time; to analyse the influences on the

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interprofessional attitudes of students and healthcare professionals in the educational and practice environment; to explore the attitudes of students and healthcare professionals towards IPE and practice) have been met by the data collection and analysis carried out in this project. This study makes a useful contribution to the evidence-base concerning IPE for healthcare students and identifies further research needs arising from the findings of this project that will enhance the field further.

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Formal changes from original proposal to meet conditions of the faculty ethics committee have been left in different coloured print for clarity. Locations of senior professional have been redacted for confidentiality.

Appendices to faculty ethics protocol have not been included, as they were unnecessary in this appendix, and several are included in other appendices.

UNIVERSITY OF EAST ANGLIA
FACULTY OF HEALTH ETHICS COMMITTEE
Application Form for Ethical Approval of a Research Project

Please refer to the guidelines when completing this form. This document should help members of the FOH Ethics Committee understand the objectives of your project/research and the procedures to be conducted. It is ESSENTIAL that you use non-technical language that can easily be understood by non-specialists and lay members of the Committee and all applications need to include all relevant documents. It is not acceptable to refer the committee to a protocol, and the information on the application together with the attachments should be sufficient to allow the Committee to form an opinion. Forms may be reviewed by the Chair and will be returned to you if you do not meet these requirements. This will delay approval of your application as applications cannot be accepted after the deadline.

*Does the project involve the use of **drugs, or testing of new equipment**, or research on **NHS staff or patients**? If so, it **MUST** be referred to an NHS Research Ethics Committee for approval and the Faculty of Health Ethics Committee must be informed of the outcome[2].*

1.   Name of applicant: HANNAH SCHUTT
        (Block letters)

2.   Academic address for correspondence:

        Postgraduate Research Office
        Queens Building,
        University of East Anglia,
        Norwich, Norfolk

        Post code: NR4 7TJ

3.   Tel No: 07890667831

4.   E-mail address: h.schutt@uea.ac.uk

5.   School: MED

6.   Status of applicant: 1st year PG Student

7.   If Student:
        Is this study being carried out to fulfil a required part of your course? Yes

        If No:
        Please confirm contact details of supervisor

        N/A

        Name of supervisor: N/A

8.   Has this application gone to an Ethics Committee elsewhere? No

        If YES, please indicate where and include copies of correspondence:

Please send 16 copies of the proposal and application form (stapled together in the top left-hand corner) to: Maggie Rhodes, FOH Research Office, Elizabeth Fry Building Room 2.30, University of East Anglia, Norwich NR4 7TJ; plus an e-mail copy to

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[2] At the time of submission, this wording was inaccurate. Separate approval was no longer required for NHS staff, and this is reflected in the changes made in the main body of the document. The form for faculty ethical approval had not been updated to match the new protocol.

Project details (please could sections 9, 10 and 11 be limited to a maximum of 3000 words.

1.   Full title:

    Investigation of the relationship between interprofessional education, interprofessional attitudes and effective interprofessional practice

2.   Purpose of project:

    The purpose of this project is wide reaching. As the NHS goes through many changes and much restructuring it is clear that a greater focus on interprofessional working and efficiency of patient care will feature heavily. It therefore seems logical that this change is something that should be mirrored in the education of the healthcare professionals of the future. The Centre for Interprofessional Practice at the University of East Anglia has already begun to explore the important issue of interprofessional learning with healthcare students through the use of the Attitudes to Health Professionals Questionnaire (AHPQ). This questionnare has been designed and validated to evaluate the attitudes of healthcare students to their own professions and others, before and after experiencing the interprofessional learning (IPL) programme at UEA *(Lindqvist et al 2005).*

    This study presents the opportunity to take this work one stage further, and triangulate quantitative data from the AHPQ with two sources of qualitative data from focus group interviews and interviews. The qualitative methods will allow a more in depth analysis of the percieved relationships between interprofessional learning and interprofessional attitudes held by healthcare students, recent graduates from UEA and more senior healthcare professionals working

within the NHS in clinical practice. By exploring all sets of data concurrently it will be possible to compare and contrast the data. This may allow greater understanding to be drawn from the data, and, or, open up new possible avenues of inquiry.

It is also hoped that this piece of research will contribute to the field of published work available on interprofessional education and practice, and possibly inform and improve the IPL programme both at UEA and potentially further afield.

11.   Methodology, Procedure and Analysis:

This is a convergent parallel mixed methodology study of interprofessional attitudes using quantitative survey data and qualitative data from focus groups and interviews. A convergent parallel study design involves collecting data from the qualitative and quantitative strands during the same phase of the study, analysing the two types of data separately, and then comparing the two strands after the initial analysis is complete.

A literature ~~systematic~~ review will form the basis of the background information of the study. This review will be conducted on all major healthcare databases available to the researcher, AMED, CINHAL, EMBASE and MEDLINE. Due to the wide reaching nature of this project, the search will also be conducted on the major educational databases, ~~ASSIA, EBSCO~~ ERIC, SCOPUS and Web of Knowledge.

It is hoped that three groups of people will be involved in the study; first and final year Faculty of Health (FOH) and School of Pharmacy (SOP) students at UEA, recent graduates from the FOH and SOP and senior qualified healthcare professionals working within the local NHS trust who have experience of working with healthcare students

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and graduates from UEA and non-UEA trained professionals.

Inclusion and exclusion criteria

Potential participants with a close personal relationship to the researcher will be excluded from the qualitative strand study, as the prior relationship may affect both the researcher's ability to remain impartial during the collection of data, and the participant's ability to express their opinions truthfully and fully.

This need not apply to the quantitative strand of the study, as the researcher will be blinded to the identity of respondents, preventing bias.

Provided that they satisfy the exclusion criteria, all undergraduate students who have taken part in the IPL programme at UEA will be eligible to take part in this study.

The same will be true of all previous graduates from the FOH and the SOP from the last five years. Five years has been selected as this is the length of time that the IPL programme has been running.

In addition to the above criteria, the senior healthcare professionals working within the NHS trust will be excluded if they have experienced the IPL programme at UEA. These participants will be heads of department, ward sisters/charge nurses, matrons and senior medical staff. It will be necessary for the senior healthcare professionals to have had experience working with healthcare students and graduates from UEA.

Selection of Participants

In the event that more people respond to take part in the study than are required, they will receive an email from the researcher thanking them for their interest in the study, and informing them that their participation will not be needed. See Appendix 12.

From the respondents, participants will be purposefully selected by the researcher with the aim of recruiting students from mixed professions and gender where possible. In case of there being many students volunteering from one professional group and with the same gender, a random selection from these students will take place.

Healthcare students

The quantitative data will be from healthcare students within the FOH and the SOP before and after they undergo IPL during their first and final year of training using the validated AHPQ. This questionnaire will be available in an online format to all students in their first and final year of training. The AHPQ measures students' attitudes towards their own profession and seven others before and after they experience the IPL programme.
Some of this data has already been collected by the university as part of the work of CIPP, and the remainder will be collected over the next year. The existing format of the AHPQ will be used to gather the data. See appendix 2.

The data from the AHPQ will be analysed using the Statistical Package for the Social Sciences 16 (SPSS) by the researcher and a statistician.
Quantitative data from the AHPQ will be analysed by the researcher and a statistician using the Statistical Package for the Social Sciences (SPSS 16).

The data obtained from the AHPQ using the two different scales ("caring" and "subservient") will be subjected to a series of calculations that will generate a series of principal component scores for each student and for each scale. Paired sample t-tests will then be used to compare the before and after scores for individual participants, and ANOVA tests to compare the mean scores for each professional group for both the first and second times the AHPQ is completed.

The qualitative data will be gathered from the students using focus groups. Students will be contacted via email through the Faculty of Health and School of Pharmacy gatekeepers, and posters will be displayed in prominant locations throughout the Faculty and the School (i.e. social spaces, year noticeboards etc.) in order to publicise the study (appendix 4). Students who express an interest in the study will be contacted by the researcher with further information, including the participant information sheet. Please see appendix 3 for the email and appendix 10 for the participant information sheet.

It is hoped that three focus groups will be conducted with first year students and three with final year students. This number has been chosen due to the time and resources available to the researcher. It may be necessary to increase the number of focus groups if it is deemed that the data gathered does not provide sufficient information.

Each focus group will consist of six to eight people. This number has been selected as the optimum number of participants in focus group interviews as it allows for different perspectives to be explored with a manageable number of people *(Krueger and Casey 2009).* The interviewed will take a semi-structured approach, using the same schedule for all focus groups (appendix 5).

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Qualitative data from focus groups will be analysed by the researcher using NVivo software. The text will be divided into small units and assigned a label, and then these units will be grouped into themes. In addition to descriptive analysis of the data, it can then be quantitized to give greater understanding of the data, and evidence for the themes identified. This can be done by counting the frequency of the themes identified, and calculating how often the theme is cited by the participants. If during the analysis of the data from the focus groups it is deemed by the researcher that the data does not provide sufficient richness, it may be necessary to take a theoretical sampling approach and revisit the field. Once repetition of themes is established, sufficient data saturation will have been reached. Due to time and resource constraints it is unlikely to be possible to conduct more than one or two extra focus groups.

Recent Healthcare Graduates

Recent graduates will be contacted through the UEA Alumni Association via email. Graduates from the Faculty of Health and the School of Pharmacy from the last five years will be contacted and invited to participate in the study. This will consist of an invitation email (appendix 6) and a participant information sheet (appendix 10).

People that express interest in the study will be contacted with further details by the researcher, and invited to arrange a time to conduct an interview either in person or via telephone. This selection will be dependent on the preference on the individual participants.

It is hoped that three to five, 30 to 40 minute interviews will be conducted with recent graduates. Significantly more interviews than this will result in an amount of data that will

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not be feasible for the researcher to analyse within the timeframe given for the project.

The interviews will take a semi-structured format, which will allow for the researcher to guide the discussion, but for the participant to focus on areas that are particularly important to them and express a wide variety of personal views. See appendix 8 for interview schedule.

The data from these interviews will be coded and analysed by the researcher using NVivo.

Senior Healthcare Professionals

~~Separate NHS ethics will need to be applied for at a later date, and no senior healthcare professional will be approached prior to this approval being received.~~ No longer needed

Senior employees of the ███████████████████████
██
████████████████ will be contacted through their work contact details. They will receive an invitation email (appendix 7) and participant information sheet (appendix 10)

Those who express an interest in the study will be contacted again by the researcher, and invited to arrange a time for an interview either in person or via telephone, dependent again on the preference of the interviewee.

Like the interviews with healthcare graduates, the interviews with senior healthcare professionals will last for half an hour to one hour and take a semi-structured format. A similar number of interviews will be aimed for, for the same reasons as discussed above.

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This data will also be analysed using NVivo by the researcher.

Mixed Methods Analysis

Once the separate data strands have been analysed it will be necessary for the researcher to merge the two databases. This is the final stage in data analysis in convergent parallel mixed methods study designs. The data-sets can be compared with one another. This will consist of looking for common themes between the two sets of data, as well as disparities. This analysis will help to confirm the findings of each data-set, and strengthen understanding of the relationship between interprofessional education, interprofessional attitudes and effective interprofessional practice.

12.   Resources required:

Access to SPSS, Nvivo and Endnote software
Dictophone and download capability
Secure storage space for transcripts
Vouchers for participants – To encourage participation in the study
£10 for each participant in the qualitative strand of the study

13.   Source of Funding

Faculty of Health PhD studentship

14.   Has this project been peer reviewed? Please could you include details of who the project has been peer reviewed by.

To be reviewed by members of the EIH research institute

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15. Ethical issues (Please also complete research safety checklist even if no risks are identified)

Each potential participant will receive a participant information sheet (appendix 10) prior to taking part in the study. This will make it clear that each participant is free to withdraw from the study at any time without giving a reason. Consent will be gained in writing from all participants in the study, a copy retained by the researcher and one by the participant (appendix 11).

Participant confidentiality and anonymity will be preserved by the researcher through anonymisation of data. Any identifiable data will be keep separately from anonymised data in password protected files and separate lockable filing cabinets. No individual will be referred to by name in any future dissemination of this work. After five years data will be destroyed in line with the Data Protection Act 1998.

Participants of focus groups will be asked at the beginning of each group not to disclose the identity of their fellow participants, or details of the focus group to people outside the study. It is hoped that this will also prevent individual participants from being identified.

In the case of a disclosure of serious professional misconduct, the researcher will inform the proper safeguarding authorities of the nature and location of the disclosed incident. This will involve breaching participant confidentiality. This eventuality will be explained to all participants on the participant information sheet and verbally by the researcher at the beginning of focus group interviews and original interviews.

Due to the non-invasive, non-interventional nature of this study, the potential risks to participants are minimal. However, there is the possibility of participants finding the focus groups or interview process stressful or upsetting. If this occurs, it will be necessary to take breaks or stop the process completely. This will be expained to participants at the beginning of each focus group or interview. There will also be signposting to the university counselling service should this be necessary.

The issue of the time burden to participants must also be considered. The completion of the AHPQ is already a part of the undergraduate healthcare courses at UEA, and as such does not represent and additional time burden. Participation in the focus groups and interviews will only be necessary once, with no follow-up needed so will cause minimal disruption to participants.

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16.   Proposed start and finish dates:

Start date: 20/10/10 Finish date: 31/06/13

17.   Where will the research be carried out?

University of East Anglia

Norfolk and Norwich University Hospital

18.   Do you need to survey UEA students or staff outside the Faculty of Health? If so, you need to get approval in principle from the Dean of Students prior to applying to the FOH Ethics Committee (see hyperlink below). Please attach a copy of approval in principle to this application form.

https://www.uea.ac.uk/polopoly_fs/1.151266!survey_form.pdf

After discussion with the research supervisory team, it was decided that as Pharmacy students are already routinely surveyed by CIPP it would be unnecessary to request permission to do so again.

19.   Information sheets and consent forms must be appended (see the NRES site for models - www.nres.npsa.nhs.uk).
3.   NB The Committee request that you do not produce your Participant Information Sheet in two parts (to avoid duplication); and that you ensure that participants are required to initial the boxes on your consent forms.

Faculty of Medicine and Health

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Email: margaret.rhodes@uea

Direct Dial: +44 (0) 1603 59 7

Hannah Schutt

Postgraduate Research Office

Queens Building

University of East Anglia

17th May 2011

Dear Hannah

Investigation of the relationship between interprofessional education, interprofessional attitudes and effective interprofessional practice: Reference 2010/2011-039

The amendments to your above proposal have been considered by the Chair of the Faculty Research Ethics Committee and we can confirm that your proposal has been approved.

Please could you ensure that any amendments to either the protocol or documents submitted are notified to us in advance and also that any adverse events which occur during your project are reported to the Committee. Please could you also arrange to send us a report once your project is completed.

The Committee would like to wish you good luck with your project

Yours sincerely

Maggie Rhodes

Research Administrator

Appendix 2 - Vignettes for Focus Groups

Scenario 1

A group of healthcare students at UEA are at an IPL session. During the group work, they are given a case scenario to discuss, which is about a patient's stay in hospital. The students decide to go around the group and discuss their views and opinions about the material.

While one student is speaking, another student on a different course politely interjects, and explains to the first student that they are not sure on the details of what the first student's role would be in the scenario.

The first student then explains their perceived role within the scenario to the second student and the rest of the group, before suggesting that the rest of the group do the same, to make sure that everyone if clear on the roles and responsibilities of each other's professions, both in the scenario and more generally.

The rest of the group agree to this and subsequently a discussion develops around overlapping professional roles and professional identities. The students then return to the scenario, and add in what they have learnt.

Scenario 2

At the first meeting of an IPL group, one student walks in half an hour late, and apologises to the facilitator. They then sit down with the rest of their group, and roll their eyes at another person who shares their profession.

The group then get back to discussing the case scenario that they have been given, and their professional roles. While one student is speaking, another cuts them off mid-sentence, and says "Well, is that really that important?"

The first student is offended, and challenges the second student on why they have this opinion. The second student then says that they view the first student's profession as "a bit of a support role, not really a core part of a healthcare team". They then go on to elaborate, by saying "I mean, other people have more important stuff to do, and you are only there to make sure that those people can get on with their jobs".

The first student is very upset by this statement, and leaves the group. The second student looks slightly abashed, but looks at the student who came in late and says "Well, that's how it is, people need to learn that." The late student nods in agreement.

The rest of the group look slightly uncomfortable, but say nothing.

Appendix 3 - Focus Group Schedule

Introduction

- Welcome the participants and ask them to write out and put on a name badge
- Ask the participants to sign the consent and confidentiality forms
- Explain to them the format of the group
  - Semi-structured discussion around the themes of interprofessional education, interprofessional attitudes and interprofessional practice
  - Conversation can be fairly free-flowing, but participants should aim not to interrupt one another
  - Participants are encouraged to speak their true opinions and feelings, the researcher is not here to judge individuals
  - Remind the participants that anything they say will be confidential, and will not be able to be traced back to them by anyone bar the researcher
  - The questions will start off fairly straightforward, but will vary in complexity
- Explain to participants the difference between interprofessional education and the interprofessional learning programme at UEA
  - The IPL programme is an example of a specific intervention designed to introduce the concept of interprofessional working to pre-registration healthcare students at UEA
  - Interprofessional education is a much broader concept that aims to inform the practice of healthcare professionals

- CAIPE Definition ; *Interprofessional Education occurs when two or more professions learn with, from and about each other to improve collaboration and the quality of care*
  - For the purpose of this focus group, when interprofessional education is mentioned, it refers to the broader concept, rather than the specific IPL programme at UEA
  - Participants may still talk about the IPL programme at UEA, but the aim of the discussion is not to focus exclusively on this

Opening Questions

- Name, programme of study, and why that particular programme?
- What experiences of interprofessional working, if any, have participants already had?

The purpose of these questions is not to challenge the participants, but to encourage all members of the group to speak, and to get them to start thinking about their choices and experiences

Introductory Questions

- How would you describe your experiences of interprofessional education?
  - Would you say they were positive or negative, and why?
  - What was your main impression of interprofessional education?
  - What did you feel the purpose of the programme was?

- What are your opinions of interprofessional education?
    - Do you think that interprfessional education is a good idea or a bad idea and why?
    - What do you think healthcare students and healthcare professionals gain from interprofessional education?
    - What effect do you think this has on their practice?

The purpose of these questions is to introduce the major topics of discussion, and to allow the researcher to gauge the participants' opinions and views. The questions are fairly broad, and allow the participants to talk about how they see the topic

Transition Questions

- What effect does interprofessional education have on healthcare students?
    - What have you observed in the practice and interaction of healthcare students?
    - Does interprofessional education have positive or negative effects on healthcare students?
    - Are there any particular trends in healthcare students' reactions to interprofessional education?
- How has the interprofessional learning programme at UEA affected you?
    - What are you overall opinions of the IPL programme?
    - Are they positive or negative and why?
    - What factors influenced your experience of the IPL programme?

- o Has the IPL programme changed anything specific in your practice or attitudes?
- Have you observed any instances of interprofessional education in clinical practice, or with qualified healthcare professionals?
  - o What form did it take? (Formal or informal)
  - o How did the participants react to the session(s)?

These questions start to focus the discussion and allow the participants to become more aware of each other's views. Participants should also be able to go into more depth about their experiences

Key Questions

- What impact does stereotyping have on interprofessional attitudes?
  - o What do you understand by "stereotypes"?
  - o What informs these stereotypes?
  - o How rigid do you think these stereotypes and attitudes are?
  - o What is the importance of interprofessional attitudes?
- What effect do interprofessional attitudes have on interprofessional practice?
  - o Is the effect significant?
  - o Is the effect positive or negative, and why?
  - o What dictates whether these attitudes are positive or negative?
  - o Have you observed or experienced the impact of interprofessional attitudes directly?

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- What effect does interprofessional education have on interprofessional attitudes?
    - Is there an effect, and why?
    - Is this effect a positive or a negative one, and why?
    - Have your own interprofessional attitudes changed since experiencing interprofessional education, and how?
    - What have you observed of the attitudes of your peers after interprofessional education?
    - What are the main factors that influence change in interprofessional attitudes? e.g. content of the programme, interaction with other healthcare students etc.

Key questions should number between two and five, and form the most important points of the discussion. They will require prompts and the facilitator to guide the discussion to keep it on track.

Ending Questions

- Is there anything else related to the discussion today that you wish to talk about?
- What would you say is the main effect that interprofessional education had on you?

The purpose of the ending questions is to allow the researcher to establish any points that may have been omitted from the main discussion, and ensure that all participants have had a chance to express their opinions

Summary

- Summarise the main points of the discussion today, and offer the participants the chance to add or disagree with anything said

- Explain to the participants that the focus group will be transcribed and analysed by the researcher
- Explain that the results will form part of a thesis, and may be disseminated to the research participants of they wish after write up has been completed
- Thank the participants for their time and give them a voucher

After the group, the audio file should be saved in at least two separate places, and transcribed by the researcher.

Appendix 4 - Interview Schedule – Graduates

Introduction

- Greet the participants and thank them for participating
- Explain that the interview they are taking part in is part of a PhD project looking at the relationships between interprofessional education, interprofessional attitudes and interprofessional practice
- Housekeeping stuff
  - All extracts or data used from the interviews will be anonymised. Only the PI will have full access to all the data
  - All data will be stored securely on a password protected computer or in a locked filing cabinet
  - No data will be directly attributable to an individual. Third parties will only be notified of any data specific to an individual in the event of a safeguarding or legal issue
  - In the unlikely event of the participant finding the interview a stressful or upsetting process then the interview will be paused or suspended. The interviewee will be referred to appropriate support services as necessary
- Semi-structured interview, some specific topics to cover, but the conversation can be quite free-flowing. Feel free to add in any comments that you would like to make
- Explanation of IPE – CAIPE Definition "Interprofessional education occurs when two or more professions learn with, from and about each other to improve collaboration and the quality of care"
- Reminder of IPL Programme
  - IPL1 – compulsory 6 week programme of group work in mixed profession groups
  - IPL2 – compulsory shadowing of a different healthcare professional with 2 mixed profession group sessions

- - IPL 3 and 4 voluntary attendance conferences with service users on a specific healthcare issue
- Topics to talk about in the interview are;
  - Recollections of the IPL programme
  - Any experiences of interprofessional education since graduating
    - Taking part in or training
  - Opinions of interprofessional education
  - Your interprofessional attitudes
  - Patient care and interprofessional practice

Introductory Questions

- Begin by asking them to explain a little bit about their job
  - Profession
  - Where they work
  - How long they have been in that role
  - General roles and responsibilities

- What are their opinions on interprofessionalism
  - Do they feel that they work interprofessionally?
  - What do they think about interprofessionalism?

- Interprofessional education
  - What do they remember about the IPL programme?
  - What do they think interprofessional education is trying to achieve?
  - Is interprofessional education effective in achieving the expressed aims?
  - What would make effective interprofessional education?
    - How should it be organised?

- What should be addressed?

Main points

- What are interprofessional attitudes?
  - What informs interprofessional attitudes?
    - Media
    - Society
    - Family
    - Conditioning of professionals
      - During training
      - In practice
  - Have their interprofessional attitudes changed over time since graduation/in practice?
    - If so what has changed them?
  - Are healthcare professionals conditioned to have certain attitudes towards one another?
    - During their course?
    - In society?
  - How do interprofessional attitudes affect practice?

- Interprofessional practice
  - How does the quality of interprofessional working impact on patient care?
  - What do they think are the challenges in implementing interprofessional practice?
    - At pre-registration level
    - In professional practice

- Power and hierarchy
  - Does hierarchy between healthcare professions exist?

- Does it exist within healthcare professions?
    - Does hierarchy impact on how professions work together?
    - Do they act as a mentor to healthcare students?
        - Are healthcare students aware of hierarchy?
        - How do they foster positive interprofessional attitudes in students?
            - What are they challenges in doing so?
    - Are healthcare students conditioned to see barriers between professions?
    - How much of an effect does socioeconomics have on the relationships between healthcare professionals?
        - Background of people entering professions
        - Payscales
        - Conventions of different professions

Closing points

- Ask them if there is anything else they would like to add that they have not had a chance
- Thank them for taking part and give out a voucher

<u>**Appendix 5 - Interview Schedule – Senior HCPs**</u>

Introduction

- Greet the participants and thank them for participating
- Explain that the interview they are taking part in is part of a PhD project looking at the relationships between interprofessional education, interprofessional attitudes and interprofessional practice
- Housekeeping stuff
  - All extracts or data used from the interviews will be anonymised. Only the PI will have full access to all the data
  - All data will be stored securely on a password protected computer or in a locked filing cabinet
  - No data will be directly attributable to an individual. Third parties will only be notified of any data specific to an individual in the event of a safeguarding or legal issue
  - In the unlikely event of the participant finding the interview a stressful or upsetting process then the interview will be paused or suspended. The interviewee will be referred to appropriate support services as necessary
- Semi-structured interview, some specific topics to cover, but the conversation can be quite free-flowing. Feel free to add in any comments that you would like to make
- Explanation of IPE – CAIPE Definition "Interprofessional education occurs when two or more professions learn with, from and about each other to improve collaboration and the quality of care"
- IPL Programme
  - IPL1 – compulsory 6 week programme of group work in mixed profession groups
  - IPL2 – compulsory shadowing of a different healthcare professional with 2 mixed profession group sessions
  - IPL 3 and 4 voluntary attendance conferences with service users on a specific healthcare issue

- Topics to talk about in the interview are;
    - Involvement with the training of healthcare students
    - Any experiences of interprofessional education
        - Taking part in or training
    - Opinions of interprofessional education
    - Your interprofessional attitudes
    - Patient care and interprofessional practice

Introductory Questions

- Begin by asking them to explain a little bit about their job
    - Profession
    - Where they work
    - How long they have been in that role
    - General roles and responsibilities

- What are their opinions on interprofessionalism
    - Do they feel that they work interprofessionally?
    - What do they think about interprofessionalism?
    - At UEA, students take part in the interprofessional learning programme. Do qualified healthcare professionals need interprofessional education too?

- Interprofessional education
    - Have they ever taken part in any education with, from or about other healthcare professionals?
    - What do they think interprofessional education is trying to achieve?
    - Is interprofessional education effective in achieving the expressed aims?
    - What would make effective interprofessional education?

- How should it be organised?
- What should be addressed?

Main points

- What are interprofessional attitudes?
  - What informs interprofessional attitudes?
    - Media
    - Society
    - Family
    - Conditioning of professionals
      - During training
      - In practice
  - Have their interprofessional attitudes changed over time since graduation/in practice?
    - If so what has changed them?
  - Are healthcare professionals conditioned to have certain attitudes towards one another?
    - During their course?
    - In society?
  - How do interprofessional attitudes affect practice?

- Interprofessional practice
  - How does the quality of interprofessional working impact on patient care?
  - What do they think are the challenges in implementing interprofessional practice?
    - At pre-registration level
    - In professional practice

- Power and hierarchy

- o Does hierarchy between healthcare professions exist?
  - ▪ Does it exist within healthcare professions?
- o Does hierarchy impact on how professions work together?
- o Do they act as a mentor to healthcare students?
  - ▪ Are healthcare students aware of hierarchy?
  - ▪ How do they foster positive interprofessional attitudes in students?
    - • What are they challenges in doing so?
- o Do students on placement normally observe effective interprofessional working?
- o Are healthcare students conditioned to see barriers between professions?
- o How much of an effect does socioeconomics have on the relationships between healthcare professionals?
  - ▪ Background of people entering professions
  - ▪ Payscales
  - ▪ Conventions of different professions

Closing points

- • Ask them if there is anything else they would like to add that they have not had a chance
- • Thank them for taking part and give out a voucher

Appendix 6 – Formulae for the calculation of Caring and Subservient scores for each profession in the Attitudes to Health Professionals Questionnaire

These formulae were used by the researcher during the quantitative analysis of the AHPQ data, and were originally calculated during the validation process of the AHPQ. The numbers included do not have a '0' placed in front of the decimal point as they have been left in their original state from the CIPP document.

A formula starting with 'F' denotes calculation for a first round of data collection, 'S' for second. The eight professions included in the AHPQ are coded using roman numerals:

- Pharmacist (PH)= i
- Occupational therapist (OT) = ii
- Medic (ME)= iii
- Nurse (NU)=iv
- Physiotherapist (PT)= v
- Midwife (MI)= vi
- Speech and language therapist (SLT)= vii
- Operating department practitioner (ODP)=xiii

The jump from seven to 13 is due to the now defunct function of previously being able to sort by branches of nursing (adult, child, mental health and learning disability) and previous inclusion of paramedics, though this course had not run for several years at the time of the study.

The final element of the code is a number from one to 20, denoting the construct pairing that the participant has rated on the visual analogue scale. This number is then followed by the principal component score for that item (See Table 2 in main text for more detail). All of the construct pairings that load on to a subscale are included in the calculation of the overall value for the target profession.

The target variable column on the tables below should be read as such; C1 or C2 refers to either the Caring or Subservient component respectively, this is then followed by the code for the target profession (given above e.g. PH=Pharmacist, and the 1 or 2 at the end refers to whether the value calculated is from the first or second completion of the AHPQ in that data-set.

Tables reproduced from CIPP below give the full formulae required to calculate the AHPQ scored for first and second round AHPQ data for each profession, with the Caring component formulae shown in the first table (Formulae for adding up Component 1 scores) and the Subservient component formulae shown in the second (Formulae for adding up Component 2 scores)

Component 1 - 'Caring' Scale	
Target Variable	Formula
C1PH1	Fi1 * .192 + fi3 * .755 + fi4 * -.226 + fi5 * .587 + fi6 * .533 + fi7 * .488 + fi8 * .792 + fi9 * .545 + fi10 * .733 + fi11 * -.265 + fi12 * .816 + fi13 * .791 + fi14 * .823 + fi15 * .225 + fi16 * .131 + fi17 * .872 + fi18 * .839 + fi19 * .833 + fi20 * .673
C1PH2	Si1 * .192 + si3 * .755 + si4 * -.226 + si5 * .587 + si6 * .533 + si7 * .488 + si8 * .792 + si9 * .545 + si10 * .733 + si11 * -.265 + si12 * .816 + si13 * .791 + si14 * .823 + si15 * .225 + si16 * .131 + si17 * .872 + si18 * .839 + si19 * .833 + si20 * .673
C1OT1	Fii1 * .192 + fii3 * .755 + fii4 * -.226 + fii5 * .587 + fii6 * .533 + fii7 * .488 + fii8 * .792 + fii9 * .545 + fii10 * .733 + fii11 * -.265 + fii12 * .816 + fii13 * .791 + fii14 * .823 + fii15 * .225 + fii16 * .131 + fii17 * .872 + fii18 * .839 + fii19 * .833 + fii20 * .673
C1OT2	Sii1 * .192 + sii3 * .755 + sii4 * -.226 + sii5 * .587 + sii6 * .533 + sii7 * .488 + sii8 * .792 + sii9 * .545 + sii10 * .733 + sii11 * -.265 + sii12 * .816 + sii13 * .791 + sii14 * .823 + sii15 * .225 + sii16 * .131 + sii17 * .872 + sii18 * .839 + sii19 * .833 + sii20 * .673
C1ME1	Fiii1 * .192 + fiii3 * .755 + fiii4 * -.226 + fiii5 * .587 + fiii6 * .533 + fiii7 * .488 + fiii8 * .792 + fiii9 * .545 + fiii10 * .733 + fiii11 * -.265 + fiii12 * .816 + fiii13 * .791 + fiii14 * .823 + fiii15 * .225 + fiii16 * .131 + fiii17 * .872 + fiii18 * .839 + fiii19 * .833 + fiii20 * .673
C1ME2	Siii1 * .192 + siii3 * .755 + siii4 * -.226 + siii5 * .587 + siii6 * .533 + siii7 * .488 + siii8 * .792 + siii9 * .545 + siii10 * .733 + siii11 * -.265 + siii12 * .816 + siii13 * .791 + siii14 * .823 + siii15 * .225 + siii16 * .131 + siii17 * .872 + siii18 * .839 + siii19 * .833 + siii20 * .673
C1NU1	Fiv1 * .192 + fiv3 * .755 + fiv4 * -.226 + fiv5 * .587 + fiv6 * .533 + fiv7 * .488 + fiv8 * .792 + fiv9 * .545 + fiv10 * .733 + fiv11 * -.265 + fiv12 * .816 + fiv13 * .791 + fiv14 * .823 + fiv15 * .225 + fiv16 * .131 + fiv17 * .872 + fiv18 * .839 + fiv19 * .833 + fiv20 * .673
C1NU2	Siv1 * .192 + siv3 * .755 + siv4 * -.226 + siv5 * .587 + siv6 * .533 + siv7 * .488 + siv8 * .792 + siv9 * .545 + siv10 * .733 + siv11 * -.265 + siv12 * .816 + siv13 * .791 + siv14 * .823 + siv15 * .225 + siv16 * .131 + siv17 * .872 + siv18 * .839 + siv19 * .833 + siv20 * .673
C1PT1	Fv1 * .192 + fv3 * .755 + fv4 * -.226 + fv5 * .587 + fv6 * .533 + fv7 * .488 + fv8 * .792 + fv9 * .545 + fv10 * .733 + fv11 * -.265 + fv12 * .816 + fv13 * .791 + fv14 * .823 + fv15 * .225 + fv16 * .131 + fv17 * .872 + fv18 * .839 + fv19 * .833 + fv20 * .673
C1PT2	Sv1 * .192 + sv3 * .755 + sv4 * -.226 + sv5 * .587 + sv6 * .533 + sv7 * .488 + sv8 * .792 + sv9 * .545 + sv10 * .733 + sv11 * -.265 + sv12 * .816 + sv13 * .791 + sv14 * .823 + sv15 * .225 + sv16 * .131 + sv17 * .872 + sv18 * .839 + sv19 * .833 + sv20 * .673
C1MI1	Fvi1 * .192 + fvi3 * .755 + fvi4 * -.226 + fvi5 * .587 + fvi6 * .533 + fvi7 * .488 + fvi8 * .792 + fvi9 * .545 + fvi10 * .733 + fvi11 * -.265 + fvi12 * .816 + fvi13 * .791 + fvi14 * .823 + fvi15 * .225 + fvi16 * .131 + fvi17 * .872 + fvi18 * .839 + fvi19 * .833 + fvi20 * .673
C1MI2	Svi1 * .192 + svi3 * .755 + svi4 * -.226 + svi5 * .587 + svi6 * .533 + svi7 * .488 + svi8 * .792 + svi9 * .545 + svi10 * .733 + svi11 * -.265 + svi12 * .816 + svi13 * .791 + svi14 * .823 + svi15 * .225 + svi16 * .131 + svi17 * .872 + svi18 * .839 + svi19 * .833 + svi20 * .673
C1SLT1	Fvii1 * .192 + fvii3 * .755 + fvii4 * -.226 + fvii5 * .587 + fvii6 * .533 + fvii7 * .488 + fvii8 * .792 + fvii9 * .545 + fvii10 * .733 + fvii11 * -.265 + fvii12 * .816 + fvii13 * .791 + fvii14 * .823 + fvii15 * .225 + fvii16 * .131 + fvii17 * .872 + fvii18 * .839 + fvii19 * .833 + fvii20 * .673
C1STL2	Svii1 * .192 + svii3 * .755 + svii4 * -.226 + svii5 * .587 + svii6 * .533 + svii7 * .488 + svii8 * .792 + svii9 * .545 + svii10 * .733 + svii11 * -.265 + svii12 * .816 + svii13 * .791 + svii14 * .823 + svii15 * .225 + svii16 * .131 + svii17 * .872 + svii18 * .839 + svii19 * .833 + svii20 * .673
C1ODP1	Fxiii1 * .192 + fxiii3 * .755 + fxiii4 * -.226 + fxiii5 * .587 + fxiii6 * .533 + fxiii7 * .488 + fxiii8 * .792 + fxiii9 * .545 + fxiii10 * .733 + fxiii11 * -.265 + fxiii12 * .816 + fxiii13 * .791 + fxiii14 * .823 + fxiii15 * .225 + fxiii16 * .131 + fxiii17 * .872 + fxiii18 * .839 + fxiii19 * .833 + fxiii20 * .673
C1ODP2	Sxiii1 * .192 + sxiii3 * .755 + sxiii4 * -.226 + sxiii5 * .587 + sxiii6 * .533 + sxiii7 * .488 + sxiii8 * .792 + sxiii9 * .545 + sxiii10 * .733 + sxiii11 * -.265 + sxiii12 * .816 + sxiii13 * .791 + sxiii14 * .823 + sxiii15 * .225 + sxiii16 * .131 + sxiii17 * .872 + sxiii18 * .839 + sxiii19 * .833 + sxiii20 * .673

Component 2 - 'Subservient' Scale	
Target Variable	Formula
C2PH1	Fi1 * .544 + fi2 * .554 + fi3 * -.164 + fi4 * .616 + fi5 * .167 + fi7 * .490 + fi8 * -.223 + fi9 * .219 + fi11 * .644 + fi15 * .319 + fi16 * .521
C2PH2	Si1 * .544 + si2 * .554 + si3 * -.164 + si4 * .616 + si5 * .167 + si7 * .490 + si8 * -.223 + si9 * .219 + si11 * .644 + si15 * .319 + si16 * .521
C2OT1	Fii1 * .544 + fii2 * .554 + fii3 * -.164 + fii4 * .616 + fii5 * .167 + fii7 * .490 + fii8 * -.223 + fii9 * .219 + fii11 * .644 + fii15 * .319 + fii16 * .521
C2OT2	Sii1 * .544 + sii2 * .554 + sii3 * -.164 + sii4 * .616 + sii5 * .167 + sii7 * .490 + sii8 * -.223 + sii9 * .219 + sii11 * .644 + sii15 * .319 + sii16 * .521
C2ME1	Fiii1 * .544 + fiii2 * .554 + fiii3 * -.164 + fiii4 * .616 + fiii5 * .167 + fiii7 * .490 + fiii8 * -.223 + fiii9 * .219 + fiii11 * .644 + fiii15 * .319 + fiii16 * .521
C2ME2	Siii1 * .544 + siii2 * .554 + siii3 * -.164 + siii4 * .616 + siii5 * .167 + siii7 * .490 + siii8 * -.223 + siii9 * .219 + siii11 * .644 + siii15 * .319 + siii16 * .521
C2NU1	Fiv1 * .544 + fiv2 * .554 + fiv3 * -.164 + fiv4 * .616 + fiv5 * .167 + fiv7 * .490 + fiv8 * -.223 + fiv9 * .219 + fiv11 * .644 + fiv15 * .319 + fiv16 * .521
C2NU2	Siv1 * .544 + siv2 * .554 + siv3 * -.164 + siv4 * .616 + siv5 * .167 + siv7 * .490 + siv8 * -.223 + siv9 * .219 + siv11 * .644 + siv15 * .319 + siv16 * .521
C2PT1	Fv1 * .544 + fv2 * .554 + fv3 * -.164 + fv4 * .616 + fv5 * .167 + fv7 * .490 + fv8 * -.223 + fv9 * .219 + fv11 * .644 + fv15 * .319 + fv16 * .521
C2PT2	Sv1 * .544 + sv2 * .554 + sv3 * -.164 + sv4 * .616 + sv5 * .167 + sv7 * .490 + sv8 * -.223 + sv9 * .219 + sv11 * .644 + sv15 * .319 + sv16 * .521
C2MI1	Fvi1 * .544 + fvi2 * .554 + fvi3 * -.164 + fvi4 * .616 + fvi5 * .167 + fvi7 * .490 + fvi8 * -.223 + fvi9 * .219 + fvi11 * .644 + fvi15 * .319 + fvi16 * .521
C2MI2	Svi1 * .544 + svi2 * .554 + svi3 * -.164 + svi4 * .616 + svi5 * .167 + svi7 * .490 + svi8 * -.223 + svi9 * .219 + svi11 * .644 + svi15 * .319 + svi16 * .521
C2SLT1	Fvii1 * .544 + fvii2 * .554 + fvii3 * -.164 + fvii4 * .616 + fvii5 * .167 + fvii7 * .490 + fvii8 * -.223 + fvii9 * .219 + fvii11 * .644 + fvii15 * .319 + fvii16 * .521
C2STL2	Svii1 * .544 + svii2 * .554 + svii3 * -.164 + svii4 * .616 + svii5 * .167 + svii7 * .490 + svii8 * -.223 + svii9 * .219 + svii11 * .644 + svii15 * .319 + svii16 * .521
C2ODP1	Fxiii1 * .544 + fxiii2 * .554 + fxiii3 * -.164 + fxiii4 * .616 + fxiii5 * .167 + fxiii7 * .490 + fxiii8 * -.223 + fxiii9 * .219 + fxiii11 * .644 + fxiii15 * .319 + fxiii16 * .521
C2ODP2	Sxiii1 * .544 + sxiii2 * .554 + sxiii3 * -.164 + sxiii4 * .616 + sxiii5 * .167 + sxiii7 * .490 + sxiii8 * -.223 + sxiii9 * .219 + sxiii11 * .644 + sxiii15 * .319 + sxiii16 * .521

Tables reproduced from "The AHPQ – Validation of the questionnaire & suggested

protocol for quantitative analysis" by the Centre for Interprofessional Practice

(CIPP) at the UEA

Appendix 7 – Graphs of Attitudes to Health Professionals Questionnaire Data collected from 'all participants'

First-year intervention group data
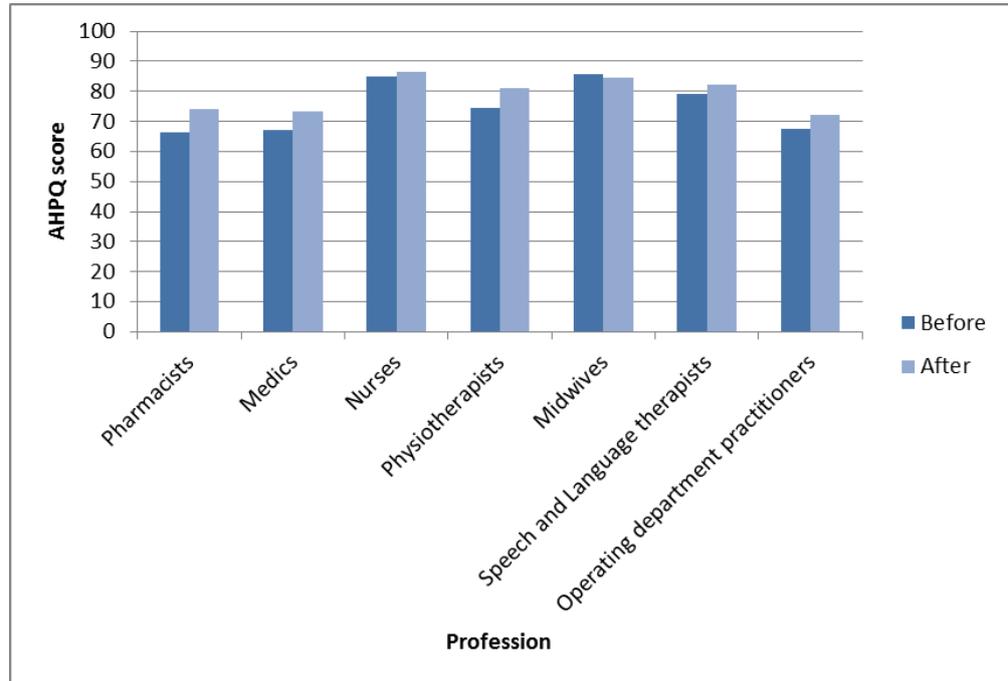
Figure 1 First-year intervention group : Caring component data from all participants – Comparison of mean Caring component scores between first and second rounds of data collection on the Attitudes to Health Professionals Questionnaire
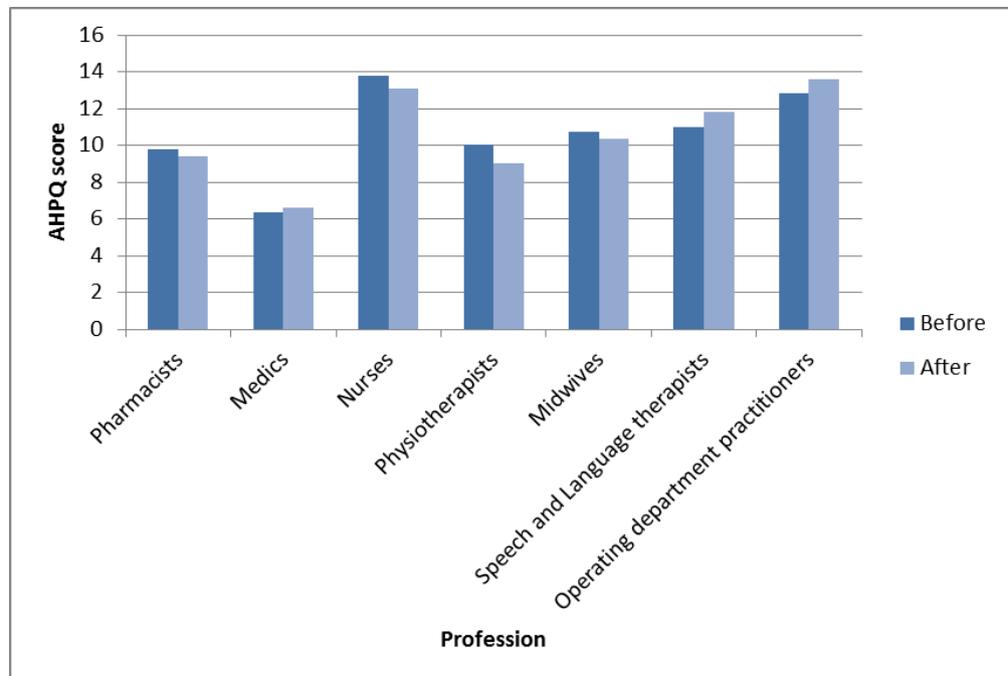

Figure 2 First-year intervention group : Subservient component data from all participants – Comparison of mean Subservient component scores between first and second rounds of data collection on the Attitudes to Health Professionals Questionnaire

First-year control group data
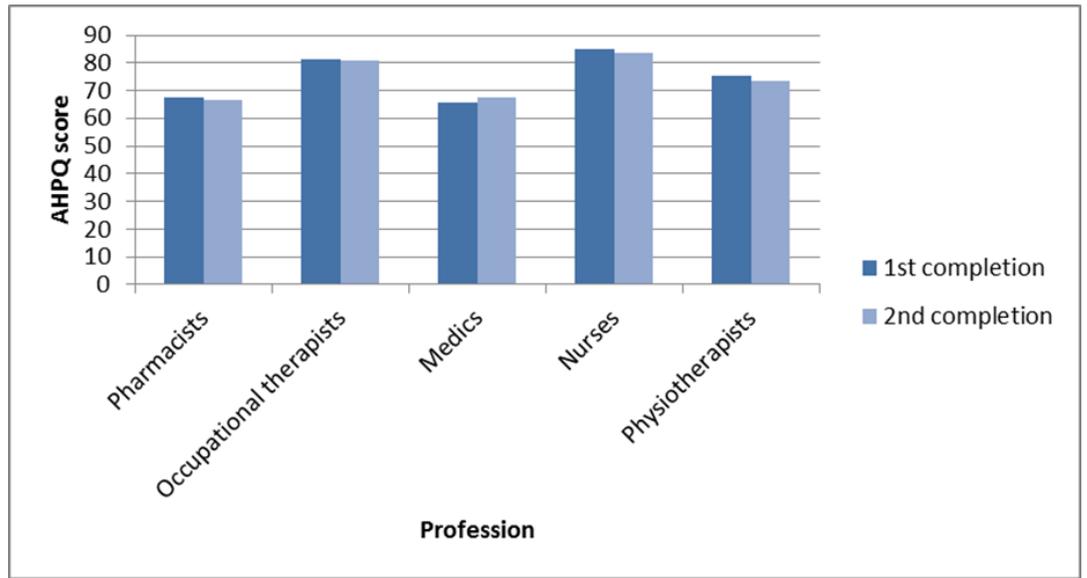
*Figure 3. First-year control group : Caring component data from all participants –
Comparison of mean Caring component scores between first and second rounds of
data collection on the Attitudes to Health Professionals Questionnaire*
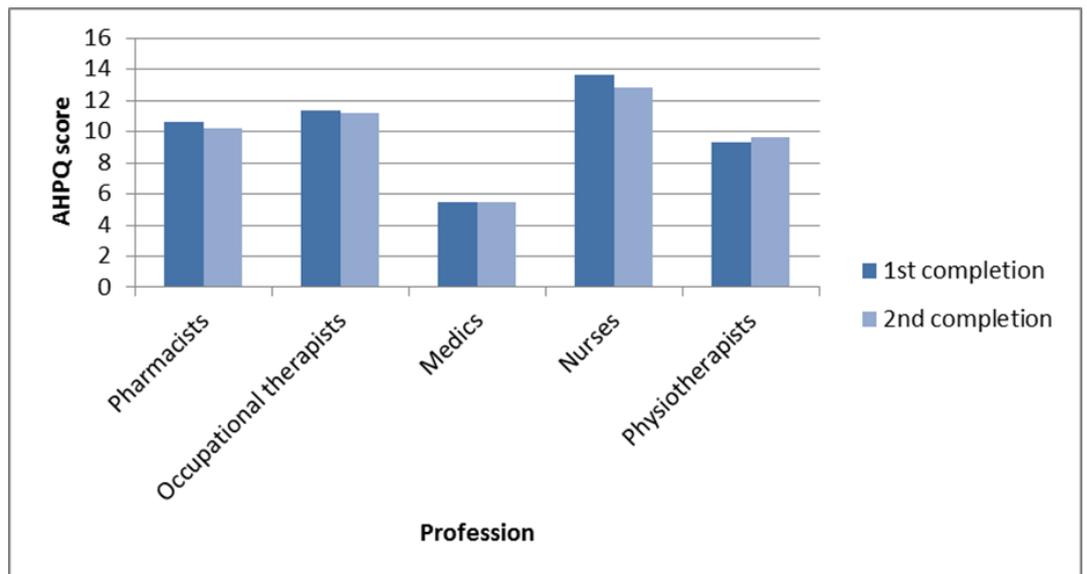
*Figure 4. First-year control group : Subservient component data from all
participants – Comparison of mean Subservient component scores between first
and second rounds of data collection on the Attitudes to Health Professionals
Questionnaire*
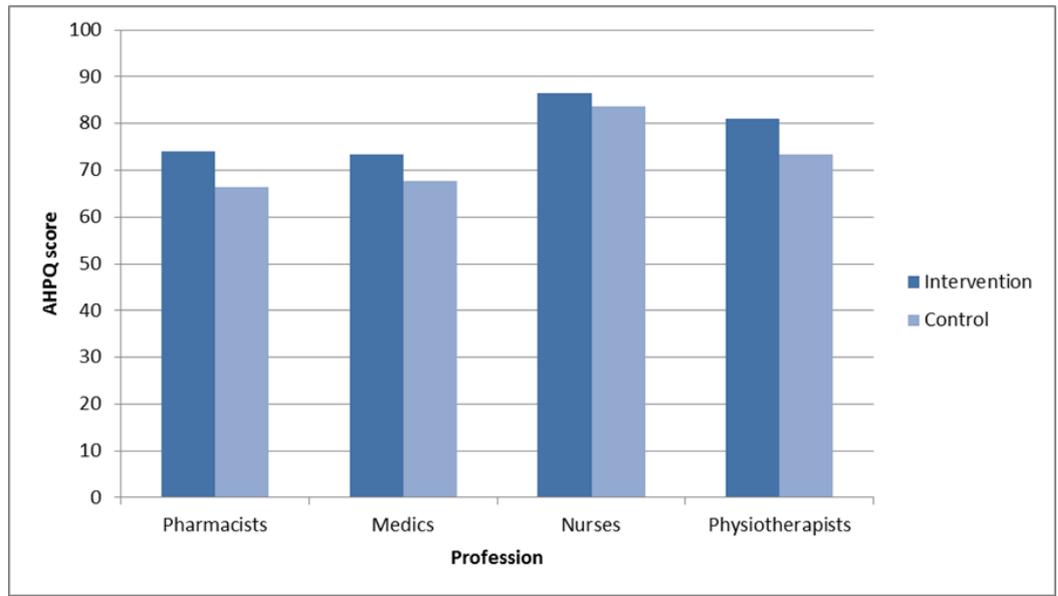
Figure 5. First-year intervention and control groups : Caring component data from all participants – Comparison of mean Caring component scores between second rounds of data collection on the Attitudes to Health Professionals Questionnaire
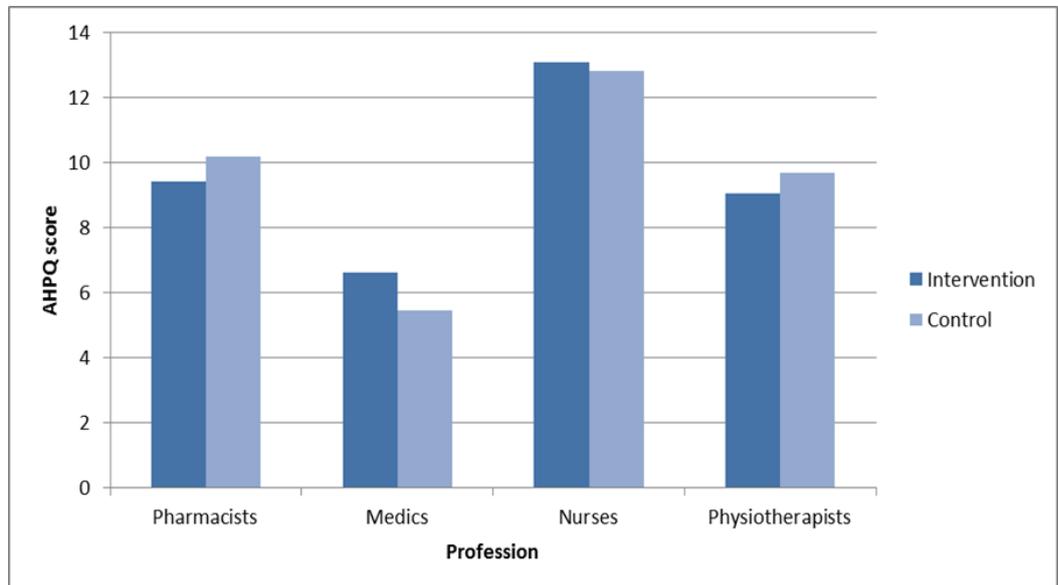

Figure 6. First-year intervention and control groups : Subservient component data from all participants – Comparison of mean Subservient component scores between second rounds of data collection on the Attitudes to Health Professionals Questionnaire

First-year intervention group, second completions of the AHPQ and final
year data
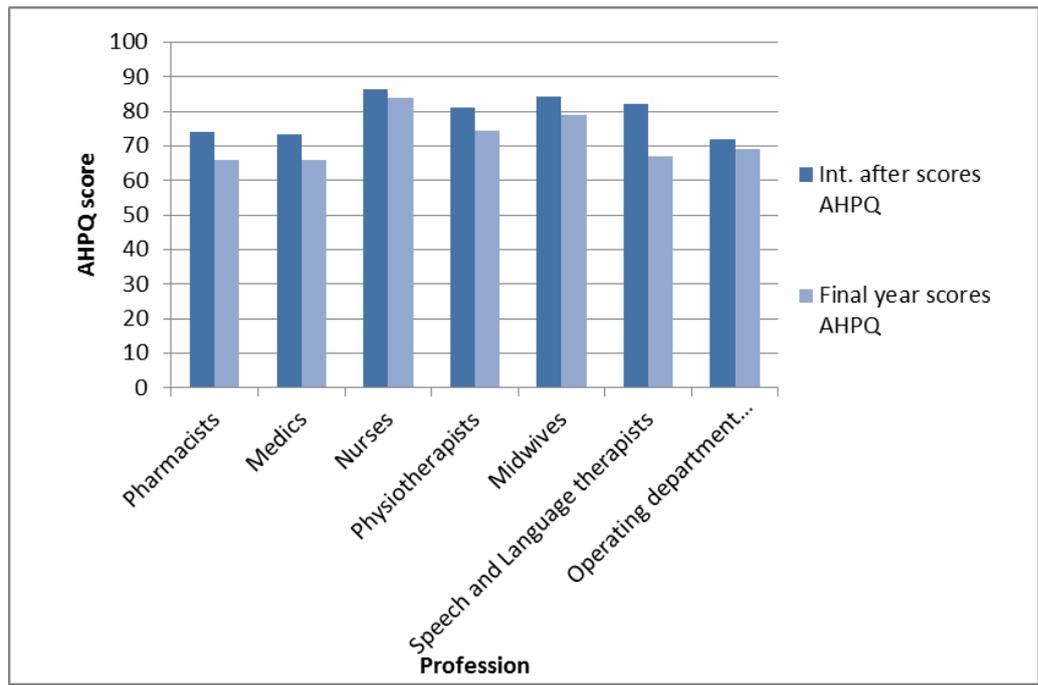
Figure 7. First-year intervention and final-year groups : Caring component data

from all participants – Comparison of mean Caring component scores between

second rounds intervention data and final-year data on the Attitudes to Health

Professionals Questionnaire
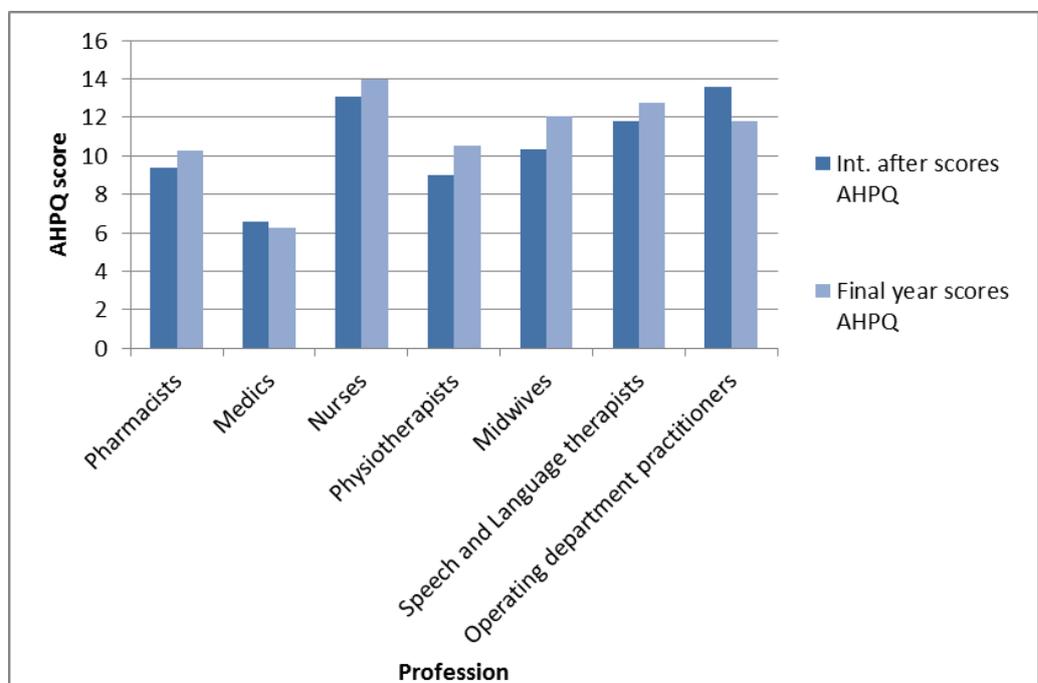
Figure 8. First-year intervention and final-year groups : Subservient component

data from all participants – Comparison of mean Subservient component scores

between second rounds intervention data and final-year data on the Attitudes to

Health Professionals Questionnaire

Appendix 8 - Consent form for qualitative strand participants

Project Title

Investigation of the relationship between interprofessional education, interprofessional attitudes and interprofessional practice.

Researcher

Hannah Schutt – Supervised by Dr Susanne Lindqvist

Please **initial** the box

- I confirm that I have read and understood the information sheet provided for the above named study and that I have had the opportunity to ask questions.

- I understand that my participation is voluntary and that I may withdraw at any time without giving a reason.

- I agree to participate in the above named study.

Name of participant (print)   Date

      Signature

Name of researcher (print)   Date

      Signature

One copy to be retained by the researcher, one by the participant

<u>**Appendix 9 - Participant Information Sheet for Qualitative Strand Participants**</u>

Investigation of the relationship between interprofessional education, interprofessional attitudes and interprofessional practice

This study is being conducted by Hannah Schutt, a PhD student at the University of East Anglia (UEA) and is being supervised by Dr Susanne Lindqvist and Dr Nicola Spalding.

You are invited to take part in this research study. Before you decide you need to understand why the research is being done and what it would involve for you.

What is this project about?

The Centre for Interprofessional Practice (CIPP) at the UEA has been conducting research into interprofessional education for the last 5 years. This project builds on that previous research and aims to inform and contribute to the current literature. We hope to do this by gathering the views and opinions of undergraduate healthcare students and previous Faculty of Medicine and Health Sciences graduates. The data collected will be compared with responses from the Attitudes to Health Professionals Questionnaire (AHPQ) completed by students at the UEA.

Why have I been chosen?

You have been identified as either a healthcare student at UEA or a recent graduate of the Faculty of Medicine and Health Sciences. In order to gain a fuller picture of the relationship between interprofessional education, attitudes and practice it is necessary to study a wider range of people at all levels of healthcare provision.

Do I have to take part?

The decision to participate in this study is up to you. If you do decide to take part, you will be given this leaflet and a consent form to sign. If you decide to take part you may withdraw from the study at any time without giving a reason.

What will happen if I take part?

You will be contacted by Hannah Schutt and asked to participate in either a focus group or interview. The discussion in these focus groups and interviews will centre on interprofessional education, interprofessional attitudes and interprofessional practice. These interviews will be held either at the UEA, by telephone, or at the Norfolk and Norwich University Hospital (NNUH). If you decide to participate you will be asked about your availability prior to interview to arrange a mutually convenient location and time, and will receive these details either by telephone or email.

The focus groups will last no longer than one hour, and may be shorter and the interviews no longer than half an hour. You will be asked to keep the discussion that takes place during your interview or focus group confidential, and not to discuss the interview or focus groups with anyone outside of the process.

How long will I be involved in the project?

As stated above you will be asked to participate in one interview or focus group, lasting no longer than the specified time.

What are the effects of taking part?

There should be no side effects to taking part in this study. There is a very small possibility that you may find the interview upsetting. If at any point the interview process becomes distressing for you, let the interviewer know and the interview will be paused or stopped.

If you require any support after the interview, you will be signposted to appropriate services.

What are the possible disadvantages and risks of participating?

There are no disadvantages or risks anticipated if participating in this study. The project will simply involve answering questions on interprofessional education, attitudes and practice, and providing your views and opinions on the topic.

Will I incur any expense when taking part in the study?

Any expense incurred will be in travel costs, which will be reimbursed to you if you fill out a claim form.

What are the possible benefits of taking part in the study?

While there are no direct benefits to you through taking part in the interview or focus group, we hope that you will find the discussion of professional interest. At the end of the project we will be able to inform you of the findings, which we hope you will find informative.

What will happen after I participate in the interview/focus group?

When the data has been gathered from all participants in the study it will be analysed and the results written up. It is anticipated that this will take place between September 2011 and June 2013. After this time, if you choose, you will be informed of the results.

What if something goes wrong?

Due to the low risk nature of the project, it is very unlikely that anything will go wrong. Should you be unhappy about anything during your participation in the project, you should tell the researcher or contact the PhD supervisor Susanne Lindqvist;

Dr Susanne Lindqvist, Queen's Building, University of East Anglia, Norwich, Norfolk, NR4 7BJ. Contact telephone: Email: s.lindqvist@uea.ac.uk

Will my participation in the project be confidential?

All information gained about you during this project will be securely stored and anonymised. No identifiable information will be used in the project, and you will be assigned a reference number to ensure that no information can be connected to you.

In the event that a disclosure is made to the researcher regarding serious professional misconduct impacting the care of a patient, it will be necessary for the researcher to disclose this information to the relevant safeguarding authority, possibly affecting participant confidentiality.

Who is organising and funding this project?

This project is being undertaken by a PhD student within the Faculty of Medicine and Health Sciences at the University of East Anglia, and is being funded by the University.

What will happen to the results of this project?

The results of this project will be included as part of a PhD thesis, and will hopefully be reported in journal articles and possibly at conferences.

Contacts

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Dr Susanne Lindqvist, Queen's Building, University of East Anglia, Norwich, Norfolk, NR4 7TJ Telephone: Email: s.lindqvist@uea.ac.uk