Intergroup communication and strategies to improve intergroup contact:

The specific case of nurses and doctors

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Submitted in accordance with the requirements for the degree of Doctor of Philosophy

The University of Leeds
School of Psychology

March, 2015

Acknowledgements

I would like to start by thanking my supervisors Professor Rebecca Lawton and Professor Rhiannon Turner for the help and support they gave me in the last three years. They have been excellent professional and personal role models whom I will always consider in my career. In this journey I have belonged to two organizations, the School of Psychology and the Bradford Institute for Health Research, both of them have been extremely important for my development, and for the success of my research and of this thesis. I would not have been able to start my PhD without the encouragement and the valuable suggestions of Rebecca Graber, Jennifer Paterson and Keon West, who have been teaching me so much and gave me motivation to conduct research in Social Psychology. I also thank Reema Harrison, Jane Heyhoe and Gemma Louch, who have been so kind in introducing me to the world of health care, and supported me through the first difficulties and dynamics of research outside the university. I thank the lecturers and the other PhD students from the School of Psychology. A big thank you goes to the PhD students who started the same year as me and with whom I was lucky to share the successes and the challenges of the last three years. Among them, I thank my dear friend Bianca, who has been so precious to me, and made me always believe that difficulties could be defeated and that I could succeed at the end. Without her friendship and continuous support, I would not be here now. I thank her for sharing my laughs and tears, for reminding me how truly passionate we are for what we do, and for showing me the hidden beauty of Yorkshire. I thank Louise Walton, Rob Bramley, Mark Hullah, Neil Lowly and everyone else from the School of Psychology that, in different ways, have been helping me during my PhD in Leeds. I am so grateful to have been part of BIHR, which offered me great opportunities to develop as a researcher. I thank every single member of the Yorkshire Quality and Safety Group, especially the Research Nurses and Leadership fellows who have given me feedback on my research. I would like to thank Natalie Taylor, Beverley Slater, Pierre Laloe, John Anderson, Caroline Reynolds, Carolyn Clover, and Liz Thorp, who all taught me so much about Health Care and helped me in the recruitment for my studies at Bradford Teaching Hospital and Leeds Teaching Hospital. I would like to thank my sponsors, Harry Ashurst, Jayne Marran, Helen Torevell, who gave me important suggestions about my research and helped me in succeeding. I thank the other PhD students based at BIHR, Daniel Bingham, Ruth Baxter,

Arabella Clark and Dharshana Jayewardene, and thank them for the interesting conversations and for making me feel I was part of a big family. I thank all the participants who took part to my studies, among them the students of the University of Leeds, University of Hull, University of Bradford and the staff at the Bradford Royal Infirmary and Leeds Teaching Hospital. A big thank you goes to those lecturers, students, and NHS staff who supported me in the recruitment of my participants. Lastly, I thank my family who encouraged and motivated me during the last years and never stopped believing in me and always reminded me how special I was for them. A final thank you goes to Jason and Coco who, in different ways, helped me when I needed them the most, never letting me down.

Abstract

Poor communication between doctors and nurses is known to be an important factor that impacts on the quality and safety of patient care (Lawton et al., 2012). The different professional roles, responsibilities and positions in the hierarchy of these two professional groups may lead to communication problems (Hewett, Watson, Gallois, Ward, & Leggett, 2009). Intergroup contact research has been applied to understand under which conditions contact between members of different groups results in more positive attitudes and behaviours (Pettigrew, Tropp, Wagner, & Christ, 2011). The aim of this thesis is to apply the intergroup contact hypothesis to the specific context of nurses and doctors, towards the improvement of inter-professional attitudes and communication. In Study 1 nurses and doctors were interviewed analysing communication breakdown and strategies used to avoid errors caused by miscommunication, based on the level of seniority of the clinicians. From the analysis of the interviews a scale of effective inter-professional communication was developed, to be used in Study 2 as part of a cross sectional survey on the effects of the quality of inter-professional contact on team work and communication in hospital. Results of study 2 showed that high quality contact predicted effective teamwork through more positive inter-professional perceptions and more effective communication, for both professional groups. In Study 3 nursing students and medical students were involved in a study on the effects of indirect contact on attitudes and communication. From the results, extended contact was successful in improving nursing students' attitudes towards future professional interactions with doctors. Finally, the results of the three research studies were presented in a focus group in which health researchers and clinicians gave feedback on the applicability of the findings in the hospital setting and on the use of intergroup based interventions in inter-professional learning between nursing students and medical students.

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List of Abbreviations

BIHR	Bradford Institute for Health Research
BRI	Bradford Royal infirmary
CAT	Communication Accommodation Theory
CRM	Crew Resource Management
IAT	Implicit Association Test
ICU	Intensive Care Unit
IOS	Inclusion of Outgroup to the Self
IPE	Inter-professional Education
NHS	National Health Service
R&D	Research and Development
RMSEA	Rosalind Franklin University of Medicine and Science
SBAR	Situation Background Assessment Recommendation
SEN	Special Education Needs
SIT	Social identity Theory
VRE	Video Reflexive Ethnography

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Chapter 1
Introduction

This chapter will present a rationale for the thesis and a brief description of the research aims and research studies. The issue of communication breakdown and its impact on patient safety will be discussed, in the context of the strategies implemented in order to improve the effectiveness of professional communication. Research supporting the impact of group factors, such as hierarchies and social structure, on communication breakdown will be presented in relation to the application of the intergroup contact hypothesis to the context of nurses and doctors in hospital. Research on inter-professional contact is limited and it has been applied exclusively to inter-professional learning courses involving students of health professional groups. In this thesis the application of direct and indirect contact to inter-professional communication and attitudes will be presented, with a discussion of its applicability to health interventions such as inter-professional education modules.

1.1 Rationale

1.1.1 Communication breakdown in hospital teams

Quality of care has been identified as one of the fundamental values of NHS England, an Executive non-Departmental Public Body which has been responsible for the running of the NHS since the 1st April 2013. Their commitment is to put patients at the centre, providing a high quality of care for everyone, now and for future generations. In their annual review (2013-2014) NHS England underlines the importance of patient safety, which is defined as “the prevention of harm to patients”. In order to achieve the target of safer care, NHS England is seeking to improve systems put in place to report incidents and near-misses. A culture of safety prevents errors and learns from errors and in order to understand how people could contribute to medical accidents it is necessary to distinguish between two different types of failure, active and latent, which differ in terms of the length of time necessary for them to have an adverse impact on patient safety and where in the system they occur (Reason, 1995).

Active failures, which have an almost immediate negative outcome, are errors and violations made by the people at the sharp end of the system (e.g. medication administration by nurses). Latent failures, in contrast, are consequences of decisions taken by people at higher levels of the system

that typically take a long time to be realised in safety events (e.g. plans agreed, funding decisions and training). Lawton and colleagues (2012) conducted a systematic review on the factors contributing to patient safety incidents. The majority of the factors identified were active failures (e.g., slips, lapses, mistakes, deviation from policy) and individual factors. Among the latent failures, however, communication was the most frequently cited failure in the studies reviewed (Lawton et al., 2012). Moreover, analysis of errors reported by surgeons show that communication breakdown was identified as a contributing factor in 43% of incidents (Gawande, Zinner, Studdert, & Brennan, 2003). Among cases where communication breakdown occurred, two thirds involved problems with handover of information or changes in personnel. Other aspects related to miscommunication were unclear information about the clinicians in charge and conflicts over decision making.

Research on communication breakdown has primarily focused on the improvement of the structure of communication itself, developing tools to support a more efficient transmission of information between members of the hospital team. Leonard and colleagues (2004) provide an extensive description of standardised tools and behaviours introduced in health care in order to improve communication and team work. SBAR (Situation, Background, Assessment, Recommendation) is a tool that provides a common structure to clinical communication to ensure the effective transfer of critical information. SBAR has been applied in several areas, such as ICU, obstetrics and cardiac arrest. This tool helps to keep communication concise, through the promotion of critical thinking (Leonard, Graham, & Bonacum, 2004).

An example of an intervention that introduced and evaluated SBAR to improve team communication in hospital, was conducted by Beckett and Kipnis (2009) and involved 245 staff members from five units of a hospital located in north Arizona (Beckett & Kipnis, 2009). The intervention lasted two weeks and it consisted of didactic content, role-play, and videos on SBAR communication. The evaluation consisted of a questionnaire on teamwork and safety climate pre and post intervention, and on recorded notes, observations and interviews with staff involved in the project. Analysis of the quantitative data indicated significant differences on the improvement of teamwork and safety climate after the intervention. Furthermore, qualitative analysis reported that staff perceived communication and collaboration to have improved. Additional examples of strategies

implemented among hospital staff are the assertion cycle (a model to improve assertion for patient safety), critical language (to allow everyone to stop and listen to each other), and situational awareness (according to which the team tries to maintain the big picture and plans ahead together). The introduction of inter-professional checklist briefings in operative rooms has produced a reduction of communication failures and promoted collaboration and team work (Lingard, Regehr, Orser, & et al., 2008). Lingard and colleagues conducted a 13-month evaluation of the effects of preoperative checklists and team briefings on the reduction of failures in communication. They used a pre-intervention/post-intervention design. The intervention lasted 3 months and involved multidisciplinary team briefings in which team members had the opportunity to share knowledge about patients and discuss how the case would continue. During the briefings staff would use a one page checklist designed to include surgical procedure and information about the patients, in an exhaustive but concise way. Outcome measures were collected pre and post intervention. Communication failures were documented by a trained observer using a validated observational scale. In addition to this, the utility of the checklist briefings was assessed, measuring their impact on the knowledge and action of the team. Lastly, the perceptions of the members of staff involved were measured, exploring the impact on safety, efficacy, and collaboration. Results indicated that the numbers of communication failures were reduced after introducing the checklist briefings. In addition to this, team communication and collaboration was perceived as more efficient by the members of staff who took part in the intervention.

1.1.2 Inter-professional relationships and communication in hospital

Despite tools like SBAR improving the efficiency of team communication, research studies on the effects of miscommunication in hospitals have provided evidence that failures are not only the consequence of faulty transmission of information: other factors identified include hierarchy, power and social structure (Sutcliffe, Lewton, & Rosenthal, 2004). Suttcliffe and colleagues interviewed doctors around episodes of communication failure. According to the clinicians interviewed, communication breakdown was more likely to occur when there were hierarchical differences between the two communicators and when one was afraid to appear incompetent in front of the other. That is, professionals might avoid speaking up when they disagree with a colleague with higher status, or may avoid asking for further

clarifications on their orders. Research on team performance and speaking up has also been conducted by Edmonson and colleagues (2003) revealing the important role of leaders in the coaching of members with lower power within their own team to face challenges and openly communicate with others of their organization (Edmondson, 2003). This process was facilitated by two factors: through motivating professionals to speak up and through the creation of psychological safety, which was established by acknowledging fallibility and stressing the importance of teamwork. Further support on how intergroup relationships could affect communication and patient care is provided by Hewett and colleagues' study (2009). The effectiveness of professional communication was investigated with relation to the organizational context in which the interviewed doctors worked (Hewett et al., 2009). According to the clinicians interviewed, intergroup rivalry took priority over the quality of care, affecting also the quality of communication between professionals: when intergroup conflict was present, professionals were less willing to adapt their communication style to the colleagues they had to communicate with, enhancing differences between adopting negative behaviours.

This body of work has provided evidence of a link between social context and communication breakdown of the professional groups involved in the transmission of information. Based on the analysis of the data from the interviews in Sutcliffe and colleagues' study, the relationship between nurses and doctors was identified as crucial in preventing medical errors related to communication breakdown. That is because healthcare is organised such that doctors are responsible for the majority of decisions in hospital and nurses carry out most of those decisions, being in closest contact with patients. Furthermore, Sutcliffe and colleagues suggested that conflict could arise because these two groups of health professionals are trained to have different styles of communication (broad for nurses vs. concise for doctors), increasing the chance of misinterpretation.

Similar findings on the relationship between nurses and doctors were reported by Berridge and colleagues (2010) who investigated inter-professional communication in delivery suites through ethnographic observations. Considering the conversations in delivery suites, the main contributors were midwives and doctors, although often midwives did not value the contributions of their medical colleagues, who were subsequently excluded from decision making (Berridge, Mackintosh, & Freeth, 2010). Further support for the relevance of the effects of power dynamics between

nurses and doctors on the quality of care is provided by Mackay's research on inter-professional communication and conflict (MacKay, 1992; MacKay, Matsuno, & Mulligan, 1991). Inter-professional interactions were found to enhance the status differences between nurses and doctors, affecting the quality of communication between them. That is, nurses traditionally would not offer their opinion during a consultation or ward round. According to the author these behaviours would actively harm the patients. Since then, research has focused on improving the status of nurses and on changing negative stereotypes associated with both professions, in order to achieve a more positive collaboration between them through inter-professional education programs (Carpenter, 1995). Inter-professional education has been defined as "members or students of two or more professionals associated with health or social care, engaged in learning with, from and about each other" (Freeth, Hammick, Reeves, Koppel, & Barr, 2008). Inter-professional learning programs focus on skills, roles and duties of the professional groups involved, and on how they could work more effectively together, aiming to improve collaboration and reduce negative professional stereotypes.

1.1.3 Intergroup contact in hospital

As barriers to effective communication have been recognized to be related to the social structure in which health care professionals work, such as power dynamics, status, hierarchy, and inter-professional conflict, research should not only implement efficient communication in terms of structure and tools to use (handover, check lists, safety briefings, etc.), but should also intervene to improve inter-professional attitudes and collaboration. This could be achieved by understanding the roles of status, power and professional stereotypes during communication and identifying how to make individuals aware of these group dynamics in order to ultimately improve intergroup attitudes. The intergroup contact hypothesis directly addresses these issues and it has been found successful in improving group dynamics and reducing conflict between several ethnic, religious, national and organizational groups. A review of research on intergroup contact will be presented in Chapter 2 of this thesis. Research on the quality of contact between groups has contributed to the development of recommendations on what conditions create the optimal environment in which people that belong to different groups could improve attitudes between each other and reduce negative bias. Among the optimal conditions that lead to high quality contact (cooperation, common goal, institutional support and equal status),

cooperation has been identified as the most effective one in reducing intergroup bias and improving intergroup attitudes (Koschate & van Dick, 2011). Specifically, results of Koschate's study showed that cooperation mediated the effects of the other three optimal conditions on the reduction of ingroup bias. These findings support the idea that cooperation could be considered as a first step towards conflict resolution and bias reduction.

Given that cooperation is crucial to ensure patient safety in a hospital setting, intergroup contact could be usefully applied in this context to improve communication, and in turn patient care. Specifically, intergroup contact strategies could be applied to improve inter-professional collaboration in hospital, ensuring that professional contact happens under the optimal conditions mentioned earlier. As a consequence of a more positive and collaborative interaction between clinicians, there would be more effective team work, communication and ultimately, better patient care. Among the types of intergroup contact that will be referred to in this thesis, indirect contact will be one of them. Indirect contact considers intergroup contact that does not happen face to face and it includes extended contact and imagined contact. According to the extended contact hypothesis, learning that people in our ingroup have positive relations with outgroup members has some of the same benefits as direct contact. Imagined contact consists of the mental simulation of a social interaction with a member of another group (Stathi & Crisp, 2008; Turner, Crisp, & Lambert, 2007). Research on intergroup contact in hospital settings is limited and it has been applied exclusively to the design of inter-professional education modules. In this thesis the argument for the need of investigating the applicability of the contact hypothesis to the improvement of professional communication and attitudes is presented, in relation to the impact that such improvements could have on the safety of patients. Additionally, extended and imagined contact have not yet been applied to the hospital contexts, despite the possibility that they could provide additional support in the design of methods to use in inter-professional learning, such as the use of extended contact manipulations and mental imaginary.

The objectives of this research are to:

a) understand how the hierarchy between and within professional groups could affect the way hospital communication is experienced and the choice of strategies used to improve communication breakdown;

b) investigate whether Allport's optimal conditions for positive intergroup contact could predict the effectiveness of hospital teams and of professional communication;

c) identify whether indirect forms of intergroup contact could be used as strategies to improve professional perceptions and attitudes at undergraduate level between students with different health care background;

d) ultimately gain clinicians' feedback on the applicability of our findings in the design of interventions that could support students and professionals in improving inter-professional attitudes towards a positive culture in which communication could be more effective.

1.2 Thesis structure

The purpose of this thesis is to apply the intergroup contact hypothesis to the improvement of attitudes and communication of doctors and nurses in hospital. In order to achieve that, a narrative literature review of research on intergroup contact is conducted, followed by three research studies and a focus group for the dissemination of the findings and feedback by clinicians. The thesis consists of 7 chapters, of which a summary is presented below.

1.2.1 Chapter 2

A narrative literature review was conducted on intergroup contact literature, presenting the main findings relating to the effects of intergroup contact on the improvement of attitudes and the reductions of prejudice and ingroup bias. Mediators, such as intergroup anxiety and stereotypes, and moderators, such as group identification, are presented for both direct and indirect forms of intergroup contact. The review describes how imagined and extended contact have been applied in interventions to improve attitudes towards several so called outgroups, e.g. refugees and people with disabilities. Among the interventions based on intergroup contact, inter-professional learning programs between medical and nursing students are presented.

1.2.2 Chapter 3: study 1

The third chapter presents a qualitative study conducted in order to investigate how junior and senior members of staff experience communication between doctors and nurses. Through narrative interviews, participants reported examples of communication breakdown, referring to which strategies were used or could have been used to avoid miscommunication. The analysis of this study identifies that communication

is affected by a range of interpersonal (e.g. familiarity and the perception of being approachable) and intergroup factors (e.g. understanding each other's roles and responsibilities), which have equal importance in ensuring its effectiveness. These findings represent the insights of more junior and more senior health care professionals, allowing interventions to consider the needs and problems of professionals at different levels of the hierarchy. Based on the results of this study, it is recommended that alongside the improvement of the structure of communication, interventions would also need to aim to increase interpersonal relationships and reduce professional barriers (such as, the lack of knowledge about others and the strong hierarchy). The findings of the interviews were used to develop a scale on effective communication in hospital used in the second research study.

1.2.3 Chapter 4: study 2

Chapter 4 presents a cross sectional survey, which was conducted to investigate whether inter-professional contact is a predictor of attitudes, team effectiveness and team communication. The findings demonstrate that when professional contact happens under the four optimal conditions (cooperation, common goal, equal status, institutional support), for both nurses and doctors, team communication is perceived as more positive, which then influenced how effective teams were considered to be. More specifically, when professional contact is positive, nurses and doctors perceive each other more positively. This increased perception would then affect the effectiveness of professional communication. This study supports previous research on the effectiveness of intergroup contact to the hospital context, providing first evidence that high quality contact also affects communication and team work, considering the mediating role of professional stereotypes on such effect. These findings support the idea that health interventions and inter-professional education could be designed based on intergroup contact hypotheses for the improvements of communication between nurses and doctors in hospital.

1.2.4 Chapter 5: study 3

In the fifth chapter, imagined contact and extended contact tasks are tested with medical students and nursing students, in order to investigate whether they could be used in inter-professional interventions. The pilot study tested whether video interactions of health care professionals are perceived as positive models of inter-professional contact and then considered as a novel extended contact manipulation. Study 3 tested whether imagined contact and extended contact manipulations result in positive attitudes and

perception of effective communication between nursing and medical students. Specific attention is given to the potential mediating role of perceptions and meta-perceptions on the effectiveness of contact for both groups. Results show that the extended contact manipulation is successful in positively affecting behavioural intentions of nursing students towards doctors. More specifically, nursing students who watched the video clip report more positive meta-stereotypes, that is more positive expectations on how doctors would perceive them in the work place. In turn, more positive meta-stereotypes are found to affect the behavioural intentions of nursing students regarding future interactions with doctors. These findings support the idea that extended contact could be used as part of inter-professional education involving nursing students, aiming for a change in attitudes and professional stereotypes. Such interventions may have the benefit of improving nurses confidence on how doctors perceive them and creating more intentions to interact with them in the workplace.

1.2.5 Chapter 6

In the sixth chapter a focus group with health care professionals and health researchers is presented. The session was conducted in order to disseminate the findings of the previous research studies of this thesis, with the goal of gaining a user perspective on the applicability of the findings in the design of interventions to support health care professionals to improve attitudes and communication. Participants provided examples of communication breakdown and of inter-professional learning experiences. They agreed on the importance of promoting similar multi-professional learning modules, which were considered extremely useful in increasing knowledge and providing positive model of multi-professional cooperation.

1.2.6 Chapter 7: general discussion

In the final chapter, the objectives of the thesis are presented, alongside a summary of the findings of the three studies and focus group. Recommendations are made about how to apply intergroup contact strategies to the hospital setting in order to improve attitudes and communication between nurses and doctors. Strengths and limitations of this work are discussed.

Chapter 2
Intergroup contact and reduction of prejudice

This chapter will present an overview of research on the effects of intergroup contact on prejudice. Starting from its first formal theorization by Allport in 1954, I will then present the results of the first meta-analysis of the effect of contact on prejudice, which was conducted by Pettigrew and Tropp in 2006. The results of this meta-analysis supported the hypothesis that high quality contact had a positive effect on the reduction of ingroup bias and prejudice. Three models developed in the 1980s will be presented and they are of particular importance for the understanding of how intergroup contact could be successful in intergroup contexts. These models explore conditions under which contact is effective in relation to the categories and group memberships of the people involved (the decategorization model, the categorization model, and the recategorization model). The review will then present two forms of indirect contact, extended and imagined contact, which were applied to the intergroup relations between nursing and medical students in Study 3 of this thesis. The main processes underlying both forms of indirect contact will be explained, alongside the presentation of relevant studies and reviews on their effects on the improvement of attitudes.

In order to explain why intergroup contact has positive effect on attitudes and prejudice, the literature review will then present two main areas in which research on intergroup contact has focused, regarding when and how intergroup contact works. I will present the main developments regarding moderators and mediators of intergroup contact, with a specific focus on those included in the research studies of this thesis; identification, stereotypes and intergroup anxiety. Mediators and moderators that have been identified for extended and imagined contact will also be presented.

Finally, given that the main focus of this thesis is understanding how inter-professional relations between nurses and doctors can be improved, I will finish the chapter by presenting applications of intergroup contact research to the hospital setting. This will include intergroup contact based interventions as part of inter-professional education (IPE) programs for university students with a health care background. Arguments regarding the potential for the application of the contact hypothesis in the hospital setting will be reported.

2.1 The nature of contact

Intergroup contact has been defined as “face to face interactions between members of clearly defined groups” and has been extensively investigated by social psychologists and other social scientists as a means for improving relations between members of different groups for over 60 years (Pettigrew & Tropp, 2006). While not the first researcher to investigate intergroup contact, social psychologist Gordon Allport developed the theory which has provided the grounding for the extensive body of work on intergroup contact which has developed since. In Chapter 16 of his book “The Nature of Prejudice” (1954), Allport analysed the effects of contact on attitudes and levels of prejudice experienced by members of different groups. He argued that mere contact would not lead to a peaceful resolution of previous competition and conflict between the groups: the final effects depend on the *nature* of contact itself. Several variables were hypothesised to predict the effect of contact on attitudes: quantity of contact, status, role, social atmosphere, personality of the individuals experiencing contact, and areas of contact.

Quantity of contact refers to the frequency and duration of the interaction, and the number of people involved. According to Allport, minority and majority groups may have differences in status during the interaction, which might affect the quality of the contact and subsequently their attitudes. Moreover, the types of activities in which people could engage during contact may be cooperative or competitive. Allport mentioned several elements of the social atmosphere: segregation or egalitarianism, voluntary or involuntary interactions, real or artificial contact, intimate or transient. Additionally, contact could be perceived in terms of intergroup relations or not, and individuals could be perceived as typical or exceptional members of their own group. Regarding the personality of the people in contact, Allport considered the initial prejudice held by the members interacting, how deeply they believed in it, their fear in life, their previous experience with interacting with members of the outgroup, their demographic information such as age and education, and other personality factors. Lastly, the author listed eight different areas in which contact could happen: casual, residential, occupational, recreational, religious, civic, political, and goodwill intergroup activities. All the six variables described above could affect, separately and combined with one other, how intergroup contact leads to peaceful resolution of intergroup conflict. In order to develop guidelines on how

contact could reduce conflict, Allport argued that researchers need to consider the specific role acted by each of these variables.

In order to analyse the complexity of the problem of contact, Allport considered each area of contact and its effect of intergroup relationships. As mentioned earlier, he argued that simply meeting many members of other groups would not reduce prejudice as casual contact happens in a superficial way and often increases negative attitudes: people tend to refer to their previous knowledge and focus specifically on particulars that confirm their negative stereotypes. In opposition to this negative effect of casual contact, Allport reported that the development of friendships with members of another group decreases hostilities with the group as a whole. Intercultural education was described as having a role in increasing the knowledge of cross group friendships through "social travel". Specifically, experiences of travelling and living with members of an outgroup would result in increased knowledge about their habits and their lives. Allport noted that an additional technique successfully used in education was psychodrama, which aims to generate empathy towards other people through taking their role and perspective. Allport underlined that members of different groups need to have equal status when interacting, for example in occupational settings. A further element is the goal of the interaction itself: in order to avoid that the contact experience is perceived as an isolated episode, people need to do things together and have common objectives: ethnicity would then become of secondary importance and the focus of the interaction would be the common goal between the groups. Allport ended his chapter on contact with some general predictions on the situational variables that could lead to the improvement of intergroup attitudes. According to his findings, prejudice could be reduced when members of different groups have (1) equal status in the pursuit of (2) a common goal. The interaction should happen with (3) institutional support and (4) should lead to the perception of common humanity and interests.

2.2 The effects of contact on prejudice

Following Allport's formulation of the intergroup contact theory, extensive research has been conducted on various aspects of intergroup contact. In order to reconcile the different views regarding the efficacy of intergroup contact, in 2006 Pettigrew and Tropp conducted the first meta-analysis considering all the published and unpublished studies on intergroup contact: their data included 515 studies, with 250,000 participants from 38 nations.

According to their analysis, ninety-four per cent of the studies report a negative relationship between contact and prejudice, with a mean correlation (*r*) of -.21. These results provide evidence that greater contact is associated with less prejudice between the members of the group who interacted with one another (Pettigrew & Tropp, 2006). The authors concluded that this effect depended on participant selection, publication bias and quality of research (Pettigrew et al., 2011). When hypothesising the explanation of the selection bias, the authors reported that the effect was larger (*r*=-.28) for the studies where participants had full choice of being in contact than in those studies where people had no choice (*r*=-.20). In contrast with the publication bias hypothesis, unpublished studies reported higher correlations (*r*=-.24) than published studies (*r*=-.20). Lastly, experimental studies had higher correlations (*r*=-.33) suggesting that rigorous research was responsible of the relationship between contact and prejudice. The meta-analysis also revealed that among studies in which Allport's optimal conditions were met, the correlation between contact and prejudice was stronger (*r*=-.29) than among the studies in which the conditions were not met (*r*=-.20). As in these last types of studies the effects of contact were still significant, the four optimal conditions were considered facilitators of the reduction of prejudice rather than necessary conditions.

Some differences emerged in the effects of contact on prejudice between majority and minority groups: the effect was stronger for majority groups (*r*=-.23) rather than for minority groups (*r*=-.17) (Tropp & Pettigrew, 2005). Out of the 698 studies, only 20.3% considered the effects of contact for members of minority status groups, and 7% considered the outcome for both majority and minority groups. The authors reported that minority-majority status significantly predicted contact-prejudice effects. Furthermore, they found a relationship between the four optimal conditions and whether the status of the target groups of the studies considered: Allport's conditions predicted contact-prejudice effects stronger for the majority status group than for the minority group. The issue of the effects of status on the efficacy of intergroup contact will be addressed in Study 2 and in Study 3 of this thesis, with the introduction of further explanations of which could be the processes responsible for such differences, such as meta-stereotypes (Vorauer, Hunter, Main, & Roy, 2000 & Roy, 2000).

Since Pettigrew's meta-analysis in 2006, intergroup contact research has expanded considerably. Pettigrew and Tropp (2011) presented an updated summary of the development of intergroup contact research identifying the

main areas in which research on intergroup contact has developed since its first formulation in 1954. The authors also presented the development of intergroup contact studies: between 2000 and 2009 over 200 intergroup contact studies had been conducted. The main areas of expansion of intergroup contact research were on the outcome variables included in the studies, the groups involved, mediators and moderators of intergroup contact, cross group friendship and indirect forms of contact; that is to say, when intergroup interaction does not happen directly face to face. An example of indirect contact is extended contact, which involves knowing someone in the ingroup who has a friend in the outgroup (Pettigrew et al., 2011). Pettigrew and Tropp reported that prejudice was not the only dependent variable involved in the investigation of the effects of contact. Among the main outcome variables, they included intergroup anxiety, empathy, ingroup and outgroup trust and identification. Moreover, the authors of the article presented evidence that intergroup contact had been successfully applied for several categories of stigmatized groups, such as sexual orientation (r=-.27), physical disability (r=-24), race and ethnicity (r=-.21), mental disability (r=-.21), mentally ill (r=-.18) and elderly (r=-.18). Pettigrew and Tropp reported that an important area of research that had developed was the investigation of *when* intergroup contact works, that is the study of its moderators, for example group salience. The study of the processes underlying intergroup contact was then expanded regarding *how* contact works, that is the study of its mediators, such as increased knowledge, anxiety reductions and induced empathy (Pettigrew & Tropp, 2008). Research on mediators and moderators of intergroup contact relating to extended and imagined contact will be presented later on in this chapter. The authors also presented the importance of cross group friendship, a specific form of contact which meets the four optimal conditions for high quality positive contact and which induces self-disclosure, an important mediator of intergroup contact. Lastly the first developments of research on indirect contact were presented, which is based on the argument that in segregated contexts cross group friendship is not easily possible. In the following paragraphs I will present advances in research of intergroup contact referring to the main areas identified by Pettigrew and Tropp: I will report three models of how intergroup contact works, specific types of intergroup contact including cross group friendship, extended and imagined contact, and mediators and moderators of both direct and indirect forms of contact.

2.3 Three models of intergroup contact

Following Allport's (1954) formulation of the intergroup contact hypothesis, in the 1980s several contact models were proposed, focusing on when and how contact would improve intergroup attitudes (Brewer & Miller, 1984; Gaertner, Mann, Murrell, & Dovidio, 1989; Hewstone & Brown, 1986). The decategorization model by Brewer and Miller (1984) is an interpersonal approach: during contact the salience of group memberships should be minimized in order to increase a more interpersonal way of thinking. This personalized contact would help to focus on personal information that would then disconfirm stereotypes, and help to consider the member of the outgroup as unique. The authors explained that this type of interaction gives alternative information to be used in future contacts and to be extended also to different groups and situations. Brewer and Miller also argued that Allport's optimal conditions reduce prejudice and bias because they help to decategorize interactions with members of other groups.

The recategorization model of intergroup contact suggested that in order to have a maximum effect on the reduction of prejudice, members of different groups should perceive themselves as members of a superordinate entity (Gaertner, Mann, Murrell, & Dovidio, 1989). Through this process, members of the outgroup should be seen as members of a new ingroup: ingroup and outgroup members would share a "common ingroup identity". The main problem with this model is that recategorization requires individuals to renounce their original group membership in order to accept the superordinate one and this may not be possible in many social groups. In order to compensate for this limitation, Gaertner and colleagues suggested a "dual identity" in some intergroup contexts, whereby both the salience of the original categories and the common ingroup are simultaneously maintained.

Hewstone and Brown's categorization model (1986) focused on the problem found in the previous two models: the personalized or ingroup based contact and the generalization to other outgroup members. The authors argued that in a depersonalized context the member of the outgroup would not be seen as a member of their own group and the positive outcomes of the contact would not be generalized to other group members. In the decategorized contact, people would cognitively consider the others as individuals not connected with their group and interpret the positive contact as an exception and the member as not prototypical of his own group (Hewstone & Brown, 1986). On the contrary, when group categories are salient, the positive outcomes towards a member of an outgroup that is considered as typical of

his group, could be extended to all the other members. To avoid the "assimilation" risk due to interpersonal or intragroup contact, in a more intergroup approach individuals are not obliged to renounce their own identities. The second idea the authors focused on was the "mutual intergroup differentiation": during contact members of different groups should recognize superiorities and inferiorities of both groups. Categories salience is easier to induce than decategorization and it could be stronger for those individuals who strongly identify with their own group. However, there could be a risk of maintaining the salience of group categories: the perceptions of groups differences could increase and this could produce fear, anxiety and negative feeling towards the outgroup. The other negative consequences are cognitive and motivational processing biases, defensive behaviour and avoidance of future contact with the outgroup.

2.4 A specific type of intergroup contact: Cross group friendship

Although contact can reduce prejudice when social groups have the opportunity to interact positively with one other, there are many contexts in which groups do not have many opportunities to engage in contact. As Allport (1954) previously mentioned in his chapter on intergroup contact, having friends among members of relevant outgroups could be considered as a fifth condition to allow interactions to reduce prejudice. Pettigrew (1998) argued that the four optimal conditions, that is, common goal, cooperation, institutional support and equal status, lead naturally to cross group friendship. Cross group friendship is considered a high quality intergroup interaction, explaining the reason why it could be extremely effective in improving intergroup attitudes. The author analysed a sample of 3806 respondents from four European countries, measuring type of intergroup contact (friends, neighbours, co-workers) and respondents' attitudes towards several minority groups. Results underlined that people with cross group friendships reported more sympathy and admiration (measures of affective prejudice) for minority members. These positive feelings were also extended to other minority groups. Additionally, those with cross-group friends were also more liberal about immigration policy (Pettigrew, 1998). Levin and colleagues investigated the cause and consequences of ingroup and outgroup friendship among several ethnic groups in a multicultural environment, exploring the effects of intergroup friendship on ingroup bias and intergroup anxiety. The longitudinal study involved 3877 students

starting their freshman year of college at UCLA in 1996, of which 36% were Asian American, 32% were White American, 18% were Latino, 6% were African American and 8% of another ethnicity. Results showed that students who had more intergroup friends showed less ingroup bias and intergroup anxiety at the end of the third year of college (Levin, Van Laar, & Sidanius, 2003 2003). Cross group friendship has been effective in the reduction of prejudice towards other groups, such as in the context of sexual orientation. Licciardello and colleagues (2014) explored the effects of cross group friendship and gender on attitudes towards homosexuals and on social dominance orientation. Participants were 198 high school students of two Sicilian towns, 93 were male and 105 were female. The measures included prejudice and attitudes towards homosexuals, social dominance orientation, and cross group friendship with homosexuals. Results indicated that participants who reported to have at least one friend who was homosexual, showed significantly lower levels of prejudice, lower tendencies towards social dominance and less apprehension towards future interactions with homosexuals, compared to those who reported to have only one friend, and compared to those participants who reported to have none friends in the outgroup (Licciardello, Castiglione, Rampullo, & Scolla, 2014).

2.5 Indirect intergroup contact

2.5.1 Extended contact

According to the extended contact hypothesis (Wright, Aron, McLaughlin-Volpe, & Ropp, 1997), learning that people in our ingroup have positive relations with outgroup members has some of the same benefits as direct contact, including more positive outgroup attitude. Extended contact could be more useful for those situations where there are less opportunities for direct contact or when such opportunities do not depend on personal past experiences, such as among children in schools (Cameron & Rutland, 2006; Paolini, Hewstone, Cairns, & Voci, 2004; Turner et al., 2008). This is because one does not need to personally know any outgroup members in order to benefit. Researchers reported evidence of those mechanisms which are responsible in increasing the effects of extended friendship on the reduction of prejudice. As extended contact is expected to reduce negative expectations of future interactions with outgroup members, it was hypothesised to reduce prejudice via a reduction of intergroup anxiety. Sustaining this hypothesis, Paolini and colleagues (2004) analysed Catholic and Protestant University students' responses on direct and indirect cross

group friendship, levels of intergroup anxiety, outgroup attitudes and perceived variability. Results indicated that indirect friendship affected prejudice, mediated by intergroup anxiety (Paolini, Hewstone, Cairns, & Voci, 2004).

A recent review on indirect contact was conducted by Vezzali and colleagues (2014) who distinguished extended contact, defined as knowing of someone in the ingroup having friends with a member of the outgroup, and vicarious contact, defined as the observation of the interaction between ingroup and outgroup members (Vezzali, Hewstone, Capozza, Giovannini, & Wölfer, 2014). Their review underlined how extended intergroup contact had positive effects in various contexts, situations and targets groups, such as Whites and ethnic minorities in US and Europe (Vezzali, Capozza, Giovannini, & Stathi, 2012), national groups (Eller, Abrams, & Gomez, 2012), religious groups (Hutchison & Rosenthal, 2011) and homosexuals (Hodson, Choma, & Costello, 2009). For example Vezzali and colleagues (2012) explored the effects of direct and extended contact on implicit prejudice. Participants were Italian school children (age between 7 and 9). Children completed an IAT (implicit association test), as measure of implicit prejudice towards immigrants and subsequently they were interviewed around direct and extended contact with immigrants. Results revealed that extended contact reduced implicit prejudice when direct contact was low. Similarly, Eller and colleagues (2012) investigated the effects of extended contact on prejudice in relation to the amount of previous direct contact with the outgroup. In study 1, participants were 70 US White undergraduate psychology students. They responded to a questionnaire on direct and extended contact with Mexicans, and affective prejudice towards them. Results indicated that when direct contact was low, extended contact affected prejudice, and when direct contact was high, extended contact did not have effect on the outcome variable.

Positive effects of extended contact have been found among children, adolescents, students and adults (Andrighetto, Mari, Volpato, & Behluli, 2012), in schools and at the workplace (Vezzali, Giovannini, & Capozza, 2010). Andrighetto and colleagues (2012) conducted a study with 171 university students from Kosovo (who identified as Albanian). Participants were asked to respond to a questionnaire on direct and extended contact with Serbian people, ingroup identification and common ingroup identification, outgroup trust, competitive victimhood and infrahumanization, that is the attribution of primary and secondary emotions to the ingroup and

to the outgroup. Results indicated that both extended contact and ingroup identification negatively predicted competitive victimhood by increasing outgroup trust and perspective taking, and by reducing tendencies to infrahumanaize the outgroup.

In contrast to studies on extended contact, research on vicarious contact has been mainly experimental. The first study using the vicarious contact paradigm has been conducted by Wright and colleagues (1997), in which participants were asked to watch an ingroup-outgroup interaction through a one-way mirror (Wright et al., 1997). More recent forms of vicarious contact have been involved the use of the media, and they consist in specially written stories, books, newspapers, radio programs or video interactions. Similarly to extended contact, the effects of vicarious contact have been generalized to several groups, such as White people and ethnic minorities, disabled, homosexual and mental health consumers (Walker & Scior, 2013). It has been effective across several age groups, from children to adults (Mallett & Wilson, 2010). Walker and Scior (2013) developed two interventions to decrease stigma towards intellectual disabilities in the lay public. Participants in both interventions were asked to watch a video on people with intellectual disabilities. In the first intervention the video was designed to enhance common goals between the groups, in the second intervention the video focused on harassment and discrimination. Results showed that watching the two videos produced effects on inclusion attitudes and desire of social distance. Specifically there was a positive increase of attitudes of empowerment and similarity and a decrease of attitudes of sheltering and of desire of social distance.

2.5.2 Imagined contact

Another type of indirect contact is imagined intergroup contact, the mental simulation of a social interaction with a member of another group (Stathi & Crisp, 2008; Turner, Crisp, & Lambert, 2007). During the mental simulation, concepts associated with a successful intergroup interaction are activated, such as feeling comfortable and less apprehensive about the prospect of a future interaction with members of the outgroup (Blair, Ma, & Lenton, 2001). This reduces anxiety, which in turn results in more positive attitudes towards the other group. While imagining contact, people may also think more about how they would feel during the interaction, and what they would learn about the outgroup member and the outgroup in general. The imagined contact task has two main components: simulation and positive tone of the instructions. Firstly, the task has proven to be more effective when it involves

a simulated interaction with a member of the outgroup. In case of the absence of this simulated interaction, the task could have negative effects on attitudes (Turner, Crisp, & Lambert, 2007). In study 2, twenty-four undergraduate students were randomly allocated to one of two conditions, the imagined contact or the control condition. In the imagined contact condition participants were asked to imagine an interaction with an elderly person, while in the control condition participants were asked just to think about the category of elderly people. Results indicated that there was a significant intergroup bias in the control condition, while imagining an interaction with a member of the outgroup reduced prejudice towards the whole category. This study presents an argument in favour of the importance of specifying in the task instruction to imagine an interaction with a member of the outgroup.

A second characteristic that researchers have found to be necessary in order to produce successful effects of the imagined contact task on attitudes, is the positive tone of the instructions. Stathi and Crisp (2008) compared the effects of neutral and positive instructions in imagined contact tasks. In study 1, 94 university students were allocated to ether a positive contact condition or a neutral contact condition (Stathi & Crisp, 2008). The intergroup relation investigated was the one between Indigenous (minority of the population) and Mestizos (majority of the population) in Mexico. After the task, participants were asked to complete a measure of the projection of positive and negative traits to the self and the outgroup. Results indicated that the neutral contact condition did not produce significant effects for ether of the two groups. Additionally, the positive contact condition produced positive effects only for the majority group. These results support the importance of maintaining a positive tone. The prototypic version of the instruction of the imagined contact task would then be: “We would like you to take a minute to imagine yourself meeting [an outgroup] stranger for the first time. Imagined that the interaction is positive, relaxed, and comfortable” (Crisp & Turner, 2012).

Miles and Crisp (2014) provide a first meta-analysis of imagined contact effects, testing for moderators arising from group and study design characteristic (Miles & Crisp, 2014). The effects of imagined contact on four measures of intergroup bias were studied: attitudes, emotions, intentions and behaviour. The meta-analysis showed that imagined contact had a reliable small to medium effect across all measures of intergroup bias, with an overall sample-weighted effect of $d+ = 0.35$. The sample included 71

studies and 5770 participants. The authors compared the effectiveness of imagined contact across the four types of intergroup bias. Results indicated that imagined contact had a larger effect on intentions and attitudes. The authors classified the majority of the studies in eight different groups, based on the outgroup involved. Imagined contact had a positive effect on ingroup bias for all types of outgroup, such as nationality (Stathi & Crisp, 2008), mental illness (West, Holmes, & Hewstone, 2011), sexual orientation (Turner, West, & Christie, 2013) and religion (Turner & West, 2012). The authors found that the effects of imagined contact was reliable for both adult and children. Age of the participants was found to be a moderator when considered as continuous variable, due to the fact that imagined contact was more effective for children than for adults. In order to explain this difference, the authors suggested that there were differences in the design of studies with younger and older participants: studies designed for children tended to include more than one session and presented more details regarding the mental simulation task. To conclude, their results provided evidence for the effects of imagined contact on all four dependent variables, especially on behaviour. This could support the argument that imagined contact interventions could have an advantage over other forms of intergroup contact interventions, which traditionally aim to alter precursor of behavioural intentions.

2.6 Mediators of intergroup contact:

In order to understand the processes that take place during intergroup contact interactions that could then lead to an improvement of intergroup attitudes, researchers had focused on identifying the mediators of the effect of contact on prejudice. The first meta-analytic test of the three most common mediational processes was conducted by Pettigrew and Tropp (2008). The three most common mediators were knowledge, intergroup anxiety and empathy. In this paragraph I will present research supporting the role of these three mediators, including among them other cognitive and affective variables, such as self disclosure. After presenting mediators and moderators of direct contact, I will present specific mediators and moderators for both extended and imagined contact.

2.6.1 Knowledge and stereotypes

The most traditional mediator of intergroup contact, which has been cited by Allport (1954) in the first theorization of intergroup contact, is knowledge: positive interactions with outgroup members will produce more accurate and

less prejudice-based perceptions of the other group. Stereotyping is defined as the attribution to one person of those characteristics which are considered as common to all their group members (Brown, 2011). Stereotypes are originated and reinforced by continuous exposure and socialization and they typically persist for a long period of time, reflecting the normative climate of the current society. Referring to Allport's formulation of intergroup contact, high quality interactions between members of different groups will decrease prejudice via a more detailed knowledge of the other group, that is the outgroup will be seen in a less stereotypical way. An example of a study on the effects of stereotypes and intergroup contact on attitudes towards several religious groups is Zafar and Ross's (2015). Undergraduate students from a Canada were asked to report their emotions, attitudes and stereotypes associated to Christians, Muslims, Hindus, Jews and Sikhs. In addition to these measures they were asked to report the quantity of extended contact with members of this group (Zafar & Ross, 2015). Results supported the hypothesis that intergroup contact and stereotypes predicted more positive attitudes towards the religious groups, after controlling for gender and social desirability effects.

To understand how prejudice could affect the accuracy of perceived differences between groups, it is necessary to first refer to two effects linked with group categorization and stereotyping: the exaggeration of differences between groups and the enhancement of similarities within the same group. When considering attributes of a relevant ingroup and outgroup, the ingroup is usually perceived as more heterogeneous and the outgroup as more homogeneous. An example of this effect is reported by Jones and colleagues (1981) who asked members of several university clubs to rate members of their own club and members of other clubs on many traits. Results reported that members of outgroups were seen as more similar to one another than members of the ingroup (Jones, Wood, & Quattrone, 1981). There are two main explanations of the outgroup homogeneity effects. Linville and colleagues (1989) suggested that knowing more members of the ingroup allows us to have more detailed information on differences between them. As outgroup members are not known, they are more likely seen as similar (Linville, Fischer, & Salovey, 1989). A second explanation by Park and colleagues (1991), refers to the abstract categories that people have in their head, which refer to a prototype of member of that category. Based on that typical person, people estimate the variability of the category (Park, Judd, & Ryan, 1991). When considering the ingroup, this is

perceived as more variable because the category itself is more important, and more concrete, due to the inclusion of the self.

Regarding group variability, Judd and Park (2008) argued that variability is strictly connected with the perceived stereotypicality of the groups and the perceived dispersion of these traits within the group. The perceived stereotypicality refers to the degree of which group members possess those dimensions. The perceived dispersion of the traits refers to the degree which outgroup members are perceived as similar on those dimensions. The perceived variability of stereotypes within a group has been studied in relation to the accuracy of stereotypes. When considering high prejudiced participants, they report stereotyped inaccuracy about the outgroup, overestimating the negative valence of the attributes that characterized outgroup members (Judd & Park, 2008). Following these arguments, not knowing many members of the outgroup will lead to a greater generalization of the attributes shared by group, and in case of prejudice towards the outgroup, there will be a greater generalization of negative attributes among its members. However, knowing more members of the outgroup (through high quality intergroup contact), will provide opportunity for more detailed information about outgroup members and this would decrease negative stereotypes with a subsequent improvement of accuracy of the categories involved in the interaction. Furthermore, greater category accuracy will increase the perception of variability within the outgroup, which is typically associated only with the ingroup. Recent research conducted by Brauer and colleagues (2011) presented support on the mediational role of stereotypes on the reduction of prejudice. In study 1, participants who read a text on Moroccans as an “heterogeneous group” reported less prejudice towards the outgroup. This effect was mediated by the perception of variability of the outgroup (Brauer & Er-Rafiy, 2011). That is, when participants read about the outgroup as heterogeneous, they increased the perceived variability of this group. This change in the perception of variability was associated with a reduction of the prejudice towards Moroccans. In study 3, participants who were exposed to a poster regarding a greater variability among Arab’s were more likely to help an Arab confederate. This effects was mediated by an increased perception of group variability induced by the poster.

Several studies have looked at the effects of positive contact on intergroup evaluations and perceived group variability, and different mechanisms have been identified in explaining the change of these two components of stereotypes. However, positive evaluation of the outgroup is not necessary

associated with perceived variability of the outgroup, as demonstrated by Wolsko and colleagues (2000) who investigated the effect of contact on stereotypes about Latinos held by Caucasians participants. After filling a questionnaire on initial perception of Latinos, participants took part in an intergroup session in which they interacted with a fellow graduate whose behaviour ether disconfirmed or confirmed Latino stereotypes (Wolsko, Park, Judd, & Wittenbrink, 2000). The researchers measured two components of stereotypes: evaluation of the group and the perceived group variability. Results indicated that after contact outgroup evaluations were more positive, however the outgroup was not perceived as more variable. These results support the idea that high quality contact increases the evaluation of the outgroup. The authors suggested two conditions in order for contact to produce a change in perceived variability of the outgroup: contact needs to disconfirm negative stereotypes and outgroup members need to be perceived as typical of their own group. These results identified a second cognitive factor that mediates the effect of contact on prejudice, that is group typicality (Hewstone & Brown, 1986): in order for contact to be successful the outgroup member needs to be seen as typical of their own group to allow the generalization of the change of attitudes following positive contact from the single individual to the whole group. Studies that failed to extend the positive effects of contact to the general group have been explained according to a lack of typicality of the outgroup members with which participants interacted. Ortiz and Harwood (2007) conducted a study on the role of perceived group typicality and intergroup contact on attitudes. University students who watched two American TV shows, in which intergroup interactions were present, took part in the study. Participants who perceived the main character of the TV show as more typical of his group, reported lower levels of social distance (Ortiz & Harwood, 2007).

2.6.2 Anxiety

The most commonly studied affective mediator of contact is intergroup anxiety, defined as a negative affective process that is experienced when anticipating future contact with an outgroup member (Brown & Hewstone, 2005). Stephan and Stephan (1985) hypothesised that when encountering a member of the outgroup for the first time people feel apprehensive and anticipate negative outcome of intergroup interactions. The authors report the antecedents of intergroup anxiety to be minimal previous contact, conflict, negative stereotypes and status differential between the two groups (Stephan & Stephan, 1985). A recent review of the theoretical models and

studies on intergroup anxiety has been conducted by Stephan (2014), in which intergroup anxiety is comprised of three interrelated components: affective, cognitive and physiological (Stephan, 2014). According to the author, affectively anxiety is experienced as negative and aversive and it is expressed with feelings associated with unease, apprehension and distress. Cognitively intergroup anxiety is expressed by the expectations that interaction with members of specific outgroups could have negative consequences. Finally, regarding the physiological component of intergroup anxiety, research has found that when intergroup contexts are salient, people could experience elevated galvanic skin responses, increased systolic blood pressure and increased cortisol levels. Moreover, it is suggested that intergroup anxiety is caused by personal characteristics, negative attitudes, personal experiences and situational factors. The review conducted also explored the relationship between intergroup anxiety and intergroup contact, arguing that neutral and positive contact reduces intergroup anxiety because it provides positive information about outgroups, reducing negative stereotypes and increasing empathy towards them, it develops skills regarding interaction with others and it undermines the perceived threat of those outgroups.

Intergroup anxiety has been identified as a mediator of both interpersonal and intergroup contact. Islam and Hewstone (1993) investigated inter-religious contact between Muslims and Hindus in Bangladesh. Participants reported quantity and quality of previous contact, and whether the contact was interpersonal or intergroup. Following those measures they also reported the levels of intergroup anxiety, perception of group variability and attitudes. Results underlined how intergroup anxiety partially mediated the effects of quality and quantity of contact on attitudes and group variability. That is higher quality and greater quantity of contact was associated with the reduction of intergroup anxiety. Lower intergroup anxiety was associated with more positive attitudes and the perceptions of greater variability of the outgroup (Islam & Hewstone, 1993). These results are consistent with Pettigrew and Troop's meta-analysis of mediators of intergroup contact which revealed that positive contact reduces anxiety related to intergroup interactions (Pettigrew & Tropp, 2008). More recently, West and colleagues (2014) explored the mediation effect of intergroup anxiety of the effects of contact on prejudice towards people with schizophrenia. In study 2 participants were 22 university students who were asked to complete a questionnaire on previous contact with people with schizophrenia, intergroup anxiety, fear, attitudes, and desire of avoidance towards the outgroup.

Results reported that positive prior contact predicted lower levels of intergroup anxiety, that predicted more positive attitudes.

Intergroup anxiety has been identified as an important mediator also of extended and imagined contact. Turner and colleagues (2008), investigated whether extended contact reduced attitudes in the context of South Asian and White British, by reducing anxiety, generating positive ingroup and outgroup norms, and including the outgroup to the self. Results supported the hypothesis: all four variables mediated the effect of extended contact on attitudes. Moreover, the mediators were found to work simultaneously, rather than one predicting the other (Turner et al., 2008). A recent study on the effects of intergroup anxiety during extended contact was conducted by Capozza and colleagues (2014). Participants were 202 undergraduate psychology students, all heterosexuals. They were asked to complete a questionnaire including measures of cross group friendship and extended contact with people who were homosexual, infrahumanization, perceived ingroup norms, perceived outgroup norms, inclusion of the outgroup of the self, intergroup empathy and intergroup anxiety. Regarding the specific role of intergroup anxiety, results indicated that the relation between extended contact and enhanced humanization was mediated by the inclusion of the outgroup to the self that was associated to lower intergroup anxiety (Capozza, Falvo, Trifiletti, & Pagani, 2014).

In line with research on more direct forms of contact, imagined contact has been found to be effective in reducing negative attitudes towards relevant outgroup members by a reduction of intergroup anxiety (Turner et al., 2007; West, Holmes, & Hewstone, 2011). In study 3 conducted by West and colleagues (2011) thirty-eight undergraduate students were randomly allocated to the imagined contact condition with a person with schizophrenia or the control condition imagining an interaction with a person without schizophrenia. Researchers measured the levels of anxiety and attitudes towards people suffering from schizophrenia. Results showed that imagining a positive interaction with an outgroup member had an effect on attitudes via the reduction of intergroup anxiety (West et al., 2011). A more recent study conducted by Prior and Sargent-Cox (2014) revealed that imagining contact with older adults was successful in improving expectations of aging. Moreover, the effects of imagined intergenerational contact were mediated by a reduction of aging anxiety. That is, participants who imagined a positive interaction with an older person reported better expectations about aging

through a reduction of the anxiety associated to aging (Prior & Sargent-Cox, 2014).

2.6.3 Empathy and Perspective Taking

A second mediator considered in Pettigrew and Tropp's (2008) meta-analysis was empathy. Empathy is defined as the ability to feel the same emotional state of others and involves imagining how other people perceive the situation and feel as a consequence of it. Several studies have underlined that feeling empathy towards several outgroups, such as people with AIDS or homeless people, produced an improvement of attitudes towards these stigmatized groups (Batson et al., 1997). Empathy produces as consequence an overlap between the self and others, resulting in the perception of others more self-like (Galinsky & Moskowitz, 2000). Considering that one of the causes of ingroup bias is the association of the ingroup with the self, higher empathy would extend those traits attributed with the self, to the outgroup. This attribution of self related traits to the outgroup members towards empathy is felt, would result in more positive evaluation of them, which could also be generalized to the outgroup as a whole. In the context of intergroup contact, empathy can increase the perception of common humanity and shared purpose to the other group, similarly to the effects of a shared common identity. Empathy could increase motivations to restore justice towards the members of the outgroup for whom empathy is felt.

Swart, Hewstone, Christ and Voci (2011) considered empathy as a mediator in a study conducted with coloured (South African label referring to people with mixed ethnic origins) high school children in South Africa. The longitudinal study measured the effects of cross-group friendship on outgroup attitudes, perceived variability and negative action tendencies (Swart, Hewstone, Christ, & Voci, 2011). The researchers tested affective empathy and intergroup anxiety as mediators. Results showed that outgroup friendship lead to greater perception of outgroup variability and more positive attitudes, reducing anxiety and increasing empathy. In a recent study conducted by Capozza and colleagues (2014) participants were 202 undergraduate psychology students, all heterosexuals and they answered a questionnaire including measures of cross group friendship and extended contact with people who were homosexual, infrahumanization, perceived ingroup norms, perceived outgroup norms, inclusion of the outgroup of the self, intergroup empathy and intergroup anxiety. Regarding the specific role of empathy, cross group friendship was directly associated with higher

empathy towards the outgroup. Vezzali and colleagues (2014) reported a study on the mediating role on empathy on the effects of extended contact among Italian elementary students towards Immigrants. Participants were asked to report social distance, outgroup stereotypes and behavioural intentions towards the outgroup. Results indicated that extended contact was associated with greater empathy, which was in turn related to less social distance and a decrease of negative stereotypes associate with the outgroup.

Perspective taking is the cognitive component of empathy and it involves the ability to take the perspective of other people, resulting in a greater understanding of the stigmatization experienced. It has been found to have a role in the reduction of negative stereotypes and ingroup bias, subsequently to an inclusion of outgroup members with the self (Galinsky & Moskowitz, 2000). That is, more traits typical of the self would then be extended to the whole group, leading to a more positive evaluation of the outgroup, as well as of the ingroup (Cadinu & Rothbart, 1996). Perspective taking has been identified as a mediator of the effect of contact on prejudice, as the positive effects of intergroup contact could be explained by an increase in the ability of taking the perspective of the person with whom ingroup members interact. As a consequence of higher perspective of their point of view, ingroup bias would be reduced as a consequence of the greater inclusion of the outgroup to the self, which is associated with perspective taking and empathy.

Aberson and Haag (2007) analysed self-reported measures of White Americans on quality and quality of contact, perspective taking, intergroup anxiety, and explicit bias towards African Americans. Results showed that having increased quantity contact and better quality of contact with African Americans were associated with increased perspective taking, that was then associated with lower anxiety. This means that perspective taking has a role in making contact effective by reducing the levels on intergroup anxiety during contact. Moreover, a decrease in anxiety was associated with more positive attitudes and stereotypes about the outgroup. These results showed that perspective taking had an impact on explicit bias via the reduction of intergroup anxiety (Aberson & Haag, 2007). A more recent study on the role of empathy and perspective taking during contact is Castiglione and colleagues' study in which they measured attitudes towards homosexuality, intergroup anxiety, cross group friendship, emotional empathy, cognitive empathy, distress and compassionate empathy (Castiglione, Licciardello, Rampullo, & Campione, 2013). Results revealed positive correlations

between intergroup anxiety and attitudes towards gay men and negative correlation between empathy and attitudes towards gay men. Additionally, intergroup anxiety was negatively related with empathy.

2.6.4 Self disclosure

An additional affective mediator of intergroup contact is self disclosure, conceptualized as the presentation of important aspects of the self to other people. Self disclosure has been defined as the presentation of information of intimate and personal nature to others (Ensari & Miller, 2002). It has been underlined to be important in creating interpersonal relationships and it is linked with more positive intergroup attitudes (Brown & Hewstone, 2005): disclosing important information to other people reduces intergroup anxiety, as people feel more in control on how other perceive them. Self-disclosure is also related to higher levels of empathy as when disclosing to others, it is easier to understand how they feel. In addition to this, it is associated with the decrease in the use of stereotypes during interactions, as the focus changes on individual characteristics of the people involved in the interactions. A study conducted on the role of self disclosure was conducted by Tam and colleagues (2006) investigating the role of self-disclosure on the effects of quality-quantity of contact with grandparents on attitudes towards older people. Results indicated that quality of contact was related to self-disclosure and explicit attitudes, while quantity of contact was associated with self-disclosure and implicit attitudes towards older people. Self-disclosure mediated the effect of contact on empathy and anxiety, which then mediated the effects of disclosure of attitudes towards elderly people (Tam, Hewstone, Harwood, Voci, & Kenworthy, 2006).

Turner and colleagues (2007) presented four studies on the mediator role of self-disclosure and intergroup anxiety on the reduction of explicit and implicit prejudice (Turner et al., 2007). In study 1 sixty white participants were recruited from two elementary schools in the UK. The questionnaire contained measures of intergroup group friendship between White British and Asian, intergroup anxiety, self-disclosure, explicit and implicit outgroup attitudes. Results indicated that cross-group friendship was associated with greater self-disclosure with a member of the outgroup, which was associated with more positive explicit attitudes. In study 3 a more comprehensive measure of self disclosure was presented, including reports of frequency of self disclosure and intended self disclosure. Results showed that self disclosure mediated the effects of cross group friendship and extended contact on explicit attitudes. Moreover in study 4, a more detailed

explanation of how self disclosure affects explicit outgroup attitudes was presented. Participants were 142 White British undergraduate students. They were asked to complete a questionnaire on cross group friendship with Asian friends, self disclosure between participants and South Asians, frequency of disclosure, empathy towards the outgroup, the importance of interactions with the outgroup, intergroup trust and explicit outgroup attitudes. Results revealed that the more self disclosure participants experienced with members of the outgroup, the more they felt important contact with them to be, the more they trusted them and felt empathy towards the outgroup. Empathy, importance of contact and trust were associated with more positive explicit outgroup attitudes.

2.6.5 Other mediators of extended contact: ingroup and outgroup norms, inclusion of others to the self, outgroup trust

While investigating the processes involved during extended contact, researchers predicted that knowing that ingroup members have friends with outgroup members also implied knowing of positive intergroup behaviours, which is associated with the knowledge of ingroup and outgroup norms around cross group interactions. Extended contact should then reduce prejudice by creating positive ingroup and outgroup norms (Turner, Hewstone, Voci, & Vonofakou, 2008). In study 1 participants were 68 men and 74 women recruited at a British University. They were asked to fill a questionnaire on measures of cross group and extended contact as predictors, perceived ingroup norms, perceived outgroup norms, intergroup anxiety and inclusion of the outgroup in the self as mediators, and attitudes towards Asians as criterion. Results indicated that extended contact was associated with more positive perceptions of ingroup norms relatively to the outgroup which was associated with more positive outgroup attitudes. Moreover, extended contact was associated with more positive perceptions of outgroup norms about the ingroup, that was associated to more positive outgroup attitudes.

Aron (1991) described close relationships as inclusion of others to the self. Observing ingroup members, which are highly included to the self, having friends with outgroup members, implies an inclusion of outgroup members to the self. This process would explain a change in attitudes towards the whole outgroup (Aron, Aron, Tudor, & Nelson, 1991). A recent study on the mediation role of the inclusion of others to the self (IOS) was conducted by Capozza and colleagues (2014) in which participants, 202 undergraduate psychology students, all heterosexuals, answered a questionnaire including

measures of cross group friendship and extended contact with people who were homosexual, infrahumanization, perceived ingroup norms, perceived outgroup norms, inclusion of the outgroup of the self, intergroup empathy and intergroup anxiety. Results identified the key role of inclusion of others to the self: the relationship between extended contact and enhanced outgroup humanization was mediated by inclusion of others to the self, which in turn was associated with lower anxiety.

A further test of mediators of extended contact was conducted by Tam and colleagues (2009), who investigated the role of outgroup trust on the effect of extended cross group friendship between Catholic and Protestant University students in Northern Ireland. Outgroup trust was defined as a positive bias that implies positive expectation of the outgroup's behaviour towards the ingroup. Results indicated that extended contact was positively associated with higher outgroup trust, which in turn was related with more positive behavioural tendencies towards the outgroup.

2.6.6 Other mediators of imagined contact: outgroup trust, availability of a positive script

Similarly for direct contact and extended contact, researchers have focused on identifying mediators of imagined contact. An additional mediator identified is outgroup trust, that ultimately has been recognized to increase cooperation, communication and problem solving (Crisp & Turner, 2012). Turner and colleagues (2013) tested whether outgroup trust was mediating the relation between imagined contact with an asylum seeker and behavioural tendencies towards the outgroup (Turner, West, & Christie, 2013). In study 1, participants were 36 British high school students, and they were allocated to the imagined contact condition or the control condition. Following the task they answered a questionnaire with several social attitudes measures. Results indicated that participants in the imagined contact condition reported more positive tendencies to approach an asylum seeker than participants in the control condition. Furthermore, this effect was mediated by higher outgroup trust. A second mediator of the effect of imagined contact is the availability of a positive cognitive script of the intergroup contact, that is the cognitive representation of specific behaviours relevant to the interaction with a member of the outgroup. That is, when engaging with the mental imagination task, people activate the cognitive script which will then be available as a reference when participants are asked to make a judgment about performing a behaviour in the future (Crisp & Turner, 2012).

2.7 Moderators of intergroup contact

In addition to the study of those processes through which contact could affect prejudice reduction (mediators), researchers have focused on understanding when intergroup contact works the best. As mentioned earlier, Allport (1954) underlined that simple contact is not sufficient to promote a positive change of attitudes. Researchers have investigated when optimal contact happens in order to maximise its effects on the reduction of prejudice. Below, moderators of intergroup contact, direct and indirect will be presented.

2.7.1 Group salience

Brown and colleagues (1999) studied the moderating role of group salience during contact; that is, the relevance of group categories during interactions. Students from six European countries were asked to report if they knew someone from another European country and had to indicate quantity and quality of such contact, how competitive was the interaction experienced, how salient were group categories during contact and how much they desired to live in a foreign European country. Quantity of contact had a direct effect on the desire to live in that country and competitive contact had a negative effect on it. Moreover, when nationalities where salient there was a relation between contact and positive attitude towards the outgroup. Van Oudenhoven, Groenewoud, and Hewstone (1996) had Dutch students participate in a cooperative task with a Turkish peer, their confederate. There were two salience conditions: in the first condition the peer introduced themselves referring to their ethnicity at the beginning of the task. In the second salience condition they referred to their ethnicity about half way through the task. In the control condition there were no references to the ethnicity of the confederate (Van Oudenhoven, Groenewoud, & Hewstone, 1996). At the end of the task participants had to evaluate the Turkish person. It was investigated whether the personal evaluation could be influenced by the group salience. In all three conditions the confederate was evaluated in a positive way, with a significant difference between the salience and the control condition: when the confederate was introduced as a member of their ethnic group, then the positive attitude was also generalized towards the whole group, an effect that did not happen in the other conditions. These results underlined the moderating role of group salience in order to achieve the generalization of the positive effects of contact to the whole outgroup, rather than to limit the positive change of attitudes to the single individual involved in the positive interaction.

2.7.2 Social Identity

Tajfel (1979) developed Social Identity Theory (SIT) to explain how individual behaviour is influenced by group membership. This theory is based on the distinction between personal and social identity, reflecting the difference between interpersonal situations (in which the focus is on interactions between single individuals) and group situations (in which group memberships are more relevant than personal characteristics). Tajfel suggested that individuals are motivated to achieve or maintain a positive social identity, in order to increase their self-esteem, by favourable comparisons between an ingroup and relevant outgroups. In case of unsatisfactory identity, individuals will tend to leave the group or find other ways to make the intergroup comparison more favourable for their own group (Brown, 2000). Considered the direct descendent of the Social Identity Theory, the Self-Categorization Theory presented the idea that when someone identifies with a group, the attributes and actions related to that specific group become incorporated as the person's attributes and actions (Tajfel & Turner, 1979). Moreover, people are recognised to identify with their own group to different degrees. As a consequence of this aspect of the identification process, the group and its outcomes are important to its members based on the strength of their attachment to it.

Researchers have investigated whether high identified people show more ingroup favouritism and prejudice. Evidence to sustain this hypothesis is rather weak. For example, Duckitt and Mphuthing (1998) measured ingroup identification and intergroup attitudes before and after the 1994 parliamentary elections. Participants involved in the study were black students. Results indicated non-significant correlations between identifications pre elections and attitudes post elections. Instead pre-election attitudes predicted post-election identification (Duckitt & Mphuthing, 1998). In exploring what factors could establish *when* identification leads to greater prejudice, Brown (1992) suggested that it might depend on the levels of individualism or collectivism among the members of the ingroup. More specifically, they expected more ingroup favouritism for those groups considered collectivist, that is where intragroup cooperation is considered highly valued, and relational, that is where the ingroup is needed to stand against other groups (Brown et al., 1992). Considering this evidence, identification could lead to ingroup favouritism depending on the nature of

the intergroup context; that is, when individuals tend to make social comparisons.

Mummendey, Klink and Brown (2001) investigated the relations between national identification and xenophobia. Participants were allocated to one of the three conditions: social comparison condition, temporal comparison condition, and control condition. In the first condition participants were asked to describe several reasons why it was better to live in their country than in others (Mummendey, Klink, & Brown, 2001). In the second condition they were asked to explain why it was better to live in their country than what it used to be. Finally, in the control condition they were asked why it was good to live in their country. After the task participants were asked to answer measures on national identification and on xenophobia. Results indicated that in the social comparison condition correlations between levels of national identification and xenophobia were higher than in the two other conditions (in which the correlation was close to zero).

When considering national identification and its relation with prejudice, psychologists referred to the difference between patriotism, an attachment to one's country, and nationalism, the belief of superiority of one's country. Research supported that nationalism is positively correlated to xenophobia, while patriotism is only weakly related to it (Brown, 2011). As nationality could be defined in multiple ways, groups can be seen as characterized by an inner essence, or inner fixed attributes shared by the members of that group. Essentialist groups are ethnicity, gender and disability, while less essentialist groups, in which members share those attributes only temporally, are political or professional groups. Pehrson and colleagues (2009) found that people who perceive their national group as more essentialist showed higher negative attitudes towards asylum-seeker. For those people who perceive their country as more civic, however, the correlation with negative attitudes was weaker (Pehrson, Vignoles, & Brown, 2009).

The relationship between ingroup identification and prejudice is complex and depends whether intergroup comparisons are salient and ingroup identification is constructed in an essentialist way. Subsequently researchers investigated whether identification could operate in an indirect way on prejudice, that is, after identifying those factors that could influence attitudes towards other groups, it could be possible that the relationship between those factors and prejudice is stronger for higher identifiers. In the context of intergroup contact, Tausch and colleagues (2007) measured the effects of

quality and quantity of contact between Catholic and Protestant University students in Northern Ireland on intergroup attitudes. Results indicated that intergroup anxiety was a weaker predictor of attitudes for high compared to low identifiers. Symbolic treats were predictors of attitudes for high identifiers (Tausch, Hewstone, Kenworthy, Cairns, & Christ, 2007).

2.7.3 Moderators of extended contact

Similarly, researchers focused on identifying moderators for extended contact as well, one of these is membership group salience. Cameron and colleagues (2006) designed interventions based on extended contact with school children, in order to reduce prejudice towards disabled children. Results showed how these interventions were only effective in reducing prejudice when the group memberships of ingroup and outgroup members involved in the interactions were emphasised (Cameron & Rutland, 2006).

An additional moderator of extended contact was the attitude structure, that is the affective and cognitive components of attitudes towards the outgroup (Turner et al., 2007). Paolini and colleagues (2007) investigated the relationships between direct and indirect friendships and attitudes towards several outgroups. Results indicated that there was a significant relationship between extended contact and prejudice for the most cognitive outgroup comparing to the most affective outgroups (Paolini, Hewstone, & Cairns, 2007). Moreover, in study 2 the relationship between extended friendship and prejudice was significant for those individuals with cognitive responding, comparing to those with affective responding.

Christ and colleagues (2010) investigated whether direct contact was a moderator of extended cross friendship (Christ et al., 2010). In study 1 the intergroup relationship considered was the one between western and eastern Germany. Results indicated that the negative relationship between extended contact and prejudice was stronger for those participants who had fewer direct cross group friendships. In study 2, the authors investigated the effects of direct contact on the relationship between extended contact and attitudes between Catholics and Protestants in Northern Ireland. The results replicating study 1: the effect was stronger for those participants who lived in more segregated areas and had fewer opportunities for direct contact.

A more recent analysis of the moderators of cross group friendships was conducted by Gruetter and colleagues (2014) who investigated the relations between intergroup friendships and intentions of social exclusions. The study involved 439 students between 6 and 14 years old (Gruetter & Meyer,

2014). The authors measured intergroup friendship between the participants and children with SEN (special educational needs), intentions for social exclusions and teachers' diversity beliefs. Results indicated that children with more direct intergroup friendship did not show lower intentions for social exclusions. However, children with friends who have SEN showed more social inclusion if their teachers had pro-diversity beliefs. These results underlined the importance of contextual variables when investigating the effects of intergroup contact, such as the teachers' beliefs on diversity.

Vezzali and collegues (2014) classified moderators of indirect contact in three main categories: contextual conditions, situational perceptions and individual differences. Forms of contextual conditions affecting the effectiveness of indirect contact are segregation/direct contact and type of outgroup. Among situational perceptions the authors mentioned membership salience, group typicality and group categorization. Lastly, as part of the category of individual differences, the moderators referred to personality variables, initial outgroup stereotypes, ingroup identification and closeness to ingroup and outgroup contacts (Vezzali et al., 2014).

2.7.4 Moderators of imagined contact

The effectiveness of imagined contact could depend on people's characteristics or experiences, that are prior contact, minority status, and ingroup identification. According to Husnu and Crisp (2010), participants' prior contact would influence the vividness of the intergroup interaction imagined, which in turn affects the effectiveness of the task itself (Husnu & Crisp, 2010). In their study they found that prior contact increased post-task intentions to interact with outgroup members in the future, supporting the hypothesis that imagined contact refers to existing past memories of intergroup interactions and the more accessible these memories are the more detailed the cognitive script will be. A second characteristic of the people engaging with the imagined contact task is the socio-economical status. As mentioned earlier, imagined contact has been found more effective for majority status groups (Stathi & Crisp, 2008). Lastly, research has found imagined contact to be more effective with participants who have lower identification. In study 2, Stathi and Crisp (2008) asked sixty-four British students to take part to a study on intergroup attitude. Firstly, they complete a national identification scale and then were randomly allocated to ether the imagined contact condition with a French person or the control condition with no intergroup interactions. Results underlined that participants imagining an interaction with a French stranger attributed more positive traits

to the outgroup than participants in the control condition. This relationship was moderated by the level of national identification of the participants: lower the identification, the more effective was the imagined contact task.

As previously mentioned, Miles and Crisp (2014) conducted a meta-analysis of the effects of imagined contact considering its moderating variables. The analysis revealed that group characteristics were identified as moderators of the effects of imagined contact. Specifically, the effects of imagined contact were larger in children than in adults. This was explained by the fact that studies with children involve multiple sessions which provide more details regarding the imagined interactions. A second moderator considered was the study design characteristics. The analysis revealed that the amount of details provided by participants regarding the context of the interaction imagined significantly moderated how effective imagined contact was to reduce intergroup bias.

2.8 Intergroup contact research in the hospital setting

The literature presented in this chapter aimed to provide evidence of the effects of intergroup contact, both direct and indirect, in the improvement of attitudes and, more generally, in the reduction of intergroup conflict. The research presented underlines how direct, extended and imagined contact have been revealed to be effective for a variety of groups and contexts. The specific focus of this thesis is the improvement of inter-professional relations between nurses and doctors, as they would ultimately benefit the quality of care and the safety of patients in hospital. In the following paragraphs I will discuss studies which have applied intergroup contact in a health care setting, demonstrating its potential also for the improvement of inter-professional attitudes between nurses and doctors.

2.8.1 Contact based inter-professional learning programs

Intergroup contact research has been applied in the contexts of inter-professional learning programs which aim to break barriers between professional groups, promoting collaboration and mutual understanding (Bridges & Tomkowiak, 2010; Hean & Dickinson, 2005). As simply putting students together in a class did not have productive outcomes, researchers have expressed the need for structured opportunities for them to work together, learning with and about each other's roles and responsibilities. Carpenter and Hewstone (1996) and Hewstone and colleagues (1994) reported the same interventions in which they apply the intergroup contact

hypothesis to inter-professional interactions between doctors and social workers (Carpenter & Hewstone, 1996; Hewstone, Carpenter, Routh, & Franklyn-Stokes, 1994). In study 1, a one-day shared learning program was conducted and aimed to enhance inter-professional cooperation in relation to "dealing with drug abuse and handling psychiatric emergencies". The workshop was presented by a doctor and a social worker and included discussions on attitudes towards patients, a short lecture and the opportunity to work with a partner of the other professional group on a case study presented on a video tape. All participants took part in the same "Shared Learning Program" organized by the University (Department of Mental Health) and the former Polytechnic (Department of Nursing, Health and Applied Social Studies). Participants had the opportunity to act as representatives of their own group and to explore doctors' and social workers' contribution to the area. The workshop focused on skills, roles and duties of the two professional groups, and on how they could work more effectively together.

Thirty-three clinical medical students (19 males and 14 females, mean age 24.0 years) and 23 final-year social work students (6 males and 17 females, mean age 29.9 years) took part in the program. The questionnaire was divided into four main sections and was presented pre and post intervention. It included measures on background perceptions, ingroup and outgroup ratings, knowledge, and judgement of working with members of the other group and experienced contact. Results indicated that both groups were aware of the higher status of doctors in society. Moreover, doctors perceived less institutional support and expected the program to be less useful. Both groups (especially the social workers) evaluated the other group more positively. There was mutual intergroup differentiation: each group acknowledged the other's superiority on one dimension. Working together with an outgroup member led respondents to rate themselves to be more knowledgeable about outgroup's skills, duties and roles. However, these effects were limited to the social workers. Finally, the judgements of the partner were overall positive, although doctors were less positive than social workers. To summarise the results, the Shared Learning Program engendered slightly more positive outgroup attitudes, especially for social workers, and some changes in knowledge.

In study 2, some changes were made to the structure of the programs and the nature of the inter-professional interaction: the program filled two and a half working days, spread over four days and participants had contact with

more outgroup members, rather than one outgroup partner. Forty-one medical students (26 males and 15 females, mean age 23.9 years) and 44 social work students (14 males and 30 females, mean age 33.2 years) took part in the program. The questionnaire of study 1 was used, including measures on background perceptions, ingroup and outgroup ratings, knowledge, and judgement of working with members of the other group and experienced contact. Results indicated that both groups were aware of the higher status of doctors in society and that doctors had more negative perceptions concerning the program. Overall attitudes become more positive over time. There was also a clear intergroup differentiation, with outgroup ratings becoming more positive over time. Regarding the knowledge, participants rated themselves as more knowledgeable about the outgroup at post-test. Finally, the judgements were overall quite positive with perceived typicality of the outgroup members higher than in study 1.

A more specific analysis of Allport's optimal conditions is offered by Bridges and Tomkowiak (2010) who present the intergroup contact hypothesis as a theoretical base in inter-professional education to achieve change in attitudes towards collaborative working as inter-professional team members (Bridges & Tomkowiak, 2010). The authors specifically analysed two of the four optimal conditions, equal status and common goal in relation of the inter-professional course organized by the Rosalind Franklin University of Medicine and Science (RFUMS) in which a total of 32 students participated. The program aimed to improve inter-professional collaboration and communication and was based on Allport's conditions. Following the completion of the program, an evaluation questionnaire was provided to the participants. Analysis reported positive evaluation of the programs and agreement towards statements of collaboration. Evaluations of the programs by students underlined that the program offered the opportunity of working side by side with other professionals, providing their knowledge and skills for the benefit of the team.

2.8.2 The potential of the contact hypothesis in inter-professional education

The studies described above provide evidence of the potential benefit of the application of intergroup contact as a foundation for IPE modules design and evaluation, allowing the implementation of those conditions that need to be present in order to achieve a change in inter-professional attitudes (Hean & Dickinson, 2005). The application of intergroup contact to IPE would allow the selection of more appropriate outcome measures for the evaluation of

inter-professional learning programs, such as attitude change and change in professional stereotypes. Hean and Dickinson (2000) provide a detailed analysis of recommendations for the application on intergroup contact in IPE. Firstly the authors explained the importance of the accurate and explicit measurement of Allport's (1954) optimal conditions during the IPE curricula, as often conditions such as equal status are assumed to be in place or not considered in the analysis. It is suggested to consider whether all of the contact conditions are essential in IPE and which could be specific to only one stage of the IPE curriculum.

Following the analysis of the optimal conditions during IPE, Hean and Dickinson expanded the argument around attitudes change, specifically what explains changes in professional attitudes during IPE, and how to guarantee the generalization of attitude change to the whole professional group and not limiting it to the learning group. The authors argued that one explanation could involve cognitive dissonance, as students taking part to IPE programs will encounter contradictions between the positive experience due to the learning group and the pre-existing negative stereotypes regarding the other professional group. Due to this contradiction, they will then alter their attitudes towards the professional group as a whole. Another explanation could refer to the benefits of intergroup friendship, already mentioned in this literature review, which could be the result of the positive interactions with the other students in the learning group. Inter-professional friendships could increase empathy towards the other professional group and lower the levels of anxiety associated with negative interactions with members of the other professions. Hean and Dickinson presented the need for a more accurate and context specific measurement of prejudice reduction and stereotypes change. The last focus of the authors was around the relation between professional identification and professional stereotypes, underlining the need for the study on how professional identification is related to attitudes change and behaviours, as students who strongly identify with their professional group are expected to show more negative stereotypes of other professional groups. They suggested the need for the investigation of superordinate identities during IPE in relation to stereotypes.

This thesis considers some of the suggestions presented above in the specific context of inter-professional communication and collaboration between nurses and doctors. Specifically in Study 2 of this thesis, the application of the contact hypothesis will be expanded from the IPE context to the work place and it will be investigated whether the four optimal

conditions are predictors of team work and effective communication between nurses and doctors in hospitals. Professional identities and stereotypes will be considered in the analysis, with the inclusion of meta-stereotypes, the knowledge of how other people perceive our own group. Though direct contact has been used before in the hospital setting, indirect contact has not yet been applied to relations between nurses and doctors in hospital, in any setting (workplace or educational). In Study 3 of this thesis the two forms of indirect contact, imagined and extended contact, will be used in a laboratory setting with nursing students and medical students, in order to investigate their potential in being strategies to be used in interventions to improve inter-professional attitudes and effective communication.

Chapter 3
Study 1: the effects of hierarchy and status on the quality of inter-professional communication

This chapter will present a qualitative study conducted with nurses and doctors on their experience of communication breakdown between health care professionals and its impact on patient safety. To consider the role of hierarchies and social structure on professional communication, it was chosen to interview junior and senior health care professionals. This allowed investigation of how communication breakdown was experienced by clinicians at different levels of the hierarchical system in hospital teams. The findings of the thematic analysis conducted will be presented and discussed in relation to recommendations on those interpersonal and inter-professional factors that interventions on the improvement of inter-professional communication, such as inter-professional training, need to focus the most.

3.1 Introduction

Research on communication as a latent contributing factor to patient safety incidents has mainly focused on developing and implementing tools to make communication more efficient (Leonard et al., 2004). In order to support the efficacy of such tools it is necessary to understand the cultural context in which they are used, and what could be barriers and motivators among the users themselves. When investigating the causes of communication breakdown, clinicians do not only report faulty transmission of information between the staff involved, but also cultural aspects of the hospital reality which are indirectly linked with communication, that is, hierarchy, power and social structure (Gawande et al., 2003). An example of the effects of the culture of the hospital team on communication is provided by Edmondson and colleagues' research on psychological safety and on speaking up in inter-disciplinary action teams (Edmondson, 1999, 2003). According to their analysis, the hospital team includes professionals who come from different disciplines and have different sets of skills. These differences are associated with differences in status, training and norms, and they can create obstacles to effective communication and shared understanding between all the members of the team. In addition to this, their results revealed that health professionals are often reluctant to question the judgements of people they perceive as more senior in the hierarchy, resulting in a lack of open dialogue

and speaking up, which are essential in facilitating cooperation and innovation.

A more in depth analysis is needed regarding the relationship between communication breakdown and the cultural aspects related to hierarchy. In order to do so, in the current study qualitative methods were used in relation to the investigation of the cultural and group dimension of inter-professional communication in the hospital setting. Several qualitative methods have been used in past research in this field of patient safety. Among these methods, ethnographic observations, individual and group interviews have been the most used. Berridge and colleagues conducted an in-depth longitudinal mixed methods study of four delivery suites, using contrasting forms of observation (Berridge et al., 2010). The observations identified several facets of communication in hospital, underlining the importance of collaboration in ensuring supportive communication. In addition to that, all the professionals involved in conversations were considered. Midwives reported an individual culture, in which they often did not value contributions from medical colleagues, especially junior doctors. An example of the use of interviews is by Hewett and colleagues' study in which they investigated doctors' communication and the influence of intergroup communication on the quality of care (Hewett et al., 2009). The authors used convergent interviewing which involved content-unstructured interviews followed by structured data collection. Data analysis revealed that intergroup conflict had a significant role in the quality of care and patient safety: in the case of conflict clinicians would not adapt their communication style to the one used by their colleagues. These results underline the need to investigate strategies to resolve intergroup conflict in order to ultimately improve practice towards a higher quality of care.

In the current study narrative interviews enabled an exploration of the factors perceived to influence communication, focusing on clinicians' examples of communication breakdown and their strategies used in order to improve it. The participants involved had different health care professional background (nurses vs. doctors) and different level of seniority within their profession (junior vs. senior). This allowed the data to represent both nurses and doctors' perspective alongside the point of view of clinicians with different status in the hospital context. In addition to that, as the majority of the studies investigated inter-professional communication in theatre, in this study the interviews were conducted with clinicians from several departments, in order have a broader insight on communication dynamics.

Specifically the following research questions were asked :

RQ1: How is inter-group communication experienced by doctors and nurses?

RQ2: What factors are perceived to influence effective communication between members of the same team?

RQ3: What are the strategies used to improve communication within members of the same team and with members of other teams?

3.2 Method

Ethics approval was granted by the Institute of Psychological Sciences Ethics Committee of the University of Leeds (Ref:12-0080) and the interviews were carried out in late 2012 (from July to November).

3.2.1 Participants and design

A series of individual narrative interviews were conducted with staff who varied according to their job role (nurses vs. doctors) and their level of seniority (junior vs. senior). The final sample included 22 health care professionals (6 male/16 female). The participants were: consultants (4), senior registrars (2), junior doctors (3), senior nurses and midwives (7) and junior nurses and midwives (6). Participants were recruited from several specialties at Bradford Royal Infirmary: Midwifery and Obstetrics, Gynaecology, Paediatrics, Anaesthesia, Orthopaedics and Acute Medicine. This sample offers insights on communication issues by both nurses and doctors at different levels of seniority. Junior and senior professionals were recruited in order to understand the effect of hierarchy and professional experience on perceptions of effective communication.

Furthermore, we compared individual perceptions across different specialities (Obstetrics and Gynaecology, Paediatrics, Surgery, Intensive Care Medicine and Anaesthetics) in order to identify and investigate specific communication dynamics driven by the speciality. Communication in theatre teams has been largely researched, with observational and qualitative approaches. In order to avoid our findings reflecting speciality-specific dynamics related to team communication, the decision was made to involve a number of different specialties. Initial contacts with consultants and ward managers from Obstetrics and Gynaecology, and ICU and Anaesthetics allowed expanding the interviews also on those specialties.

3.2.2 Interviews

Data were collected via a series of narrative interviews. The length varied between 10 and 40 minutes, according to the location of the interviews and the availability of participants. They were conducted in a private meeting room at the Bradford Institute for Health Research or in private rooms located in hospital wards at the Bradford Royal Infirmary. A first draft of the interview schedule and main research questions were developed after several experiences of observing inter-professional interactions. These included attendance at surgical safety briefings so as to become familiar with this context and to understand the pre-existing safe practices to improve communication. Moreover, informal discussions with health professionals were useful in better understanding the medical environment and the main needs and worries around inter-professional communication. The first draft of the interview schedule was examined by a risk manager, a consultant anaesthetist and a senior nurse. Before developing the final draft based on the feedback provided, pilot interviews were conducted to examine the response of health care professionals to the language used and to ensure that the questions asked were pertinent to the hospital context (see Appendix 1 for schedule of topic areas).

3.2.3 Procedure

Potential participants responded directly to study information distributed via ward managers within the Trusts following attendance at staff meetings to explain the study. Firstly, participants received the information sheet, where full information about the intent of the study and confidentiality issues were provided. Subsequently, participants completed and signed a form to indicate that they gave their informed consent to take part in the research. Any important details or information that could identify participants was removed. All information participants provided during the interview was handled in confidence.

3.2.4 Analytic strategy

Audio tapes were transcribed and then analysed using thematic content analysis. This method was chosen as it allows the identification, analysis and reporting of patterns and themes generated within the data (Braun & Clarke, 2006). The thematic analysis was conducted in six phases. After the data was transcribed, initial ideas were noted down in order to ensure familiarity with the data (phase 1). An initial list of ideas was then noted down, trying to organize the data into meaningful groups (codes). The codes

were extracted manually, writing notes in the text, using different colours for each different group. After all the data was coded, a list of all the codes identified was produced (phase 2). The third phase of the analysis involved the identification of the themes (broader units of analysis than the codes), collating several codes into the same theme. Themes were then reviewed (phase 4) and named (phase 5). For each theme a clear definition was produced. The final phase consisted of generating the written analysis, otherwise termed report, for this chapter.

3.3 Findings

Through thematic analysis 19 codes (presented in bold) were generated, and organised into 5 higher order themes: Relationships with Others, Collaboration and Mutual Understanding, Hierarchy and Roles, Challenges and Systems to Improve Communication.

3.3.1 Theme 1: Relationships with Others

When asked about their experience of communication with members of their team and of different teams, participants indicated how *Relationships with Others* seemed to affect both positively and negatively the quality of the communication experience. According to their reports, the effectiveness of communication seemed to depend on **individual differences**: some people appeared to be better communicators than others and the style that they used was described as naturally successful by the other members of the team. Participants also highlighted some colleagues who were perceived as more (or less) **approachable** and this could affect their future interactions and their intentions of working effectively together, as illustrated below.

"I think it depends on who they are as an individual. You can get some people who are quite sarcastic, and then they are not very approachable. Some people will always, if they dismiss you, you won't find them approachable, you will not want to speak to them, compare to someone who actually listens to what you have to say, and we are together collectively, you find it easier to work with them and to get on." (Junior Nurse)

The health care professionals interviewed explained that **experience and confidence** were likely to affect the way they spoke with other colleagues, especially those at a different level of the hierarchy. More senior staff felt that they had many years of experience during which they have had the opportunity to build professional and personal relationships with other colleagues. This was perceived to improve the quality of interactions in every day duties and consequently to make communication better. More junior

staff, especially junior nurses, explained how **others' perceptions** influenced their confidence in speaking up and in asking for clarification when information was not clear.

"I've been doing this job for five years now, so the relationships that you've built with other people that got different job role, and you can get a better understanding of what their job role is as well. Which I think it helps a lot more." (Senior Nurse)

"Yeah, maybe, especially when they come on the ward round and you have got to say what's happening, sometimes they can ask you things that you don't know and it does put you on the spot and if you have not read that or if you have forgotten and they ask you a question and you have to go through the notes, it is not really anything that they do wrong, it's just they put you on a spot and you feel a bit, ohh, a bit stupid." (Junior Nurse)

As part of the effect that *Relationships with others* have on the quality of communication, doctors and nurses explained that they felt relationships got better when the opportunities for **contact with others** were more available. Having breaks together or undertaking training together provided the opportunity to get to know each other better on a personal and professional level. Communication was also perceived as more positive when people were **familiar**: it was easier in these circumstances to understand each other's professional role and duties. This increased a shared understanding of the situation and improves communication, as explained below.

"There's no joined, you know, kind of team building and, there is nothing for the team, the nurses do it, the doctors do it but there's no kind of whole team staff development, you would never do any training with the doctors or anything like that, or they wouldn't do any training, there's none of that kind of joined up work which maybe would help" (Junior Nurse)"

"I think people that you're feeling more comfortable communicating with are people that you're used to cause you have a style that you're used to, and you understand what people's role is and you understand what their requirements are and what they need you to tell them and what you need them to tell you so you both understand those, it tends to be easier when you assume that people understand, what you may and may not need. I think you need to be more careful in communication so you need to be more specific." (Consultant)

3.3.2 Theme 2: Collaboration and Mutual Understanding

The doctors and nurses interviewed highlighted that communication was more efficient when *Collaboration and Mutual Understanding* were ensured between health care professionals working together within the same specialty or between departments. Describing the conditions that could facilitate team dynamics, participants mentioned **collaboration and team work, shared understanding and sharing information**. These aspects were perceived to create a more cohesive team, in which each members' role was recognized as essential for the care of the patient and where healthcare professionals were able to successfully share information about the care plan among everybody involved in the delivery of the treatment. This theme was present across the job roles and hierarchical levels of the participants interviewed, as explained below.

"Well, I think that if you are a good leader, you set shared goals. And so we are all working to the same aim, we have in general mutual respect, and so therefore, everybody feels that they're valued in that, for their contributions. I supposed they are the main factors for me, to how meetings work well." (Consultant)

"It can be difficult at times. Cause obviously not everyone understands the pressure that each team has. They don't really know we got other jobs to do, we can't break off from that, because of the risk of having errors and miscalculations, it's the understanding of different roles and responsibilities within different departments sometimes that is an issue." (Junior Nurse)

"I can't say a lot but often we come across that when we go and see patients their observations are not communicated to us, over the phone, or you know, multidisciplinary team would document a plan of care and that might not have been followed, could be because it is not communicated to the nursing staff, who are often going to read the medical notes on a regular basis, of when things are not documented at all" (Senior nurse)

Once collaboration is ensured and information is properly shared between everyone in the team, then members feel more **respected** and **supported.** Communication was perceived as easier with peers; to which health care professional tend to ask additional information. This happened especially in the case that the information provided by senior members of the team was contrasting with their own knowledge or unclear. Moreover, participants underlined that they preferred to work collectively with people who respect

and understand their role and duties. These codes were mostly cited by the nursing group, both senior and junior.

"I think it's also important to have respect for other people and because it doesn't matter if it's the consultant doing the surgery, everybody is vital in that patient's care, so I always make the point, you know, we have a regular cleaner during the day and then in the evening I say hello, hi, have you managed with the job or, what did you do at the week end, these sort of things. Because it makes it easier to discuss with people, you know, if you already got that relationship." (Senior Nurse)

"Yeah, I definitely share my feelings with my mentor, or the midwives I'm on a shift with, or the students. I wouldn't personally go to the doctors and say I felt a bit stupid speaking to you really. I wouldn't tell any of the coordinators, yeah I would definitely tell other midwives that I feel comfortable with." (Junior Nurse)

Participants were asked about strategies in place to improve communication. Collaboration and communication was considered improved when the **rules of contact** are explicit. According to the participants, often people do not know who to contact in case of emergency and communication breakdown is likely to happen, especially when communication is not face-to-face. In this case, as a strategy used to overcome this barrier, participants mentioned the need to divulge clearly who they need to contact, and in what circumstances they need to be contacted. This should be more accessible to all team members to reduce delay of care, often mentioned as main consequence of this type of breakdown. In addition, nurses and doctors agreed to the need for learning to listen properly to colleagues and to have more confidence and to **speak up**. Leaders were also described as being responsible for ensuring a questioning culture among members of the team.

"So there's a lot of local knowledge that I've built up, so not so much HOW to communicate, but WHO to communicate with, I found this is the most important thing, and the other things, to speak to the right person, I also think it is important to speak nice and well, but it is more important to speak to the right person than it is to speak correctly" (Senior registrar)

3.3.3 Theme 3: Hierarchy and Roles

Roles and responsibilities was one of the most cited codes across all the interviews. It not only related to the hierarchical system of the hospital interactions, but it was also considered to increase collaboration and affect

confidence and the perception of being approachable. Understanding people's roles was mentioned to be one of the most important factors affecting the quality of inter-professional communication.

"I think sometimes it's the clarification of our roles, and why you have been asked to see that patient. And if we've been asked to see that patient, what we've recommended, perhaps it needs to be listened to" (Senior Nurse)

"I've been doing this job for five years now, so the relationships that you've built with other people that got different job role and you can get a better understanding of what their job role is as well. Which I think it helps a lot more." (Senior Nurse)

One of the barriers linked with hierarchy in hospital teams mentioned by nurses and doctors was **different priorities** between the different health care professionals involved in patient care. Additionally, understanding each other's priorities was perceived essential in order to clarify roles and improve dynamics.

"Let them know that they are supposed to discuss patients with us. And cases that have not been discussed with us, we assume that are low priority. Other ways to improve that, the person taking the booking tries to encourage people to contact the anaesthetists." (Junior Doctor)

Consultants often discussed the role of their **leadership** and their responsibilities towards the other members of the team in ensuring an open culture. The leader, they suggested, is usually seen as more experienced, not only in technical skills but also in communication skills. In addition to that, leaders were considered to have the role of increasing the awareness of their juniors on effective communication frameworks.

"I think the consultant has to take the lead. He has to set the culture. Because I think the other members will respond to that culture if it's appealing to them and tension arises when the agenda seems to be contrary or that culture is not established. So yes, the consultant is responsible for setting the tone. And the agenda. Sometimes the agenda is set by the other members of the team, but I think ultimately the consultant takes the lead in it." (Consultant)

Participants expressed their thoughts about *Hierarchy and Roles* as factors that could influence communication in hospital. When asked about their teams, participants expressed how difficult it was to define their own team. **Teams are complex** because people often move around and cover different roles in the Trust. This was perceived as an obstacle in creating lasting

professional and personal relationships and in establishing the perception of belonging to a same group with which people could identify while working together for the patient's care. Despite being in the same team, a lack of familiarity with other people's style of communication could increase breakdown in the transmission of information, as described below.

"Well, there isn't really a team that you work with on a regular basis from the point of view of a really small group of people, you are not working on a small cohesive team, on the occasion it's a very fluid team, so when you refer to team, it's not the same every day, so it's not as it used to be in the old days, if it makes sense, when you did have quite of a more rigid sort of teams, really, so this is sort of helps to get to know people's styles and you know, what they are really meaning, if they are not saying what they mean, if this makes sense. Because you are not necessarily tuned with those people if you have not worked with them before regularly and know what their strengths and weaknesses are, in terms of communication if that makes sense." (Consultant)

3.3.4 Theme 4: Challenges

Participants were asked to provide specific examples of communication breakdown. They indicated those people who were involved and what type of *Challenge* it was.

Phone communication was reported to be a problem in most interviews. The challenges described were multiple: health care professional reported that often they were unsure of the right person to contact by phone. Moreover, when they were not familiar with the person they were speaking to on the phone, it was harder to communicate effectively and understand each other's priorities. All these aspects contribute to a delay of care.

"There was always a delay because I need to bleep them and they needed to get back in touch, so it took a stupid amount of time, just to speak to the right person, agree to a plan, there were several options, and then get the drugs sent across. So that was quite unsatisfying, because physically the person is in a different building, and they need to see the prescriptions." (Senior registrar)

Workload and time was mentioned as an additional challenge to communication. Alongside the description of those situations that could make communication easier, such as interpersonal contact during breaks or training together, participants often mentioned that the biggest barrier to

create those useful opportunities was lack of time. On daily basis, participants felt to not have enough time to invest into knowing each other because people usually rush off between heavy shifts.

"Doctors, we do have a chat with doctors when they come on the ward but because they have so many wards to look after, then they don't generally tend to have much time. But when they are on here we do have a chat. Have you had a nice week end, you know how is your week going, do you have anything planned? In between of rushing off." (Senior Nurse)

Handover and notes were perceived to improve communication but only when used effectively. Often not everything is documented in the notes or things get missed and handover does not happen properly. It then becomes harder to contact the people present in earlier shifts in order to ask for clarifications when notes are not clear.

"I think sometimes in handover, things can get missed, especially because we are doing the handover in clinic, and staff are in and out, especially I find it's more the afternoon handover, because people the staff nurses are coming and get the drug trolley, go to do the ward round, and all the dressings and for everything that is in the clinic, we have handover and in the afternoon the person who is handing over the coordinator could sometimes get broken off and then little things do missed out and the way that they are communicating then fails and we are aware of it and we don't pass it on and that's when things can get missed." (Senior Nurse)

3.3.5 Theme 5: Systems to improve communication

The health care professionals interviewed were asked to provide examples of *Systems in place to improve communication* and what strategies had been recognised as more effective in the case of communication breakdown. Participants explained how the **SBAR** framework was largely successful in improving the quality of information exchange.

"I think that it's good for getting people to sort of, you know people rumbling, it's hard to be able to interrupt people, you get them really upset, but at the end of it, I say perhaps you know use the SBAR, we go through that with SBAR again, then just remind them, but a lot of the time you feel you are playing the same record again, some people struggle with it really but I think, it's just getting used to it really. So the people that I feel are good communicators are people who would naturally used that style, without being necessarily been thought about it and some are, but other people just seem to have harder job." (Consultant)

Furthermore, **handovers, safety briefing and debriefings** had been recognised as effective in improving the successful sharing of information and reducing missed information between shifts.

"Yeah, and I think that before that, we used to do the handover at the bedside with the midwife that was in charge at the night with the midwife that is in charge at the day but one of the things because we have done it it's because it's so noisy, because the doctors are doing the handover, so that's why it's quieter than doing the one to one handover, that was one thing with it, I think it's because it's so busy so we have a communication diary" (Senior Nurse)

3.4 Discussion

The aim of this study was to investigate perceptions of doctors and nurses on communication in hospital, specifically around factors that could influence the quality of team dynamics and communication. Facilitators and challenges were examined, for both junior and senior members of staff, to have an insight into the effect of health care professional's hierarchical position on these perceptions.

3.4.1 Key Findings

3.4.1.1 Individual factors

Relationships with Others was a theme cited by health care professionals across both job roles and level of seniority. However, it was especially prevalent in reports by nurses, particularly by junior nurses. It seems that nurses at the beginning of their career felt less confident and were less willing to approach consultants. They preferred to communicate with peers, who they perceive as more approachable. In general health care professionals attributed the ability to communicate effectively to individual characteristics and gave great importance to perceptions of how approachable colleagues were. They then used this as a basis to plan future professional interactions. Sharing break time and training opportunities were perceived as potential good strategies to improve familiarity with people across professions and knowledge about each other's professional roles. This was recognized by participants themselves as a means to increase empathy and mutual understanding, which is essential in effective communication and positive professional interactions.

Moreover, from the analysis of the current study, participants explained that when practitioners had worked together for a few years, they found communication easier compared to having to approach someone that they had not met before. High turnover is a barrier to reach familiarity with colleagues: teams are not static and getting to know each other is increasingly difficult in such an environment. Similarly, the importance of familiarity and team effectiveness was described in a qualitative study on factors affecting team communication in surgery (Gillespie, Chaboyer, Longbottom, & Wallis, 2010) which revealed that when staff were unfamiliar with each other, they were not able to coordinate their actions and strategies.

The positive impact of interpersonal relationships on professional communication was also one of the main findings of Hewett and colleagues'

study (2009). The authors investigated the adaptation of the language used by clinicians in order to minimise differences and facilitate communication between people (accommodative strategies). The Communication Accommodation Theory (CAT) is one of the theories on interpersonal communication that has also been applied to the health care setting. When considering these theories on health communication, they have been organized according to three theoretical approaches (Bylund, Peterson, & Cameron, 2012). Individual based theories explain how individuals plan and create goals and messages. Interaction theories explain how during interactions communicators affect each other. Finally, relationship theories focus on the understanding on how communication is linked with development of relationships. CAT explains the motivations that underline shifts in people's speech styles during conversations, in particular speech convergence and divergence. Convergence is defined as a strategy through which individuals adapt their communicative behaviour to be more similar to the interlocutor's behaviour. This leads to greater perceptions of similarity, which increases interpersonal attraction. In contrast, divergence leads to stronger perceptions of differences between the two communicators. Individuals who use this second strategy to maintain their speech pattern when it is different from that of their interlocutors, or they change it when it is the same. As mentioned above, CAT has been applied in the hospital setting to investigate inter-speciality communication among doctors (Hewett et al., 2009). The accommodative strategy (convergence of interlocutor's behaviour) prevailed when speakers were motivated to reduce intergroup differences and increase the interpersonal salience of the interactions: in order to reduce professional conflict clinicians accommodated their language to that of other colleagues. Doing this, they tended to perceive professional interactions on an interpersonal level rather than stressing the differences between professional group.

3.4.1.2 Group factors

In the current study participants were asked to explain under which conditions communication was perceived as more effective. *Collaboration and Mutual Understanding* were identified as essential factors in achieving improvements of the quality of team dynamics and patient care: participants explained how collaboration was essential in reducing communication breakdown. That is, when the working environment is more collaborative, information is shared between every member and everyone feels respected and essential in the delivery of patients' treatment. In terms of strategies to

achieve this positive level of collaboration, nurses and doctors mentioned the importance of shared understanding of each other's role: every professional's contribution is respected and understood by the other members of the team. People feel supported and more comfortable to speak up when information is not clear or in the case of disagreement. These results confirmed previous findings on the effect of cooperation on safer care (Schmalenberg et al., 2005).

The findings of the interviews suggested that communication is also affected by *Hierarchy and Roles,* which have been widely mentioned by both junior and senior health care professionals. More specifically, consultants saw themselves as taking the lead and setting an open culture between each member of the team. They perceived their role as essential in setting the tone and providing support to juniors in their communication skills development after training. The importance of leaders in assessing an open culture and the psychological safety has been underlined by Edmondson's work on interdisciplinary action teams (2003). According to Edmondson's findings, leaders have the role to promote the importance of speaking up in the occurrence of unclear information or disagreement. This characteristic of leaderships mirrors one of the optimal conditions for intergroup contact identified by Allport as essential in order to maximise the effectiveness of intergroup interactions, that is institutional support. When members of other groups interact with each other, they need to perceive such interactions as acceptable and approved by the relevant authority. Such institutional support could vary according to the specific context of the encounter, such as school teachers or the government itself. For the specific case of doctors and nurses in hospital, it could be represented by the team leaders, by the ward managers or by the organizational culture of the hospital.

Some participants underlined having different roles in the Trust and as a consequence of this, for most of them it was not easy to define what team they belonged to. Teams were described as fluid because they change often and they are not always present in the same physical environment (such as in the same ward or the same building) at the same time. These were considered barriers to effective communication by both the doctors and nurses interviewed. Not understanding clearly what teams clinicians belong to could have implications on the groups they identify with, and ultimately on professional attitudes. For example, those clinicians who had worked in the same ward for a longer period of time, could easily identify their team as the ward or department, and subsequently collaborate more with colleagues

from other professions and have more positive attitudes towards them in general. According to Tajfel's Social Identity Theory, for the clinicians in the example, the ward or department would be the relevant group used to define their self in a positive way. In contrast, for those clinicians who have a high turnover, and change wards and care teams often, the professional team could be the relevant group with which to identify. For them, the team changes all the time, but the constant of their interaction is the role they have in each one of them. The importance of group identification has also been discussed in the common group identity model, previously presented in the Literature Review of this thesis (Chapter 2). The authors suggest that promoting a common ingroup could increase the effectiveness of intergroup contact on the improvement of attitudes. In this way, the inclusion of the self in the common group would be promoted. As a consequence, relations would become more positive, without forcing the people involved to renounce to their original group membership. It would then be possible to take advantage of the fluidity of the team, and promote the identification with an additional category, such as the department or the organization itself. This would allow to create a stronger sense of belonging to the department or specialty, or with the trust in which they all work together.

3.4.1.3 Strategies in place

Participants were asked to report examples of communication breakdown involving different health care professionals. Indirect communication, workload and handover were mentioned as main challenges experienced by both doctors and nurses. It is recommended that future studies could consider specific strategies to improve one or multiple types of these particular communications. Specifically, future studies could analyse what factors could facilitate indirect communication (for example phone communication) and what factors support the management of heavy workload and poor handover.

Communication challenges were also expressed in the other themes identified in the data: lack of collaboration, poor inter-personal relationships and strong hierarchical systems could influence the quality and motivation of communication.

As well as examples of communication breakdown, participants were asked to report what strategies were used to improve communication. The majority of the strategies cited referred to the improvement of the transmission of information and style of communication: SBAR and handovers, as well as structured team meetings. These results confirmed previous research on the

development of tools to improve the transmission of information (Leonard et al., 2004).

Insights on the facilitators of communication were also present in the other themes: collaboration, positive relationships with others and clarity about roles and responsibilities were perceived as essential for a positive working environment and positive team relationships and communication. As participants recognized the value of using tools to improve the structure of communication, the introduction and establishment of these tools is recommended as current practice alongside other types of interventions which could target the improvement of team collaboration and professional attitudes. The improvement of teamwork, in terms of creating an open and positive culture, could ultimately provide a more responsive environment in which to establish specific techniques to improve the structure of communication.

3.4.2 Implications for Interdisciplinary training

From the analysis of the interviews it was possible to understand that the process of communication breakdown is a complex mechanism comprising several factors (interpersonal and intergroup). Personal contact and positive relationship with colleagues are considered important to help future communication, in terms of understanding how and when to approach colleagues and how to interpret unclear information received from them. Perceiving other professionals as more approachable and being familiar with them help junior members of staff in particular to feel more confident and less intimidated by their superiors. In order to achieve these positive work conditions, participants suggested the need for creating more opportunities for informal contact across professions and within their own team. This space for relaxed contact could help to overcome barriers and create a more positive and familiar environment.

Interventions that ultimately look at the improvement of team work and communication should then also focus in creating the opportunities for more personal and informal contact between members of the team. This could be realized with the organization of common training involving both nurses and doctors, so that staff could familiarize with each other and learn together. In addition, creating the space for informal discussion on the ward itself (in common rooms or staff kitchens) could promote the importance of finding the right space and time to know each other more.

Inter-professional learning could represent a structured opportunity to work together alongside other professions and develop at the same time interpersonal and team skills (Carpenter & Hewstone, 1996; Kane, 1977). In fact, research on interpersonal contact showed the impact of the disclosure of personal information on the quality of interactions between people who belong to different groups (Brewer & Miller, 1984), suggesting that when people interact on a more individual level, they could experience more positive interactions, than when they interact focusing on the groups they belong to. The promotion of friendship across groups has been also used in several interventions aiming to overcome group barriers and to increase positive interactions (Cameron & Rutland, 2006). These types of interventions based on inter-personal positive interactions could also be adapted in the health care settings to inter-professional learning, in order to ultimately increase familiarity between staff from different health care backgrounds.

Alongside the interpersonal level of communication, analyses of the current interviews have provided evidence of the importance of group associated factors that could facilitate effective communication. According to the participants, collaboration between health care professionals and the effects of status on communication between staff were both linked with the importance of understanding each other's roles and responsibilities. As a consequence of this, an additional possible way of improving communication could be represented by increased awareness of people's roles within teams and more accessible information about their duties and skills. Promoting contact and common training was also identified as a strategy to overcome this lack of knowledge about other professions. Interventions that aim to improve collaboration and respect often aim to increase the knowledge of each others' roles and duties (Bridges & Tomkowiak, 2010; Hean & Dickinson, 2005). For example, Carpenter and Hewstone (1996) designed an inter-professional learning program for medical students and social work students based on inter group contact theories (Allport 1954). The program was evaluated positively by the participants and it resulted in increased positive attitudes and knowledge about other's roles and duties. Another example of interventions aiming to improve team work and communication using an interdisciplinary approach are the Schwartz Centre Rounds, established in 1997 by the Kenneth B. Schwartz Centre (Boston, Massachusetts). The goal of these rounds was to improve relationships, communication and perceptions of personal support. They were one-hour, case-based interactions and the size varies from 35 to 200 health care

professionals from different disciplines. These discussions, lead by a practitioner, started with the presentation of a patient case and developed around a common discussion. Examples of the main topics covered by the discussions are team conflict, impact of making mistakes and stories of hope. A recent evaluation (Lown & Manning, 2010) showed that the rounds reinforced feelings of shared purpose among the health care professionals alongside improved communication with patients and with other colleagues. They improved teamwork, and the perception of support, decreasing stress and anxiety.

3.4.3 Measure of inter-professional communication

One of the outcomes of the analysis of the interviews conducted in this study was to generate a scale on the effectiveness of inter-professional communication that could be used in Study 2. The goal was to have a more accurate measure of what effective communication meant for both nurses and doctors, and for both junior and senior members of this profession. After a review of the most commonly used scale on inter-professional communication Shortell's scale (1991) was identified to be a more comprehensive measure of communication specifically between nurses and doctors. The scale was then adapted adding new items which were generated based on the analysis of the interviews conducted in the current study (Shortell, Rousseau, Gillies, Devers, & Simons, 1991).

The 19 codes, used to generate the 5 themes, were considered as a framework for the adaptation of the scale on effective communication included in the questionnaire of Study 2 of this thesis. As a first step, a review of frequently used communication scales in health care was conducted. It was then decided to choose the 12-item Shortell and colleagues' scale (1991) which appeared to be more comprehensive and to specifically include items around communication between nurses and doctors. In order to achieve a final scale which could be representative of every single one of the 19 codes generated by the analysis of the interviews in study one, the 12 items of Shortell's scale were mapped to one or more of the 19 codes. An additional 8 items were then generated for the remaining codes. The final scale on effective communication, as an adaptation of Shortell's scale, included 20 items.

3.4.4 Strengths and Limitations

An initial aspect to consider when trying identifying how to improve the analysis of communication breakdown in future studies, is the sample of professionals to consider for the interviews. That is, it is suggested to increase the number of participants based on the possibility of comparing and organizing participant's data according to some key element, such as professional group, specialty and level of hierarchy. The comparison of participants' contributions based on these three elements would provide a more elaborate analysis of communication breakdown. With a larger sample it would also be possible to avoid misleading representations of factors involved, based on the predominance of one of those characteristics in the sample, such as, for example, an over representation of the point of view of clinicians with senior positions. In the current study junior and senior members of staff were involved in the interviews, in order to have the opportunity to consider both contributions in the understanding of communication breakdown. In increasing the number of interviews it could be possible to compare junior and senior perspectives on barriers and facilitators of effective communication.

Furthermore, members of two professional groups were involved in the interviews conducted. When analysing the data, several clinicians mentioned examples of communication breakdown that involved additional professional groups, such as health care professionals, pharmacists and physiotherapists. This finding underlines the need for expanding the analysis of communication breakdown to these other groups, in order to have their insight and opinion of barriers and strategies to improve team communication. It would then be important to include members of these professions in future studies.

The interviewed nurses and doctors belonged to several specialities (Midwifery and Obstetrics, Gynaecology, Paediatrics, Anaesthesia, Orthopaedics and Acute Medicine) but because of the limited numbers of interviews (22) it was not possible to compare the data according to the department of the person interviewed, not allowing to identify specific dynamics that belonged to a particular area of Medicine. As Surgery has been largely studied in research on team communication and collaboration, future studies could focus on other specialties or departments, in order to obtain a more specific knowledge and tailor interventions according to the specialty considered to target in the analysis. It would be recommended to

include a larger sample for the interviews so to make possible comparisons based on the specific specialty the participants belonged to.

When considering the actual interview questions, there are some factors related to communication breakdown which I would suggest to explore and include in further investigations. As the participants' contribution largely discussed group communication and the difficulty of defining teams, it would be relevant to explicitly ask participants to define what team they belonged to. In addition to that it would be important to ask them whether they think their team is effective. This information would add to the analysis the possibility of understanding whether teams are perceived to be less efficient when they are harder to define. From a theoretical advance, this investigation could provide support to the Common Ingroup Identity Model, as the perception of the inclusion to a common group could ease interactions with members of a different professional group and improve the perception of effective communication.

3.4.5 Summary

The interviews conducted gave an insight to how both junior and senior members of two professional groups (nurses and doctors) experience team communication, providing information on which factors related to communication could contribute to its effectiveness. The interviewed nurses and doctors, presented their own experiences of communication breakdown, forming the basis for the analysis that revealed the role of interpersonal and inter-professional interactions in contributing to the avoidance of communication breakdown. Individual differences and positive interpersonal interactions have been identified to help communication. Through the perception of increased familiarity and of being approachable, creating the opportunity for positive interpersonal exchange of information, positive relationships with colleagues can ultimately increase the quality of patient centred communication. In addition to that, effective collaboration and the understanding of each other's roles and responsibility have been mentioned to improve team communication.

These findings represent the insights of more junior and more senior health care professionals, allowing intervention to respond to the needs and problems of professionals at different levels of the hierarchy, avoiding the risk of ignoring the voice of more junior members of staff. In fact, it was the specific contribution of junior nurses that underlined how feeling insecure about their own knowledge and professional experience could affect the way they could approach senior colleagues. It is suggested to consider

interventions that would aim to increase interpersonal relationships and reduce professional barriers (such as, the lack of knowledge about others and the strong hierarchy), in conjunction with the improvement of the structure of communication (using SBAR and safety briefings). In the context of inter-professional learning, the intergroup contact hypothesis had been applied at the undergraduate level to promote more structured positive inter-professional interactions aiming for the professionals in the learning group to learn with and about each other. In this context of shared learning, participants develop positive relationships among each other and learn more about specific roles and responsibilities.

As an additional outcome of the conducted interviews, the findings of the current study were used for the development of a scale on effective inter-professional communication, based on the five themes generated by the thematic analysis: Relationships with Others, Collaboration and Mutual Understanding, Hierarchy and Roles, Challenges and Systems to Improve Communication. The new scale to be used in Study 2 of this thesis is an adaptation of an existing scale on inter-professional communication initially developed by Shortell (1991). With the adapted scale effective communication between nurses and doctors will be measured more accurately, investigating both interpersonal and intergroup factors that both junior and senior members of the two professions considered important to ensure that information regarding patients is shared effectively. The relations between effectiveness of communication and the quality of inter-professional contact, based on Allport's (1954) optimal conditions, will then be investigated in Study 2.

Chapter 4
Study 2: the role of the quality of professional contact on communication and teamwork

In this chapter, a cross sectional survey on the quality of inter-professional contact between nurses and doctors will be presented. The current study aimed to investigate whether high quality contact between nurses and doctors, at different levels of the hierarchy, could predict positive communication and the effectiveness of teamwork. In addition to this, inter-professional perceptions (stereotype and meta-stereotypes) and professional identities will be considered as additional factors that could explain how positive professional contact and positive teamwork and communication are related to each other. The results of the analysis conducted will be presented in relation to previous research on intergroup contact, discussing whether the contact hypothesis could be applied to the hospital setting for the improvement of inter-professional relations between nurses and doctors. Specifically it will be discussed whether previous findings on the effects of contact will be replicated, and whether high quality intergroup contact could also predict team work and team communication as outcome variables.

4.1 Introduction

Cooperation has been found to be an essential predictor of a positive work environment and safer care (Schmalenberg et al., 2005). Specifically, it is perceived to create a culture of respect towards individual differences and interests (McCaffrey et al., 2012). Teamwork training of clinicians has often focused on the improvement of communication skills alongside with collaboration, based on the principles of crew resource management (or CRM) traditionally used to train pilots in aviation (Musson & Helmreich, 2004). A first key element of CRM is the idea of briefings, which are short discussions around the actions to be taken by the person in charge. Usually conducted by the captain, briefings focus on information such as bad weather, specific roles and norms of social behaviour. An important space in the crew discussions is reserved to the open communication of safety concerns in order to establish a “shared mental model” of the flight. A second element of CRM is the acceptance of any crew member to challenge actions of colleagues in the case of safety concerns. A final element is the

use of behaviours to monitor others' actions critical to safety. An example of a program based on CRM and designed to improve collaboration and team communication in health care is the "Medical Team Training" developed by the National Center for Patient Safety of the Department of Veterans Affairs. The project aimed to improve the outcomes of patient care and staff job satisfaction, measuring changes in organizational culture, communication, teamwork, and human factor awareness (Mills, Neily, & Dunn, 2008).

Social psychological research on intergroup contact provides an additional perspective to fully understand how to improve cooperation and consequently team communication. This approach focuses on what conditions create the optimal environment in which to build a positive culture between people that belong to different groups. Gordon Allport in his book "The Nature of Prejudice" (1954) proposed that interactions between members of different groups could improve attitudes if contact happens in the right conditions: members of the groups involved should have (a) equal status, (b) common goals, (c) institutional support and (d) cooperation (Pettigrew, 1998). A meta-analysis on the studies involving intergroup contact has revealed that the positive effects of contact on prejudice was stronger for those studies in which the four optimal conditions were met. Furthermore, these findings have been replicated in a multitude of settings and towards several different outgroups. Studies on intergroup contact studying the relationship between health care professionals are limited to inter-professional learning programs (Carpenter & Hewstone, 1996; Hewstone et al., 1994) and do not assess whether the four optimal conditions could be considered predictors of team effectiveness and effective communication, alongside reduction of ingroup bias and prejudice. In the current study the focus will be on assessing whether the four optimal conditions are predictors of positive professional attitudes in the hospital settings, specifically between nurses and doctors.

A study of the relationship between collaboration in the organizational setting and the other optimal conditions has been conducted by Koschate and van Dick, who hypothesized the mediation role of intergroup cooperation on the relationships between the other three conditions and intergroup bias (Koschate & van Dick, 2011), an idea first suggested by Gaertner and Dovidio (2000). Cooperation was referred to as cooperative interaction, and its characteristic elements were working together on a task, resolving conflict and communicating effectively. The intergroup context analysed by the authors was between several work groups in a German mail order company.

Their results supported the hypothesis that cooperation mediated the effects of the other three optimal conditions on the reduction of ingroup bias, showing that cooperation could be considered as a first step towards conflict resolution and bias reduction.

In the current study the effects of intergroup contact on several cognitive components of attitudes are considered. Several studies on intergroup contact provide evidence for the role of cognitive factors in the explanation of how intergroup contact works in reducing bias: the increased knowledge helps to disconfirm negative stereotypes about the outgroup (Miller, Kenworthy, Canales, & Stenstrom, 2006). Carpenter (1995) analysed the power of stereotyped relationships between nurses and doctors on patients, suggesting the need for a change of attitudes and behaviours of the two professional groups via inter-professional shared learning. In Carpenter's study nurses were seen by both groups as caring, good communicators and dedicated; doctors were perceived as dedicated, and confident but arrogant. These results were similar to Mackay's findings (1992) that reported that nurses value more personal characteristics, while for doctors professional skills were considered as more important in defining the "good doctor". At the end of Carpenter's inter-professional program based on intergroup contact theories, nurses saw doctors as less arrogant and better communicators, suggesting that the promotion of more collaborative team work could produce a change of negative stereotypes between professions. Although Carpenter's inter-professional program was based on social psychological theories, such as intergroup contact and social identity theory, there was no assessment of whether the optimal conditions predicted a change in stereotypes, and subsequently how the change in stereotypes affected the change in professional attitudes.

More positive attitudes would not only be reflected by more positive stereotypes about the other group, but also in more positive expectations about how the outgroup see us, that is in the activation of more positive meta-stereotypes (Ruys, Spears, Gordijn, & Vries, 2007). Vorauer and colleagues (2000) underlined how meta-stereotypes are a specific form of meta-perceptions: they refer to stereotypes that members of the ingroup believe that members of the outgroup hold of them (Vorauer et al., 2000). The roles of meta-stereotypes have been investigated amongst several national and ethnic contexts, such as White Canadians and Aboriginal Canadians, African Americans and White Americans. Kamans et al. (2009) examined the moderators of the assimilation of meta-stereotypes. More

precisely, they examined the conditions under which the minority group legitimises negative meta-stereotypical behaviours. They considered intergroup relations between Dutch Moroccan teenagers and the Dutch majority, finding that feelings about the outgroup and the perception of being personally stereotyped moderate the legitimization of those negative behaviours. That is, highly prejudiced Moroccan teenagers who feel personally stereotyped by the Dutch majority assimilate more to the negative meta-stereotype than low prejudiced Moroccan teenagers who do not feel personally stereotyped by the Dutch majority (Kamans, Gordijn, Oldenhuis, & Otten, 2009). The relation between meta-stereotypes and prejudice has not been investigated extensively. Vorauer found a negative correlation between meta-stereotypes and levels of prejudice in White Canadians participants: more negative meta-stereotypes were associated with lower prejudice towards the Aboriginal Canadians group. These findings suggest that those members of the dominant group who are less prejudiced are also more aware of the history of discrimination experience by the subordinate group and they show more negative feelings towards their own group. On the contrary, in studies considering the South African context, more prejudiced participants were reported to believe that members of the other group think negatively of their own group (Finchilescu, 2010). Moreover, few studies investigated the relationship between meta-stereotypes, intergroup anxiety and several types of contact (such as anticipated or face to face), suggesting that meta-stereotypes may explain intergroup anxiety and avoidance of intergroup contact (Finchilescu, 2005).

Carpenter refers to them as hetero-stereotypes and explains how the knowledge of how the professional groups see each other could set a culture in which nurses and junior staff do not feel free to speak up. The link between changes in meta-stereotypes during professional contact has not been investigated for the two professional groups. In this study the role of both stereotypes and meta-stereotypes is considered in relation to the quality of professional contact and effective interactions. It is suggested that working together towards a common goal in a supportive culture would affect the way the professional groups perceive each other's professions, leading to effective team work and communication.

When considering what happens when members of different professional group interact with each other, it is also important to understand how their specific behaviour changes according to the fact that they belong to different groups and the importance that this membership has for their own personal

and professional image. Group identification has been identified as an additional element that has an important moderating role on the effects of contact interactions on the improvement of attitudes. Several studies showed how contact strategies are more effective for people who identify less strongly with their own group. The concept of social identity was developed by Tajfel's (1978) Social Identity Theory (SIT) to explain how individual behaviour is influenced by group membership, arguing that social identity reflects group membership and becomes relevant in inter-group contexts, when social comparisons are more salient. This theory is based on the distinction between personal and social identity, reflecting the difference between interpersonal situations and group situations. Tajfel suggested that individuals are motivated to achieve or maintain a positive social identity, in order to increase their self-esteem, by making favourable comparisons between an ingroup and relevant outgroups. In the case of unsatisfactory identity, individuals will tend to leave the group or find other ways to make the intergroup comparison more favourable for their own group (Brown, 2000). The importance of the role of group identities is underlined by the recategorization model of intergroup contact which suggests that prejudice can be reduced when members of different groups perceive themselves as members of a super ordinate entity (Gaertner et al., 1989). In the hospital team this could be applied to when doctors and nurses identify with the surgical team, rather than with their own professions. Recategorization requires individuals to renounce their original group membership in order to accept the super ordinate group and this may not be possible in many social groups, including health care professionals. In order to compensate for this limitation, Gaertner and colleagues suggested a "dual identity" in some intergroup contexts, whereby both the salience of the original categories and the common ingroup are simultaneously maintained. When analysing the social context in which doctors and nurses interact and communicate with each other and other members of the teams, the strength of professional group membership and how they feel as members of their own group is an important aspect that has to be take into consideration. Specifically, it is important to understand whether identification with their own professional group could coexist with a positive inter-professional interaction and perceptions of effective team work and communication.

4.1.1 The current research

Cooperation and effective communication are essential to deliver safer care in hospitals, but professional stereotypes and the hierarchical system between professions could represent a barrier to effective team work (Carpenter & Hewstone, 1996). The aim of this study is to investigate whether when the four optimal conditions for contact are present, (a) equal status, (b) common goals, (c) institutional support and (d) cooperation, inter-professional relations and communication within the hospital team are more positive. Differences in inter-professional attitudes as a consequence of quality of contact will be tested. Moreover, the level of identification with their job role will be measured as a predictor of the effects of the quality of contact on team effectiveness and perceptions of the other professional group (stereotypes and meta-stereotypes). More specifically I will ask the following research questions:

RQ1. Does Quality of professional group predict effective team communication and team effectiveness? Is team effectiveness a mediator of the relationship between positive contact and effective teamwork? It is hypothesised that when the quality of professional interactions is high, teamwork and inter-professional communication will be more effective.

RQ2. Does strength of professional identification moderate the effect of quality of contact on team effectiveness and communication?

RQ3. Do stereotypes mediate the effects of Quality of Contact on Team Effectiveness and Communication? It is hypothesised that when inter-professional contact is positive, the stereotypes associated with other professions will be more positive, leading to more effective teamwork and communication.

RQ4. Do meta-stereotypes mediate the effects of Quality of Contact on Team Effectiveness and Communication? It is hypothesised that more positive inter-professional contact would increase positive meta-stereotypes, leading to more effective teamwork and communication.

RQ5. What is the best model that describes the relationship between these variables?

4.2 Method

4.2.1 Participants and Design

The study design was a cross-sectional survey. Two hundred and twenty questionnaires were distributed at several wards of the Bradford Royal Infirmary and Leeds Teaching Hospital. It was chosen to include the same specialities and wards in which the recruitment of study one took place, that is Obstetrics and Gynaecology, Paediatrics, Surgery, Intensive Care Medicine and Anaesthetics. This choice was made in order to make comparisons and generalizations between the samples of the two research studies, as one of the scales included in the questionnaire was based and adapted on the analysis of the interviews of study 1. Moreover, as a result of initial contacts made with ward managers and consultants from those specific wards during the recruitment of study 1, the access of staff for the completion of the questionnaire was easier in those specialties.

For calculating the sample size, recommendations by Norman (2003) were followed regarding a minimum total of 100 participants when conducting Path Analysis and Structural Equation Modelling (Norman & Streiner, 2003). Additionally, other indications regarding sample size suggest having 10 subjects per parameter, considering each variable to have three parameters (its path coefficient, its variance and the disturbance term). In this study the measured variables were 6 (quality of contact between nurses and doctors, quality of inter-professional communication, team effectiveness, professional identification, professional stereotypes and meta-stereotypes), resulting on a recommended sample size of 180 participants. It was then decided to aim for a sample size of between 100 and 180 participants (which would be considered enough to test the relationship between the variables in our model).

4.2.2 Materials

The questionnaire took approximately 5-10 minutes to complete. The questionnaire included measures of quality of contact between nurses and doctors, quality of inter-professional communication, team effectiveness, professional identification, professional stereotypes and meta-stereotypes. All the measures used were adaptations of original scales used in previous studies: in order to answer to the heavy workload of the participants, the questionnaire could not take longer than 10 minutes to complete, resulting with the reduction of the number of items. The questionnaire included the following measures.

Quality of Contact: This is a measure of Allport's optimal conditions: cooperation, goal interdependence, institutional support and equal status. The eight-item scale was an adaptation of Koschate and van Dick's (2011) scale. Examples of items measuring cooperation and common goal are: "If disagreements arise, nurses and doctors are usually able to resolve them", "A friendly attitude exists between nurses and doctors", "When problems arise during shared tasks, nurses and doctors perceive them as "mutual" problems that need to be solved", "Nurses and doctors recognise the expertise of each others' group", "When problems arise, nurses and doctors search for solutions that are agreeable to each others' professional group". Examples of the two items measuring institutional support are: "I feel supported by my managers in cooperating with a nurse in my team", "I feel supported by my managers when problems arise between nurses and doctors". The item measuring equal status is: "Nurses have a higher status than doctors at this organization". Items were assessed on a 5-point likert scale. Scores were aggregated in a reliable index (alpha=0.81): the higher the score the more positive the quality of inter-professional contact between doctors and nurses in hospitals.

Communication: This is a measure of the quality of inter-professional communication perceived by nurses and doctors. Out of the 20 items, 12 were developed by Shortell et al. (1991). This scale was chosen after a review of measures on effective communication between doctors and nurses in the hospital setting and it was selected because it is one of the few multi-item scales that measured several domains of effective communication (i.e., timeliness and openness). The final 8 items were adapted based on the themes from an interview study with 22 health care professionals conducted prior to this research (reported in the previous Chapter). We aimed to have at least one item per code identified during the analysis of the interviews. In order to check that the 8 items developed matched accurately the codes we asked two independent judges to assign one or more codes generated from the interviews to each of the 20 final items of the scale. A 5-point scale was used ranging from 1 (Not at All) to 5 (Very Much). Examples of items are "I look forward to working with nurses each day", "It is easy for me to talk openly with nurses", "I can think of a number of times when I received incorrect information from nurses", "There is effective communication between nurses and doctors across shifts", "Communication between doctors and nurses is very open", "It is often necessary for me to go back and check the accuracy of information I have received from nurses", "I find it enjoyable to talk with nurses", "Nurses are well informed regarding events

occurring on other shifts", "When nurses talk with doctors, there is a good deal of understanding between them", "The accuracy of information passed between nurses and doctors leaves much to be desired", "It is easy to ask advice from nurses", "I feel that certain nurses don't completely understand the information they receive from doctors", "Talking on the phone with a doctor I haven't met before is challenging", "Doctors and nurses have different priorities", "There are a lot of opportunities for doctors and nurses to learn together", "There are a lot of opportunities for doctors and nurses to know each other better as individuals", "I know the nurse I should go to for the information I need", "I feel that certain nurses don't understand the roles and responsibilities of a doctor", "I don't always understand what team people belong to", "I am confident of my role in the team". Scores were aggregated in a reliable index (alpha=0.88): high scores indicated more positive inter-professional communication.

Team Effectiveness: This is a measure of how effective health care professionals perceived their team to be. The 7-item scale was originated from Richter, Scully and West's (2005) scale, reducing the number of items due to the final length of the questionnaire (Richter, Scully, & West, 2005). Examples of items are "Our team meets the standards of the quality expected by our Trust", "Our team meets the standards of timeliness expected by our Trust", "Our team meets the standards of patient safety expected by our Trust", "Our team meets the standards of patient experience expected by our Trust", "The relationship between nurses and doctors is productive", "Our team has a reputation of work excellence within our Trust", "Nurses and doctors work effectively together in order to provide better services to patients". For each item a 5 point scale was used ranging from 1 (Not at All) to 5 (Very Much). Scores were aggregated in a reliable index (alpha=0.90): higher scores indicated higher levels of perceived team effectiveness.

Identification: This is a measure of how strongly participants felt that they belonged to their professional group. The scale was derived from the three-factor model scale by Cameron (2004) . It measures three components of Social Identity: Centrality (cognitive accessibility), Ingroup Affect (evaluation of Social Identity) and Ingroup Ties (psychological ties with the group). For the 6 items, a 6-step items scale was used ranging from 1 (Strongly Disagree) to 6 (Strongly Agree). Scores were aggregated in a reliable index (alpha=0.71): the higher the score, the higher was the identification with the ingroup. Examples of items for the three factors are: "I

have a lot in common with other doctors", "I feel strong ties with other doctors", "In general, being a doctor is an important part of my self-image", "The fact that I am a doctor rarely enters my mind", "I don't feel good when I think about myself as a doctor" and "In general I'm glad to be a doctor".

Stereotypes and Meta-stereotypes: This was a measure of how much participants thought each set of characteristics applied to the other professional group (stereotypes) or how their professional group was seen by the members of the outgroup (meta-stereotypes). This measure was considered as a cognitive measure of attitudes towards the outgroup. The attributes used in this study derived from Carpenter (1995). The 7 characteristics used were: "detached", "good communicator", "confident", "dedicated", "arrogant", "caring", and "dithering". For the 5 items a 5-step items scale was used ranging from 1 (Not at All) to 5 (Very Much).

Team: Participants were asked to indicate which teams they belonged to. They could write as much information as they wanted in the box provided. Examples of instructions are "In your job you may work with more than one team. However, we are specifically interested in your perceptions of the team that you work in most frequently. Please indicate in the box below which team you work with most frequently. My team is ...".

4.2.3 Procedure

Initial contact was made with several ward managers and consultants from the two hospitals selected for this study. After presenting the current research, suitable dates for the recruitment of their staff were discussed. Some of the questionnaires were handed by the ward managers and consultants themselves to their staff and others were given directly by me. Participants were asked to complete the questionnaires in their own time, and to return them to their manager with whom I had a final meeting to collect the questionnaires. Questionnaires took from one day to few weeks to be handed in and then collected. Participants received a folder containing the information sheet, the consent form and the questionnaire. They were asked to complete several questions on the quality of professional contact, effective communication, team effectiveness, professional identity, stereotypes and meta-stereotypes. Participants were then asked to provide demographic information, specifically gender, age, job role and specialty.

Inclusion criteria were the job role of the participants (doctors or nurses), any other professions (for example, health care assistants) were excluded from the analysis. In exchange for the completion of the questionnaires, the ward

managers and consultants who granted access to their members of staff were approached at the end of the study and received £1 for each questionnaire completed by their team, to then use for their ward or department.

All study materials were kept in locked store cabinets at the University of Leeds and all data were stored in a password protected computer. The study received University of Ethics approval (Ref:12-0080) and R&D approval from Bradford Royal Infirmary and Leeds Teaching Hospital.

4.2.4 Method of analysis

Descriptive statistics were generated for the variables included in the questionnaire and initial correlations were conducted in order to investigate the relations between the variables in the questionnaire.

Several mediation analyses were then conducted in order to study what mediators could explain the effects of the quality of contact on the team effectiveness and communication (RQ1 and RQ3). Furthermore, a moderation analysis was conducted to answer the question on the moderation role of the professional identification level on the effects of the quality of inter-professional contact (RQ3). Finally, path analysis was conducted to generate a model to describe the relations between the effects of contact and team effectiveness, communication and professional stereotypes.

4.3 Results

The response rate was 53.9%: the final sample consisted of 73 nurses, of which 7 were male and 66 were female, and 44 doctors, 21 male and 23 female. The descriptive statistics are presented in the table 1 below.

Table 1 Descriptive statistics for Quality of Contact, Communication, Identification, Team Effectiveness and Stereotypes

	Nurses M (SD) (N=73)	Doctors (SD) (N=44)
Quality of Contact	3.93 (0.60)	3.89 (0.50)
Communication	3.60 (0.54)	3.69 (0.55)
Identification	4.73 (0.82)	4.58 (0.69)
Team Effectiveness	4.23 (0.55)	4.04 (0.69)
Detached	2.38 (1.02)	1.48 (0.73)
Good Communicator	3.51 (0.78)	3.82 (0.84)
Confident	3.99 (0.72)	3.66 (0.61)
Dedicated	3.95 (0.66)	4.07 (0.90)
Arrogant	2.52 (1.08)	1.61 (0.65)
Caring	3.81 (0.64)	4.27 (0.73)
Dithering	2.11 (0.95)	1.84 (0.95)

4.3.1 Correlations between the variables

In order to investigate how the variables were associated with one other, Pearson's correlations between Quality of contact, Communication, Team Effectiveness and Professional Identity were conducted. The correlation matrix is reported in Table 2.

Table 2 Correlations between the Quality of Contact, Communication, Team Effectiveness and Identification

	1	2	3	4
1.Quality of Contact	-	.56**	.47**	.41**
2. Communication		-	.62**	.35**
3. Team Effectiveness			-	.38**
4. Identification				-

*p < .05, **p < .01, ***p < .001.

The correlations illustrate that high quality of inter-professional contact was associated with perception of effective communication, high team effectiveness and strong identification with their own professional group.

In addition to that, a correlation was conducted between Quality of Contact and the 7 traits of stereotypes. The correlation matrix is reported in Table 3.

Table 3 Correlations between Quality of Contact and Stereotypes

	1	2	3	4	5	6	7	8
1.Quality of Contact	-	-.23*	.28**	.27**	.40**	-.39**	.35**	-.39**
2. Detached		-	-.39**	-.14	-.43**	.49**	-.48**	.39**
3.Good Communicator			-	0.32*	.41**	-.46**	.60**	-.40**
4. Confident				-	.28**	.01	.22*	-.42**
5. Dedicated					-	-.20*	.47**	-.29**
6. Arrogant						-	-.43**	.36**
7. Caring							-	-.37**
8. Dithering								-

*p < .05, **p < .01, ***p < .001.

The correlations illustrate that the high Quality of Contact was positively associated with the 4 positive traits (*Good Communicator, Confident, Dedicated, Caring*) and negatively correlated with the 3 negative traits (*Detached, Arrogant, Dithering*). This means that when there was positive contact between nurses and doctors, health care professionals saw each other in a more positive way. Moreover, the negative traits correlated positively with other negative traits and negatively with other positive traits. Similarly, positive traits positively correlated with the other positive traits and negatively with negative traits. To reduce the data in later analysis, two new variables were then created: Positive Stereotypes, (Alpha= 0.72) were the mean of participants' scores on the four positive traits (*Good Communicator, Confident, Dedicated, Caring*) and Negative Stereotypes (Alpha= 0.68) were the mean of participants' scores on the three negative stereotypes (*Detached, Arrogant, Dithering*).

Correlations were next conducted between the Quality of Contact and the seven traits of Meta-stereotypes. The correlation matrix is reported in Table 4.

Table 4 Correlation between Quality of Contact and Meta-stereotypes

	1	2	3	4	5	6	7	8
1.Qualityof Contact	-	-.33**	.33**	.27**	.34**	-.34**	.41**	-.34**
2. Detached		-	-.42**	-.05	-.45**	.55**	-.53**	.36**
3.Good Communicator			-	0.13	.49**	-.50**	.51**	-.42**
4. Confident				-	.39**	.03	.20*	-.27**
5. Dedicated					-	-.44**	.69**	-.40**
6. Arrogant						-	-.54**	.54**
7. Caring							-	-.46**
8. Dithering								-

*$p < .05$, **$p < .01$, ***$p < .001$.

The correlations illustrate that the high Quality of Contact was positively associated with the 4 positive traits (*Good Communicator, Confident, Dedicated, Caring*) and negatively correlated with the 3 negative traits (*Detached, Arrogant, Dithering*). That is, when the quality of contact between health care professionals was positive, then participants expected to be seen by the other professional group in a more positive way. Moreover, the negative traits positively correlated with the other negative traits and negatively with the positive traits. Positive traits positively correlate with the other positive traits. Following these results two new variables were created: Positive Meta-stereotypes (alpha=0.73) were the mean of the scores on the four positive traits (*Good Communicator, Confident, Dedicated, Caring*) and Negative Meta-stereotypes (alpha=0.74) were the means of the scores on the three negative traits (*Detached, Arrogant, Dithering*).

Finally, a correlation was conducted between the stereotypes and the meta-stereotypes. The correlation matrix is reported in Table 5.

Table 5 Correlations between Stereotypes and Meta-stereotypes

	1	2	3	4
1.Positive Stereotypes	-	-.58**	-.26**	.38**
2.Negative Stereotypes		-	.28**	-.20*
3.NegativeMeta-stereotypes			-	-.63**
4. Positive Meta-stereotypes				-

*p < .05, **p < .01, ***p < .001.

The correlations indicate that perceiving the other group in a positive way was positively correlated with positive expectations about how their group was seen by the others. Similarly, when participants perceived the other group in a negative way, the expectations of how the other group would perceive them were also negative.

4.3.2 Research Question 1: Does Effective Communication mediate the effect of Quality of Professional Contact on Team Effectiveness?

These analyses examined whether the relationship between Quality of Contact and Team Effectiveness was mediated by the perception of Effective Communication between the two professional groups (Baron &

Kenny, 1986). In the first regression model Communication was the predictor and Team Effectiveness was the outcome. Results showed that the quality of Communication predicted the Team Effectiveness ($\beta=0.62$, $p<0.000$) and that Quality of contact predicted Team Effectiveness ($\beta=0.52$, $p<0.000$). A second regression was conducted adding both Quality of Contact and Communication as predictors. Results revealed that there was a partial mediation of Communication ($\beta=0.51$, $p<0.000$) on the relationship between Contact and Team Effectiveness ($\beta=0.18$, $p<0.05$). That is, when adding Effective Communication as mediator, the effect of Quality of Contact on Team Effectiveness was reduced but not completely eliminated.

The analyses were then repeated separately for the two professional groups.

For the nurses, results revealed that Quality of Contact predicts Communication ($\beta=0.54$, $p<0.001$) and Team Effectiveness ($\beta=0.44$, $p<0.001$). Additionally, Communication predicted Team Effectiveness ($\beta=0.58$, $p<0.001$). Finally when adding both predictors in the model results indicated that Effective Communication fully mediated the effects of Contact on team Effectiveness, eliminating the effect of Contact on the outcome, that becomes non significant ($\beta=0.18$, $p=0.11$).

Similarly for the doctors, Contact predicted both Communication ($\beta=0.62$, $p<0.001$) and Team Effectiveness ($\beta=0.55$, $p<0.001$). In addition to this, Communication predicted Team Effectiveness ($\beta=0.71$, $p<0.001$). Finally, a third regression was conducted adding Communication and Quality of Contact to the model as predictors and results indicated that Communication fully mediated the effects of Contact on Team Effectiveness, that became non significant ($\beta=0.18$, $p=0.20$).

A bootstrapping technique using 5000 resamples and 95% bias-corrected intervals was then performed (Hayes, 2013). When confidence intervals do not contain zero, they show a significant mediation effect. Results are reported in Table 6.

Table 6 Bootstrapping analysis for the mediation of Effective Communication on the effects of Contact on Team Effectiveness

	Total	Direct	95% CI
Whole sample	0.52***	0.20*	0.18/0.49
Nurses	0.41***	0.17	0.12/0.40
Doctors	0.75***	0.24	0.23/0.94

*p < .05, **p < .01, ***p < .001.
CI= confidence intervals

The bootstrapping analysis indicated that the three mediations were significant.

4.3.3 Research question 2: Does strength of professional group identity moderate the effect of quality of contact on Team Effectiveness?

In order to investigate whether the strength of Professional Identification moderated the effect of Quality of Contact on Team Effectiveness, moderation analysis was conducted where Quality of Contact, Identification and the product of the two variables were the predictors and Team Effectiveness was the outcome. In order to test the model a first linear regression was conducted where Contact was the predictor and Team Effectiveness was the outcome. The results showed that the Quality of Contact predicted Team Effectiveness (β=0.47, p<0.000). I then added to the regression model Identification and the product between Contact and Identification.

Results indicated that professional identity did not moderate the relationship between quality of contact and team effectiveness (β=-0.08, p=0.43).

4.3.4 Research question 2: Does strength of professional group identity moderate the effect of quality of contact on Effective communication?

In order to investigate whether the strength of Professional Identity moderated the effect of Quality of Contact on Effective Communication, moderation analysis was conducted where Contact, Identity and the product of the two variables were entered as predictors and Effective Communication was the outcome.

Results indicated that the Quality of Contact between nurses and doctors predicted effective Communication between the two professional groups ($\beta=0.56$, $p<0.000$) and that Professional Identification did not moderate the relationship between Contact and Communication ($\beta=0.05$, $p=0.56$).

4.3.5 Research Question 3: Do positive stereotypes mediate the effect of Quality of Contact on Team Effectiveness?

A first model was carried out to investigate if Positive Stereotypes mediated the relationship between Contact and Team Effectiveness.

In the first linear regression Contact was entered as predictor and Team Effectiveness as outcome variable. Results indicated that for the whole sample, Quality of Contact predicted Team Effectiveness ($\beta=0.47$, $p<0.001$). Similarly, when considering Positive Stereotypes as outcome variable in the linear regression, results showed that Contact also predicted Positive Stereotypes ($\beta=0.44$, $p<0.001$). Additionally, a third linear regression was conducted considering Stereotypes as predictor of Team Effectiveness and results showed that there was an effect of Positive Stereotypes on the outcome variable ($\beta=0.48$, $p<0.001$). To test whether there was a mediation of Positive Stereotypes on the effect of Contact on Team Effectiveness, we conducted a last regression adding Contact and Stereotypes as predictors. Results indicated that there was no mediation.

The same analyses were conducted separately for the two professional groups.

Considering nurses, a first linear regression was conducted with Contact as the predictor and Team Effectiveness as the outcome. Results revealed that Contact predicted Team Effectiveness ($\beta=0.44$, $p<0.001$). A second regression was conducted where Contact was the predictor and positive stereotypes were the outcome, revealing that Quality of Contact predicted

Positive Stereotypes of the other group (β=0.51, p<0.001). A third regression was conducted considering Positive Stereotypes the predictor and Team Effectiveness the outcome. Results showed that when participants had positive stereotypes about the other group, they also perceived the team to be effective (β=0.50, p<0.000). A final regression was conducted adding Contact and Positive Stereotypes as predictors. Results indicated that Positive Stereotypes partially mediated the effect of Contact on Team Effectiveness, including the mediator the relationship between the predictor and the outcome was not eliminated but reduced (β=0.25, p<0.05). A bootstrapping technique using 5000 resamples and 95% bias-corrected intervals was then performed (Hayes, 2013) showing that the mediation was significant (see Table 7).

Table 7 Bootstrapping analysis for the mediation of Positive Stereotypes on the effect of Contact on Team Effectiveness

	Total	Direct	95% CI
Nurses	0.41***	0.23*	0.05/0.39

*p < .05, **p < .01, ***p < .001.
CI= confidence intervals

Similarly for the doctors' responses, results showed that Contact predicted Team Effectiveness (β=0.55, p<0.000) and Positive Stereotypes (β=0.36, p<0.05) and that Positive Stereotypes predicted Team Effectiveness (β=0.50, p<0.001). Finally a last regression was conducted showing that Positive stereotypes did not mediate the relationship between the predictor (Contact) and the outcome variable (Team Effectiveness).

4.3.6 Research Question 3: Do negative stereotypes mediate the effect of Quality of Contact on Team Effectiveness?

Similar analyses were conducted considering Negative Stereotypes as mediators of the effect of Contact on Team Effectiveness.

For the whole sample, results showed that Quality of Contact predicted Negative stereotypes (β=-0.43, p<0.001) and that Negative Stereotypes predicted Team Effectiveness (β=-0.27, p<0.01). Finally, results indicated

that there was no mediation of Negative Stereotypes on the effects of Contact on Team Effectiveness (β=-0.09, p=0.37).

For nurses, results showed that Quality of Contact predicted Negative Stereotypes (β=-0.47, p<0.000) and that Negative Stereotypes predicted Team Effectiveness (β=-0.29, p<0.05). In order to investigate the mediation Contact and Negative Stereotypes were entered as predictors in the model. Results showed that there was no mediation of Negative Stereotypes on Team Effectiveness (β=0.40, p<0.05). When considering the doctors' scores, results indicated that Contact predicted Negative Stereotypes (β=-0.57, p<0.000) and that Negative Stereotypes predicted Team Effectiveness (β=-0.62, p<0.000). Finally, Negative Stereotypes partially mediated the relationship between Contact and Team Effectiveness (β=0.29, p<0.05).). A bootstrapping technique using 5000 resamples and 95% bias-corrected intervals was then performed (Hayes, 2013) showing that the mediation was significant (see Table 8).

Table 8 Bootstrapping analysis for the mediation of Negative Stereotypes on the effect of Contact on Team Effectiveness

	Total	Direct	95% CI
Doctors	0.75***	0.40*	0.11/0.70

*p < .05, **p < .01, ***p < .001.
CI= confidence intervals

4.3.7 Research Question 3: Do positive stereotypes mediate the effect of Quality of Contact on Effective Communication?

The same analyses were conducted considering Communication as the outcome in the model. It was first tested whether Positive Stereotypes were mediating the effect of Contact on the outcome variable and then whether Negative Stereotypes were mediating the effect of predictor on Effective Communication.

For the whole sample, results indicated that Quality of contact predicted Effective Communication (β=0.56, p<0.001) and that Positive Stereotypes predicted Effective Communication (β=0.62, p<0.001). Moreover, there was

no mediation of Positive Stereotypes on Effective Communication, suggesting that these two variables worked independently.

The analyses were conducted separately for nurses and doctors. For the nurses, a first linear regression was conducted where Contact was the predictor and Communication the outcome, showing that Contact predicted Communication (β=0.54, p<0.000). A second regression was conducted considering Contact as predictor and Positive Stereotypes as outcome variable. Results indicated that Contact significantly predicted Positive Stereotypes (β=0.51, p<0.000). In the third regression Positive Stereotypes were entered as predictor variable and Effective Communication as the outcome, revealing that Stereotypes predicted Communication (β=0.62, p<0.000). Lastly, in the final regression model Contact and Positive Stereotypes were entered as predictors. Results indicated that Positive Stereotypes partially mediated the effects of Contact on Communication (β=0.30, p<0.05). A bootstrapping technique using 5000 resamples and 95% bias-corrected intervals was then performed (Hayes, 2013) showing that the mediation was significant (see Table 9).

Table 9 Bootstrapping analysis for the mediation of Positive Stereotypes on the effect of Contact on Effective Communication

	Total	Direct	95% CI
Nurses	0.48***	0.27**	0.09/0.39

*p < .05, **p < .01, ***p < .001.

CI= confidence intervals

The same analyses were conducted for the doctors groups. Results revealed that Contact predicted Communication (β=0.62, p<0.000) and Positive Stereotypes (β=0.36, p<0.05). Moreover, Positive Stereotypes predicted Communication (β=0.60, p<0.000). Finally both Contact and Stereotypes were entered in the model as predictors and results indicated that Positive Stereotypes did not mediate the effect of Contact on Communication (β=0.46, p<0.000).

4.3.8 Research Question 3: Do negative stereotypes mediate the effect of Quality of Contact on Effective Communication?

A second model was then tested for the two groups, considering Negative Stereotypes as mediators of the effect of Contact on Communication.

When considering the whole sample, results indicated that Negative Stereotypes predicted Effective Communication (β=-0.56, p<0.001) and that there was no mediation of Negative Stereotypes on the effect of Contact on Communication.

For the nurses, a linear regression revealed that Contact predicts Negative Stereotypes (β=-0.47, p<0.000) and that Negative Stereotypes predict Effective Communication (β=-0.52, p<0.000). It was then tested whether the Stereotypes mediated the effect of Contact on Communication, entering both Negative Stereotypes and Contact to the regression model and results indicated that there was a partial mediation of Negative Stereotypes on the effect of Contact on Communication (β=0.38, p<0.05).

When considering doctors' scores, results indicated that Contact predicts Negative Stereotypes (β=-0.56, p<0.000) and that Negative Stereotypes predicts effective Communication (β=-0.80, p<0.000). Additionally, it was found that Negative Stereotypes partially mediated the effect of Contact on Communication (β=0.25, p<0.05). A bootstrapping technique using 5000 resamples and 95% bias-corrected intervals was then performed (Hayes, 2013) showing that both mediations were significant (see Table 10).

Table 10 Bootstrapping analysis for the mediation of Negative Stereotypes on the effect of Contact on Effective Communication

	Total	Direct	95% CI
Nurses	0.48***	0.34**	0.05/0.32
Doctors	0.67***	0.27*	0.23/0.59

*p < .05, **p < .01, ***p < .001.

CI= confidence intervals

4.3.9 Research Question 4: Do meta-stereotypes mediate the effect of Quality of Contact on Team Effectiveness?

Similar mediation analyses were conducted to investigate whether Positive Meta-stereotypes were mediating the effect of Contact on Team Effectiveness

When considering the whole sample, results indicated that Contact predicted positive meta-stereotypes (β=0.44, $p<0.001$) and that this last variable predicted Team effectiveness (β=0.44, $p<0.001$). Moreover, there was no mediation of meta-stereotypes on the effect of Contact on Team Effectiveness.

The same analyses were conducted considering Negative Meta-Stereotypes the mediators in the model.

For the whole sample, Contact predicts Negative-Meta-stereotypes (β=-0.42, $p<0.001$) and they predict Team Effectiveness (β=-0.41, $p<0.001$). Additionally, there was no mediation of Negative meta-stereotypes on the effect of Contact on team Effectiveness.

4.3.10 Research Question 4: Do meta-stereotypes mediate the effect of Quality of Contact on Effective Communication?

It was also tested whether Positive and Negative Meta-stereotypes were mediating the effect of Contact on Team Communication. When considering the whole sample, Positive Meta-stereotypes predicted Communication (β=0.37, $p<0.001$), but there was no mediation of Positive Meta-stereotypes on the effect of Contact on Team Communication (β=0.15, $p=0.09$).

The same regression model was tested considering Negative Meta-stereotypes as mediator of the effect of Contact on Communication. For the whole sample, Negative Meta-stereotypes predicted Effective Communication (β=-0.36, $p<0.001$) but there was no mediation of Negative Stereotypes on the effects of Contact on Communication (β=-1.15, $p=0.67$).

4.3.11 Research Question 5: Exploratory model

An exploratory path model was tested using AMOS 20 (Arbuckle, 2008) for the two professional groups (Arbuckle, 2008). The model included two mediation effects which were found significant in the mediation analysis previously reported in this chapter. Firstly, the model included the significant mediation of effective communication on the effects of the quality of contact on team effectiveness. Secondly, when considering the effects of quality of

contact on effective communication, it was chosen to include positive stereotypes as mediators of such effect. This significant mediation of stereotypes replicated previous findings on the cognitive mediators of intergroup contact (presented in Chapter 2). Specifically, it supports the idea that intergroup contact positively affects intergroup attitudes via an increase of positive stereotypes, that is through an increased accuracy of the knowledge of the outgroup. The model that best fitted the data tested how quality of inter-professional contact was associated with team effectiveness via effective communication, and how the quality of inter-professional contact predicted effective communication via positive stereotypes.

For the nursing group, referring to Hu and Bentler's (1999) guidelines the model fit the data well: the chi square test was non significant $\chi^2(2, N = 74) = 5.23$, $p = .10$; but the root-mean-square error of approximation (RMSEA) was not lower than 0.06 (RMSEA=0.09); the comparative fit index (CFI) was over .95 (CFI=0.98).

Similarly, for the doctors group, the chi square test was non significant $\chi^2(2, N = 44) = 2.48$, $p = .29$; but the root-mean-square error of approximation (RMSEA) was not lower than 0.06 (RMSEA=0.07); the comparative fit index (CFI) was over .95 (CFI=0.99).

As illustrated by Figure 1.1, for the nursing group, quality of inter-professional contact was perceived to lead to more effective communication ($\beta=0.30$, $p<0.01$) which in turn was associated to more team effectiveness ($\beta=0.59$, $p<0.001$). When the quality of contact between health care professional was higher, stereotypes of the outgroup were more positive ($\beta=0.51$, $p<0.001$), that then increased the perception of effective inter-professional communication ($\beta=0.47$, $p<0.001$). Inter-professional contact mediated by the activation of positive stereotypes explained 46% of the variance of effective communication. Furthermore quality of contact, mediated by effective communication, explained 35% of team effectiveness (Hu & Bentler, 1999).

When considering the doctors group (see Figure 2), quality of inter-professional contact was perceived to increase effective communication ($\beta=0.46$, $p<0.001$) which was then associated to more positive team effectiveness ($\beta=0.71$, $p<0.001$). Quality of contact was also increasing the activation of positive stereotypes about the outgroup ($\beta=0.36$, $p<0.05$), which in turn increased effective communication ($\beta=0.44$, $p<0.001$). Inter-professional contact mediated by the activation of positive stereotypes explained 55% of the variance of effective communication. Furthermore

quality of contact, mediated by effective communication, explained 50% of team effectiveness.

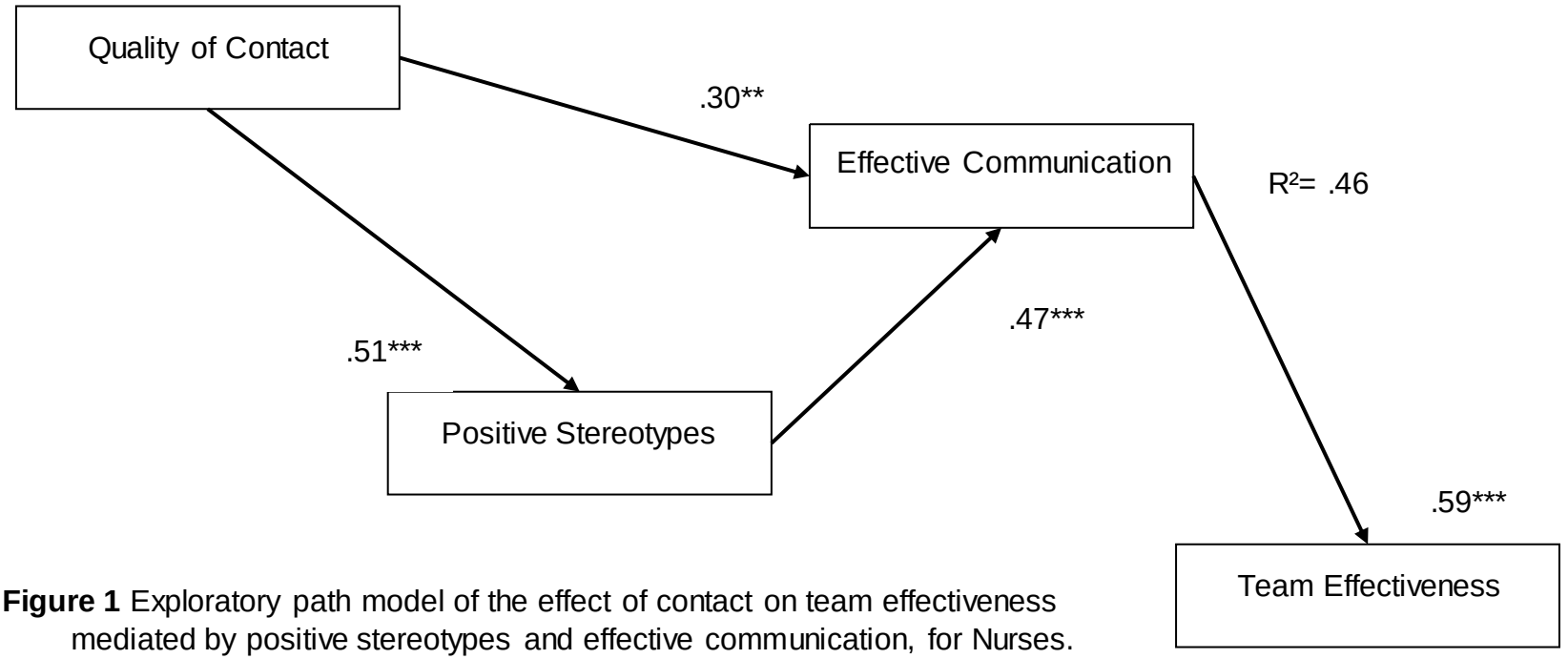


Figure 1 Exploratory path model of the effect of contact on team effectiveness mediated by positive stereotypes and effective communication, for Nurses.

Note. N=74; Coefficients are standardized. *p < .05, **p < .01, ***p < .001.

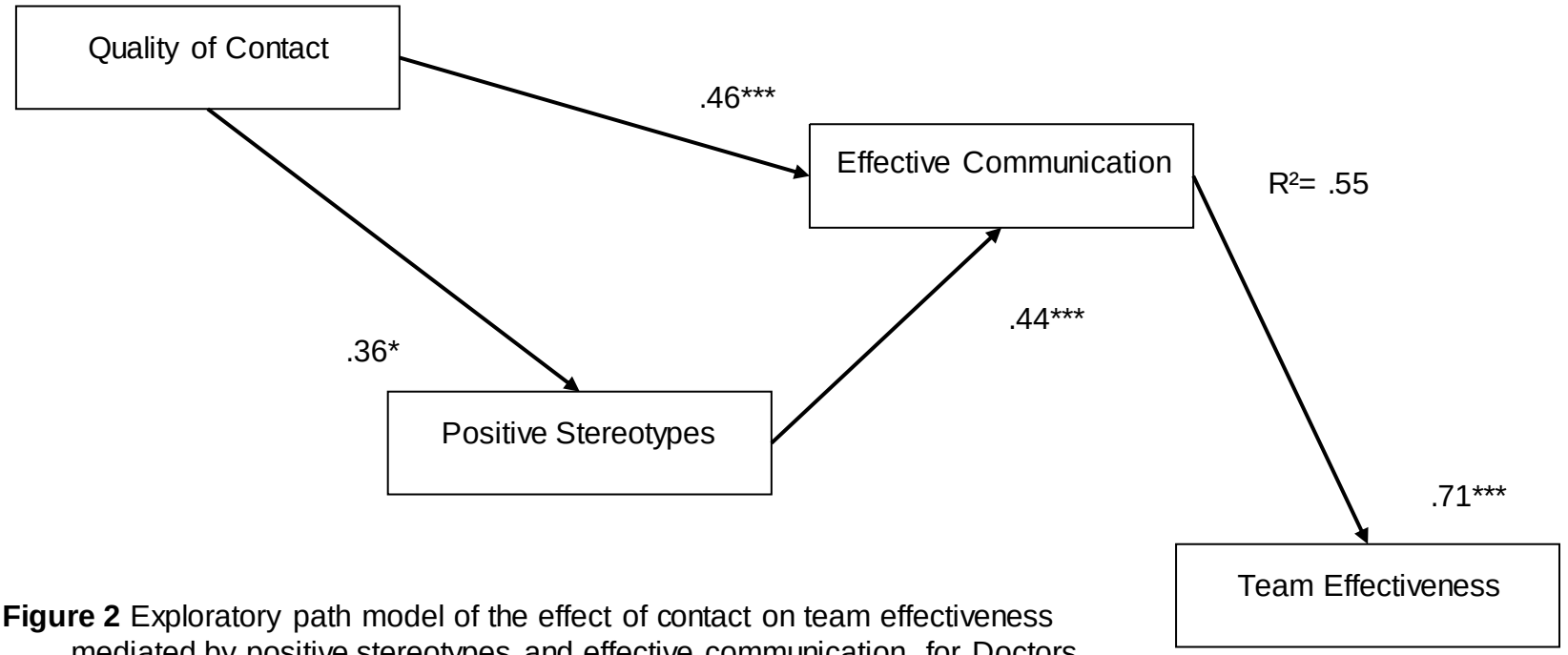


Figure 2 Exploratory path model of the effect of contact on team effectiveness mediated by positive stereotypes and effective communication, for Doctors.

Note. N=44; Coefficients are standardized. *$p < .05$, **$p < .01$, ***$p < .001$.

4.4 Discussion

The aim of this study was to investigate whether Allport's four optimal conditions for positive inter-group contact could predict positive communication and team work in the hospital setting. It was expected that participants who perceived inter-professional interactions to be (a) of equal status, (b) towards a common goal, (c) under institutional support and (d) cooperative would also have positive perceptions of the other group (stereotypes and meta-stereotypes) and would describe communication and team work as more effective. The extent to which these relationships were different depending on the professional group and identification are also explored.

4.4.1 Research question 1: The effect of the quality of professional contact

Results indicated that all the variables were positively correlated with each other: positive contact was associated with positive stereotypes and meta-stereotypes, with effective team work and communication, and with higher professional identification. These findings support Pettigrew and Tropp's (2006) meta-analysis, demonstrating that the four optimal conditions are predictors of positive relationships in the hospital setting. These findings justify the use of intergroup contact strategies also between health professional groups, with the goal of improving attitudes between members of different teams. The specific relationship between the optimal conditions and team work were also investigated. Results showed that for both professional groups this relationship was mediated by the perception of more effective communication, underlying that when nurses and doctors interact positively with each other they experience effective communication and consequently effective team work. These findings are consistent with previous research on the group level of professional communication in hospital (Gawande et al., 2003) which underlines the importance of considering the social structure of the hospital when analysing how to improve the quality of communication. It is a collaborative practice that then leads to effective communication and a safer care.

4.4.2 Strength of professional group identity as moderator the effect of quality of contact on effective communication and team effectiveness

Results revealed that the strength of professional identification was not a moderator of the quality of contact on effective communication or on team effectiveness. That is, health care professionals who experienced high quality professional contact reported positive communication independently of how strongly they identified with their own professional group. These results do not confirm previous research on the moderating role of identification (Brown et al., 1992) which suggests that intergroup group contact is less effective for higher identifiers. As previously reported, the hospital setting is a complex environment in which clinicians belong to several professional group and teams, often hard to identify. This would suggest that according to the specific profession and level of seniority a specific team or professional group could be more relevant than others. Future research would need to explore in more detail the variability of professional identification in hospital according to the specific role and level of seniority of the clinicians. This understanding would allow the identification of what groups are relevant for this intergroup context and could facilitate the effectiveness of intergroup contact, such as promoting dual identity and the perception of common ingroup.

4.4.3 Research Question 3 and 4: Professional stereotypes and meta-stereotypes

To further explore the relationship between the variables, a path analysis was conducted. The path analysis confirmed that quality of inter-professional contact was perceived to lead to more effective communication which in turn was associated to greater team effectiveness. Moreover, when the quality of contact between health care professionals was higher, stereotypes of the outgroup were more positive: that then increased the perception of effective inter-professional communication. These results provide support in the identification of stereotypes as barriers of effective interactions also in the hospital settings (Carpenter & Hewstone, 1996). Indicating the importance of how the professions see each other, positive interactions offer health care professionals the opportunity of disconfirming negative stereotypes about each other, leading to more effective interactions.

Regarding the relationship between meta-stereotypes and quality of contact, results indicated that when inter-professional contact was positive, participants extended to be seen under a more positive light by their

colleagues: higher quality contact was associated with more positive meta-stereotypes and less negative meat-stereotypes. These results provide evidence of the link between intergroup contact and meta-stereotypes. However, our analysis did not support the hypothesis of a mediating role of meta-stereotypes on the relation between contact and communication or contact and effective communication. In Study 3 I will investigate the mediating role of meta-stereotypes on the relationship of intergroup contact on another outcome variable, such as intergroup attitudes.

4.4.4 Implications for intergroup contact based interventions

These findings support Allport's (1954) beliefs that high quality contact leads to more positive attitudes, and in the case of this study more positive stereotypes and expectations about outgroup's perceptions (meta-stereotypes) between health care professionals. In addition to this, a relationship was established between quality of contact and team work and communication, providing evidence that collaboration is an essential factor in predicting team work and effective communication. That is, it is in enhancing inter-professional contact and collaboration so that an improvement of relationships and team work could be made. Health care professionals who belong to a positive culture perceive each other's profession in a positive way, reducing bias and negative expectations. This change in mutual perceptions has as an outcome more effective communication that then leads to more effective team work. The effectiveness of inter-professional education in relation to increased opportunities of learning with and about each other is offered by an evaluation of pedagogical method used to deliver teamwork training to medical and nursing students that was conducted by Hobgood and colleagues (2010). The authors performed a full-day team work training with 203 senior nursing students and 235 fourth-year medical students, from two universities in the United States (Hobgood et al., 2010). The randomised control trial aimed to evaluate the effectiveness of four methods on student teamwork knowledge, skills and attitudes. All students participated to a didactic lecture on situational awareness, shared mental models and leadership. One of the content highlights was the advantages of SBAR as tool for team communication. Participants were then randomised to one of the four intervention groups: human-patient simulation, role play, audience response system lecture, and traditional didactic lecture. Analysis showed no significant differences between the four cohorts, suggesting that inexpensive methods could be as effective in improving teamwork knowledge and attitudes. One of the feedback received by

students, which highlight an important characteristic of teamwork training, was the importance of learning together. The interdisciplinary cohort allowed students to learn about each other's roles and training, providing the right opportunity to create trusting relationships and an environment of mutual respect.

It could be then suggested that using tools to improve the structure of communication and the effective transmission of information should occur in a positive environment where the optimal conditions (equal status, institutional support, cooperation, common goal) are promoted. Moreover, these results support the possibility of introducing interventions and training programs in which manipulations of the optimal conditions are used (for example, imagined or extended contact), in order to promote attitudes change between health care professionals, as these changes would then also be linked with intentions in establishing more positive communication and then lead to more effective team work.

4.4.5 The complexity of hospital teams

This study was limited to the specific relationship between doctors and nurses and used measures tailored to these two particular health care professions. As hospital teams are complex and often fluid, as people belong to multiple teams that are not always physically in the same place, it would be important to consider also other professionals' perceptions on team effectiveness and quality of inter-professional contact. A second aspect that would be important to consider would be the hierarchy level of the health care professionals and whether more or less senior professionals would perceive quality of contact and communication in different ways. That would allow understanding other potential predictors of the perception of quality of contact in hospital.

4.4.6 Summary

In summary, the findings of the current study highlighted that effective teams, in which communication was also more effective, presented health care professionals who interacted in a positive and collaborative way. Specifically, it was found that the quality of inter-professional contact, defined by Allport's four optimal conditions of cooperation towards a common goal under institutional support and equal status of the groups involved, predicted a change in professional perceptions. Results underlined that when health care professionals perceived each other under a more positive light, they communicated in a more effective way. As a

consequence of more positive communication between members of different professional groups, teamwork was also more effective. These results confirmed that the contact hypothesis could be applied to the hospital settings to improve the relations between nurses and doctors, specifically team work and communication. The findings of this study supported the idea that team work and communication are affected by group factors, such as professional perceptions (stereotypes) and the quality of group interactions between health care professionals. Considering this finding, interventions which aim to improve team work and team communication should intervene on the improvement of such group factors too. Intergroup contact based interventions were also designed in the past as part of inter-professional learning modules with undergraduate students, promoting a change in negative professional stereotypes and attitudes between students with different health care background. This change was the result of learning with and about each other professional roles and responsibilities. In study 3 of this thesis I will investigate whether indirect forms of intergroup contact, extended and imagined contact, will be effective strategies to improve attitude, professional perceptions and communication between nursing and medical students. Their application to inter-professional learning modules will be presented in the following chapter.

Chapter 5
Study 3: the effects of indirect contact on professional attitudes and communication between nursing and medical students

In the current study, two specific types of intergroup contact are considered as strategies to be used in interventions designed to improve attitudes between nursing and medical students: extended contact and imagined contact. Nursing students and medical students will be allocated to one of the experimental conditions (imagined contact, extended contact, control condition) in order to investigate the effectiveness of indirect contact strategies for groups with different status. Furthermore, the role of professional identities and professional perceptions (stereotypes and meta-stereotypes) on the effectiveness of extended and imagined contact will be considered. The results of the analysis will be presented and discussed considering the applicability of such strategies as part of inter-professional learning modules with undergraduate students possessing different health care background.

5.1 Introduction

Extended contact (Turner et al., 2008; Wright et al., 1997) is the idea that learning that people who are in the same social group as us (ingroup members) have positive relations with outgroup members has some of the same benefits as direct contact, including more positive outgroup attitude. Researchers argued that this specific type of contact could be especially useful in those circumstances where there are fewer possibilities for contact. Extended contact is based on Bandura's social learning theory (1977), which suggests that human behaviour is learnt by the observations of others' behaviours. It is through observational learning that people use this information to guide their own actions: people would learn about appropriate intergroup behaviour observing ingroup members engaging in to friendships with outgroup members (Bandura, 1977). A second theory to which the extended contact refers to is Heider's balance theory (1958). In order to maintain balance states in the context of the observation of ingroup members liking outgroup members, people would adjust their attitudes towards outgroup members. Over the years, studies on extended contact have used a variety of manipulations and contexts in order to inform

participants of real or fictional successful interactions between members of different groups (news paper articles, stories). For example, in the educational context, Cameron, Rutland, Brown, and Douch (2006) evaluated an intervention designed to change children's attitudes toward refugees (Cameron, Rutland, Brown, & Douch, 2006).

The second type of intergroup contact used in the current study is imagined intergroup contact, the mental simulation of a social interaction with a member of another group (Stathi & Crisp, 2008; Turner, Crisp, et al., 2007). During the mental simulation, concepts associated with a successful intergroup interaction are activated, such as feeling comfortable and less apprehensive about the prospect of a future interaction with members of the outgroup (Blair, Ma, & Lenton, 2001). This reduces anxiety, which in turn results in more positive attitudes towards the other group. While imagining contact, people may also think more about how they would feel during the interaction and what they would learn about the outgroup member and the outgroup in general. An example of an intervention using imagined contact was developed and tested by Vezzali, Capozza, Giovannini, and Stathi (2012). Italian 5th grade students participated in a 3-week intervention. Students were asked to imagine meeting an unknown immigrant in various situations. Participants in the intervention condition showed more positive implicit and explicit attitudes towards immigrants. Indirect contact based intervention may also be applied to the hospital setting where nurses and doctors are in contact everyday but the conditions for contact are not ideal. Moreover, in order to break inhibitions that come from existing negative experience, imagined contact could be used as a first step immediately before an intervention that involves the use of more direct contact (Pettigrew, 1998).

In the current study extended contact and imagined contact tasks will be used in the professional context of nursing and medical students, as potential interventions to improve attitudes and perception of effective communication in hospital. As these two forms of indirect contact have been largely and successfully used in educational setting (among children and young adults) and regarding several intergroup contexts (such as ethnic or religious), it is expected that they would be effective also in improving attitudes between professional groups, such as nurses and doctors, at undergraduate levels. These two forms of indirect contact have not yet been applied to such specific groups. It will also be investigated whether one could be more successful than another in improving attitudes. As additional

outcome measure I will include, alongside with inter-professional attitudes, the perception of effective communication between nurses and doctors. Literature on direct or indirect contact has not yet investigated the effects of high quality contact on effective intergroup communication as outcome. In this study the effects of extended and indirect contact on effective communication will be then investigated.

As mentioned in previous chapters, one of the factors affecting communication and collaboration in hospital teams are the hierarchy, and social structure between health care professionals (Gawande et al., 2003). When considering research of the relation between intergroup contact and the social structure or status between the groups involved in the interactions studied, intergroup contact could differ in its effectiveness depending on the status of the groups. Tropp and Pettigrew's meta-analysis has consolidated research on intergroup contact by considering those empirical studies in which contact was an independent variable predicting prejudice. Results revealed that higher quality of intergroup contact was associated with lower levels of prejudice. However, out of the 698 samples only 20.3% examined the outcomes on prejudice towards members of minority groups, and only 7.3% involved both minority and majority status groups. Tropp and Pettigrew examined whether the magnitude of the contact-prejudice effect varied depending on the social status of the groups involved. Specifically, it was weaker for minority status groups (for example Black Americans comparing to White Americans). The authors also found that minority-majority status was a predictor of contact-prejudice effect sizes only when the racial and ethnic samples were included. These findings underline the need of understanding the power and status relationships in the context to which the contact hypothesis needs to be applied and consequently understanding the specific needs of both groups involved. More specifically to the NHS settings, the complex inter-professional context sees nurses to usually be a majority with lower status than doctors and this could affect the way the two groups respond to intergroup contact interventions, usually designed for high status majority ethnic groups.

The above findings underline the importance of considering the different nature of the contact-prejudice relationship among lower and higher status groups. Researchers suspect that for minority groups, the recognition of their group's devaluation inhibits the potential positive outcomes of intergroup contact. One possible explanation is that members of lower status groups might be chronically aware of being targets of prejudice and stereotypes that

members of higher status groups have about them. That is, during intergroup contact, they may activate meta-stereotypes, one's perception about how a member of another group could stereotype one's own group (Ruys et al., 2007; Vorauer et al., 2000). This is likely to decrease the degree to which the contact situation is associated with positive outcomes among minority group members. In this process, the self concept is involved: if people believe that someone holds perceptions about them that are negative or inconsistent with the concept they have about themselves, the interaction with these individuals will be negatively affected (Fein & Spencer, 1997). As a consequence people may want to find others who see them as they see themselves, and they may achieve this by having contact with those individuals who will validate their positive self-views and avoiding contact with those who might misperceive them. A possible behavioural implication of this is the avoidance of contact with outgroup members (Curtis & Miller, 1986). Moreover, when contact is unavoidable, as is the case of nurses and doctors, the consequences may be hostile reactions towards outgroup members. The results of research on the implications of meta-stereotypes highlight the importance of involving both groups, not just high status majority groups, in research and interventions. Intergroup interactions could be affected by how people think that others view them (meta-perceptions). In this study I will compare the effect of indirect contact between a higher status group (medical students) and a lower status group (nursing students) investigate whether indirect intergroup contact is effective in different ways according to the status of the group. Furthermore, I will measure the activation of negative and positive meta-stereotypes after the indirect contact manipulation, allowing to test for moderation effects of meta-stereotypes on the relation between contact and the outcome variables (attitudes and perception of effective communication).

The aim of this study was to investigate differences in the effect of imagined and extended contact on attitudes for higher and lower status groups and the potential role of meta-stereotypes on the effectiveness of the contact manipulations. The intergroup context examined is a medical setting, specifically the relationship between nurses and doctors.

The research questions are:

RQ1. Is there a different effect of imagined contact and extended contact for the two professional groups on attitudes, anxiety and the perception of effective communication? A weaker positive effect of indirect contact is expected for the lower status group (Tropp, 2006).

RQ2. Is there a different effect of imagined contact and extended contact for professional groups on stereotypes and meta-stereotypes?

RQ3. Are meta-stereotypes mediators of the effect of imagined contact and extended contact for the nursing group on attitudes, effective communication and anxiety? A greater activation of negative meta-stereotypes for the low status group could explain a possible weaker effect of indirect contact on attitudes.

RQ4. Is ingroup identification a predictor of the strength of positive effect of contact on attitudes, anxiety and communication? High identifiers will be expected to report a weaker effect of indirect contact on attitudes (Simon & Brown, 1987).

Below a pilot study is reported, which was conducted to test whether the video clip chosen as extended contact manipulation in Study 3 was perceived as a positive example of effective communication and team work. Study 3 will then be presented, in which the effectiveness of the Imagined Contact and Extended Contact were tested on the improvement of inter-professional attitudes and perception of effective communication between nurses and doctors.

5.2 Pilot Study

5.3 Aims

Extended intergroup contact is defined as the knowledge that members of one's own group have friendships (or positive relationships) with members of an outgroup (for a review see Turner, Hewstone, Voci, Paolini and Christ, 2007). Over the years, studies on extended contact have used a variety of manipulations in order to inform participants of real or fictional successful interactions between members of different groups (news paper articles, stories). In Study 3 I introduce a novel manipulation presenting participants with a video clip in which doctors and nurses interact with each other in a positive way. Pettigrew and Tropp's meta-analysis (2006) highlighted that not all types of contact reduce prejudice: only positive contact increases positive attitudes. According to Allport's optimal conditions (1954) positive contact is more likely when members of the different groups need to cooperate, have a common goal, equal status and perceive institutional support. Extended contact and vicarious contact have been operationalized through the use of the media, such as radio shows, specially written stories and newspaper articles (Vezzali et al., 2014). Among these, video clips have been used as indirect forms of intergroup contact. Mazziotta, Mummendey, and Wright (2011) showed that participants watching video clips of positive interactions of German and Chinese university students improved intergroup attitudes and their willingness of engaging in direct cross group contact in the future.

The aim of this pilot study was to test whether the video clip chosen to be used in Study 3 met the requirements of an extended contact manipulation. In order to be considered as an example of positive interaction between health care professionals it was necessary that the inter-professional contact demonstrated in the video clip aligned with Allport's four optimal conditions. It was also investigated whether the overall interaction was perceived as positive and whether doctors and nurses were perceived to communicate effectively with one another in the video clip. In order to do that, the perceptions of the quality of inter-professional contact in the positive video clip were compared with those of the negative version of the same interaction. The two video clips were designed to be used as e-learning materials as part of a Regional Innovation Fund project (Yorkshire and Humber) to promote awareness of medical error. Permission to use the clips which were available on the Health Innovation and Education for Yorkshire

and Humber website was granted by the project lead (Rebecca Lawton). Though the clips were presented as examples of positive communication and negative communication, the developers had not tested whether the videos were actually perceived as positive or negative, making piloting prior to use in this research essential.

5.4 Method

5.4.1 Participants and Design

Twenty-four psychology students were recruited from the University of Leeds via the participant pool system and took part in the study in exchange for credits. Participants were randomly allocated to one of the two conditions (positive video or negative video) using a randomization computer program. The study received ethics approval from the University of Leeds (Ref:13-0072).

5.4.2 Materials

Positive video clip: participants in the positive video condition were asked to watch a 2 minute video clip designed to provide a positive example of team communication during a ward round. The video was originally designed by a multi-professional team of doctors, nurses and health psychologists from the Quality and Safety Research Group at the Bradford Institute of Health Research, with the purposed of being used as an e-learning resource on situational awareness and patient safety. In the video clip a team of doctors and nurses are doing a ward round and a medical error is avoided as a result of the collaboration and the climate of openness that encourages the members of the team to speak up when noticing the red band on the patient indicating a penicillin allergy.

Negative video clip: participants in the negative video condition were asked to watch a 2 minutes long video clip presenting the same clinical team doing the ward round. In contrast to the positive video clip, the health care professionals appeared tense and demonstrating an unwillingness to question one another or speak up when interacting with each other and the medical error was not avoided.

Quality of inter-professional interaction questionnaire: After watching the video clip participants were asked to answer a short questionnaire about the interaction between health care professionals during the ward round. The

questionnaire included 5 items measuring the quality of the inter-professional contact (overall quality of interaction, perception of equal status between the health care professionals, degree of cooperation between the members of the team, perception of a common goal during the interaction and effective communication between doctors and nurses). Participants responded to the items on a 5-point scale ranging from 1 (Not at All) to 5 (Very Much). The five items were: “The interaction between the health care professionals was positive”, “The health care professionals had equal status in the team”, “The health care professionals were cooperating with each other and with other members of the team”, “The health care professionals were working together towards a common goal”, “The health care professionals were communicating effectively with each other”.

5.4.3 Procedure

On their arrival at the room designated for the experiment, participants were informed to take part in a study in which they had to evaluate the interaction between health care professionals during a short video clip. It was not specified what video clip and which condition they would take part in. Additionally, they learned about anonymity and confidentiality via the participant information sheet. They were then asked to complete the consent form. After watching the 2 minutes video clip they completed the short questionnaire on the quality of the interaction between health care professionals doing the ward round in the video clip. Finally, they were fully debriefed and informed on which condition they had been randomly allocated. They were then informed about the second video clip that participants in the other condition were asked to watch and how the video was going to be used in Study 3.

5.5 Results

In order to compare the perceptions of the quality of team work in the two video clips we conducted an independent groups t-test. As illustrated in Table 11, the t-tests were significant for all 5 dimensions (p<0.001). Specifically, the findings indicate that the interaction between the health care professionals in the positive video was perceived as more positive than in the negative video. Furthermore, doctors and nurses were perceived as being more equal in status and as cooperating to achieve a common goal. Inter-professional communication was also perceived as more effective in the positive video clip than in the negative video clip.

Table 11.Differences in the quality of team work between positive and negative video clips

	Positive video *M* (*SD*) (*N*=12)	Negative video *M* (*SD*) (*N*=12)	t-test (df=22)
Positive interaction	3.92 (0.90)	1.42 (0.50)	8.35 ***
Equal status	2.08 (0.99)	1.08 (0.29)	3.34 ***
Cooperation	4.58 (0.51)	1.83 (0.72)	10.78 ***
Common goal	4.67 (0.49)	2.25 (0.87)	8.40 ***
Effective communication	3.83 (0.72)	1.33 (0.49)	9.95 ***

*** $p<0.001$

We then conducted a one sample t-test to investigate whether the rating of the positive video on the four dimensions significantly different from the neutral point (3) in order to establish whether their evaluations were positive (significantly higher than the middle point 3) or negative (significantly lower than 3). Results indicated that the interaction was perceived as positive, $t(11) = 3.53$, $p < .01$; there was cooperation, $t(11) = 10.65$, $p < .001$; there was the perception of a common goal, $t(11) = 11.73$, $p < .001$; and communication was perceived as effective, $t(11) = 4.02$, $p < .01$. Although the overall interaction was positive on the previous four traits, participants did not consider the health care professionals in the video to have equal status, $t(11) = -3.19$, $p < .01$.

5.6 Conclusions

The pilot study was designed to investigate whether the positive video clip could be used as an extended contact manipulation within Study 3 to inform participants about a successful model of interaction and communication between health care professionals. Half of the participants were presented with the positive video clip and the other half with the negative video clip and they were asked to rate the interaction according to the overall quality of team work, cooperation, equal status, common goal and effective communication. Results indicated that the video clip was perceived as more positive than the negative version of the same interaction on all 5 dimensions. Moreover, participants rated the video as significantly positive

on all dimensions except for the status of the members of the team. This indicates that this one optimal condition, equal status, was not met as participants still perceived a clear hierarchy between the members of the team in the positive video clip. However the quality of the interaction was positive and the communication was perceived as effective. Results confirmed that the positive video clip could be considered a suitable extended contact manipulation. Therefore it was decided to use the positive video clip as an extended contact intervention in Study 3 with the prediction that providing participants with a positive model of interaction and communication could influence their attitudes and expectations about future interactions with members of the other professional group.

5.7 Study 3

5.8 Method

5.8.1 Participants and Design

Fifty-four medical students (20 males, 34 females; M=21.00 years old, SD=1.65; year one=9, year two=27, year three=13) and 54 nursing students (2 males, 52 females; M= 26.90 years old, SD=8.49; year one=6, year two=12, year three=4, year four=29, year five=2) were recruited from the Universities of Leeds, Bradford and Hull. The sample size was decided based on a power analysis conducted using G*Power (Faul, Erdfelder, Buchner, & Lang, 2009; Faul, Erdfelder, Lang, & Buchner, 2007). For the power analysis, it was considered to have the number of groups equal to 6 and the effect size equal to 0.297. The effect size was based on a review of effect sizes of imagined contact and extended contact studies conducted using Comprehensive Meta-analysis Software. In order to reach a power of 0.8 the power analysis suggested a total sample of 106 participants. Participants were approached via email through research emailing lists, by their module leaders, or via word of mouth. They were also approached during a brief presentation about the aims of the study before one of their lectures and in common areas, such as cafeterias and foyers. Participants were randomly assigned, using the RAND function in Microsoft Excel, to one of three conditions: Imagined Contact, Extended Contact or Control. The study had a 2 (Professional Group: nursing vs. medical student) X 3 (Condition: Imagined Contact, Extended Contact or Control) between subjects design. The study received ethical approval from the University of Leeds (Ref:13-0072), Hull and Bradford.

5.8.2 Procedure

On their arrival in the room designated for the experiment, participants were informed about the aims of the study and confidentiality. After reading the participants' information sheet and asking any questions, they were asked to sign the consent form.

All participants were asked to complete an initial questionnaire on their levels of identification with their own professional group (see measures section below), to do two tasks 1) a mental imaginary task and 2) watch a short video clip. The tasks in each experimental condition were matched with control tasks to avoid confounding variables from influencing their responses in the questionnaires. The mental imaginary task was matched

with a neutral simulation task in which participants were asked to imagine a positive interaction with a member of their own professional group. The extended contact video was matched with a short clip showing neutral images of the hospital. Both control tasks were similar to the manipulations in terms of cognitive tasks involved and were designed to have no influence on participants' responses on intergroup attitudes. After the two tasks, participants completed a questionnaire containing measures of attitudes (affective and behavioural components), stereotypes, meta-stereotypes and perception of effective communication in the hospital setting between doctors and nurses (see Measures).

In the *Imagined Contact condition,* participants undertook an adapted version of a task developed by Turner et al. (2007). Medical students were asked to imagine meeting a nurse, whilst nursing students were asked to imagine meeting a doctor. Specifically, participants were asked: "I would like you to spend the next two minutes imagining yourself being at work and meeting a Nurse / Doctor, with whom you are not familiar, to discuss a patient's care. Imagine that the interaction is relaxed, positive, and comfortable. I will now time you while you imagine meeting this Nurse / Doctor for two minutes. Afterwards, you will be asked to write down details of what you imagined". After the mental imaginary task, participants were asked to watch a short video clip involving images of a hospital setting with neutral valence. The clip did not show any interactions between staff. Lastly, participants were asked to answer a questionnaire containing several dependent measures.

Participants in the *Extended Contact Condition* were asked to imagine a neutral scenario. They were asked to imagine a positive and comfortable interaction with a member of the *ingroup* and to then write a list of what they just imagined. Specifically medical students / nursing students were asked: "I would like you to spend the next two minutes imagining yourself being at work and meeting a Doctor / Nurse, with whom you are not familiar, to discuss a patient's care. Imagine that the interaction is relaxed, positive, and comfortable. I will now time you while you imagine meeting this Doctor / Nurse for two minutes. Afterwards, you will be asked to write down details of what you imagined". Following the mental imaginary task participants watched a 2 minute long video clip set on a hospital ward. The interaction between the members of the team (a consultant, a junior doctor and a nurse) was positive and comfortable. Thirdly, participants completed a questionnaire with several dependent measures.

Participants in the Control condition were asked to imagine a positive interaction with a member of their ingroup (as presented in the extended contact condition) and subsequently asked to watch the neutral video clip (as presented for the Imagined Contact condition). After the two tasks participants were asked to complete the final questionnaire containing the dependent variables.

5.8.3 Dependent Measures

The questionnaire containing the dependent measures took approximately 10 minutes to complete. To avoid order effects, half of the questionnaires presented outcomes first and then mediators, the other half presented mediators first and then outcomes. Potential moderators were presented prior to the experimental manipulation.

Ingroup Identification: This is a measure of how strongly participants feel they belong to their professional group. The scale is derived from the three-factor model scale by Cameron (2004), measuring three components of Social Identity: Centrality, Ingroup Affect and Ingroup Ties. Centrality is defined as the frequency with which the group comes to mind and its importance for the self. Ingroup affect is conceptualised as the specific emotions that are associated to the group membership. Lastly, ingroup ties refer to the extent to which group members feel linked to that particular social group. For the 12 items, a 6-point Likert scale was used ranging from 1 (*Strongly Disagree*) to 6 (*Strongly Agree*). Examples of items for the medical students group were: “I have a lot in common with other doctors”, “I feel strong ties with other doctors”, “I find it difficult to form a bond with other doctors”, “I don’t feel a sense of being connected with other doctors”, “I often think about the fact that I am a doctor”, “Overall, being a doctor has very little to do with how I feel about myself”, “In general, being a doctor is an important part of my self-image”, “The fact that I am a doctor rarely enters my mind”, “In general I’m glad to be a doctor”, “I often regret that I am a doctor”, “I don’t feel good that I am a doctor” and “Generally, I feel good when I think about myself as a doctor”. Negative worded items were reversed and scores were aggregated to form a reliable index (alpha=0.86): the higher the score, the higher was the identification with the ingroup.

Common Group Identity: Two additional items were added in order to measure how strongly doctors and nurses felt to be members of the same group. The two items were: “In the work place, to what extent do nurses and

doctors feel like members of the same group?"; "In the work place, to what extent do nurses and doctors feel like members of two separate groups?. The negative worded item was reversed and the two scores were aggregated in a marginally reliable index (alpha=0.61): the higher the score, the higher the perception of a common ingroup between nurses and doctors.

Extended Contact Manipulation Check: In the Extended Contact Condition participants were asked to respond to 5 items following the screening of the video clip. This was a measure of the perceived quality of the inter-professional contact between the members of the team in the video clip. The questions measured Allport's four optimal conditions. An additional item was added to measure the quality of communication between the health care professionals. Participants responded to the items on a 5-point scale ranging from 1 (*Not at All*) to 5 (*Very Much*). The five items were: "The interaction between the health care professionals was positive", "The health care professionals had equal status in the team", "The health care professionals were cooperating with each other and with other members of the team", "The health care professionals were working together towards a common goal", and "The health care professionals were communicating effectively with each other". The scores were aggregated in a reliable index (alpha=0.88).

Stereotypes and Meta-stereotypes: This was a measure of how much participants thought each of a set of characteristics applied to the professional outgroup (stereotypes) or how they believed their professional group was perceived by the members of the outgroup (meta-stereotypes). This measure was considered as a cognitive measure of attitudes towards the outgroup. The seven attributes used in this study were derived from Carpenter 's (1995) study on nurses and doctors' stereotypes: "detached", "good communicator", "confident", "dedicated", "arrogant", "caring", "dithering". For the 7 items a 5-point scale was used ranging from 1 (*Not at All*) to 5 (*Very Much*). In line with Carpenter's study, the single items were analysed separately and were not aggregated in an index of stereotypes.

Anxiety: This was a measure of how anxious participants predicted that they would be in a future interaction with a member of the outgroup. As measure on intergroup anxiety, it was chosen to adapt a scale which has been largely used in intergroup contact literature (Turner et al., 2008). This scale was an adaptation of the Stephan and Stephan (1985) anxiety scale, which measured how participants felt thinking of interactions with members of the outgroup. In Stephan and Stephan's study, participants were asked

whether they felt more or less “certain, awkward, self-conscious, happy, accepted, confident, irritated, impatient, defensive, suspicious, and careful ” (Stephan & Stephan, 1985).

For this specific intergroup relation, it was chosen to make more explicit what type of interactions participants were asked to refer to, when asked how they would feel in that inter-professional encounter. It was chosen to refer to a similar inter-professional interaction which has been used as imagined contact task: interacting with a member of the outgroup to discuss a patient’s care. The interaction was then made relevant to the inter-professional situation and relevant to both professional groups.

The six items used in the current study were: “If I were to work with a doctor that I’m not familiar with to discuss a patient’s care, I think I would feel awkward”, “If I were to work with a doctor that I’m not familiar with to discuss a patient’s care, I think I would feel happy”, “If I were to work with a doctor that I’m not familiar with to discuss a patient’s care, I think I would feel self-conscious”, “If I were to work with a doctor that I’m not familiar with to discuss a patient’s care, I think I would feel competent”, “If I were to work with a doctor that I’m not familiar with to discuss a patient’s care, I think I would feel relaxed”. For each item a 7-point scale was used ranging from 1 (*Not at all*) to 7 (*Very Much*). Scores were aggregated in a reliable index (alpha=0.76): the higher the score, the more anxious participants felt they would be about interacting with a member of the outgroup in the future.

Affective component of outgroup attitudes: This was a measure of the affective component of attitudes (Eagly & Chaiken, 1993), that is feelings about the outgroup. As measure for the current study, it was chosen to include a scale commonly used in intergroup contact studies and adapted by Wright et al. (1997), as General Evaluation Scale. In Wright’s study 1, participants were asked how they felt about the outgroup using bipolar adjectives pairs: “warm-cold, negative-positive, friendly-hostile, suspicious-trusting, respect-contempt, admiration-disgust”(Wright et al., 1997). According to the authors, semantic differentials have been largely used as measures of intergroup attitudes, and regarding their study, this measure was used as positive or negative evaluation of the outgroup. In the current study, participants rated their feelings towards the other professional group using a 7-point semantic differential: “Warm/Cold”, “Positive/Negative”, “Friendly/Hostile”, “Trusting/Suspicious”, “Respect/Contempt”, “Admiration/Disgust. Scores were aggregated in a reliable index

(alpha=0.87): the higher the scores, the more positive were the feelings towards the other group.

Behavioural component of outgroup attitudes: This was a measure of the behavioural component of attitudes, that is how participants predicted that they would behave when interacting with a member of the outgroup in the future. The six items were an adaptation of Mackie, Devos and Smith's (2000) scale on behavioural tendencies as consequences of intergroup emotions, which has been used in several intergroup contact studies (Turner, Crisp, et al., 2007; Turner et al., 2013). Originally the scale was used to measure three distinctive action tendencies towards the outgroup: move against the outgroup and move away the group.

Similarly to the Anxiety Scale previously reported, for the current study it was chosen to make more specific the inter-professional interaction participants had to refer to when answering about their action tendencies towards the outgroup. It was decided upon using the same "discussion patient's care" inter-professional scenario. Participants were asked: "If I were to work with a *[member of the outgroup]* that I'm not familiar with to discuss a patient's care, I think I would want to …". The six behaviours considered were: "talk to them", "avoid them", "find out more about them", "keep them at a distance", "spend time with them", "have nothing to do with them". For each item a 9-point scale was used, ranging from 1 (Not at All) to 9 (Very Much). Scores were aggregated in a reliable index (alpha=0.92): the higher the scores, the more positive was the behaviour towards members of the outgroup.

Communication: This was a measure of the quality of inter-group communication perceived by the participants. The 12 item scale developed by Shortell et al. (1991) was employed here. For the 12 items, a 5-point scale was used ranging from 1 (Not at All) to 6 (Very Much). Examples of items are: "It is easy for me to talk openly with nurses"; "It is often necessary for me to go back and check the accuracy of information I have received from nurses". Scores were aggregated in a reliable index (alpha=0.76): higher scores, more positive was inter-group communication.

5.8.4 Method of Analysis

In order to investigate the effects of the two contact conditions and the professional group on attitudes, anxiety and communication (RQ1) a 3 (Imagined Contact, Extended Contact and Control) X 2 (nurse or doctor) MANOVA was conducted.

A series of mediation analyses were planned to investigate whether the meta-stereotypes traits mediated the relationship between condition and feelings or behaviour (RQ2).

Lastly in order to investigate whether the effects of indirect contact on attitudes were moderated by the levels of ingroup identification, a moderation analysis was conducted considering Condition, Identification and the products of the two as predictors and attitudes (feelings and behaviours) and dependent variables (RQ3).

5.9 Results

5.9.1 Manipulation check extended contact task

To investigate whether the quality of the inter-professional interaction between health care professionals in the video clip was perceived by the participants to be positive according to Allport's optimal conditions, a one sample t test where the test value was 3, the middle point of the scale was conducted. As shown in Table 12, all conditions were satisfied except for the status between groups. Doctors and nurses were not perceived to have equal status during the interaction (M=2.88, SD=1.22). These evaluations are in line with the findings of the pilot study.

Table 12: Quality of inter-professional contact manipulation check

	Total M (SD) (N= 108)	t test (df=34)
Positive interaction	3.71 (1.04)	4.04***
Equal status	2.94 (1.26)	-0.27
Cooperation	3.86 (1.11)	4.55***
Common goal	4.31 (0.87)	8.97***
Effective communication	3.51 (1.23)	2.35*

Note *** p<0.001; *p<0.05

An independent groups t-test was conducted for the two professional groups (nursing students and medical students) to investigate whether the professional group influenced the perception of the interaction of health care professionals in the video clip. This could allow understanding whether the video was an effective manipulation for both professional groups.

As illustrated in Table 13 the t-tests were not significant for any of the 5 items showing that nursing students and medical students did not differ in their perception of the quality of the interaction between health care professionals in the extended contact video.

Table 13: Manipulation check differences between nursing and medical students

	Nursing students M (SD) (N=54)	Medical students M (SD) (N=54)	t-test (df=33)
Positive interaction	3.61 (1.04)	3.82 (1.07)	-0.59
Equal status	3.00 (1.37)	2.88 (1.17)	0.27
Cooperation	3.94 (1.06)	3.76 (1.20)	0.47
Common goal	4.11 (0.96)	4.53 (0.72)	-1.45
Effective communication	3.28 (1.23)	3.76 (1.35)	-1.12

5.9.2 Manipulation check for the imagined contact task

After engaging with the mental simulation task, participants were asked to provide a brief description of the scenario just imagined. In order to check whether the participants in the imagined contact condition followed the instruction and imagined a positive, relaxed and comfortable interaction with a member of the other professional group, two independent reviewers coded each description on 4 dimensions using a 7-point semantic differential: positive-negative, warm-cold, vivid-vague, deep-superficial. Higher scores indicated more negative, cold, vague and superficial descriptions. In order to ensure inter-rater reliability, we examined the correlation between the coders' scores on each item. For each item, the coders' scores were significantly correlated (positive-negative: $r = .70$, $p<0.05$; warm-cold: $r = 0.71$, $p<0.05$); deep-superficial: $r = 0.53$, $p<0.05$; vivid-vague: $r = 0.60$, $p<0.05$).

As the inter-rater reliability was good, the mean of the two scores was created and an independent groups t-test was conducted in order to investigate whether medical students and nursing students' descriptions were rated differently on the 4 dimensions. Means and standard deviations are presented in Table 14.

Table 14: Means and standard deviation for the imagined contact descriptions

	Nursing students M (SD) (N=17)	Medical students M (SD) (N=19)	t test (df=34)
Positive-negative	3.15 (1.01)	3.05 (0.94)	0.29
Warm-cold	4.65 (1.40)	4.16 (1.62)	0.97
Vivid-vague	4.5 (1.42)	4.5 (1.62)	0.00
Deep-superficial	4.82 (1.50)	4.74 (1.32)	1.88

Results showed that there was no difference in the way the medical students and nursing students' descriptions were rated on the 4 dimensions. The descriptions of both doctors and nurses were rated as positive, but were neutral to cold, neutral to vague and superficial.

5.9.3 Research question 1: What effect did imagined contact and extended contact have on anxiety, attitudes and communication?

A 3x2 MANOVA was conducted in order to investigate the effects of condition (Imagined Contact, Extended Contact and Control) and professional group (nurse or doctor) on the levels of anxiety, attitudes and perception of effective communication. Results from the MANOVA demonstrated a significant main effect of professional group (F (1, 107) = 32.41, p< 0.001; Wilk's Λ =0.43) and of condition (F (1, 107) = 4.88, p< 0.001; Wilk's Λ =0.70). The interaction GroupXCondition was also significant (F (1,107) = 3.62, p<0.001; Wilk's Λ =0.76).

5.9.3.1 Univariate effects for Inter-group anxiety

Means and standard deviations are reported in Table 15. Results showed a significant main effect of professional group: nursing students reported higher levels of anxiety (M=3.94, SD=1.02) than medical students (M=3.00, SD=1.00); F (1,107) = 23.56, p<0.001. The main effect of condition (F (1,107) = 1.63, p=0.20) and the interaction professional group X condition (F (1,107) = 0.30, p=0.74) were not significant.

Table 15 Descriptive statistics for the levels of Inter-group Anxiety

	Nursing students M (SD) (N=54)	Medical students M (SD) (N=54)	Total M (SD) (N=108)
Control	4.22 (1.01)	3.10 (1.16)	3.66 (1.21)
Imagined Contact	3.98 (0.47)	3.03 (0.96)	3.49 (0.89)
Extended Contact	3.61 (1.33)	2.86 (0.89)	3.25 (1.18)
Total	3.94 (1.02)	3.00 (1.00)	3.47 (1.11)

5.9.3.2 Univarate effects for Affective Component of Outgroup Attitude

Participants were asked to rate how positive their attitude was towards the other professional group on a series of affective items. Means and standard deviations are reported in Table 16.

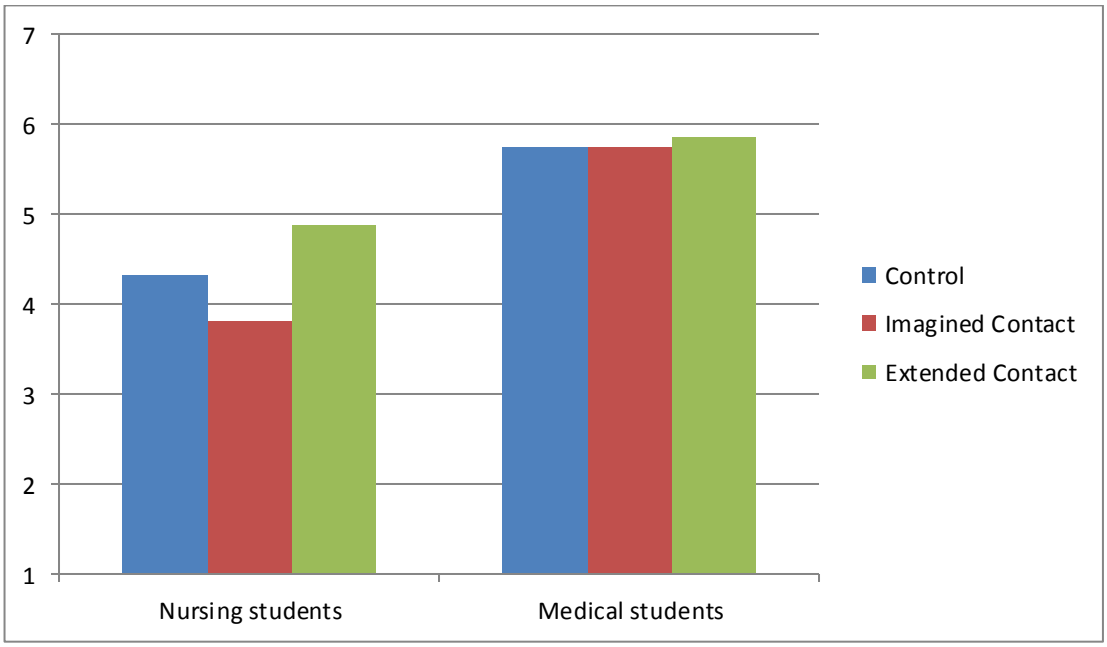
Table 16: Descriptive statistics for the levels of Feelings towards the outgroup

	Nursing students M (SD) (N=54)	Medical students M (SD) (N=54)	Total M (SD) (N=108)
Control	4.33 (0.80)	5.76 (0.60)	5.06 (1.01)
Imagined Contact	3.81 (0.80)	5.75 (0.68)	4.81 (1.26)
Extended Contact	4.89 (0.96)	5.87 (0.77)	5.37 (0.99)
Total	4.34 (0.95)	5.79 (0.71)	5.07 (1.11)

There was a significant effect of professional group, with nursing students reporting less positive feelings towards the professional outgroup than medical students; F (1,107) = 90, p<0.001. Results also showed a main effect of condition, F (2, 107) = 5.15, p<0.05. A series of independent groups t-tests revealed that participants in the control condition and participants in the imagined contact condition did not differ in how positive their feelings were towards the other professional group (t (68.40) = 0.90, p=0.37). Nor did participants in the extended contact condition differ from the control condition in how positively they felt towards the other professional group (t (69) = -1.35, p=0.18). However, participants in the extended contact condition did have more positive feelings towards the other professional group than did participants in the imagined contact condition (t (67.85) =2.10, p<0.05).

There was also a significant interaction between Group and Condition, F (2,107) = 3.33, p<0.05.

Figure 3 Interaction of professional group and condition on the affective component of outgroup attitudes



A series of independent group t-tests were undertaken. Among nursing students, extended contact was associated with marginally more positive affective attitude towards doctors (M = 4.89) compared to the control condition (M = 4.33), *t* (34) = 1.89, *p*=0.07, and the imagined contact condition (M = 3.81), *t* (34)=-3.67, *p*=0.001. Contrary to the hypotheses, participants felt marginally more negatively towards the professional outgroup in the imagined contact condition compared to the control condition *t* (34) = -1.97, *p*=0.057 (see Figure 3). In contrast, no significant differences emerged between the three conditions for medical students.

5.9.3.3 Univariate effects for Behavioural components of attitudes

Means and standard deviations regarding the behavioural attitudes of participants are reported in Table 17.

Table 17 Behavioural attitudes towards the outgroup as a function of condition and professional group

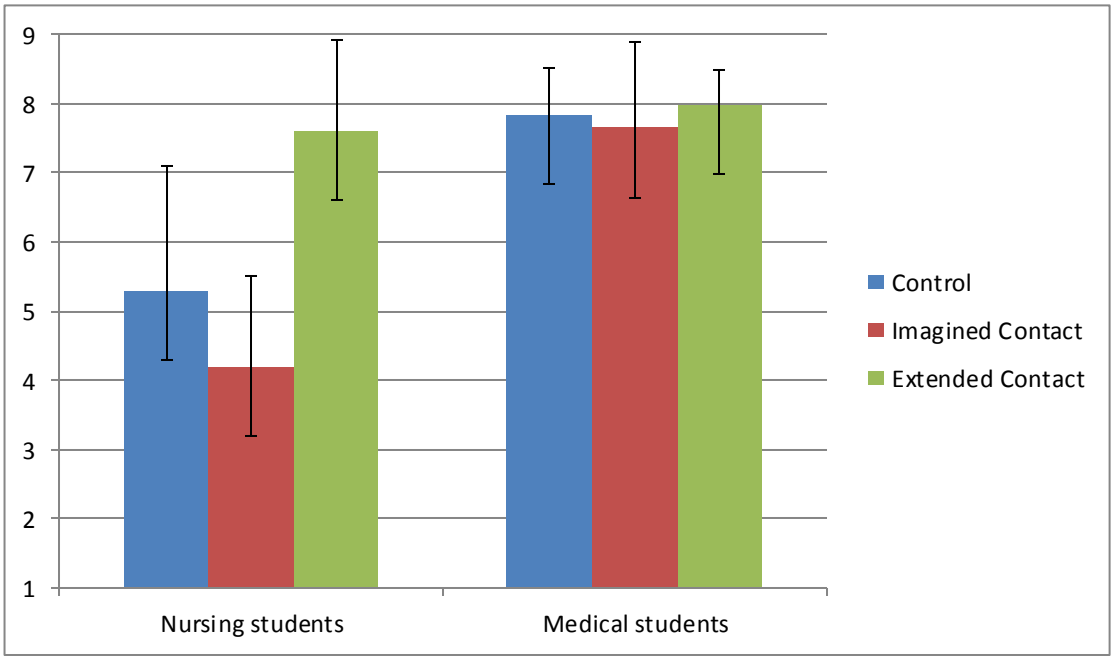
	Nursing students M (SD) (N=54)	Medical students M (SD) (N=54)	Total M (SD) (N=108)
Control	5.30 (1.80)	7.84 (0.68)	6.57 (1.86)
Imagined Contact	4.20 (1.31)	7.65 (1.24)	5.97 (2.33)
Extended Contact	7.61 (1.31)	7.97 (0.53)	7.78 (1.01)
Total	5.70 (2.18)	7.81 (0.88)	6.76 (1.96)

A main effect of professional group, F (1, 107) = 67.69, p<0.001, highlighted that nursing students reported significantly less positive behavioural intentions towards the other professional group than medical students.

Results showed also a main effect of Condition, F (2, 107) = 17.97, p<0.001. An independent group t-test revealed that participants who had experienced extended contact subsequently reported more positive behavioural intentions towards the professional outgroup (M = 7.78) than those in the control condition (M = 6.57), t (54.31) = -3.44, p<0.001, or the imagined contact condition (M = 5.97), t (49.61) = -4.32, p=0.000. However, there was no significant difference in behavioural intentions between participants in the imagined contact and the control condition (t (68.37) =1.21, p=0.23).

There was also a significant Group X Condition interaction, F (2, 107) = 12.60, p<0.001. Six independent t-tests were conducted in order to compare medical students and nursing students in each of the three conditions, looking separately at the effect of condition for doctors and nurses. Results are reported in Figure 4.

Figure 4 Interaction of professional group and condition on the behavioural component of outgroup attitudes



Nursing students in the extended contact condition reported significantly more positive behavioural intentions towards future interaction with members of the outgroup (M = 7.61) compared to nursing students in the control condition (M = 5.30), t (34) = 4.42, p<0.001, or the imagined contact condition (M = 4.20), t (34) =-6.38, p<0.001. Contrary to expectation, nursing students in the control condition reported marginally more positive behavioural intentions than nursing students in the imagined contact condition, t (34)=-1.80, p=0.08. In contrast, condition had no effect on the behavioural intentions of medical students.

5.9.3.4 Univariate effects Effective communication

Means and standard deviations are presented in Table 18.

Table 18 Descriptive statistics for the perception of effective inter-professional Communication

	Nursing students M (SD) (N=54)	Medical students M (SD) (N=54)	Total M (SD) (N=108)
Control	3.01 (0.94)	3.82 (0.54)	3.42 (0.60)
Imagined Contact	3.11 (0.26)	3.71 (0.42)	3.42 (0.46)
Extended Contact	3.17 (0.48)	3.70 (0.27)	3.43 (0.47)
Total	3.90 (0.37)	3.74 (0.42)	3.42 (0.51)

Results showed a main effect of professional group on inter-professional communication (F (1, 107) = 71.52, p<0.001): nursing students perceived communication in hospital as less positive (M = 3.90, SD = 0.37) than did medical students(M = 3.70, SD = 0.42). However, the main effect of condition (F (1,107) = 0.40, p=0.96) and the interaction between professional group and condition (F (1,107) = 1.15, p=0.32) were not significant.

Summary of results

Analysis reported a significant main effect of professional group for four outcome variables (intergroup anxiety, affective attitudes, behavioural intentions, communication). Nursing students reported less positive attitudes, perceptions of less positive communication and higher levels of inter-professional anxiety, than medical students did.

For both affective attitudes and behavioural intentions, a main effect of Condition was significant, showing that participants who took part in the extended contact task (video clip), reported more positive feelings and more positive behavioural intentions towards future interactions with the other professional group.

For these two variables, the Interaction effect GroupXCondition was also significant, highlighting how nursing students who took part to the extended contact task, showed more positive feelings and behavioural intentions than nursing students who were allocated to the other two conditions.

5.9.4 Research question 2: What effect does imagined contact and extended contact have on stereotypes?

In order to compare the stereotypes held by the two groups about each other's professional group, a 3X2 MANOVA was conducted, investigating the effects of group (nursing or medical students) and condition (Control, Imagined Contact and Extended Contact) on the stereotypes. Results from the MANOVA demonstrated a significant main effect of professional group (F (1, 107) = 18.82, p< 0.001; Wilk's Λ =0.46) and of condition (F (1, 107) = 1.71, p= 0.056; Wilk's Λ =0.79). However, the group x condition interaction was not significant (F (1,107) = 0.73, p=0.745; Wilk's Λ =0.90).

Nurses were perceived as *good communicators, confident, dedicated* and *caring* (M>4.17) by medical students. Similarly, doctors were perceived as *good communicators, confident, dedicated* and *caring* (M>3.33). Results identified a main effect of professional group for the traits *detached, good communicator, dedicated, arrogant* and *caring*. Means and standard deviations of stereotypes typical of the other professional group are reported in Table 19. These show that nurses consistently rate doctors as less positive than doctors rate nurses. Nurses rate doctors as more detached, less good at communicating, less dedicated, more arrogant and less caring than doctors rate nurses.

Table 19 Means and standard deviations for outgroup stereotypes

	Nurses' rating of doctors M (SD) N=54	Doctors' rating of nurses M (SD) N=54	F ratio (p)
Detached	2.87 (0.93)	1.78 (0.63)	50.50 ***
Good communicator	3.54 (1.06)	4.17 (0.67)	14.66 ***
Confident	4.17 (0.75)	4.18 (0.65)	0.02 NS
Dedicated	3.69 (1.10)	4.43 (0.69)	18.52 ***
Arrogant	3.02 (0.86)	1.87 (0.78)	51.16 ***
Caring	3.33 (0.77)	4.41 (0.62)	68.80 ***
Dithering	2.22 (0.88)	1.96 (0.85)	2.46 NS

Note ***p<0.001

There was a main effect of condition for the item *good communicator* ($F(2,107)=4.54$, $p<0.05$) and a marginal main effect for the trait *dedicated* ($F(2, 107)=2.52$, $p<0.085$). Post hoc test revealed that participants in the Extended Contact condition perceived members of the other professional group as more *dedicated* (M=4.31, SD=0.83) comparing to participants in the Imagined Contact condition (M=3.86, SD=1.03), t (70)=-2.03, $p<0.05$. There was no differences between participants in the Control and Imagined Contact condition (t (71)=0.56, p=0.58) and between participants in the Control and Extended Contact condition (t (70)=-1.4, p=0.16).

On the other hand, participants in the Imagined Contact condition perceived the other professional group as *better communicators* (M=4.16, SD=0.80) comparing to participants in the Extended Contact Condition (M=3.54, SD=0.91), t (70) = 3.06, $p<0.05$. Additionally, there was no difference between participants in the Control and Imagined Contact condition (t (71)=-1.55, p=0.12) and between participants in the Control and Extended Contact condition (t (60)=1.27, p=0.21).

5.9.5 Research question 2: What effect does imagined contact and extended contact have on Meta-stereotypes?

Meta-stereotypes are the beliefs people hold about which stereotypes of their own group are held by members of other groups. To investigate the impact of condition (Control, Imagined Contact and Extended Contact) and group (nursing or medical students) on meta-stereotypes, a 3X2 MANOVA was conducted. Results from the MANOVA demonstrated a significant main effect of professional group (F (1, 107) = 22.01, p< 0.001; Wilk's Λ =0.62). The main effect of condition (F (1, 107) = 1.62, p= 0.08; Wilk's Λ =0.80) and the interaction group x condition were not significant (F (1,107) = 1.29, p=0.21; Wilk's Λ =0.84).

Nursing students believed that doctors perceived nurses to be *good communicators, confident, dedicated and caring* (M>3.20). Medical students believed that nurses perceive doctors as *confident, dedicated, arrogant and caring* (M>3.61). Results are reported in Table 20. There was a main effect of professional group for the traits *detached, good communicator, confident, dedicated, arrogant* and *dithering.*

Table 20: Means and standard deviations of meta-stereotypes.

	Nurses M (SD) N=54	Doctors M (SD) N=54	F ratio (p)
Detached	2.70 (1.28)	3.28 (0.83)	8.57 **
Good communicator	3.67 (0.84)	3.29 (0.83)	7.24 **
Confident	3.72 (0.83)	4.44 (0.57)	28.08***
Dedicated	3.20 (1.28)	4.00 (0.83)	17.33 ***
Arrogant	3.04 (1.03)	3.85 (0.86)	17.01 ***
Caring	3.52 (1.13)	3.61 (0.71)	0.28
Dithering	2.91 (1.23)	2.09 (0.96)	14.40***

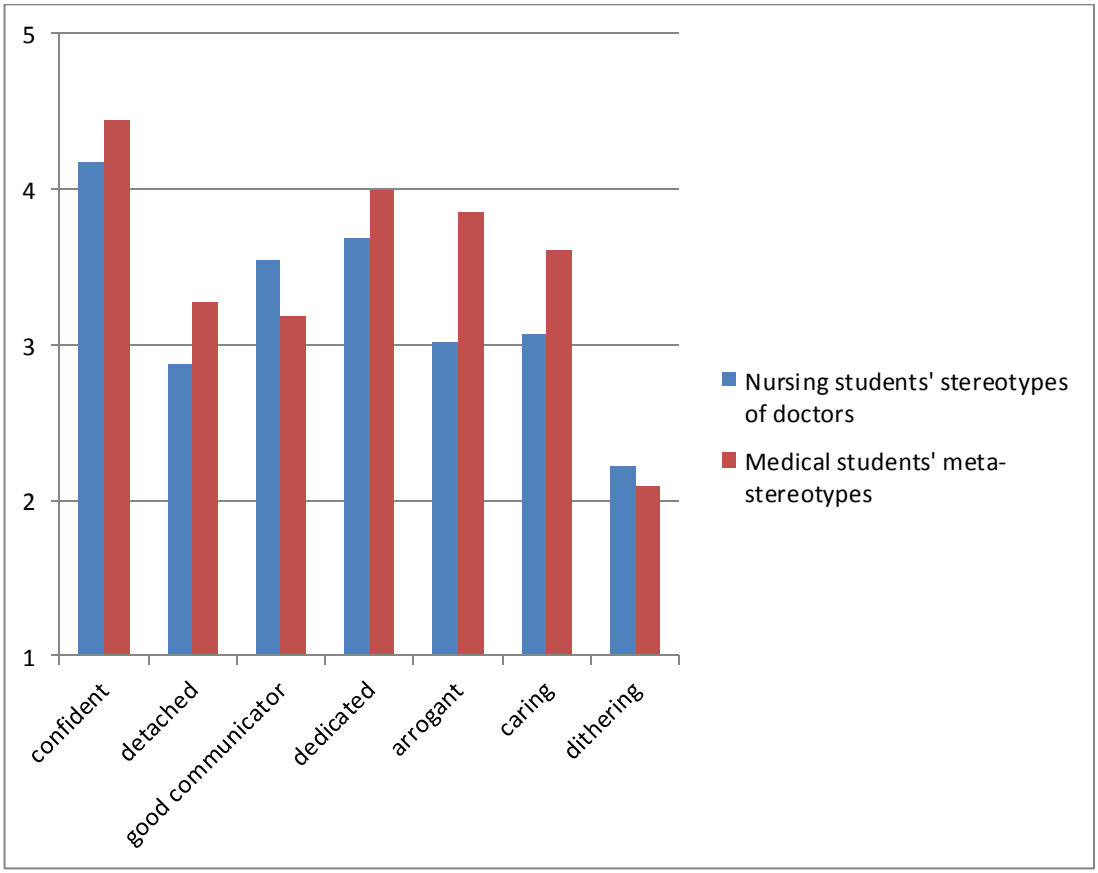
Note ***p<0.001; **p<0.01

5.9.6 Research question 2: What are the effects of imagined contact and extended contact on Doctor's expectations of stereotypes held by nurses?

In order to compare whether the medical students' meta-stereotypes differed from the actual nursing students' stereotypes of doctors, a 3X2 MANOVA was conducted. Results from the MANOVA demonstrated a significant main effect of professional group (F (1, 107) = 10.03, p< 0.001; Wilk's Λ =0.58). The main effect of condition (F (1, 107) = 1.03, p= 0.86; Wilk's Λ =0.86) and the interaction group x condition were not significant (F (1,107) = 1.09, p=0.37; Wilk's Λ =0.86).

As we can see from Figure 5, medical students would overestimate the extent to which nurses describe doctors as *confident, detached, dedicated, arrogant* and *caring*.

Figure 5 Differences between medical students' meta-stereotypes and nursing students' stereotypes

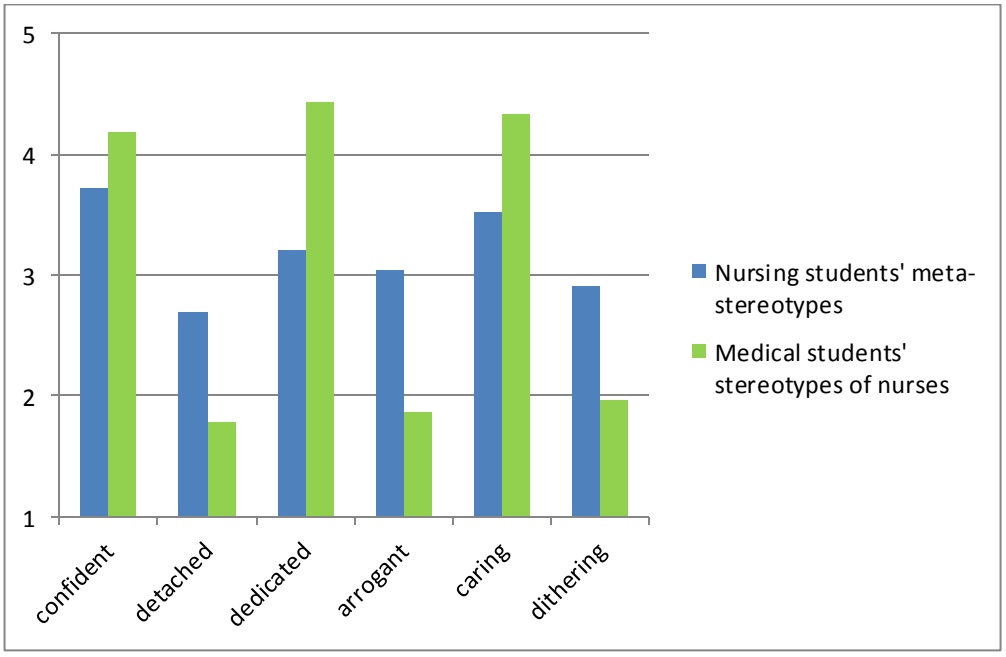


5.9.7 Research question 2: What are the effects of imagined contact and extended contact on Nurses' expectations of stereotypes held by doctors?

Similarly, in order to compare whether nursing students' meta-stereotypes could differ from the actual stereotypes reported by medical students a 3X2 MANOVA was conducted. Results from the MANOVA demonstrated a significant main effect of professional group, meaning that stereotypes held by doctors significantly differ from nurses' expectations around those stereotypes (nurses' meta-stereotypes), F (1, 107) = 10.70, p< 0.001; Wilk's Λ =0.56. The main effect of condition (F (1, 107) = 1.51, p= 0.11; Wilk's Λ =0.81) and the interaction group x condition were not significant (F (1,107) = 1.34, p=19; Wilk's Λ =0.83).

Means are reported in Figure 6. Nursing students seem to have more negative expectations compared to what medical students reported: they overestimated the degree to which doctors characterized them by negative traits (*detached, arrogant, dithering*) and underestimated the degree to which doctors characterized them by positive traits (*confident, dedicated, good communicator, caring*).

Figure 6 Differences between nursing students' meta-stereotypes and medical students' stereotypes



Summary of significant results

Results reported that doctors' and nurses' perceptions of each other are very similar: both groups tend to describe each other as good communicator, confident, dedicated and caring. When comparing the way the two groups tend to attribute those traits, nurses rate doctors lower than how doctors do.

Nurses' stereotypes were then compared to doctors' meta-stereotypes. Results underlined that medical student would overestimate the extent to which nurses describe doctors as *confident, detached, dedicated, arrogant* and *caring*.

Doctors' stereotypes were compared to nurses' meta-stereotypes, suggesting that nursing students overestimated the degree to which doctors characterized them by negative traits (*detached, arrogant, dithering*) and underestimated the degree to which doctors characterized them by positive traits (*confident, dedicated, good communicator, caring*).

5.9.8 Research question 3: Are meta-stereotypes mediators of the effects of extended contact on attitudes?

To further explore the significant group x condition interaction that showed how nursing students in the extended contact condition reported more positive attitudes comparing to nursing students in the control condition (see findings of Research question 1), it was investigated whether meta-stereotypes mediate the effects of the extended contact condition on the behavioural and on the affective components of outgroup attitudes. For this analysis responses of nursing students in the extended condition (recoded +1) were compared with those of nursing students in the control condition (recoded -1). A new variable called condition was created.

5.9.8.1 Affective component of attitudes

Correlations were conducted between condition, feelings and the 3 traits significant in the interaction condition x group (*detached, arrogant, caring*). The correlation matrix is reported in Table 21.

Table 21 Correlation matrix for Conditions, Feelings and the Mediators

	1	2	3	4	5
1.Condition	-	0.31	-0.43 **	-0.38*	0.45**
2. Feelings		-	-0.59**	-0.60**	0.66**
3. Detached			-	0.84**	-0.81**
4. Arrogant				-	-0.80**
5.Caring					-

*p < .05, **p < .01, ***p < .001.

The correlations illustrate that being in the extended contact condition was associated with the thought of being perceived as more caring and less detached or arrogant. Similarly, having more positive feelings towards the outgroup was associated with the belief of being perceived as more caring and less detached or arrogant, suggesting that mediation might be possible.

Following the correlation analysis, 3 regression models were conducted considering each meta-stereotype as mediator of the effect of condition on feelings. A first regression was conducted considering condition as independent variable and feelings as dependent variable. The regression results showed that condition marginally predicted the levels of feelings towards the outgroup (β=0.31, p=0.68).

For the first model, results showed that condition also predicted the mediator, that is the level of how participants perceived the outgroup to see their own group as detached (β=-0.43, p<0.05). Moreover, the path between the mediator and feelings, while controlling for the predictor was significant (β=-0.56, p<0.000), and when the mediator was controlled the relationship between condition and feelings became non significant (β=0.07, p=0.66).

For the second model arrogant was considered as mediator of the effect of the extended contact condition on feelings. The path between condition and the mediator, the levels of how participants think that the outgroup see their group as arrogant, was significant (β=-0.38, p<0.05). Additionally, the path between the mediator and feelings, while controlling for the predictor was significant (β=-0.57, p=0.001), and when the mediator was controlled the relationship between condition and feelings became non significant (β=0.09, p=0.55).

For the third model the trait caring was considered as mediator of the effect of the extended contact condition on feelings. In the second regression it

was demonstrated that the condition affected the levels of how participants think that the outgroup see their group as caring (β=0.45, p<0.05). Additionally, the path between the mediator and feelings, while controlling for the predictor was significant (β=0.66, p<0.001), and when the mediator was controlled the relationship between condition and feelings became non significant (β=0.01, p=0.95). A bootstrapping technique using 5000 resamples and 95% bias-corrected intervals was then performed for the three models (Hayes, 2013). Confidence intervals for the three models did contain zero, showing that the mediation effect was not significant.

5.9.8.2 Behavioural component of attitudes

In order to investigate whether meta-stereotypes where mediators of the effect of extended contact on behaviour tendencies for the nursing students correlations between condition, behaviour and the 3 traits significant in the interaction condition x group (*detached, arrogant, caring*) were conducted. The correlation matrix is reported in Table 22.

Table 22 Correlation matrix for Condition, Behaviour and the Mediators

	1	2	3	4	5
1.Condition	-	0.60**	-0.42**	-0.38**	0.42**
2. Behaviour		-	-0.53**	-.57**	0.66**
3. Detached			-	0.84**	-0.81**
4. Arrogant				-	-0.80**
5.Caring					-

*p < .05, **p < .01, ***p < .001.

The correlations illustrate that being in the extended contact condition was associated with more positive behavioural tendencies towards the outgroup. Moreover, also the relationship between the predictor and the potential mediators were significant. Being in the extended contact condition positively correlates with the thought of being perceived as more caring and less detached or arrogant. Similarly, having more positive behavioural tendencies towards the outgroup was associated with the belief of being perceived as more caring and less detached or arrogant, suggesting that mediation might be possible.

Three regression models were next conducted with Condition as independent variable, behaviours as dependent variable and detached, arrogant and caring as separate mediators. In the first regression the condition was considered as predictor and behavioural tendencies as outcome. Results revealed that condition predicted the levels of behavioural attitudes towards the outgroup (β=0.60, p <0.05).

For the first model, a mediation analysis was conducted considering the trait detached as mediator. Results revealed that there was a partial mediation of the trait detached (β=-0.33, p<0.05) between condition and behaviour (β=0.46, p<0.05).

For the second model, a mediation analysis was conducted considering the trait arrogant as mediator. Results indicated that there was a partial mediation of arrogant (β=-0.39, p<0.05) on condition and behavioural tendencies (β=0.01, p<0.05).

Lastly, in the third model, the regression results showed that thinking of being perceived as caring partially mediated (β=0.48, p<0.05) the relationship between the predictor and the outcome (β=0.39, p<0.05).

A bootstrapping technique using 5000 resamples and 95% bias-corrected intervals was then performed (Hayes, 2013). When confidence intervals do not contain zero, they show a significant mediation effect. Results are reported in Table 23.

Table 23 Bootstrapping analysis for the mediation of Meta-stereotypes on the effect of Condition on Feelings and Behaviour

	Total	Direct	95 % CI
Detached			
Feelings	0.28	0.06	0.07/0.50
Behaviour	1.16***	0.89**	0.03/0.79
Arrogant			
Feelings	0.28	0.08	0.05/0.47
Behaviour	1.16***	0.87**	0.05/0.70
Caring			
Feelings	0.28	0.01	0.09/0.57
Behaviour	1.16***	0.74**	0.10/0.89

*p < .05, **p < .01, ***p < .001.

CI= confidence intervals

Summary of significant results

A series of mediation analysis showed that nursing students in the extended contact condition reported more behavioural intentions towards doctors, due to a change if the way they expected to be perceived by the other professional group. More specifically, watching the video clip, affected nursing students to believe that doctors would perceive nurses as less detached, less arrogant and more caring. Ultimately, a positive change of these beliefs influenced nursing students to have more positive behavioural intentions towards interacting with a doctor in the future.

5.9.9 Research Question 4. Is identification a predictor of the strength of positive effect of extended contact on attitudes?

In order to investigate whether there were differences between the levels of identification with their own professional group between nursing students and medical students, an independent groups t-test was conducted. As

reported in Table 25, medical students reported a significantly greater identification with their professional group than nursing students. Similarly in order to investigate the extent to which participants perceived nurses and doctors to belong to the same group, an independent group t-test was conducted. Results showed that medical students believe that nurses and doctors were part of the same group, more than nursing students.

Table 24 Differences in Identification Levels and Common Group Identity between nursing and medical students

	Nursing students M (SD) (N=54)	Medical students M (SD) (N=54)	t test (df=34)
Ingroup Identity	4.11 (1.11)	4.77 (0.56)	-3.87***
Common Group Identity	3.80 (0.95)	4.54 (0.84)	-4.29 ***

Note *** p<0.001

It was also tested whether the two types of identification were correlated with each other. The correlations were conducted separately for the two professional groups. Results showed that Ingroup Identification was not correlated with Common Group Identification for nursing students (r=-0.01, p=0.93) or for the medical students (r=0.14, p=0.32).

5.9.9.1 Professional Identification

In order to investigate whether the level of identification with their own professional group could moderate the effect of the extended contact manipulation on attitudes, moderation analysis was conducted for the nursing students group. In the first model the predictor variables were condition, ingroup identification and the product of condition and identification. Feelings were added as outcome variable. Results indicated that there was no moderation of Ingroup Identification (β=1.05, p=0.52) on the effect of Condition on feelings.

Similarly, a moderation analysis was conducted considering behaviour as outcome variable and Professional Identification, Condition and the product of the two variables as predictors. Results showed that there was no moderation effect of professional Identification (β=-0.29, p=0.83) on the effect of Condition on Behaviour.

5.9.9.2 Common Ingroup Identification

Participants were asked to what extent they believed nurses and doctors to be part of the same groups. It was investigated whether their level of common group identification moderated the effect of Condition on Attitudes.

A first model was tested for the nursing group, where Condition, Common Group Identification and the product of the two were entered as predictors and feelings were the outcome variable. Results indicated that there Common Group Identification moderated (β=1.00, p<0.05) the effects of Condition on feelings. Results showed that the effects of Contact on Feelings were significant only for those participants who perceived doctors and nurses to be part of the same group (β=0.58, p<0.01)

A second model was tested in which Behaviour was entered as outcome variable. Results indicated that there was a tendency that Common Group Identification moderated (β=0.80, p=0.08) the effects of Condition on Behavioural intentions. Results showed that the effects of Contact on Behavioural intentions are greater for participants with higher Common Ingroup Identification (β=0.66, p<0.01) than for participants with lower Common Ingroup Identification (β=0.47, p=0.059).

Summary of significant results

Results indicated that medical students reported greater identification with their own professional group, compared to nursing students. Also, medical students believed more than nursing students that the two professions to be part of a common group.

Additionally, the effects of extended contact on feelings and behavioural intentions were higher for those participants who believed strongly that doctors and nurses were part of a common group.

5.10 Discussion

In the pilot study it was tested whether the video clip could be used as an extended contact manipulation in Study 3. Results showed that participants who watched the positive video clip rated it as significantly positive on all dimensions except for the status of the members of the team, confirming that could be used as model of effective team work and communication in the Extended Contact condition.

Following on from this, in study 3 I was interested in comparing the effects of imagined contact and extended contact on inter-professional attitudes for

higher and lower status groups. The two groups considered were nursing students and medical students. More specifically I investigated the moderating role of professional identification for the two groups on the effects of contact on attitudes and the potential mediating effects of meta-stereotypes, whose activation following the contact manipulation could have affected a change in attitudes.

5.10.1 Differences between nursing students and medical students

Nursing students and medical students reported differences on all the measures. Generally nursing students report less positive attitudes and perceptions of effective communication and higher levels of anxiety about future inter-professional interactions. Moreover, they showed lower levels of professional identification and common ingroup identification. When considering professional stereotypes and meta-stereotypes, the two groups presented differences in the ways they attribute the traits to each other and also differences in the way they think that they will be seen by the other group. Generally nursing students seemed to have more negative expectations about how they believe doctors see nurses: they overestimated the degree to which doctors characterized them by negative traits (*detached, arrogant, dithering*) and underestimated the degree to which doctors characterized them by positive traits (*confident, dedicated, good communicator, caring*). When looking at the medical students values on the dependent measures, they did not show any differences across conditions. As the means of communication and attitudes in the control conditions were very high, an increase due to the manipulations could not have been expected, showing a ceiling effect. The same explanation is applied for the low levels of anxiety for medical students in the control conditions, showing a floor effect.

5.10.2 Differences in the effects of extended contact and imagined contact

Considering the analysis on the effects of watching the video clip, results revealed the extended contact manipulation to be effective only for the nursing students: those participants who watched the positive video clip reported more positive feelings and behavioural intentions towards a future possible interaction with a doctor than participants in the control or imagined contact conditions. Furthermore, after watching the video nursing students reported more positive expectations about future professional interactions with doctors: more specifically they were expecting doctors to see nurses as

more caring and less detached or arrogant. These changes in expectations then lead to more positive feelings and behaviours towards the other professional group confirming the mediating role of both positive and negative meta-stereotypes on the effects of extended contact on attitudes. No change in the levels of inter-professional anxiety or perception of effective communication was present. These results confirm that the video clip simulation could have the same effects of other variants of the extended contact manipulations on the change of inter-group attitudes (Turner et al., 2008). The video clip is successful in providing a positive model of effective collaboration and communication between the two groups. It provides a positive memorable example to which participants could refer to when thinking of how to interact with a member of the outgroup in the future.

In addition to this, the results also confirmed that there is an important change in meta-stereotypes due to the extended contact manipulation that directly affects feelings and behaviour towards the outgroup, providing indication that meta-stereotypes could be cognitive mediators of the effects of contact. That is, intergroup contact is not effective just because changes the way we see the other group, but also because influences the way we expect the other group to see us. This aspect is especially relevant for lower status groups that usually are target of more negative bias and stereotypes held by the higher status groups. The knowledge of these expectations is found to prevent low status group in engaging in contact with higher status groups (Fein & Spencer, 1997; Vorauer et al., 2000). A change in these negative expectations is then essential to encourage the stigmatised group to interact in the future, without having the fear or the anxiety of confirming or trying to disconfirm the negative stereotypes. The moderating role of identification on the effects of extended contact was also tested. Results indicated that when participants perceived that nurses and doctors belonged to the same common group, then effects on feelings and behaviours were greater than on those participants with low common group identification. This suggests the importance of promoting a recategorization of group identities in order to promote better attitudes between health care professionals along with a greater efficacy of interventions on team effectiveness and communication.

When looking at the effects of imagined contact on attitudes for the nursing student group, results reported more negative effects of the mental simulation on feelings comparing to participants in the control condition and extended contact condition. Moreover, participants in the imagined contact

condition reported less positive behaviours than participants in the extended contact condition. No differences were reported for the levels of inter-group anxiety and effective communication. These results underline that the imagined contact manipulation seems not be effective for the two professional groups and in the specific case of nurses students, the mental simulation about the interaction with a doctor to discuss a patient's care make feelings towards them more negative. There was no mediation effect of meta-stereotypes or moderation effect of identification on the effect of imagined contact on feelings. Below I outline why this might have been the case, and what might be done differently in future in order to improve the efficacy of the intervention developed.

5.10.3 Limitations and future directions

5.10.3.1 The imagined contact task

In order to further investigate why the imagined contact task was not effective, two independent reviewers were asked to rate the descriptions that participants wrote about what they imagined after the imagined contact task. The four dimensions for the ratings were positive-negative, warm-cold, deep-superficial and vivid-vague. Results indicated that nursing and medical students' descriptions did not differ. Furthermore, they were rated as positive but vague, superficial and cold. This suggests that imagining a positive professional interaction is not sufficient to change attitudes about the other group, as the situation imagined was still cold, vague and superficial. It might be necessary to revisit the instruction used for the mental simulation task (Crisp & Turner, 2012) and adapt them to the specific inter-group relationship and the professional context. Firstly in past research the inter-group interaction imagined was on a more personal level, rather than professional: this would increase positive feelings and subsequently behavioural intentions. It is possible that encouraging more positive inter-personal attitudes between health care professionals could then lead to better professional perceptions. The instructions should then be changed in order to describe a positive and comfortable inter-personal interaction between nurses and doctors. Moreover, in order to increase the vividness and depth of the mental simulation, that ultimately could have affected the efficacy of the task itself (Husnu & Crisp, 2010), it may be necessary to provide further information about what was discussed or encourage participants to be as more specific and realistic as possible when imagining the social encounter.

5.10.3.2 Previous Contact

Participants in the study were recruited across several years and presented a variable amount of previous placement experience and subsequently inter-professional contact. There was no measure of the quantity and quality of previous inter-professional contact for any of the two professional groups. This could have been a limitation for two main reasons: firstly, the two samples were not homogenous for previous contact, suggesting that quality and quantity of past professional contact could be identified as confounding variables, which may have suppressed the effects of the imagined contact manipulation. Secondly, we know that indirect contact has been more successful in contexts where the two groups involved in the intervention did have previous contact (Husnu & Crisp, 2010), as it increases the vividness of the interaction that ultimately acts as moderator of the effect of imagined contact on attitudes. A possible explanation of the ineffective manipulation of imagined contact for participants in this study is that they may had different levels of quantity of contact (explaining why the descriptions were rated as less vivid and deep) and different levels of previous contact. These two aspects could have affected the availability of previous cognitive scripts, inhibiting the imagination of a positive scenario with a member of the outgroup. It would be suggested to control for quality and quantity of prior contact (Voci & Hewstone, 2003) when testing the efficacy of imagined contact manipulations with nursing and medical students in the future.

5.10.3.3 Identification

As presented in the results section, both groups presented high levels of identification with their own profession. Previous research on intergroup contact in general but also on imagined contact (Stathi & Crisp, 2008) reported that the intergroup contact is more effective for people who identify less with their group. This could explain why the imagined contact manipulation was not effective for participants in the current study. A first aspect of the role of identification on the effectiveness of intergroup contact is the type of groups with whom participants highly identify and whether the group membership is or not a personal choice. That is, the dynamics of high identifiers towards chosen groups (for examples professions) might be different than those of high identifiers towards non chosen groups (for example nationality). Ultimately this could affect the success of intergroup contact interventions. One solution could be to promote a recategorization of their group towards a positive common group; in the current study participants who considered nurses and doctors to work together as a

common group, were more responsive to the extended contact manipulation. It is also possible that the instructions of the imagined contact could present information around promoting the positive perception of the two professionals as part of the same superordinate group.

5.10.4 Application to the hospital setting

Intergroup contact based interventions designed as part of inter-professional learning programs were organized by Carpenter and Hewstone (1994, 1996), involving medical and social worker students. The interventions were designed based on Allport's optimal conditions (1954) and were evaluated positively by the social worker students involved, which reported to have increased their knowledge about the roles and duties of the other professional group. The current study offers an alternative intergroup contact based intervention, such as the video clip manipulation, which could be used as part of a larger inter-professional education module or intervention, which involves nursing students and aims to improve attitudes towards doctors. The positive video clip could be used as model of positive interaction in hospital, offering an example of mutual respect and understanding between professionals. The nursing students would perceive a climate of respect and will increase the expectations related to how they will be seen by doctors in the workplace (change in meta-stereotypes) and they will perceive themselves doctors in a more positive way (change in stereotypes). These two cognitive changes will then mediate a positive change in attitudes towards doctors. If these positive models will be sustained also in the workplace, the positive change in intergroup attitudes will improve the inter-professional context in which nurses and doctors interact in the workplace, that ultimately will be associated with more effective teamwork and communication, as presented in Study 2.

5.10.5 Summary

In this study the effects of two types of indirect contact (imagined and extended) on two professional groups (nursing students and medical students) were investigated. Results showed a positive effect of the extended contact manipulation on attitudes for nursing students. That is, when nursing students watched a video clip on positive interactions between nurses and doctors on a ward round, they reported more positive behavioural intentions towards future interactions with doctors than nursing students who did not watch the positive video. This effect was mediated by the activation of meta-stereotypes: in the extended contact condition nursing students believed that doctors perceived nurses as less arrogant and

detached and more caring than what participants in the control condition believed. Moreover, this effect was stronger for those participants who believed nurses and doctors to be part to the same group. These finding highlighted that extended contact had a positive effect on improving nursing students' attitudes towards doctors. Meta-stereotypes are mediators of such effect of extended contact on attitudes. On the other hand, there was no effect of the imagined contact manipulation for any of the two groups. Results suggest that the video clip manipulation could be used as part of an extended intervention that targets nursing students, aiming to improve professional perceptions and attitudes between the groups, suggesting that making nursing students more confident on how they would be perceived by doctors on the work place would affect their willingness of having positive future relationships with them. This change in inter-professional relations would then affect team work and team communication between them. It is suggested that promoting a positive common group identification through inter-professional learning would increase the effectiveness of the intergroup contact intervention itself. In this way, participants of the learning group would perceive each other as part of the same common ingroup, collaborating together towards the common goal of the patient care. The applicability of intergroup contact based interventions will be the focus of the next chapter, in which two focus group sessions will be presented. The focus groups were organized to discuss the applicability of the findings of the three research studies of this thesis with a group of clinicians and health researchers. The group will be presented with the methodology used in the studies and will discuss the current results in relation to intergroup contact based interventions and their potential in the work place and in inter-professional learning education.

Chapter 6
A Focus Group on the implementation of intergroup contact interventions in health care

6.1 Aims

In this chapter, a two session focus group will be presented. This focus group was conducted in order to provide feedback from clinicians and health care professionals on the impact that the research studies of this thesis could have on the design of interventions aiming to improve attitudes and communication between nurses and doctors.

The three research studies described in the earlier chapters of this thesis provide a theoretical contribution to the understanding of the group related factors that could affect and improve communication and teamwork between nurses and doctors in hospital. The theoretical basis for these studies are the Contact Hypothesis (Allport 1954) and the Social Identity theory (Tajfel & Turneer, 1979). The studies test whether the intergroup contact approach predicts effective teamwork and communication, providing an explanation of how effective teams perceive each other and work together. Moreover, two types of indirect contact, that is Imagined Contact (Crisp & Turner, 2009) and Extended Contact (Wright et al., 1997), were used as potential strategies to improve attitudes and perceptions of effective communication between nursing students and medical students. In the first study, through narrative interviews with nurses and doctors the factors affecting communication breakdown were explored. Analysis revealed that both interpersonal (such as being approachable, familiarity and confidence) and group factors (such as leadership, hierarchy and collaboration) influenced the effectiveness of communication between health care professionals in hospitals. Furthermore, techniques implemented in order to improve the structure of communication breakdown, as SBAR and safety briefings, were perceived as useful strategies to improve communication. Results from the second study, highlighted that quality of inter-professional contact between nurses and doctors positively influenced professional perceptions and stereotypes around other colleagues, which lead to improved inter-professional communication. An increase in the effectiveness of communication is shown to lead to more effective teamwork for both nurses and doctors. The third study tested the effectiveness of imagined contact

and extended contact (using a video clip) on the improvement of inter-professional attitudes and perception of good communication between nursing and medical students. Results showed that nursing students, who watched a positive video clip (extended contact manipulation) of positive interaction between nurses and doctors during a ward round, showed more positive feelings and behavioural intentions towards future interactions with doctors. These improvements were also expressed through more positive expectations of how doctor would see nurses as a professional group.

After conducting the three studies, it seemed essential to reflect on how such knowledge could be applied to the improvement of current practice and training in order to make communication and team work between nurses and doctors better. According to the Research Councils UK, one of the pathways to achieve societal and economic impact is the engagement and communication with the beneficiaries. The applicability of knowledge, rather than the creation of knowledge itself, is one of the principles of knowledge translation into practice improvement. Knowledge translation has been defined as "a dynamic and iterative process that includes the synthesis, dissemination, exchange and ethically sound application of knowledge to improve health, provide more effective health services and products, and strengthen the health care system" (Straus, Tetroe, & Graham, 2009). According to the knowledge to action-cycle, the involvement of stakeholder (patients, clinicians, managers) is part of the cycle as they are the end users of the implemented knowledge (Graham et al., 2006). Therefore, it was decided to invite a heterogeneous group of people to take part in the focus group, in order to have both clinicians and researchers' feedback. Focus group participants were selected as representatives of the groups who would be involved in potential interventions to understand the impact that these strategies would have for them, how would they need to be adapted and how they would be accepted by members of the hospital staff.

In order to get feedback from potential beneficiaries, we presented to them (a) the findings of this thesis, and (b) some illustrative studies on using intergroup contact based interventions to improve collaboration between groups. The literature on intergroup contact (Crisp & Turner, 2012; Turner et al., 2008) was reviewed in order to identify interventions that were based on intergroup contact, more specifically using imagined contact and extended contact. The majority of the interventions involved school children and adolescents (Vezzali, Capozza, Stathi, & Giovannini, 2011), and aimed to improve relations between different religious, ethnic or mental health related

groups (West & Turner, 2014). Two interventions conducted by Carpenter and Hewstone, were identified to apply intergroup contact theories to the training of health care professionals and were designed in the context of inter-professional learning, defined as “members or students of two or more professionals associated with health or social care, engaged in learning with, from and about each other” (Freeth et al., 2008). Carpenter and Hewstone (Carpenter & Hewstone, 1996) developed a shared learning program based on Allport’s optimal conditions and demonstrated successful improvements in attitudes and knowledge about roles and duties between professional groups. For the purpose of the focus groups it was then decided to present the participants one intervention which used imagined contact as strategy, one which used extended contact as strategy, and one intervention implemented in the health care setting.

In order to understand whether these interventions could be applied to the new context of the hospital setting and whether the results of the three research studies of this thesis could provide guidance in order to adapt the format of the intervention to the specific issue of team work and communication between doctors and nurses, it was decided to gather feedback from clinicians and health researchers. The method chosen to do so was focus groups. Focus groups are defined as “a research technique that collects data through a group interaction on a topic determined by the researcher” (Morgan, Krueger, & King, 1998). One of the strengths of using this method is that they provide an understanding of people’s complex behaviour and motivations and they do not just reflect the sum of the individual’s participation: participants also ask and explain to each other. Moreover, compared to individual interviews, in focus groups the researchers have the opportunity to ask participants about comments on each other’s experiences, rather than making comparison after the collection of individual data through interviews.

With the aim of gaining participants feedback on two main topics, findings of previous studies and interventions strategies, two focus group sessions were conducted. With these aims in mind, the first session focused on the discussion of the findings of the three studies previously conducted in this thesis and to consider the implications on common practice. Participants were invited to provide any comments and feedback on the three research studies presented. The second session would focus on the presentation of existing interventions to improve intergroup attitudes based on imagined contact, extended contact and intergroup contact theories in general.

Participants were invited to provide their feedback on the potential of using these types of interventions on the hospital settings, whether they knew of other methods and interventions used to achieve similar aims, and whether they had any suggestions on how implement contact based interventions in hospital.

In this chapter, a summary of how the focus group discussions were conducted will be presented. More specifically the feedback received by the participants around the findings of the studies conducted in this thesis and on the applicability of intergroup contact based interventions will be presented. Although this is not a research study as such, rather the report of a series of two stakeholders' workshops, the chapter will be structured as research chapter for ease of reading.

6.2 Method

6.2.1 Ethics

Ethics approval was granted by the Institute of Psychological Sciences Ethics Committee, at the University of Leeds (Ref:14-0103) to carry out the focus group session in early July 2014.

6.2.2 Participants

The focus group sessions involved thirteen members of the Quality and Safety Research Group, at the Bradford Institute of Health Research. The participants involved were from a variety of backgrounds: academic research, clinical practice and improvement specialists. The group was composed of two PhD research students from the University of Leeds, two research fellows, two academic lecturers affiliated to Bradford Teaching Hospital and the University of Leeds, two implementation managers from the Academic Health Science Networks, one risk manager, and four clinicians from the Bradford Royal Infirmary.

6.2.3 Procedure

The sessions took part in a meeting room at the Bradford Institute for Health Research, Bradford Royal Infirmary. Before starting the focus group participants received the participant information sheet and consent form, where they were fully informed about the aims of the sessions, about confidentiality and anonymity. After agreeing to take part in the focus group by signing the consent form, the program of the sessions was clarified.

6.2.4 Focus group session I

The focus group lasted a total of two hours and was organised into two separate sessions. In the first session, the three research studies conducted during the course of this PhD were presented to the participants. Initial background was provided to underline the reasons behind studying communication in hospital and the main social psychological approaches used in the development of the three research studies were presented. The presentation covered aims and methodology for each study, providing information on the main research questions, the participants who took part and the study design. In addition to that, the main results were presented to the participants, with reference to practical implications in the understanding of the improvement of group communication and teamwork. After presenting each study, a hand-out was made available to the group in order to provide additional information around the analysis conducted and the measures included in the questionnaires. Participants then had the opportunity to provide thoughts and ask questions about the study presented. The first hand-out included a summary of the five themes generated from the analysis of the interviews in study 1. In the second handout, the items of each measure used in the questionnaire for study 2 were presented. Finally, the third handout included a list of all the questions used in study 3 (see Appendix 4).

6.2.5 Focus group session II

After the first session lunch was provided. Following the break, the second session included two separate phases focusing on interventions in the health care setting. In the first phase summaries of three interventions based on intergroup contact were presented to the group (see Appendix 4). The first described intervention was a shared learning program with social work students and medical students, with a design based on research on intergroup contact (Hewstone et al., 1994). A one-day shared learning program was conducted aimed at enhancing inter-professional cooperation in relation to “dealing with drug abuse and handling psychiatric emergencies”. The workshop was presented by a doctor and a social worker and included discussions on attitudes towards patients, a short lecture and the opportunity to work with a partner of the other professional group on a case study presented on a video tape. All participants took part in the same “Shared Learning Program” organized by the University (Department of Mental Health) and the former Polytechnic (Department of Nursing, Health and Applied Social Studies). Participants had the opportunity to act as

representatives of their own group and to explore doctors' and social workers' contribution to the area. The workshop focused on skills, roles and duties of the two professional groups, and on how they could work more effectively together. The Shared Learning Program engendered slightly more positive outgroup attitudes, particularly for social workers, and some changes in knowledge.

The second intervention presented used imagined contact as strategy to improve attitudes towards immigrants and was implemented with school children (Vezzali et al., 2012). Forty-four Italian 5th-graders (24 males and 20 females, mean age 10.5 years) were randomly allocated to experimental or the control condition. Participants in the experimental condition took part in three intervention sessions each lasting 30 minutes. The interventions took place in small groups (5-6 children) and were implemented once a week on 3 consecutive weeks. Participants were asked to imagine a pleasant interaction with an unknown immigrant child. Every week they imagined the interaction to take place in a different scenario (at school, in the neighbourhood, at the park). In each session the children were given 15 minutes to write a detailed description of the interaction imagined. They also took part in a 10 minute discussion with the research assistant on what they had just imagined. Participants in the control condition were not asked to engage in any imagined contact sessions. Participants who engaged in the intervention had more positive behavioural intentions, higher self disclosure and more positive implicit attitudes towards the outgroup.

Lastly, an intervention using extended contact in school was presented to the participants (Cameron & Rutland, 2006). The aim of the study was to develop a prejudice reduction intervention for young children based on extended contact (the knowledge that members of one's own group have friendships or positive relationships with members of an outgroup). A number of extended contact interventions were tested. Sixty-seven non-disabled children (27 boys and 40 girls, mean age 8.2 years) were tested. The extended contact interventions involved reading stories with the children, each about ingroup members who had close friendship with outgroup members. After reading the stories children took part in a group discussion of the story, led by the researcher. These interventions occurred once a week, for six weeks. The neutral condition consisted of the basic extended contact condition, with no extra information. In the decategorization condition, the text emphasized individual characteristics of the story characters. In the intergroup condition category salience was

maintained and the typicality of the characters was stressed. Extended contact led to increased positivity toward disabled children, particularly in the intergroup condition (where group characteristics were stressed).

Participants were encouraged to discuss how these interventions could be translated into training of health care professionals, at undergraduate level and in the work place, reporting also their knowledge of existing interventions that used a different approach to the one presented in the sessions. The last phase of the second session involved a more creative task for the participants. They were invited to consider Allport's optimal conditions and the results of the three PhD studies reported in the first session. Additionally they were asked to discuss what interventions aiming to improve team work and communication should look like.

The focus group schedule and a copy of the handouts used during the two sessions are present in Appendix 4.

6.3 Participants' feedback

6.3.1 Sessions I

After the presentation of each research study in the first session of the focus group, participants had the opportunity to ask questions and provide feedback based on their clinical experience. The questions focusing around the background of the studies mainly centred on how intergroup contact models were applied in the hospital setting. Participants also asked how the systems in place to improve communication (such as SBAR and safety briefings) were accepted by the health care professionals interviewed.

6.3.1.1 The definition of team

Many questions were asked around the perceptions of the concept of team and responsibilities within the team. Participants commented that in the past health care professionals used to refer to being part of the firm, increasing the belief of being part of the same professional group rather than the team. They underlined how defining the team is itself challenging as roles are not always clear and the "disciplinary team" is different from the "care team" that looks after the patients. Professionals could then identify in different ways to the two concepts of team. This difficulty in the identification of the team was also mentioned in relation to the evaluation of team effectiveness. It was pointed out that it would be interesting to investigate how the perception of effectiveness could vary according to the different types of teams (care team or professional team).

6.3.1.2 The context of inter-professional interactions

After the presentation of the three research studies participants gave some general feedback on the issue related to communication breakdown in hospital. One of the concerns reported was around the importance of supporting not just the communicator but also those people receiving the information. It was also mentioned that clinicians perceive themselves to be too busy and overworked to prioritize and invest in effective communication. In both instances what was reported to be needed was not new communication systems but the improvement of context in which communication happens. Participants also revealed how nurses and doctors have different priorities and a lack of empathy for each other's role, as the two professions are seen and treated in different ways.

6.3.1.3 Lack of time to interact

Moreover, nurses and doctors usually do not work on the same ward for the same length of time: nurses stay on the wards for years while doctors work on many wards. This also affects doctors' participation in ward meetings and the possibility of being in contact with the other clinicians and of contributing to the improvement of the service through feedback. Participants reported that clinicians do not have time to reflect on how shifts went and to share these reflections with the colleagues. Furthermore, due to turnover, junior doctors find it hard to keep up with differences in practice between organizations. Participants underlined the role of consultants in supporting newly appointed doctors.

6.3.2 Session II

After reading the summaries of the three intergroup contact based interventions, participants reported their experience of projects aiming to improve relationships between nurses and doctors.

6.3.2.1 Participants' examples of inter-professional learning

One of the projects mentioned by a doctor was part of an inter-professional learning program conducted at undergraduate level in which nursing students and medical students simulated a ward round during which buzzers went off signalling that patients needed something. Nursing students tended to respond to the buzzers more often than medical students, confirming the doctors' perception that answering them was just a nurse's responsibility. When they realized that their parents were the actors playing the patients behind the curtains, medical students realised the emotional distance they had assumed towards patients and subsequently increased their empathy

towards the future patients' needs. This type of intervention, in which the two health professions had the opportunity to train together and learn from each other, was reported to be successful and it was suggested that implementing these ideas at undergraduate level might change understanding of the other clinicians' roles and responsibilities.

6.3.2.2 Shadowing professionals as additional inter-professional contact opportunity

When discussing the importance of knowing each other and having friendly relationships, participants said that different people work on the same ward week to week, and so there is no time to bond with colleagues. Consequently, interventions should happen as part of the undergraduate curriculum and they should allow both nursing students and medical students to learn from each other. In addition to inter-professional learning at undergraduate level, it was suggested that to introduce shadowing of health professionals on the ward would be a useful intervention. This could allow nursing students to understand what it is like for junior doctors to move around several wards, and medical students to further clarify nurses' contributions and responsibilities.

6.3.2.3 Limits of existing inter-professional learning programs

When considering the existing opportunities for junior doctors and junior nurses to get together and learn from each other, participants confirmed that there is a lack of contact between the two professions, making it hard to gain each other's perspective. Participants commented that opportunities to learn together at undergraduate level are rare and when the different students are together they do not contribute to the groups in the same way: nursing students still seem reluctant to get involved compared to medical students, suggesting that training courses rather than being inter-professional merely teach groups in the same session without any interaction. It seemed a key element to consider when designing an inter-professional learning program. Moreover, another format of interventions mentioned by the participants consisted in bringing doctors and nurses together to reflect on examples of communication.

6.3.2.4 Hierarchy and status differences during professional contact

Differences between doctors and nurses in the hospital hierarchy were also reported to be reflected by the way they introduce each other or refer to other colleagues: doctors tend to use their title while nurses use their first name. This difference in the use of names and titles reinforces the

differences in status. This practice depends on ethnic culture: in certain cultures hierarchies are reinforced by calling their superiors by the titles or on the organization itself. Additionally, in certain hospitals it is encouraged to refer to colleagues by their titles, while in others, it is common practice to use the first names despite the different status between colleagues. Professionals who found themselves changing ethnic or organizational culture could also experience confusion and barriers about the new rules around the use of title. The use of the first name could have a different meaning if it happens with the patient or with colleagues, increasing the confidence of the patient in the health care professionals who they are in contact with or reinforcing status and barriers between clinicians.

6.3.2.5 How to reinforce positive practice in the workplace

When considering the long term effect of interventions at undergraduate level, participants reported the difficulties in the maintenance of learnt positive practices that newly qualified health professionals would encounter once starting to work in the workplace. It was then discussed what could be done to support the same positive model also in the organizations. In relation to this issue, the importance of creating the space to interact together and discuss important topics was mentioned, such as the patients' feedback on the care received. Another strategy that could be used in the workplace to make people feel more responsible towards teamwork was involving them in a project in which they collaborate together. Clinicians should feel allowed to take the initiative and to feel responsible in joining projects together towards the development of a better cultural relationship. Cultural change was reported to be an essential element in inter-professional collaboration. Participants agreed on the role of the leader in getting everyone on board. However, they also underlined how not all the consultants are also necessarily good leaders, and that they need to engage more on the importance of their role in the team that goes beyond clinical duties, such as promoting cultural changes.

6.4 Discussion

The aim of the two focus group sessions was to present the findings of the three research studies previously conducted to a group of clinicians and researchers in order to gather their feedback on how the results reflected the issues and experience they had during their clinical practice. In addition to the empirical session, three intergroup based interventions were summarized to the participants and discussions around the applicability of similar types of interventions to the hospital context were generated.

6.4.1 Feedback on the research studies and on the issue of communication breakdown

The general response of participants to the three studies conducted was positive and many questions were asked in order to understand the theoretical approach and details around the methodology used. They also offered several comments on the applicability of the results providing further examples of the importance of targeting the cultural context and professional attitudes when applying strategies to improve team work and communication. Important examples were around the issue of unclear responsibility when people have different roles and different teams to work with, and the duality of the concept of team (professional versus care) which is linked with the instance of understanding when the team is perceived effective. These two topics generated through the discussion reflect some of the themes identified during the analysis of the interview study (see Chapter 2), according to which one of the main aspects mentioned in relation to communication breakdown were unclear roles and responsibility and the fluidity of the team.

Moreover, during the focus group discussion, participants also mentioned the importance of becoming familiar on a personal level with colleagues, which reflects the “relationships with others” theme generated from the interview study. Several barriers were cited to have caused that, one of which was the lack of time and the heavy work load. Participants also agreed on the need for improving attitudes between health care professionals rather than introducing new systems to improve communication, as the ones already in place are very successful (such as SBAR and safety briefings) although there is the need to make clinicians understand why it is important to use these systems. In relation to an improvement in attitudes, participants underlined the importance of making feelings more positive, especially increasing empathy between nurses and

doctors. As a lack of understanding of each other's roles is a barrier to effective team work, the importance of understanding the daily pressure experiences by both professions seemed to be an essential step towards effective cooperation.

6.4.2 Participants' views on interventions to improve teamwork

To summarize their comments on the issue of communication breakdown and team work in hospital, participants agreed on the need to focus on the improvement of attitudes through the promotion of positive inter-personal relationships and a better understanding of each other's roles and daily pressure. Considering some of the intergroup contact models to improve attitudes, Brewer and Miller's decategorization model (Brewer & Miller, 1984) states that in order to overcome conflict, members of different groups would need to focus on personal information rather than on the group membership. Furthermore, when investigating how contact is effective in reducing group bias, cross-group friendships have been identified as predictors in the successful change of attitudes, leading to a reduction of negative emotions and anxiety (Kenworthy, Turner, Hewstone, & Voci, 2005). As participants underlined, taking other people's perspectives, being able to put oneself in other people's shoes, has positive consequences for intergroup relations because outgroup members become more similar to the self (Galinsky & Moskowitz, 2000). Associating self-related traits to outgroup members would lead to more positive evaluations of these individuals. Positive feelings could then also be extended to the entire outgroup. Based on this, interventions aiming to improve attitudes could then focus on improving positive inter-personal contact through the increase of empathy and perspective taking. Having positive personal relationships with colleagues and understating their role and pressures encountered during every day shift could then support the establishment of a positive and cooperative organizational culture.

One of the barriers identified by the focus group participants and reflected by the analysis of the interview study, was heavy workload accompanied by lack of time. Participants suggested that interventions could happen at undergraduate level, in order to promote a better understanding of each profession's roles and duties. Inter-professional learning programs such as the one organized by Carpenter and Hewstone (1994) follow the principles of IPE being an opportunity to learn with and about each other. These interventions were designed following the intergroup contact principles, creating cooperative interaction between the students involved, ensuring equal status, common goal and perception of institutional support. Students

had the opportunity of discussing together important topics, increasing their knowledge of other professional's duties and expertise. These learning programs were evaluated as effective, and as an outcome exhibited improvement of stereotypes and attitudes between the two professional groups. Moreover, participants in the focus group underlined the need for increasing the number of inter-professional learning modules, and explained the need to promote everyone's participation. Another format of intervention suggested was group based training, in which health professionals could get together and reflect on positive examples of communication. The video clip used as extended contact manipulation in the third study (see Chapter 4), could be used as a resource in reflective training of this kind. Video reflexive ethnography (VRE) has been applied to the study of several medical practices for the achievement of patient safety (Iedema, Mesman, & Carroll, 2013). This technique uses video footage and aims to draw clinicians' attentions to their daily practices that have become unconscious and to promote self-reflection. These types of reflective activities could be use at both undergraduate level and in the work place.

One of the main issues reported by the participants during the focus group sessions was the importance of sustaining the positive models promoted with students, also once they start working on the wards. It is often the case that negative behaviours are adopted by peers and superiors, making it challenging for young professionals to apply the positive model previously learnt at undergraduate level. When reflecting on the ways to sustain the positive culture, participants reported the responsibility of the leader in support other staff to adapt positive behaviour and engage in projects in order to change negative practice. Support of the leader could be related to Allport's optimal conditions to make intergroup contact more effective, especially when referring to institutional support. This fourth condition could refer to several levels according to the specific context considered, such as teachers in schools when working with children. In the context of the hospital, support to high quality contact between professionals could be represented by the managers, the hospital culture, or by the consultants.

The link between the role of the leaders in the team and perceived safety within the hospital team is explored by Edmonson's research (2006). Edmonson underlined how high status individuals experience more psychological safety than lower status individuals (Nembhard & Edmondson, 2006). Psychological safety is defined as the shared belief that the team will not punish someone for speaking up and it is characterized by mutual trust

and respect between the members of the team (Edmondson, 1999). According to the author, doctors reported more psychological safety than nurses, underlining how people with different status perceive differently speaking up in the same team. Moreover, the openness of leaders was found to affect how safe members of staff perceive speaking up to be in case of uncertainty. The more a leader was perceived as open, the more members of the team were likely to speak up. The relationship between leader openness and speaking up was also predicting the effectiveness of the team, highlighting the importance of collaboration and mutual understanding in effective teams.

6.5 Summary

The focus group sessions were organized in order to gain clinicians feedback on the findings of the three research studies conducted and on their applicability on the hospital setting. In the first session, participants were presented with a summary of the main background theory, followed by the objectives, methods and analysis of the three research studies conducted over the past three years. After the presentation of each study they had the opportunity to ask any questions and give their feedback, based on their clinical experience of inter-professional communication and teamwork in hospital. Participants engaged positively in the discussion and provided additional examples of communication breakdown and of issues related to lack of team work and negative attitudes between nurses and doctors. During the second session participants had the opportunity to read three brief summaries of intergroup contact based interventions which aimed to improve attitudes between several groups. In one of the studies presented the relation considered was the one between doctors and social workers. Two of the strategies applied were imagined and extended contact with children in schools. The aim was to have clinicians' insights on how intergroup contact based interventions could be applied to the specific context of nurses and doctors in hospital. Participants provided further examples of inter-professional learning experiences which aimed to improve attitudes and knowledge about other professions' roles and responsibilities. It was agreed on the importance of promoting similar multi-professional learning modules, which were considered extremely useful in increasing knowledge and providing positive model of multi-professional cooperation. One of the main goals of this training was identified in the increase of empathy towards colleagues, and the opportunity to create positive personal

relationships: both of these aspects were considered essential in creative a collaborative culture.

Chapter 7: General Discussion

This chapter presents a summary of the research findings in relation to the achievement of the specific objectives of the thesis. Limitations and practical implications of such findings for the hospital contexts will be also explored, specifically in the design of interventions aimed to improve inter-professional communication and attitudes, involving both nurses and doctors, at undergraduate and professional level.

7.1 Introduction: Aims of the thesis and overview

Analysis of medical errors and mishaps underline how communication between health care professionals may indirectly affect the care of patients in hospital (Gawande et al., 2003; Lawton et al., 2012). Communication breakdown may involve faulty transmission of information between health care professionals and could be improved by introducing systems and tools which improve the structure of communication itself (Lingard et al., 2008). Although tools such as SBAR have been successful in decreasing the mishaps caused by miscommunication, further analysis of communication dynamics between clinicians reveals that the hierarchical structure and the professional conflict within hospitals affect how clinicians interact and communicate with each other (Hewett et al., 2009; Sutcliffe et al., 2004). Differences in power and status affect how easily professionals feel psychologically safe and speak up when concerned around colleagues' orders and actions (Edmondson, 1999, 2003). Interventions aiming to improve teamwork and communication should therefore also focus on improving the inter-professional relationships between clinicians alongside introducing tools to improve the transmission of information. Inter-professional education (IPE) aims to achieve this goal, involving undergraduate students from different health care background in interactions during which students learn from and about each other's roles and duties. IPE interventions organized by Carpenter and Hewstone (1994) were designed referring to the intergroup contact research as a framework in order to structure inter-professional interactions to be positive and to limit inter-professional bias. Yet, very little research has been done in this field, leaving a significant gap in the literature on understanding inter-professional communication in a hospital setting and whether intergroup contact could be applied to improve inter-professional relations and attitudes between nurses and doctors.

This thesis aimed to investigate whether inter-professional communication and attitudes between doctors and nurses could be improved based on the recommendations emerging from theory and research on the intergroup contact hypothesis. As a basis, this work began with understanding inter-professional communication based on the role of hierarchy and status between nurses and doctors. The role of intergroup contact on inter-professional communication and team work was then investigated. Given the clear role that contact played, two indirect forms of intergroup contact, imagined contact and extended contact, were tested between medical and nursing undergraduate students, as strategies to improve inter-professional communication and attitudes. More specifically, the thesis objectives were to a) understand how senior and junior health care professionals perceived communication between nurses and doctors, b) explore whether Allport's conditions could predict team effectiveness and positive communication between doctors and nurses, c) investigate whether indirect forms of intergroup contact could produce more positive attitudes and improved communication between nursing students and medical students, and d) provide feedback (by clinicians and health researchers) on the application of the thesis findings, with a view to developing more effective hospital based interventions. The objectives were achieved by a review of existing literature on intergroup contact and interventions, followed by a series of studies to extend such knowledge and apply it to the hospital context. The research studies explore the hierarchical aspect of communication breakdown in hospital (study 1), the application of Allport's optimal conditions to the prediction of team effectiveness and positive communication (study 2), and imagined contact and extended contact as strategies to improve attitudes at undergraduate level (study 3). In addition to the three research studies, a focus group was organised to share the findings of the three research studies to a group of clinicians and health researchers, and gather their feedback on how to apply such findings to the design of interventions aiming to improve attitudes and communication between doctors and nurses in the NHS.

7.2 Summary of key findings

7.2.1 How do hierarchies affect the experience of communication and the choice of strategies to improve episodes of communication breakdown?

Previous research on the factors contributing to patient safety incidents highlighted that communication breakdown was identified by clinicians to

have an indirect role of medical mishaps. Specifically, communication breakdown was recognised to be characterised by errors in the transmission of information and by problems in the social structure and hierarchy of the hospital team (Gawande et al., 2003). In order to investigate the specific relationship between social structure and communication breakdown, interviews with health care professionals at different levels of the hierarchical system of the hospital team were conducted, and form study 1. This allowed the inclusion of both senior and junior professionals' perspectives to the analysis of the factors that could make communication better.

Using thematic analysis, five different themes were generated from the data: Relationships with Others, Collaboration and Mutual Understanding, Hierarchy and Roles, Challenges, and Systems to improve communication. Participants' perceptions of communication referred to two main factors: interpersonal interactions and group dynamics. Both aspects were considered essential to ensure that communication processes could be effective. Interpersonal aspects of communication were based on how other people were perceived, how the person felt about other people, past relationships, and experiences of interaction. Communication was considered easier when other people were perceived as approachable, when participants felt confident about their own professional knowledge and skills, and when they had positive past experience of communicating with the other colleagues. When considering the group dynamics within the hospital team, participants recognized the importance of collaboration with colleagues, in an environment where respect between professions and mutual understanding of each other's role were valued. Participants reported the key role of leaders in ensuring a culture of psychological safety, where professionals feel free to speak up. When these interpersonal and group characteristics are present, communication is perceived as effective. In addition to these two levels of factors, specific strategies to improve the transmission of information were mentioned, such as SBAR (Situation, Background, Assessment, Recommendation), safety briefings and handovers. Several forms of communication were then reported as particularly challenging, such as indirect communication via phone, written communication and handovers. The analysis of the interviews in Study 1 was used to develop a new measure of quality of communication. This scale was representative of each of the 19 codes generated by the analysis of the interviews. In order to develop it, the 12 items of Shortell's scale were mapped to one or more of the 19 codes. An additional 8 items were then generated to allow us to represent the remaining codes generated by the

interviews. The final scale on effective communication, an adaptation of Shortell's scale, included 20 items.

7.2.2 Do Allport's optimal conditions predict effective team work and communication between nurses and doctors?

Pettigrew and Tropp's (2006) meta-analysis reported that, for those studies in which intergroup contact happened under Allport's four conditions (cooperation, equal status, common goal, institutional support), intergroup contact had stronger effects in reducing prejudice. The aim of this study was to investigate whether Allport's optimal conditions for intergroup contact could be applied to communication between nurses and doctors in the hospital setting. More specifically, the effects of the quality of inter-professional contact on inter-professional perceptions (stereotypes and meta-stereotypes), team effectiveness and positive communication were investigated. The role of team identification in the quality of inter-professional contact was considered.

Regression analysis highlighted that the effectiveness of team interactions and the quality of inter-professional communication were both predicted by the quality of interactions between nurses and doctors. These relations were significant for both health care professions. That is, when nurses and doctors cooperated positively towards a common goal, perceiving each other as having an equal status and institutional support, then team interactions were also more positive and contributed towards safer patient care. These results support previous research on the effects of intergroup contact on ingroup bias and prejudice, especially the importance of ensuring that Allport's optimal conditions are met during interactions in order to increase the effects of positive contact. These findings provide evidence of the value of applying intergroup contact based interventions to the specific relationship between nurses and doctors in hospital. Specifically, when designing interventions that aim to improve attitudes, communication and team effectiveness, it is important to make sure that health care professionals interact under Allport's optimal conditions, especially through cooperation, which has been found to mediate the effects of the other three conditions on the reduction of ingroup bias (Koschate & van Dick, 2011). When investigating the relations between quality of contact, communication and team effectiveness, analysis revealed that positive professional interactions lead to effective teamwork due to more positive communication. These results underline the key role of effective communication when considering how to make team interactions more positive.

A second important aspect considered in this study was the role of group perceptions during professional interactions. The path model generated during the analysis showed that high quality professional interactions are ultimately associated with positive communication and team effectiveness due to a change in how the two professional groups perceive each other. In fact, when health care professionals have positive experiences of professional encounters, then they also have a tendency to have a more positive overall perception of the other professional group. Moreover, it is this change of perceptions that helps communication and collaboration to be more effective. These results replicate the mediating role of knowledge and stereotypes on the effect of contact on attitudes, previously studied in several intergroup contexts, such as religious groups, national groups and ethnic groups (Brown & Hewstone, 2005). They also provide evidence that stereotypes mediate the effect of contact and provide evidence for an additional outcome variable, effective communication. That is, when designing interventions that aim to improve professional communication, in order to make those interventions more effective, it is important to ensure that participants have positive perceptions of each other's professions. As Carpenter (1995) suggested, inter-professional learning at undergraduate level, could provide opportunities for students to learn about each other's professions and duties, changing those negative stereotypes that historically stigmatized nurses and doctors, compromising effective interactions (Carpenter, 1995): these stereotypes refer to the traditional view of doctors as competent, detached and arrogant, while nurses are perceived to be caring, good communicators and dithering. Despite Carpenter's studies being based on Allport's optimal conditions and more generally on the contact hypothesis, the current study measured the effects of intergroup contact in the hospital settings, providing formal support for intergroup contact based interventions in hospital teams. Furthermore, inter-professional communication was considered for the first time as an outcome measure of the effects of inter-group contact, supporting the evidence around an inter-group based approach of the study of the improvement of professional communication. This study underlined the need for improving professional perceptions and the quality of professional interactions, based on professional cooperation towards a common goal, under support of the managers and team leaders and a more equal status among the clinicians. Such improvements on the social structure and culture of the hospital teams will positively affect the way health professionals communicate and work together, improving also the safety of patients.

7.2.3 Can indirect forms of intergroup contact be utilized as an intervention to improve attitudes between nursing students and medical students?

Intergroup contact based learning programs have been successful at improving attitudes between medical students and social worker students (Hean & Dickinson, 2005). Imagined contact tasks and extended contact based interventions have been applied in school settings, considering a variety of different target groups, such as refugees (Vezzali et al., 2012; Vezzali et al., 2011). This versatility of indirect contact interventions suggests the possibility that they could be effective also in improving attitudes and perceptions of effective communication between nursing and medical students. Study 3 tested whether imagining a positive interaction with a member of the outgroup would lead to more positive attitudes and effective communication compared to a control condition in which participants imagine a positive interaction with a member of the ingroup. When considering what extended contact task to include in the study, the possibility of using a variance of the commonly used extended contact tasks (such as stories or articles) was considered. As video based interventions have been successfully used in health care training (Iedema et al., 2013), and have visual impact and versatility that can be utilised in different training settings, a video clip of a medical ward round was chosen as the extended contact manipulation. Prior to study 3 a pilot study tested the perceptions of the positive interaction video clip, piloted alongside a more negative version of the same video clip. Results from the pilot study supported that the interactions between health care professionals in the video clip were positive. Study 3 examined whether watching this positive video clip could produce more positive inter-professional attitudes and perceptions of positive communication compared to when students were asked to watch a video clip which did not involve medical and nursing interactions.

Results underlined that nursing students who were randomly assigned to the extended contact condition, reported more positive behavioural intentions towards future interactions with doctors, compared to nursing students allocated to the imagined contact or the control condition. Moreover, watching the video clip was successful in increasing positive feelings towards inter-professional interactions in the future. These results support previous research on the effectiveness of extended contact and its applicability to different intergroup educational contexts, such as the one between nursing and medical students at undergraduate level (Cameron &

Rutland, 2006). The findings also introduce the effectiveness of a novel manipulation of extended contact, that is, the use of video clips which show positive intergroup interactions between the members of the two groups. It is suggested that video clips presenting cross group friendships or positive intergroup contact could be used in other interventions aiming to reduce intergroup bias. When looking at the medical students values on the dependent measures, they did not show any differences across conditions: medical students reported very high levels in all positive measures, showing very positive attitudes and low anxiety towards nurses in hospital. A possible explanation for a very positive inter-professional attitudes is that medical students are more aware of the importance of role and responsibilities because of existing modules on safety and team work.

In this study the effect of intergroup contact on stereotypes and meta-stereotypes was also explored. Meta-stereotypes refer to how someone would expect members of the other group to perceive them based on the groups they belong to (Vorauer et al., 2000). It was hypothesized that intergroup contact could affect not only how participants perceived the other group, but also how they were expecting to be perceived by members of the other professional group, and that a change in meta-stereotypes could determine the effectiveness of the intergroup manipulation itself. When investigating the specific role of perceptions and meta-perceptions on the effectiveness of the extended contact manipulation on behavioural intentions and feelings, it was suggested that nursing students would expect to be seen under a more positive light by doctors. Results indicated that the video clip offered a positive model of interaction during inter-professional contact which increased nursing students' confidence in their knowledge of how doctor would behave towards them and how they would stereotype them. After being exposed to the video clip, nursing students felt more respected as professionals by doctors. This increased knowledge and confidence in turn had a positive effect on their feelings and intentions regarding future interactions with doctors. This study provides evidence of how different groups respond in different ways to the same manipulations, suggesting that indirect contact interventions should consider the specific status relations between the groups involved. In this study extended contact was successful for the low status group, which in the hospital teams traditionally represent the majority group. Moreover, these findings present the novel role of meta-stereotypes during extended contact for low status majority groups: extended contact was effective in changing nursing students' attitudes due to a change in negative meta-stereotypes. Intergroup contact does not only

provide a more positive knowledge of the outgroup, but it also works in increasing low status groups' confidence in how members of the outgroup will see them in future interactions. Extended contact based interventions could be considered as preparatory steps to increase lower status groups' expectations on how higher status groups will perceive them, followed by positive direct contact with outgroup members. The effectiveness of videos used as part of training in health care is also provided by Mesman and colleagues who used videos as part of "video-reflexive ethnography" in multidisciplinary teams in hospital (Iedema et al., 2013). As part of video feedback research, Mesman and colleagues wanted to capture the processes that naturally occurred in the work place (ethnography). In addition to that they aimed to produce reflexivity involving the same clinicians recorded in the footage in the analysis of their medical practice.

In summary, the results of the current study are in line with previous research on extended contact based interventions, and provide evidence that these strategies could be used also in the health care context. More specifically it is suggested that inter-professional learning programs with nursing students, which are organized to increase knowledge about health care professionals' duties and responsibilities, could bear in mind research on intergroup contact when developing new and effective interventions. More specifically, extended contact manipulations and tasks could be used at undergraduate level as learning tools and techniques. Results of the current study provide evidence of the possibility of using video clip on positive models of interactions and inter-professional communication as a safe environment where health care professionals could reflect and exchange opinions on such models and how to make them part of the current practice.

Another interesting finding to emerge concerned the different perceptions held by the two professional groups. According to the results of this study, the nursing group expressed higher concerns about inter-professional interactions. That is, compared to medical students, they reported higher anxiety and less positive attitudes. Moreover, the nursing group was found to be the one that gained the most benefits from the extended contact manipulations. These findings underline the importance of investigating the reactions to contact interventions with both groups involved, not just the high status majority group. Pettigrew and Tropp's meta-analysis (2006) reported that the majority of intergroup contact studies involve higher status groups and that in those studies which involve also lower status groups the effects

of intergroup contact are less effective than in studies conducted with higher status groups. The results of this study provide support for the hypothesis that groups react in different ways to the same manipulation and interventions need to be targeted according to the specific intergroup context and status differential of the two groups involved. Based on the findings of this study, using video clips with positive interaction models would be more useful in increasing nursing confidence about how doctors would perceived them in the work environment in the future.

7.2.4 How can intergroup contact based interventions be implemented in health care?

As part of a knowledge translation process, it was decided to organize a focus group inviting the potential beneficiaries of our research to discuss the research findings of this thesis and the ways these could be translated into interventions in the hospital setting. The focus group was organized into two separate sessions. The first session focused on the presentation of the three research studies of this thesis, during which participants of the focus group had the opportunity to give their feedback on the topics explored and to reflect on the importance of the findings in relation to their own practice. In the second session participants were presented with three examples of interventions from the literature on intergroup contact, which used three different intergroup contact based strategies to improve attitudes between groups. Participants had the opportunity to ask questions and provide their opinion on the applicability of these strategies in a hospital setting. Furthermore, they provided feedback on similar interventions they had encountered which aimed to improve the same aspects of the relationship between nurses and doctors, and on how to implement intergroup contact strategies in hospital.

When presenting the three research studies, feedback of the clinicians and researchers of the focus group confirmed the importance of addressing the issue of communication breakdown from a psychological and group perspective. In fact, participants provided further examples of communication breakdown between nurses and doctors that they experienced in the past, and suggested factors that could affect positive communication, additionally to those identified by the analysis of the interviews. Among them, participants explained the importance of understanding how professionals think and feel about each other, in order to intervene for the improvement of the way they communicate. Supporting the findings of the analysis of Study 1, one of the main aspects thought to affect

effective communication was a lack of understanding of each other's roles and duties, and a lack of time to interact and learn more about those duties. Participants' contributions were also related to the importance of group memberships and social identity: when discussing the challenges of inter-professional relationships they mentioned the difficulty of defining which team professionals belonged to and the importance of investigating whether different types of teams, and perceptions of belonging to such teams, could help to improve communication with other team members. Overall, participants' feedback on the three research studies presented during the first session of the focus groups supported the main direction of this thesis towards the analysis of group factors related to the improvement of inter-professional communication such as hierarchy, professional identities and status. The general comments provided related to the broader problem of poor nurse-doctor collaboration and on the importance of improving inter-professional relationships to ultimately improve communication and the safety of patients. Their feedback was positive regarding social psychological research on intergroup contact and its applicability in interventions aiming to improve intergroup attitudes.

After learning about three interventions using intergroup contact strategies (such as imagined contact and extended contact) participants provided some examples of their experience of inter-professional learning programs (IPE). Some of the comments referred to some limits they recognized in how IPE is currently implemented at undergraduate level, such as the lack of actual interactions between students from different health professions or the dominant contributions of medical students over nursing students, who do not feel comfortable to actively participate to the sessions. Despite the limitations of current programs participants underlined the need to promote effective IPE programs, which they felt could be a recommended intervention and stressed the importance of learning from and about each other's profession. In order to make those programs more effective, participants underlined the need of reinforcing positive practice also during placements and after graduating. A commonly identified risk was mixed messages from the positive models during undergraduate training, and the actual interactions experienced in the work place. Shadowing other professionals during undergraduate placements and organizing multi-professional projects with the right involvement and support of team leaders, were suggested as possibilities to avoid the reinforcement of hierarchy and conflict in the workplace.

7.2.5 Differences in the effects of extended contact for minority and majority groups

Tropp and Pettigrew's meta-analysis (2005) highlighted how the magnitude of the effect of intergroup contact on prejudice varied according to the social status of the groups involved. Specifically, it was weaker for minority low status groups, which were considered in only 20.7% of the studies. Results of Study 3 of this Thesis on the effects of indirect contact on professional attitudes and communication support the hypothesis that intergroup contact could have different effects based on the groups considered, also suggesting the mediating role of meta-stereotypes on the effect of contact on attitudes for lower status groups.

In study 3 the extended contact manipulation was effective for the nursing students group, which in the hospital context represents a majority with lower status when compared with the medical professional group. Furthermore, the results confirmed that there is a change in meta-stereotypes due to the extended contact manipulation that directly affects feelings and behaviour towards the outgroup. This provided indication that meta-stereotypes could be cognitive mediators of the effects of contact. That is, intergroup contact is not effective just because it changes the way we see the other group, but also because it influences the way we expect the other group to see us. This change in meta-perceptions is especially relevant for lower status groups that are usually the target of more negative bias and stereotypes held by the higher status groups. The knowledge of other groups' negative perceptions of the ingroup is found to prevent low status groups engaging in contact with higher status groups (Fein & Spencer, 1997; Vorauer et al., 2000). A change in these negative expectations is then essential to encourage the stigmatised group to interact in the future, without having the fear or the anxiety of confirming or trying to disconfirm the negative stereotypes.

When considering the effects of imagined contact on professional attitudes and communication, results in Study 3 indicated that the manipulation was not effective for the two groups involved in the study. These findings suggest that the imagined contact manipulation needs to be adapted to the specific context and the status relation between the groups involved in the study. This could be achieved by tailoring the instructions to the two groups and by providing more details regarding how positive and vivid the interaction needs to be.

7.3 Limitations and future directions

7.3.1 Inclusion of other professional groups

The three research studies conducted in this thesis focus on the specific relationship between nurses and doctors. As a consequence of this, the findings are representative of the particular relationship between these two professional groups and could not be extended to other groups which are present in the hospital settings, such as health care assistants or pharmacists. As mentioned by the participants in the interviews of study 1, other professional groups could have specific and relevant insights of other aspects related to communication within hospital teams, which could ultimately affect the care and safety of patients. As care teams are complex and formed by several professionals, in order to have a richer and more complex picture of team communication, it is necessary to involve the whole team, in its complexity, involving other professionals, which directly or indirectly care for patients. Similarly, when investigating the effects of the quality of intergroup contact on communication and team work, other professional groups should be involved, in order to test whether quality of contact could be a predictor of positive attitudes and effectiveness also for other members of the care team, and not limiting the study predictions to nurses and doctors. Study 3 was conducted exclusively with nursing students and medical students. As inter-professional learning could be expanded to other health care professionals, it could be recommended to test the effectiveness of intergroup contact strategies (imagined contact and extended contact) involving students with a different health care background, such as Pharmacy students.

7.3.2 Inclusion of other specialties

Participants in study 1 and study 2 were recruited from similar specialties, such as Obstetrics and Gynaecology, Paediatrics, Surgery, Intensive Care Medicine and Anaesthetics. The findings of the interviews in study 1 clarified that workload, turnover and the complexity of the care team itself differ across specialties, showing how each department presents peculiar dynamics due to the specific care provided to the patients and the consequent organization of the delivery of care and of the type of professionals involved. Considering the number of total participants from each specialty, it was not possible to compare results across specialties, losing the opportunity of identifying specific dynamics and components relative to communication breakdown and quality of contact depending on the department participants were from. In order to have a more complex

analysis of the topic, one might investigate factors related to communication breakdown and quality of contact considering differences between specialties, as each one could bring specific problems and, consequently, the need of tailoring interventions according to this.

7.3.3 Comparisons between high and low status professionals

In study 1 and study 2 participants were recruited with consideration of the importance of involving both higher and lower status professionals, within each profession, as hierarchy had been identified as crucial factor that could affect effective communication. As a consequence of this choice the findings of the two studies include both perspectives, providing a more complex insight of communication breakdown than in those studies where the level of seniority of participants is not considered. In order to specify factors relating to communication breakdown increasing the number of participants per level of seniority within each profession would have allowed comparisons based on higher or lower status of the clinicians involved in the study. This understanding would allow identification of specific target groups, such as more senior or more junior clinicians, for interventions on the improvement of communication.

7.3.4 Quantity and quality of inter-professional contact at undergraduate level

In study 3 nursing students and medical students were recruited across all years. According to the year they were in and on the course they were doing, students varied according to the amount of time they had already spent on placements in hospitals. That meant that the final sample was then not homogeneous for quantity and quality of prior contact with other professional groups, potentially affecting the effectiveness of the imagined and extended contact manipulation used in the study. More specifically, the two strategies could be more effective with students having limited prior professional contact, as it is less likely that past negative experiences might interfere with the positive models of inter-professional relationships offered by the intergroup contact manipulations. In order to avoid quality and quantity of prior inter-professional contact to influence the interventions, it could be suggested to control for such variable, recruiting only participants with minimal professional contact. Doing so, it could be tested whether imagined contact and extended contact were effective in improving attitudes between students at the beginning of their education, when opportunity of interacting with other professionals are limited, reducing also potential negative experience and the formation of negative professional stereotypes.

7.3.5 Tailoring tasks according to the groups

In study 3 participants in the imagined contact condition were asked "to spend the next two minutes imagining being at work and meeting a doctor / nurse, with whom they were not familiar, to discuss a patient's care, imagining that the interaction was relaxed, positive, and comfortable". Despite asking participants to imagine a positive and comfortable interaction, ratings of the descriptions provided by participants revealed that the descriptions of both doctors and nurses were perceived as positive, but were neutral to cold, neutral to vague and superficial. This suggests that the imagined contact task was not effective in promoting the mental simulation of an effective scenario that could then affect attitudes of participants. Past research on the optimal instructions of imagined contact tasks refer to two main aspects to consider: the positivity and the vividness of the interaction to imagine. When considering the tone of the interaction, as for direct contact, imagined contact works better when it is positive than neutral (Crisp, Stathi, Turner, & Husnu, 2009; Stathi & Crisp, 2008). Moreover, more elaborate and vivid imagined contact have been hypothesised to create a more available behavioural script that would have greater impact on intentions (Husnu & Crisp, 2010). Future studies in this area might consider altering the instructions of the imagined contact task, considering the specific relationship between the groups involved, providing more information about the interaction to imagine or suggesting interpersonal rather than inter-professional interactions. In contrast to target groups previously studied in past imagined contact studies, participants in this thesis already had a considerable amount of prior contact with other health care professionals. The amount of experience of interacting with other clinicians may have affected the impact of the imagined contact task. In future studies it might be necessary to provide more details in order to control for vividness and level of complexity of the scene imagined, and may make the manipulation more effective, overcoming potential negative past experience. The level of details could involve two aspects which could influence the effectiveness of the task: it could involve more specific information about the positivity of the interaction, or it could change the interaction on a more personal level rather than professional. For example, participants might imagine themselves at a social event or chatting over lunch. Based on literature around cross group friendship, and on the findings of the interview study in this thesis, which underlined the importance of both interpersonal and group factors, the most appropriate strategy might be to support an improvement of the relationship between nurses and doctors on a personal level, rather than professional,

creating positive attitudes towards having positive friendships with members of the other professional group. These positive attitudes could then be extended towards the whole group, and to a professional setting.

7.4 Reflections on practical implications

The focus groups offered the opportunity to gain feedback on the applicability of the three research studies in this thesis to clinicians and health researchers directly involved in patient safety issues. The participants who were invited confirmed the importance of addressing the issue of communication breakdown between health professionals, particularly focusing on the social context in which professionals interact. They also provided additional examples of lack of communication and negative attitudes based on their direct experience. In terms of possible interventions which aimed to improve attitudes between clinicians, participants mentioned the importance of organizing inter-professional learning programs which allowed a real exchange between the groups involved. In addition to that, they underlined the importance of avoiding contrasting messages around the acceptable behaviours and practices between what is learnt at undergraduate level and the examples provided by colleagues in the work place. More specifically, suggestions around the ways of maintaining the positive models of inter-professional interactions learnt at undergraduate level were made, such as shadowing health professionals, involving leaders in such interventions, creating inter-professional projects which create more space for multi-professional interactions.

After gathering this feedback and contributions, one important recommendation is the promotion of inter-professional learning programs at undergraduate level, where medical student and nursing students, alongside other health care students such as pharmacists, have the opportunity to interact with each other while learning about each other's duties and responsibilities. Such inter-professional modules should provide a real opportunity for participation and involvement of both students. Based on intergroup contact research, students will interact in a cooperative environment, perceiving the importance of working together as a team, rather than separate professionals (Allport 1954). Learning about each other's duties will increase empathy and understanding of others' roles, which could change potential negative stereotypes and increase a sense of connection between professionals, towards a common goal, such as the care of the patients. Research on empathy and perspective taking highlighted them to be moderators of the impact of simulated behaviour

(Vasquez & Buehler, 2007) as they have been found to affect how abstract the imagined situation is perceived to be (Libby & Eibach, 2011). Moreover, inter-professional learning interactions will make the students feel a more equal and important status in the team, bringing different and essential contributions to the delivery of care. These positive interactions need to be seen supported and encouraged by lecturers and other professionals who may take part in the interventions. Based on the results of study 3, one possible strategy to use in such inter-professional learning modules could be the use of video clips, which has been successful in having the necessary impact to promote a memorable model of positive practice. The videos could generate discussions and reflections between students on positive practice and professionals roles. Interventions based on the video reflexivity approach have also been implemented to the improvement of post-operative handovers (Iedema et al., 2009). The video clips used in the project were presented to a multi-disciplinary team as part of feedback meetings. As an outcome, agreements on change were generated together with the identification of the person responsible for overseeing the change.

From the focus group discussions the importance of supporting inter-professional learning with interventions in the workplace, in order to produce a change in the organizational culture around collaboration and communication was recognized. Among the suggestions on how to promote the understanding of roles and responsibilities, participants referred to the opportunity of shadowing in the workplace. Students could then have the opportunity to shadow other professionals during their placements and have a real understanding of what colleagues do, how they manage their workload and tasks. As mentioned by the participants of the focus groups, alongside more effective multi disciplinary learning programs it is necessary to support health professionals in the workplace, as they will have an important influence on newly qualified professionals. If newly qualified professional will start working in a non cooperative work environment, they will not be able to use the positive models learnt in the past and they will adapt their behaviour to the negative ones established by more senior colleagues. In addition to this, another important aspect to consider when designing interventions in the work place is the involvement of leaders, such as managers and consultants, this has been proven to be necessary for the establishment of an open culture where professionals collaborate and feel psychologically safe within their team (Edmondson, 2003). Leaders will have to embrace the responsibility of supporting positive inter-professional

interactions, and encourage junior members of staff to feel comfortable in participating and speaking up.

7.5 Conclusions

This thesis aimed to understand the social and group component of communication breakdown between nurses and doctors in hospital. Specifically, it was explored how inter-professional contact and perceptions affect the quality of communication and teamwork in the hospital setting. In addition to this, two forms of indirect intergroup contact, imagined and extended contact, were used as strategies to improve attitudes and professional communication involving medical and nursing students. The analysis of the interviews in Study 1 underlined the importance of addressing the need of both junior and senior professionals in understanding how to improve communication breakdown. Moreover, both interpersonal and intergroup factors have been identified to be responsible in ensuring that communication between nurses and doctors happened effectively. Study 2 provides evidence that the intergroup contact hypothesis could be applied to the relations between nurses and doctors. Based on Allport's (1954) optimal conditions, high quality professional contact predicted team work and communication. This study provides evidence of two additional outcome variables of the effects of intergroup contact: team work and professional communication. Finally, this study highlighted the role of professional stereotypes as mediators of the effects of contact on communication. Study 3 explored the effectiveness of indirect contact between nursing students and medical students, supporting previous research on the effects of extended contact on attitudes. In addition to this, it also showed how lower status groups and higher status groups had different responses to the contact manipulations, with the extended contact task being effective only with the nursing students group. The results underlined that meta-stereotypes had a mediating role of the effect of extended contact for the nursing groups, showing how extended contact could have benefits in changing negative meta-perceptions existing for the lower status group. These findings were then presented to a focus group for feedback. Results of the three studies and focus group underline the importance of considering the interpersonal and intergroup context in which professionals communicate, alongside introducing new techniques to improve the flow and transmission of information. The quality of inter-professional contact, operationalized in terms of high cooperation, was found to be a predictor of effective communication and teamwork. These findings underline the

importance of designing effective inter-professional learning programs to offer the opportunity to students to reflect on the value of collaboration and mutual understanding between professions. Intergroup contact research offers an important framework for the design of interventions and learning programs following the same principles that would be used for the reduction of prejudice, in order to promote an open and positive culture during interactions between doctors and nurses.

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Appendix 1
Interview schedule Study 1

Inter-professional communication:

When nurses and doctors communicate effectively

Section 1- Icebreaker Questions

a) Could you please confirm your healthcare background, job role and key duties and responsibility?

Section 2a- Inter-professional Communication

a) Could you please briefly describe what happened in your last shift?
b) Referring to your last shift, who were the people you communicated the most with?
c) What type of information did you have to communicate with them?

Section 2b-Effective Communication

a) Referring to your daily duties, who are the people you feel more comfortable communicating with? Why is communication with them easier?
b) In your experience, how could good communication help to achieve the main goals of your team?
c) Could you give me a specific example of when you felt that communication was breaking down between you and other members of your team?
d) In your opinion, how could communication with these people have been better? What could you and other people in your team have done to make communication better?

Section 2c-Identity and Communication

a) Thinking of your daily duties how do you find communication with people in your team who have a different job role than yours?
b) How do you find communication with people who belong to a different team or specialization?

Section 3- Final Thoughts

a) Are there any additional comments you would like to make regarding professional communication?

Appendix 2
Questionnaire study 2

Inter-professional communication: when nurses and doctors communicate effectively

We are interested in understanding what doctors and nurses think and feel about team communication. Effective inter-professional communication is important in ensuring high quality health care, with communication breakdown reported as the main factor contributing to incidents in hospitals. However, it isn't always obvious what effective communication looks like, or what factors are the most important in determining whether teams work well together. This study which is based on ideas from social psychology about group identity and communication has been designed to better understand these issues. This study aims to investigate the factors that contribute towards effective communication (e.g. perceptions and attitudes) in hospitals by asking doctors and nurses about their own experiences.

The questionnaire should take no longer than about 10 minutes to complete. You are not required to give your name or any other identifying information. Please be as honest as possible when responding to the questions below. This research has been approved by the Institute Ethics Committee at the University of Leeds (Ref:*12-0080*).

Please indicate your agreement with the following statements by circling the number which best describes your opinion. For example, if the statement describes your opinion very accurately, circle 5; if the statement does not describe your opinion at all, then circle 1.

	Not at all				**Very much**
1. If disagreements arise, nurses and doctors are usually able to resolve them.	1	2	3	4	5
2. A friendly attitude exists between nurses and doctors	1	2	3	4	5
3. When problems arise, nurses and doctors search for solutions that are agreeable to each others' professional group.	1	2	3	4	5
4. Nurses and doctors recognise the expertise of each others' group	1	2	3	4	5
5. When problems arise during shared tasks, nurses and doctors perceive them as "mutual" problems that need to be solved.	1	2	3	4	5
6. I feel supported by my managers in cooperating with a nurse in my team.	1	2	3	4	5
7. I feel supported by my managers when problems arise between nurses and doctors.	1	2	3	4	5

8. Nurses have a higher status than doctors at this organization.	1	2	3	4	5

In your job you may work with more than one team. However, we are specifically interested in your perceptions of the team that you work in most frequently. . Please indicate below which team you work with the most frequently.

My team is:

When you are asked about 'your team' in subsequent questions, we are referring to the team that you indicated in the above box. Please keep this team in mind while answering the below questions.

Please indicate your agreement with the following statements by circling the number which best describes *yourself*. If the statement describes yourself very accurately, circle 5; if the statement does not describe yourself at all, circle 1.

	Not at all				**Very much**
1. I look forward to working with nurses each day	1	2	3	4	5
2. It is easy for me to talk openly with nurses	1	2	3	4	5
3. I can think of a number of times when I received incorrect information from nurses	1	2	3	4	5
4. There is effective communication between nurses and doctors across shifts	1	2	3	4	5
5. Communication between nurses and doctors is very open.	1	2	3	4	5
6. It is often necessary for	1	2	3	4	5

me to go back and check the accuracy of information I have received from nurses.					
7. I find it enjoyable to talk with nurses.	1	2	3	4	5
8. Nurses are well informed regarding events occurring on other shifts	1	2	3	4	5
9. When nurses talk with doctors, there is a good deal of understanding between them.	1	2	3	4	5
10. The accuracy of information passed between nurses and doctors leaves much to be desired	1	2	3	4	5
11. It is easy to ask advice from nurses	1	2	3	4	5
12. I feel that certain nurses don't completely understand the information they receive from doctors	1	2	3	4	5
13. Talking on the phone with a nurse I haven't met before is challenging	1	2	3	4	5
14. Doctors and nurses have different priorities	1	2	3	4	5
15. There are a lot of opportunities for doctors and nurses to learn together	1	2	3	4	5
16. There are a lot of opportunities for doctors and nurses to know each other better as individuals	1	2	3	4	5
17. I know the nurse I should go to for the information I need	1	2	3	4	5
18. I feel that certain nurses don't understand the roles and responsibilities of a doctor	1	2	3	4	5

19. I don't always understand what team people belong to	1	2	3	4	5
20. I am confident of my role in the team	1	2	3	4	5

Please indicate your agreement with the following statements by circling the number which best describes your team. For example, if the statement describes your team very accurately, circle 5; if the statement does not describe your team at all, then circle 1.

	Not at all				**Very much**
1. Our team meets the standards of quality expected by our Trust	1	2	3	4	5
2. Our team meets the standards of timeliness expected by our Trust	1	2	3	4	5
3. Our team meets the standards of patient safety expected by our Trust	1	2	3	4	5
4. Our team meets the standards of patient experience expected by our Trust	1	2	3	4	5
5. Our team has a reputation for work excellence within our Trust	1	2	3	4	5
6. The relationship between nurses and doctors is productive	1	2	3	4	5
7. Nurses and doctors work effectively together in order to provide better services to patients	1	2	3	4	5

Please indicate your agreement with the following statements by circling the number which best describe *yourself*. If the statement describes yourself

very accurately, circle 6; if the statement does not describe yourself at all, circle 1.

	Strongly disagree					**Strongly agree**
1. I have a lot in common with other doctors	1	2	3	4	5	6
2. I feel strong ties with other doctors	1	2	3	4	5	6
3. In general, being a doctor is an important part of my self-image	1	2	3	4	5	6
4. The fact that I am a doctor rarely enters my mind	1	2	3	4	5	6
5. In general I am glad to be a doctor	1	2	3	4	5	6
6. I don't feel good when I think about myself as a doctor	1	2	3	4	5	6

Please indicate whether you think the statements describe *nurses* very accurately. If you think the statement describes *nurses* very accurately, circle 5; if you think the statement does not describe *nurses* at all, circle 1

	Not at all				**Very much**
1. I think that nurses are detached	1	2	3	4	5
2. I think that nurses are good communicators	1	2	3	4	5
3. I think that nurses are confident	1	2	3	4	5
4. I think that nurses are dedicated	1	2	3	4	5
5. I think that nurses are arrogant	1	2	3	4	5
6. I think that nurses are caring	1	2	3	4	5

7. I think that nurses are dithering	1	2	3	4	5

Please indicate where you think the statements describe how *nurses see a typical doctor* in each statement. If you think the statement describes how *nurses see doctors* very accurately, circle 5; if the statement does not describe how *nurses see doctors* at all, circle 1.

	Not at all				**Very much**
1. Nurses think that doctors are detached	1	2	3	4	5
2. Nurses think that doctors are good communicators	1	2	3	4	5
3. Nurses think that doctors are confident	1	2	3	4	5
4. Nurses think that doctors are dedicated	1	2	3	4	5
5. Nurses think that doctors are arrogant	1	2	3	4	5
6. Nurses think that doctors are caring	1	2	3	4	5
7. Nurses think that doctors are dithering	1	2	3	4	5

The final part of the questionnaire will ask you to provide some **personal information**. However, the information provided will not be used to identify you.

1. Gender	
2. Age	
3. Nationality	
4. First Language	
5. Specialty	
6. Job role	

Appendix 3
Questionnaire study 3

Please indicate your agreement with the following statements by circling the number which best describe *yourself*. If the statement describes yourself very accurately, circle 6; if the statement does not describe yourself at all, circle 1.

1) I have a lot in common with other nurses.

1	2	3	4	5	6
Strongly disagree					Strongly agree

2) I feel strong ties with other nurses.

1	2	3	4	5	6
Strongly disagree					Strongly agree

3) I find it difficult to form a bond with other nurses.

1	2	3	4	5	6
Strongly disagree					Strongly agree

4) I don't feel a sense of "being connected" with other nurses.

1	2	3	4	5	6
Strongly disagree					Strongly agree

5) I often think about the fact that I am a nurse.

1	2	3	4	5	6

Strongly disagree — Strongly agree

6) Overall, being a nurse has very little to do with how I feel about myself.

1 2 3 4 5 6

Strongly disagree — Strongly agree

7) In general, being a nurse is an important part of my self-image.

1 2 3 4 5 6

Strongly disagree — Strongly agree

8) The fact that I am a nurse rarely enters my mind.

1 2 3 4 5 6

Strongly disagree — Strongly agree

9) In general I'm glad to be a nurse.

1 2 3 4 5 6

Strongly disagree — Strongly agree

10) I often regret that I am a nurse.

1 2 3 4 5 6

Strongly disagree — Strongly agree

11) I don't feel good about being a nurse.

1 2 3 4 5 6

Strongly disagree — Strongly agree

12) Generally, I feel good when I think about myself as a nurse.

1	2	3	4	5	6
Strongly disagree					Strongly agree

13) In the work place, to what extent do nurses and doctors feel like members of the same group?

1	2	3	4	5	6
Not at all					Very much

14) In the work place, to what extent do nurses and doctors feel like members of two separate groups?

1	2	3	4	5	6
Not at all					Very much

I would like you to spend the next two minutes imagining yourself being at work and meeting a Doctor, with whom you are not familiar, to discuss a patient's care.

Imagine that the interaction is relaxed, positive, and comfortable.

I will now time you while you imagine meeting this Doctor for **two minutes.**

Afterwards, you will be asked to write down details of what you imagined.

Now please think about the meeting you have just imagined with the Doctor. Write down as many things as you can (you don't have to limit yourself to 5) about the interaction that you imagined (e.g., where did you meet, what happened, what did you say to one another)

1)

_____

_____

2)

_____

_____

3)

_____

_____

4)

_____

_____

Please indicate where you feel a typical *doctor* should be placed in each statement. If the statement describes *doctors* very accurately, circle 5; if the statement does not describe *doctors* at all, circle 1.

1) I think that doctors are detached

1	2	3	4	5
Not at all				Very much

2) I think that doctors are good communicators.

1	2	3	4	5
Not at all				Very much

3) I think that doctors are confident.

1	2	3	4	5
Not at all				Very much

4) I think that doctors are dedicated.

1	2	3	4	5
Not at all				Very much

5) I think that doctors are arrogant.

1	2	3	4	5
Not at all				Very much

6) I think that doctors are caring.

1	2	3	4	5

Not at all Very much

7) I think that doctors are dithering.

1 2 3 4 5

Not at all Very much

Please indicate where *doctors would place a typical nurse* in each statement. If the statement describes how *doctors see nurses* very accurately, circle 5; if the statement does not describe how *doctors see nurses* at all, circle 1.

1) Doctors think that nurses are detached.

1 2 3 4 5

Not at all Very much

2) Doctors think that nurses are good communicators.

1 2 3 4 5

Not at all Very much

3) Doctors think that nurses are confident.

1 2 3 4 5

Not at all Very much

4) Doctors think that nurses are dedicated.

1 2 3 4 5

Not at all Very much

5) Doctors think that nurses are arrogant.

1	2	3	4	5
Not at all				Very much

6) Doctors think that nurses are caring.

1	2	3	4	5
Not at all				Very much

7) Doctors think that nurses are dithering.

1	2	3	4	5
Not at all				Very much

"If I were to work with a *doctor* that I'm not familiar with to discuss a patient's care, I think I would feel …"

Awkward

1	2	3	4	5
Not at all				Very

Happy

1	2	3	4	5
Not at all				Very much

Self-conscious

1	2	3	4	5
Not at all				Very much

Competent

1	2	3	4	5
Not at all				Very much

Relaxed

1	2	3	4	5
Not at all				Very much

Please indicate how you feel about *Doctors* in general. For each of the following scales, circle the number that best reflects how you feel.

1	2	3	4	5
Cold				Warm
1	2	3	4	5
Positive				Negative
1	2	3	4	5
Friendly				Hostile
1	2	3	4	5
Suspicious				Thrusting
1	2	3	4	5
Respect				Contempt
1	2	3	4	5
Admiration				Disgust

"If I were to work with a *doctor* that I'm not familiar with to discuss a patient's care, I think I would want to …"

Talk to them

Not at all	1	2	3	4	5	6	7	8	9Very much

Avoid them

Not at all 1 2 3 4 5 6 7 8 9 Very much

Find out more about them

Not at all 1 2 3 4 5 6 7 8 9 Very much

Keep them at a distance

Not at all 1 2 3 4 5 6 7 8 9 Very much

Spend time with them

Not at all 1 2 3 4 5 6 7 8 9 Very much

Have nothing to do with them

Not at all 1 2 3 4 5 6 7 8 9 Very much

Please indicate your agreement with the following statements by circling the number which best describe *yourself*. If the statement describes yourself very accurately, circle 5; if the statement does not describe yourself at all, circle 1.

1) I look forward to working with doctors each day.

1 2 3 4 5

Not at all Very much

2) It is easy for me to talk openly with doctors.

1	2	3	4	5
Not at all				Very much

3) I can think of a number of times when I received incorrect information from doctors.

1	2	3	4	5
Not at all				Very much

4) There is effective communication between nurses and doctors across shifts

1	2	3	4	5
Not at all				Very much

5) Communication between nurses and doctors is very open.

1	2	3	4	5
Not at all				Very much

6) It is often necessary for me to go back and check the accuracy of information I have received from doctors.

1	2	3	4	5
Not at all				Very much

7) I find it enjoyable to talk with doctors.

1	2	3	4	5
Not at all				Very much

8) Doctors are well informed regarding events occurring on other shifts.

1	2	3	4	5

Not at all Very much

9) When doctors talk with nurses, there is a good deal of understanding between each other.

1 2 3 4 5

Not at all Very much

10) The accuracy of information passed between doctors and nurses leaves much to be desired

1 2 3 4 5

Not at all Very much

11) It is easy to ask advice from doctors.

1 2 3 4 5

Not at all Very much

12) I feel that certain doctors don't completely understand the information they receive from nurses.

1 2 3 4 5

Not at all Very much

This final part of the questionnaire will ask you to provide some personal information. However, the information provided will not be used to identify you.

a) GENDER (please circle one): male female
b) AGE:
c) NATIONALITY:
d) FIRST LANGUAGE:
e) SUBJECT STUDYING AT UNIVERSITY:
f) YEAR OF COURSE

Appendix 4
Handouts focus group

4.1 Handout 1: Results Thematic analysis Interviews (Study 1)

Theme 1: Relationships with others

Relationships with Others was a cited theme by health care professionals across both job roles and level of seniority. It was prevalent in reports by nurses, specifically by junior nurses. It seems that nurses at the beginning of their career feel less confident and they are less willing to approach consultants. They prefer to communicate with peers, who they perceive as more approachable. In general health care professionals attribute the ability to communicate effectively to individual characteristics and give large importance to perceptions of how approachable colleagues are: based on which they plan future professional interactions. Sharing break time and training opportunities seem a good strategy to improve familiarity with people across professions and provides the right knowledge about each other's professional role. This seems to increase empathy and mutual understanding, which is essential in effective communication and positive professional interactions.

Theme 2: Collaboration and Mutual understanding

Collaboration and Mutual Understanding have been identified as essential factors to improve the quality of team dynamics and patient care. Health care professionals expressed that working in a collaborative environment is perceived as essential and leads to less communication breakdown. Under these working conditions, information is shared between every member and everyone feels respected and essential in the delivery of patient's treatment. In terms of strategies to achieve this level of collaboration, nurses and doctors mentioned the importance of shared understanding of each other's role: every professional's contribution is respected and understood by the other members of the team. People feel supported and more comfortable to speak up when information are not clear or in the case of disagreement.

Theme 3: Hierarchy and Roles

Hierarchy and Roles have been widely mentioned by both junior and senior health care professionals. Consultants seem themselves to take the lead and set an open culture between each member of the team. They feel to have to set the tone and provide support to juniors in their communication skills development after training. Although some participants underlined to have different roles in the Trust, understanding each other's role and priorities was mentioned to improve communication and patient's treatment. Defining their teams was controversial for most health care professionals who were not easily able to define what team they belonged to. The team is fluid, it changes often and it is not always present in the same physical environment at the same time. These are perceived as barriers to effective communication by both doctors and nurses.

Theme 4: Challenges

Participants were asked to report exampled of communication breakdown involving different health care professionals. Indirect communication, workload and handover were mentioned as main challenges experienced by both doctors and nurses. Challenges are also expressed by the other themes identified in the data: lack of collaboration, poor inter-personal relationships and strong hierarchical system could influence the quality and motivation of communication.

Theme 5: Systems in place to improve communication

As well as examples of communication breakdown, participants were asked to report what strategies were used to improve communication. SBAR and handovers, as well as structured team meetings, were reported to improve the quality of communication. The majority of the strategies cited referred to the improvement of the transmission of information and style of communication of those information. Facilitators of communication were also present in the other themes: collaboration, positive relationships with others and clarity about roles and responsibilities were perceived as essential for a positive working environment and positive team relationships and communication.

4.2 Handout 2: Measures Questionnaire Study 2

Quality of Inter-professional contact (1-5)

1. If disagreements arise, nurses and doctors are usually able to resolve them.
2. A friendly attitude exists between nurses and doctors
3. When problems arise, nurses and doctors search for solutions that are agreeable to each others' professional group.
4. Nurses and doctors recognise the expertise of each others' group
5. When problems arise during shared tasks, nurses and doctors perceive them as "mutual" problems that need to be solved.
6. I feel supported by my managers in cooperating with a nurse in my team.
7. I feel supported by my managers when problems arise between nurses and doctors.
8. Nurses have a higher status than doctors at this organization.

Communication (1-5)

1. I look forward to working with nurses each day.
2. It is easy for me to talk openly with nurses.
3. I can think of a number of times when I received incorrect information from nurses.
4. There is effective communication between nurses and doctors across shifts.
5. Communication between nurses and doctors is very open.
6. It is often necessary for me to go back and check the accuracy of information I have received from nurses.
7. I find it enjoyable to talk with nurses.
8. Nurses are well informed regarding events occurring on other shifts.
9. When nurses talk with doctors, there is a good deal of understanding between them.
10. The accuracy of information passed between nurses and doctors leaves much to be desired.
11. It is easy to ask advice from nurses.
12. I feel that certain nurses don't completely understand the information they receive from doctors .
13. Talking on the phone with a nurse I haven't met before is challenging.

14. Doctors and nurses have different priorities.
15. There are a lot of opportunities for doctors and nurses to learn together.
16. There are a lot of opportunities for doctors and nurses to know each other better as individuals.
17. I know the nurse I should go to for the information I need.
18. I feel that certain nurses don't understand the roles and responsibilities of a doctor.
19. I don't always understand what team people belong to

20. I am confident of my role in the team.

Team Effectiveness (1-5)

1. Our team meets the standards of quality expected by our Trust.
2. Our team meets the standards of timeliness expected by our Trust.
3. Our team meets the standards of patient safety expected by our Trust.
4. Our team meets the standards of patient experience expected by our Trust.
5. Our team has a reputation for work excellence within our Trust
6. The relationship between nurses and doctors is productive.
7. Nurses and doctors work effectively together in order to provide better services to patients.

Professional Identity (1-6)

1. I have a lot in common with other doctors.
2. I feel strong ties with other doctors.
3. In general, being a doctor is an important part of my self-image.
4. The fact that I am a doctor rarely enters my mind.
5. In general I am glad to be a doctor.
6. I don't feel good when I think about myself as a doctor.

Stereotypes (1-5)

1. I think that nurses are detached
2. I think that nurses are good communicators

3. I think that nurses are confident
4. I think that nurses are dedicated
5. I think that nurses are arrogant
6. I think that nurses are caring
7. I think that nurses are dithering

Meta-stereotypes

1. Nurses think that doctors are detached
2. Nurses think that doctors are good communicators
3. Nurses think that doctors are confident
4. Nurses think that doctors are dedicated
5. Nurses think that doctors are arrogant
6. Nurses think that doctors are caring
7. Nurses think that doctors are dithering

4.3 Handout 3: measures questionnaire study 3

Professional identity (1-6)

1) I have a lot in common with other nurses.
2) I feel strong ties with other nurses.
3) I find it difficult to form a bond with other nurses.
4) I don't feel a sense of "being connected" with other nurses.
5) I often think about the fact that I am a nurse.
6) Overall, being a nurse has very little to do with how I feel about myself.
7) In general, being a nurse is an important part of my self-image.
8) The fact that I am a nurse rarely enters my mind.
9) In general I'm glad to be a nurse.
10) I often regret that I am a nurse.
11) I don't feel good about being a nurse.
12) Generally, I feel good when I think about myself as a nurse.
13) In the work place, to what extent do nurses and doctors feel like members of the same group?
14) In the work place, to what extent do nurses and doctors feel like members of two separate groups?

Stereotypes (1-5)

1) I think that doctors are detached
2) I think that doctors are good communicators.
3) I think that doctors are confident.
4) I think that doctors are dedicated.
5) I think that doctors are arrogant.
6) I think that doctors are caring.
7) I think that doctors are dithering.

Meta-stereotypes (1-5)

1) Doctors think that nurses are detached.
2) Doctors think that nurses are good communicators.
3) Doctors think that nurses are confident.
4) Doctors think that nurses are dedicated.
5) Doctors think that nurses are arrogant.
6) Doctors think that nurses are caring.
7) Doctors think that nurses are dithering.

Anxiety (1-7)

"If I were to work with a *doctor* that I'm not familiar with to discuss a patient's care, I think I would feel …"

Awkward

Happy

Self-conscious

Competent

Relaxed

Feelings

Please indicate how you feel about *Doctors* in general. For each of the following scales, circle the number that best reflects how you feel.

Cold/Warm

Positive/Negative

Friendly/Hostile

Suspicious/Trusting

Respect/Contempt

Admiration/Disgust

Behavioural Intentions (1-9)

"If I were to work with a *doctor* that I'm not familiar with to discuss a patient's care, I think I would want to …"

Talk to them

Avoid them

Find out more about them

Keep them at a distance

Spend time with them

Have nothing to do with them

Communication (1-5)

1. I look forward to working with doctors each day.
2. It is easy for me to talk openly with doctors.
3. I can think of a number of times when I received incorrect information from doctors.
4. There is effective communication between nurses and doctors across shifts
5. Communication between nurses and doctors is very open.

6. It is often necessary for me to go back and check the accuracy of information I have received from doctors.
7. I find it enjoyable to talk with doctors.
8. Doctors are well informed regarding events occurring on other shifts.

9. When doctors talk with nurses, there is a good deal of understanding between each other.
10. The accuracy of information passed between doctors and nurses leaves much to be desire
11. It is easy to ask advice from doctors.

12. I feel that certain doctors don't completely understand the information they receive from nurses.

4.4 Handout 4

Intergroup contact between professional groups- social workers and doctors, Hewstone et al., 1994 Study 1

Method

Overview: A one-day shared learning program was conducted aimed at enhancing inter-professional cooperation in relation to "dealing with drug abuse and handling psychiatric emergencies". The workshop was presented by a doctor and a social worker and included discussions on attitudes towards patients, a short lecture and the opportunity to work with a partner of the other professional group on a case study presented on a video tape. All participants took part in the same "Shared Learning Program" organized by the University (Department of Mental Health) and the former Polytechnic (Department of Nursing, Health and Applied Social Studies).

Participants had the opportunity to act as representatives of their own group and to explore doctors' and social workers' contribution to the area. The workshop focused on skills, roles and duties of the two professional groups, and on how they could work more effectively together.

Participants: Thirty-three clinical medical students (19 males and 14 females, mean age 24.0 years) and 23 final-year social work students (6 males and 17 females, mean age 29.9 years) took part in the program.

Results and Discussion:

1. *Background perceptions:* Both groups were aware of the higher status of doctors in society. Doctors perceived less institutional support and expected the program to be less useful.
2. *Ingroup and outgroup ratings:* both groups (especially the social workers) evaluated the other group more positively. There was mutual intergroup differentiation: each group acknowledged the other's superiority on one dimension.
3. *Knowledge:* Working together with an outgroup member led respondents to rate themselves to be more knowledgeable about outgroup's skills, duties and roles. These effects were limited to the social workers.

4. *Judgements of work with member of the other group and experienced contact:* The judgements of the partner were overall positive, although doctors were less positive than social workers.

The Shared Learning Program engendered slightly more positive outgroup attitudes, especially for social workers, and some changes in knowledge.

Study 2

Method

Overview: The program filled two and half working days, spread over four days. Participants had contact with more outgroup members, rather than one outgroup partner.

Participants: Forty-one medical students (26 males and 15 females, mean age 23.9 years) and 44 social work students (14 males and 30 females, mean age 33.2 years) took part from the program.

Questionnaire: The same questionnaire was used.

Results and Discussion:

1. *Background perceptions:* Both groups were aware of the higher status of doctors in society. Doctors had more negative perceptions concerning the program.
2. *Ingroup and outgroup ratings:* Overall attitudes become more positive over time. There was also a clear intergroup differentiation, with outgroup ratings more positive over time.
3. *Knowledge:* Participants rate themselves as more knowledgeable about the outgroup at post-test.
4. *Judgements of work with member of the other group and experienced contact:* The judgements were overall quite positive with perceived typicality of the outgroup members higher than in study 1.

4.5 Handout 5

Improving implicit and explicit intergroup attitudes using imagined contact: An experimental intervention with elementary school children Vezzali et al., 2012

Method

Participants and Procedure: Forty-four Italian 5th-graders (24 males and 20 females, mean age 10.5 years) were randomly allocated to experimental or the control condition. Participants in the experimental condition took part in three interventions sessions each lasting 30 minutes. The interventions took place in small groups (5-6 children) and were implemented once a week on 3 consecutive weeks. Participants were asked to imagine a pleasant interaction with an unknown immigrant child. Every week they imagined the interaction to take place in a different scenario (at school, in the neighbourhood, at the park). In each session the children were given 15 minutes to write a detailed description of the interaction imagined. They also took part in a 10 minutes discussion with the research assistant on what they had just imagined.

Participants in the control condition were not asked to engage in any imagined contact sessions.

Measures:

1. *Explicit attitudes:*
    - Self-disclosure
    - Ingroup and outgroup behavioural intentions
2. *Implicit attitudes (child IAT, Implicit Association Test)*: Implicit attitudes are thoughts, feelings, or actions towards groups which arise due to past experiences which one is unaware of.

Results

1. *Explicit attitudes*
    - Self-disclosure was higher in the imagined contact (above the midpoint of the scale) than in the control condition.
    - Participants who engaged in the intervention had more positive behavioural intentions towards the outgroup.
2. *Implicit attitudes*
    - Implicit bias was stronger in the control than in the imagined contact condition.

4.6 Handout 6

Extended contact through story reading in school: reducing children's prejudice toward the Disabled

Cameron and Rutland, 2006

Method

Aims: The aim of the study was to develop a prejudice reduction intervention for young children based on extended contact (the knowledge that members of one's own group have friendships or positive relationships with members of an outgroup). A number of extended contact interventions were tested.

Participants: Sixty-seven non-disabled children (27 boys and 40 girls, mean age 8.2 years) were tested.

Procedure: The extended contact interventions involved reading stories with the children, each about ingroup members who had close friendship with outgroup members. After reading the stories children took part in a group discussion of the story, led by the researcher. These interventions occurred once a week, for six weeks.

- The neutral condition consisted of the basic extended contact condition, with no extra information.
- In the decategorization condition, the text emphasized individual characteristics of the story characters.
- In the intergroup condition category salience was maintained and the typicality of the characters was stressed.

Measures:

1. *Intergroup attitude measure*
2. *Intended behaviour measure*

Results

Extended contact led to increased positivity toward disabled children, particularly in the intergroup condition (where group characteristics were stressed).