The influence of face-to-face communication on intergroup interaction and attitudes

A qualitative study on the balance of means of communication in the multidisciplinary intergroup situation among medical specialists, nurses and medical secretaries during consultation hours at an outpatient clinic.

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De invloed van face-to-face communicatie op multidisciplinaire samenwerkingsprocessen en attitudes

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ABSTRACT

How multidisciplinary teams collaborate and communicate with each other is essential to both patients and employees. Healthcare information systems are being implemented at outpatient clinics on a large scale and will continue to be developed in the future. These communication technologies offer visible benefits regarding the quality of healthcare, but their effects on intergroup interactions are underexplored. Therefore, the aim of this study is to investigate the influence face-to-face communication has on the interactions among healthcare teams that are dealing with increasingly digitalized hospital processes.

Different qualitative data collection methods were used. Firstly, work processes were observed to determine how medical specialists, nurses and medical secretaries interact with each other. Thereafter an intervention was executed to investigate the influences of face-to-face communication on intergroup interaction. Finally, interviews and observations were used to gather data concerning the effects of face-to-face communication on intergroup interaction and attitudes.

Participants embraced the increased face-to-face communication. According to the different disciplines included in the study, this type of multidisciplinary intergroup contact would be helpful for gaining insight into each other's situations and would sustain the basis for open communication and mutual trust. Other factors such as high workload and the dynamic within one discipline were also found to influence both intergroup interaction and attitudes.

This study shows that face-to-face communication contributes to both cognitive and affective dimensions of intergroup attitudes. The in-groups desire to have the out-group gain understanding of the situations the in-group has to deal with. This introduces the basis for enhancing emotions such as appreciation and mutual trust. Face-to-face communication influences the overall work climate and thus also team performance, which in turn positively influences the quality of patient healthcare. These conclusions were used as the basis for developing propositions. Further longitudinal research is needed to gain a deeper insight into specific intergroup conditions that influence the interaction between and within the concerned disciplines (whereby people have already been working together for quite some time).

Key terms: intergroup interactions, intergroup attitude, cognitive and affective dimensions, face-to-face contact, hospital team processes

CONTENTS

1. INTRODUCTION

In a medical setting, good communication between and within teams is essential for the effectiveness of work processes (Landry & Erwin, 2015). Miscommunication has a negative effect on both patient care (Watson, Manias, Geddes, Della, & Jones, 2015) and the quality of the work environment for healthcare professionals (Agarwal, Sands, Schneider, & Smaltz, 2010). Hertting, Nilsson, Theorell and Larsson (2003) have found that frustrations among employees are triggered by the changes this sector is subject to. One major development is the implementation of healthcare information systems (HIS). Although these technologies have advantages (Adler-Milstein & Bates, 2010; Agarwal et al., 2010; Caleira, Serrano, Quaresma, Pedron, & Romão, 2012), their consequences for intergroup communication and work processes among medical employees and support staff are unknown. These workers, who depend on each other's work, have less face-to-face contact than they used to. However, social contact remains essential for them, especially for medical secretaries (Hertting et al., 2003). Having a direct form of contact influences how employees in this setting experience collaboration, as well as the effectiveness of work processes (Reddy & Spence, 2008).

Intergroup interactions lead people to develop feelings and opinions about the relationships they have with both other teams and individual members of those teams. These feelings and opinions, which are called intergroup attitude, arise from people's interpretations of a variety of information, prior experiences and prejudices (Harwood, 2010). Intergroup attitudes are comprised of affective and cognitive dimensions (Aberson, 2015). People classify themselves and each other into groups to form ideas and understandings about how to behave towards each other (Aberson, 2015; Brewer & Kramer, 1985). Research reveals that individuals show favouritism towards people who they place within their own group (Brewer & Kramer, 1985; Harwood, 2010). This process of making distinctions between one's own group and the "other" group is an important element in actual intergroup interaction.

At the same time, these intergroup interaction processes can be very complex (Dovidio, Gaertner, & Saguy, 2009). In their meta-analytic review, Pettigrew and Tropp (2006) have shown that positive effects of intergroup attitudes can be detected when individuals participate in intergroup interaction while having face-to-face communication. However, some disagreements arise mainly because outcomes depend highly on the particular

circumstances of a given context (Pettigrew & Tropp, 2006). In some situations, face-to-face communication reinforces the continuity of negative intergroup attitude (Harwood, 2010).

Relevant knowledge is missing in many areas due to several gaps in the literature. Firstly, there is insufficient literature concerning the consequences that implementing information systems and the resulting decline of face-to-face communication have on intergroup interaction and attitudes in the medical setting. Furthermore, contradictory arguments exist about the effects of intergroup face-to-face contact (Pettigrew & Tropp, 2006), which makes research within the described field more valuable. According to Sassenberg and Boos (2003), further research is needed into the effects that different communication media have on intergroup attitudes. Secondly, a multi-perspective approach is relevant for discovering the interplay among different disciplines, namely medical specialists, nurses and medical secretaries. It is particularly interesting to investigate the perspective of medical secretaries, seeing as they play a significant role in supporting medical work processes (Alexander, 1981); moreover, their perspective is rarely investigated (Hertting et al., 2003). Finally, managerial knowledge is limited to how to facilitate teams in a medical setting to enhance the effectiveness of intergroup interactions (Landry & Erwin, 2015).Based on the extant literature, further investigation within the field of intergroup interaction and attitudes in healthcare is thus required.

The foregoing leads to a two-part research question that this research strives to answer. The first part of this question is "*How does the interplay between intergroup interactions and attitudes occur among the disciplines (namely medical specialists, nurses and medical secretaries) that work together during consultation hours at an outpatient clinic?*" The process used to answer it is descriptive in nature and helps to diagnose the intergroup situation. The second part of the research question is "*In what way does increased face-to-face communication influence intergroup interaction and attitudes among the disciplines (namely medical specialists, nurses and medical secretaries) that work together during consultation hours at an outpatient clinic?"* Answering it involves creating and evaluation a proposed intervention.

This study contributes to the extant literature by refining the understanding of communication and intergroup interaction within the healthcare sector, where information frequently flows via organizational information systems. It also elaborates on the existing literature on face-to-

face communication among healthcare workers and provides insights into the intergroup attitudes among medical specialists, nurses and medical secretaries.

This study also contributes practically to the field of healthcare administration in several ways. Healthcare professionals generally depend on good communication for ensuring a pleasant and effective work environment, and having a thorough understanding of intergroup interactions is an essential component. Furthermore, managers of healthcare teams require knowledge and skills related to this topic to be able to support strong work processes and communication systems (Landry & Erwin, 2015). This study provides these stakeholders with better insight into the differences in perceptions of intergroup interaction in a multidisciplinary context. It also offers managers ideas for facilitating positive intergroup contact.

This paper is structured as follows. After this introduction, a theoretical background of the relevant concepts and their interrelations is presented to identify what previous research has contributed and how it has used the concepts of intergroup interaction. Thereafter the methodology describes which approaches are utilized for the current empirical study. To answer Part 1 of the research question, observations, secondary data and information interviews are used to obtain a deeper insight into the intergroup situation in the healthcare sector. Semi-structured interviews are also conducted to evaluate the intervention, which is set up to answer Part 2 of the research question and determine how face-to-face communication influences intergroup interaction and attitudes. A results section then presents the study's findings. Finally, the paper ends with a conclusion and discussion section that outlines theoretical and practical contributions, limitations and suggestions for further research.

2. THEORETICAL BACKGROUND

The aim of this study is to investigate the influence of face-to-face communication on the interaction between teams in healthcare. Within this sector, information is predominately transmitted via healthcare information systems (HIS). This section discusses the concepts of intergroup interaction, intergroup attitude and face-to-face communication as they are used in the extant literature. This discussion results in the research framework for the current study.

2.1 Healthcare context: communication among teams, and the developments in relation to HIS

Healthcare settings are complex and unique for multiple reasons. Firstly, employees work in a dynamic environment in which they have to deal with unique circumstances and situations that are sometimes stressful. For example, as they do not know the precise medical issues that people who come to the hospital have, they have to quickly assess situations. Secondly, this sector is known for having high diversity in its professional and support staff, who work together in divergent and multidisciplinary team contexts (Landry & Erwin, 2015). To effectively facilitate team processes among such healthcare teams, it is important to deeply understand intergroup interactions. Different studies have shown that hierarchy plays an important role in how employees communicate with each other. Within the healthcare sector, the hierarchy among professionals and their teams is often classified based on medical profession (Landry & Erwin, 2015). Hierarchical differences contribute to miscommunication, which can in turn cause adverse patient events and have a negative influence on team processes (Landry & Erwin, 2015; Watson et al., 2015). Thirdly, healthcare employees spend a significant amount of their time obtaining and transferring information (Agarwal et al., 2010). Researchers have therefore underlined that communication and collaboration within and between healthcare teams are essential to the patient's care and well-being (Angst, Devaraj, & D'Arcy, 2012). Inefficiencies in communication have negative effects on work processes and the quality of work life, such as wasting the time of medical personnel, medical errors and high stress levels. These negative effects can cause the loss of job satisfaction among personnel (Agarwal et al., 2010). As such, the dynamics in healthcare teams influence the experiences of both patients and employees. Little research on how to facilitate intergroup interaction effectively in this context has been done to date (Landry & Erwin, 2015), which gives rise to the need for future studies that focus on this subject.

For some decades now, many regimes have been working to implement organization-wide information systems. These new HIS technologies are designed to improve information transmission in the complex and highly collaborative healthcare context. However, implementation of these communication systems can be challenging (Igira, 2010). Agarwal et al. (2010) have recommended a cultural change management approach that requires the consideration of intergroup interaction when implementing new information systems within healthcare settings. In addition, Orlikowski (1992) has explained that the effects of HIS on the interaction between healthcare workers and technology are mainly only noticeable over an extended period of time. When HIS are implemented, people adapt and find ways to work with them in executing their tasks and collaborating with others. Several studies demonstrate positive effects of HIS implementations (Adler-Milstein & Bates, 2010; Agarwal et al., 2010; Caleira et al., 2012). Research shows that HIS influences both technical and interpersonal processes, but effects at the team level remain underexplored (Angst et al., 2012). As HIS will continue to develop and more (collaborative) work is becoming digitalized, Setchell, Leach, Watson and Hewett (2015) have suggested that future researchers be aware of the intergroup nature of healthcare in order to improve the effectiveness of collaboration in that setting successfully.

A case study by Laerum, Karlsen and Faxvaag (2004) shows that opinions on the implementation of HIS vary among medical specialists, nurses and medical secretaries. In general, people acknowledge the benefits of effective information distribution. However, dissatisfaction has also developed due to HIS leading to less personal contact between medical secretaries and medical specialists (Hertting et al., 2003). Research suggests that insufficient communication and coordination mechanisms cause higher levels of cognitive stress among healthcare professionals (Agarwal et al., 2010). Hertting et al. (2003) have found that medical secretaries in particular prefer to have frequent moments of social contact and equal communication with the healthcare professionals with whom they work. Given the specific position and preferences of medical secretaries (as noted by the same authors), it would be interesting to investigate their point of view on intergroup interaction and compare it with the perspectives of nurses and medical specialists.

2.2 Intergroup interactions

To understand people's behaviour and opinions, one first has to explore the basic principles of intergroup interaction. People collect all kinds of information that often corresponds with expectations and past experiences to classify themselves and others into groups or teams (Brewer & Kramer, 1985). Harwood (2010) has defined the "out-group" as those with whom people cannot identify and the "in-group" as those with whom they feel they belong. The processes involved in making related distinctions, which are referred to as "social category-base information processes", affect how people judge or interpret information to determine their behaviours and points of view (Brewer & Kramer, 1985). Intergroup biases occur because people develop more positive feelings and behaviours towards people they perceive and treat as in-group members (Turner, Brown, & Tajfel, 1979), which is affected by the feeling of "we" in the in-group (Dovidio et al., 2009). Processes of social categorization influence the development of intergroup attitudes, whereby the self, the in-group and the out-group are evaluated (Dovidio, Gaertner, & Saguy, 2007).

A team is a collection of individuals who perform tasks interdependently, share outcomes and are viewed as a group within a larger system (Lira, Ripoll, Peiró, & Orengo, 2008). Teams are more than simple organizational concurrences that execute specific tasks. Moreover, compared to groups they also exhibit social configurations because individuals within and between them instinctively move to understand their social environment (Bhappu, Griffith, & Northcraft, 1997).

Landry and Erwin (2015) distinguish the following intergroup interactions among multidisciplinary teams in healthcare settings: communication, coordination and interdisciplinary collaboration. Communication is defined as the way in which people share information. According to these authors, coordination is the ability of teams to organize their activities, taking protocols, plans and intergroup interactions into account. Interdisciplinary collaboration is explained by intergroup processes. These processes involve multiple disciplines, which have shared objectives, decision-making, responsibilities and power. They are closely related seeing as each process depends on mutual respect, trust, effective and open communication, and an awareness and appreciation of each other's roles, skills and responsibilities (Landry & Erwin, 2015). Intergroup tensions have negative effects on patient care and increase the risk of clinical inefficiencies (Setchell et al., 2015; Watson et al., 2015).

The foregoing analysis shows that intergroup conflict is harmful to team effectiveness. According to De Dreu and Weingart (2003), intergroup conflict can be divided into ”task conflicts” and “relationship conflicts”. Task conflicts are related to the distribution of procedures and policies, as well as to the judgement and interpretation of facts. Relationship conflicts pertain to social input, such as personal taste, political preferences, values and interpersonal style (De Dreu & Weingart, 2003). It is possible only under specific conditions (equal status, common goals, lack of competition and support) to create positive intergroup interaction and improve team processes (Pettigrew & Tropp, 2006).

2.3 Intergroup attitudes

Intergroup attitudes are the thoughts, feelings, expectations and opinions that people have about themselves, the people from their own discipline or the multidisciplinary team they work in, and the out-group (Mackie & Smith, 2015). People develop them as a result of intergroup processes (Brewer & Kramer, 1985). The certainty of one’s attitude is helpful in stabilising relationships with people and important objectives at work (Holtz, 2003). In this regard, people require a feeling that the perceptions of others agree their own attitudes, as this confirms the correctness of their opinions. The interaction between the out- and in-groups is a dynamic interplay between intergroup attitudes and interactions.

Negative and positive intergroup attitudes are arranged according to cognitive and affective dimensions (Aberson, 2015). According to Riek, Mania and Gaertner (2006, p. 336), negative intergroup attitudes occur when the actions, beliefs or characteristics of one team challenge the performance or well-being of another team. In this manner, negative prejudice is the result of misevaluations or a lack of information. Positive intergroup attitudes are seen in behaviours that show more intimate and co-operative contact. In addition, people who have developed positive intergroup attitudes often search for frequent contact (Brown, Vivian, & Hewstone, 1999). According to Al Ramiah and Hewstone (2013), positive intergroup attitudes can be deduced from the number of intergroup friendships.

2.3.1 Cognitive dimensions of intergroup attitude

Harwood (2010) has defined cognitive dimensions as the judgements of experiences within intergroup interaction. At the same time, Brewer and Kramer (1985) have explained the cognitive element of intergroup attitudes as “the role of mental representations that guides the processing of information about individuals or social events”. An important factor here is the

knowledge that people have of the out-group. Knowledge is related to the phenomenon of "getting to know each other" whereby people discover their mutual similarities (Dovidio et al., 2011; Al Ramiah & Hewstone, 2013). This is noticeable when people are familiar with each other's tasks and responsibilities. Stereotyping is a form of cognitive dimension that is mostly negatively loaded. Negative intergroup experiences reinforce the stereotyping of perceptions (Harwood, 2010).

2.3.2 Affective dimensions of intergroup attitude

Affective dimensions of intergroup attitudes are related to the emotions and feelings that people experience towards each other and in their intergroup interaction (Mackie & Smith, 2015). Affective experiences often fluctuate frequently during a work day (Triana, Kirkman, & Wagstaff, 2012), which makes them difficult to control. As is the case with cognitive dimensions, affective dimensions appear to be both negative and positive. However, they are usually more related to positive intergroup attitude, as emotions are more involved with friendships; in contrast prejudice is influenced by cognitive dimensions (Harwood, 2010).

Affective dimensions have different characteristics. Firstly, intergroup anxiety is concerned with feelings of discomfort and nervousness that arise in intergroup gatherings. These negative attitudes are related to experiences such as being belittled, intimidated or insulted on a personal level by a member of the out-group (Dovidio et al., 2009). The development of negative intergroup attitudes can also occur at the team level, where people feel uncomfortable in situations of intergroup interaction due to certain perceptions they have of the out-group (Al Ramiah & Hewstone, 2013; Brown et al., 1999). Secondly, people show empathy to those who are able to share and understand the feelings of others. Empathic feelings are likely to enhance positive out-group evaluations (Brown et al., 1999) and are helpful for reducing the negative emotions associated with intergroup interaction (Riek et al., 2006). Thirdly, Harwood (2010) has introduced the term favourability, which represents the general positive rating of the members of another team.

2.4 Face-to-face communication

Although contact between people occurs in multiple ways, the oldest means of communication and the most commonly used type of intergroup contact is face-to-face communication (Al Ramiah & Hewstone, 2013; Lantz, 2001). According to Harwood (2010), face-to-face or direct contact entails high personal involvement and rich experiences with the

out-group. In face-to-face communication, not only verbal cues are exposed but also body language is revealed as well. These elements together form a good basis for people to understand each other, as opposed to communication via text (Lira et al., 2008). Sassenberg and Boos (2003) have stated that when using face-to-face communication, people exhibit behaviour that is more based on social norms than when communicating via computers, due to the availability of social cues. Using face-to-face communication also makes it possible to continue workflows effectively (Reddy & Spence, 2008).

Face-to-face communication affects dimensions of intergroup attitude in different ways. Affective dimensions are more influenced by direct intergroup contact than cognitive dimensions. Positive intergroup face-to-face contact positively affects the general feeling of out-group trust (Turner, West, & Christie, 2013). According to Aberson (2015), negative intergroup contact seems to be a strong predictor of the cognitive dimensions of intergroup attitudes. Intergroup anxiety is seen as a powerful factor of direct contact that is related to a fear of the negative consequences of interaction (Harwood, 2010).

Communication via digital information systems is often compared to face-to-face communication but the former is less time consuming (Lira et al., 2008; Triana et al., 2012). It takes more time and effort to express thoughts and acquaint oneself with the perspective of an interlocutor (Lantz, 2001; Lira et al., 2008). Lira et al. (2008) have also stated that intergroup conflict influences feelings of social cohesion in teams that communicate via computers more negatively that in teams that communicate face to face. Although HIS have benefits, such as cost reduction and patient service (Adler-Milstein & Bates, 2010; Agarwal, Sands, Schneider & Smaltz, 2010; Caleira et al., 2012), their effects on intergroup attitude in healthcare remain unknown. According to Sassenberg and Boos (2003), extended research is needed on how different communication media change intergroup attitudes.

Reddy and Spence (2008) have argued that face-to-face communication is important in the specific context of healthcare. In critical and hectic situations, which are common in medical settings, most people look for other individuals to gather the information they need instead of turning to a more “formal source” (such as an information system). As healthcare workers are usually very specialized in particular domains or tasks, they are often the only individuals to know certain information within a multidisciplinary team context. This heightens the need to talk to a specific individual, as collecting information via other types of communication or

other individuals would not be sufficient. In this regard, researchers have shown that information exchange does occur within the context of team collaboration (Reddy & Spence, 2008).

2.5 Changing intergroup attitudes by stimulating intergroup (face-to-face) contact

A meta-analytic review reveals that intergroup attitudes can be altered when people engage in intergroup face-to-face communication (Pettigrew & Tropp, 2006). Those with intergroup face-to-face contact are likely to be less prejudiced towards out-group members than those who do not (Pettigrew & Tropp, 2006; Harwood, 2010). Positive direct intergroup contact decreases negative intergroup attitudes (Riek et al., 2006) and increases favourable emotional reactions towards the out-group (Aberson, 2015). When teams rarely see each other, it becomes difficult to change intergroup perceptions (Harwood, 2010). Rather than affective dimensions, cognitive dimensions of intergroup attitudes show more resistance to change because people are treated more as members of the out-group than as individuals (Harwood, 2010). Dovidio et al. (2011) and Al Ramiah and Hewstone (2013) have found that face-to-face communication reduces anxiety and increases empathic experiences more than indirect types of contact. Moreover, due to social categorization, intergroup attitudes can become more polarized when people communicate via computer rather than face to face (Sassenberg & Boos, 2003).

In addition to teams actually seeing each other, different mechanisms can also play a role in changing intergroup attitudes. These mechanisms are closely related to intergroup interaction. Firstly, Watson et al. (2015) have concluded that social change should be achieved by ensuring that healthcare professionals are aware of their role in both their daily intergroup interactions and the system in which they operate. Moreover, empathy is stimulated by allowing people to see situations from another perspective (Riek et al., 2006). Whether the outcome of this approach would be positive or negative heavily depends on the intergroup interaction situation (Pettigrew & Tropp, 2006). Vorauer, Martens and Sasake (2009) have suggested that people should actually contact each other and ask questions directly instead of getting to know each other by imagining how the other would act.

Secondly, the literature suggests that to positively change intergroup attitude, one should also focus on enhancing intergroup harmony and social cohesion (Dovidio et al., 2009). Having common goals in intergroup relations would be helpful to this end (Riek et al., 2006). Face-to-

face communication affects how people understand each other and discover shared interests, which in turn contributes to positive intergroup attitudes (Harwood, 2010). When using direct contact, it is important to have knowledge about the overall group norm that is shared socially (Sassenberg & Boos, 2003). As previously mentioned, the following characteristics outlined by Landry and Erwin (2015) are useful for enhancing intergroup attitudes: mutual respect, trust, effective and open communication, and an awareness and appreciation of each other's roles, skills and responsibilities.

Nevertheless, some researchers disagree over the statement that intergroup face-to-face contact reduces negative intergroup attitudes (Pettigrew & Tropp, 2006; Barnea & Amir, 1981). Risks occur when negative face-to-face contact happens often, as negative intergroup attitudes can be reinforced (Harwood, 2010). Researchers have shown that positive intergroup interaction depends heavily on certain conditions, including equal status, common goals, lack of competition and support (Pettigrew & Tropp, 2006). Nevertheless, the same researchers have also found that these conditions are mainly facilitating instead of necessary. Positive contact effects (though diminished) are measurable even when all conditions are not met. In relation to the debate over intergroup contact statements, it is therefore interesting to investigate the effects on hospital departments that consist of teams with different disciplines: medical and support staff.

2.6 Research framework

Based on this theoretical analysis, it seems clear that the concepts of intergroup interaction, intergroup attitude and face-to-face communication are interrelated. Further research into this area is useful, especially within the healthcare sector. Figure 1 shows the current study's research framework, which illustrates the interplay between these concepts. Intergroup interactions influence how employees experience the effectiveness of work processes and the quality of work life. These multidisciplinary interactions are influenced by the intergroup attitudes of the concerned disciplines (i.e. medical specialists, nurses and medical secretaries), seeing as people's expectations, feelings and opinions (pre-) determine how these behaviours should happen. However, an inverse relationship can also be found, given that intergroup interaction influences the process of developing and changing intergroup attitudes which explains the two-way arrow that directly links the two outside boxes in Figure 1.

The described phenomenon is a dynamic process that is affected by means of communication. This study investigates the influence of a particular communication channel, namely face-to-face communication between the concerned disciplines during consultation hours at an outpatient clinic. The two-way arrows that link the outside boxes to the inside box in Figure 1 show the main focus of this study. The following section describes how data is collected to answer both parts of the research question.

Figure 1: Research framework: the influence of face-to-face communication on multidiscilinairy intergroup interaction and attitudes among the disciplines medical specialists, nurses and medical secretaries, during consultation hours at an outpatient clinic.

3. METHODOLOGY

All procedures that were used lie within the boundaries of qualitative research. Employing this research method helped the author to obtain a deep understanding of experiences related to the intergroup interaction and attitudes within a multidisciplinary context. The section outlines how the research was approached and the methods that were used to collect and analyse the data.

3.1 Research approach

Previous research has claimed that intergroup interaction has changed since the introduction of HIS (Hertting et al., 2003). The aim of the current study is to find a solution that optimizes intergroup communication and workers' experiences but also contributes to the literature. A two-part research approach that incorporates grounded theory and the participatory-research approach is suitable for this study, as explained below.

This study employed the method to establishing grounded theory, due to its usefulness in developing empirical theory (Hertting et al., 2003). According to Hennink et al. (2011, p. 206), "Developing grounded theory is a qualitative method that sets a flexible guideline for textual data analysis in the context of human behaviours, social processes and cultural norms." Brewer and Kramer (1985) have also stressed the benefits of investigating intergroup interaction in a participant's natural environment, as experimental settings bias people's behaviours and interactions. The current study involved setting an intervention up at the outpatient clinic of the investigated department (Part 2). This enabled participants to execute their work processes in their regular environment and with real patients and circumstances. The research offers both practical and the academic contributions by providing several propositions related to inductive theory concerning the role of face-to-face communication in intergroup interaction and attitudes in a medical setting.

The study used the participatory action research method of Hennink, Hutter and Bailey (2011), which has two characteristics that make it suitable for the context and purpose of this research. Firstly, the "commitment to action for social change" is relevant, seeing as the current study attempted to improve intergroup interactions and attitudes around work processes during consultation hours (Hennink et al., 2011, pp. 49-51). Secondly, this method stresses the importance of treating participants as partners in the research process, which is

relevant in the current study. As the researcher observed participants prior to executing the intervention, she conducted informal interviews to determine some parameters to assist in setting the intervention up. This was necessary to gain information about practical aspect of executing the intervention, such as ideal time for gathering all three parties after the last had left the outpatient clinic following consultation hours. Further details about the intervention and the interplay with the participants are provided in subsection 3.3.

Furthermore, the researcher was actively involved in work environment of the healthcare employees due to several reasons. The participatory action research method was therefore beneficial for gaining insights into the experiences and opinions that participants have about their intergroup interaction, as well as how these factors influence their intergroup attitudes. For example, the researcher took an active role in collecting information about some specific tasks in which people depend on members of other disciplines; this was done by following certain participants closely for a day. This study's strong dependence on its researcher seems to threaten its reliability, as close interaction between an author and study participants places some constraints on the idea of an entirely objective situation. However, in accordance with Hennink et al. (2011, p. 51), the researcher was viewed as a "facilitator, a change agent and a creator of space for dialogue". Following this line of reasoning, the author took the lead while executing the intervention (Part 2). More details of how the researcher facilitated the intergroup face-to-face contact are found in subsection 3.3.

3.2 Research site

A department in a Dutch academic hospital was chosen to be involved in this research. In this department, various staff members work together to provide healthcare and service to patients who have health issues related to a certain medical area. The work processes that were investigated concern the execution of consultation hours at the hospital's outpatient clinic. In the investigated department consultation hour are defined as follows: within a certain time slot, a specific medical specialist receives a number of patients to review their medical status and determine further medical treatment. Each medical specialist has his/her own weekly consultation hours. During these consultation hours, the work process is characterised by several factors, including medical specialism, patient group, medical specialist and specialized nurses. Each work process involves three disciplines work that together to provide the health care the patients need, namely medical secretaries, nurses and medical specialists. To this

regard, the disciplines also play a role in a multidisciplinary team when executing consultation hours.

In 2014, the investigated department implemented an information system and digitalized its paper medical files. This led to a great deal of change, especially for the department's medical specialists and medical secretaries. The former had to deal with larger administrative workloads, while the latter were faced with more computer work. Prior to these changes, the medical specialists and nurses met by the medical secretaries' desk; today much of the intergroup communication takes place digitally. However, personal contact remains essential for the workers, especially the medical secretaries. The current communication environment of communication is inadequate. A negative atmosphere permeates intergroup interactions, and flaws in the work process occur. For example, medical test results may be missing from the system when a patient visits a medical specialist. This can happen due to inadequate intergroup interaction: a medical specialist may not put an assignment into the system correctly, or a medical secretary may not request another department properly for medical test results. Employees across the three disciplines (i.e. medical specialists, nurses and medical secretaries) have identified the need to improve intergroup interaction to enhance both the quality of the work processes and the overall atmosphere.

3.3 Data collection

Different means of data collection were used to gain a deep understanding of the participants' feelings, thoughts and opinions about intergroup interaction and attitudes. Moreover, the current study shows a multi-level data collection approach, which will be explained further in this section. Due to the two-part research question, a distinction was made in how data related to each part of the question was gathered. As such, Part 1 and Part 2 are discussed separately. Table 1 provides an overview of how data was collected throughout the entire research process; more details are explained below. Part 1 concerned the investigation that led to a diagnosis of the situation to understand the intergroup interactions and the context in which they take place; it was interesting in itself, but it was also preparatory for the second part of the research question. Part 2 was concerned with the execution of an intervention for investigating how face-to-face communication influences intergroup interaction and attitudes.

Data collection		
Part 1	Secondary data	Interview data
		Internal evaluations of consultation hours
	Observations during consultation hours (intergroup interactions)	Medical specialists (#1)
		Nurses (#2)
		Medical secretaries (#4)
	Informal interviews (intergroup attitude)	Medical specialists (#1)
		Nurses (#2)
		Medical secretaries (#5)
		Manager (#2)
Part 2	Intervention to enhance face-to-face communication	Observations from the desk of the medical secretaries (where intergroup interaction takes place the most)
	Semi-structured interviews (evaluating the intervention and obtaining a better understanding of intergroup interactions and attitudes)	Medical specialists (#3)
		Nurses (#2)
		Medical secretaries (#4)
		Manager (#1)

Table 1: Overview of the data collection process

According to van Aken, Berends and van der Bij (2012), triangulation as employed for this study contributes to instrument reliability. It is useful for flattening the shortcomings and biases of instruments, which it also complements and corrects to some extent. Additionally, throughout this study's research process the author kept memos to document research activities, which enhanced the study's controllability (van Aken et al., 2012).

3.3.1 Part 1: Diagnosis of the intergroup situation

To diagnose the intergroup interaction, a combination of (1) secondary data, (2) observations and (3) informal interviews was used. The work model in Figure 2 shows that these sources focused on the context of intergroup interactions among medical specialists, nurses and medical secretaries. Data collection through observations and secondary data show that the study's level of analysis therefore concerns the multidisciplinary context among these three disciplines at an outpatient clinic.

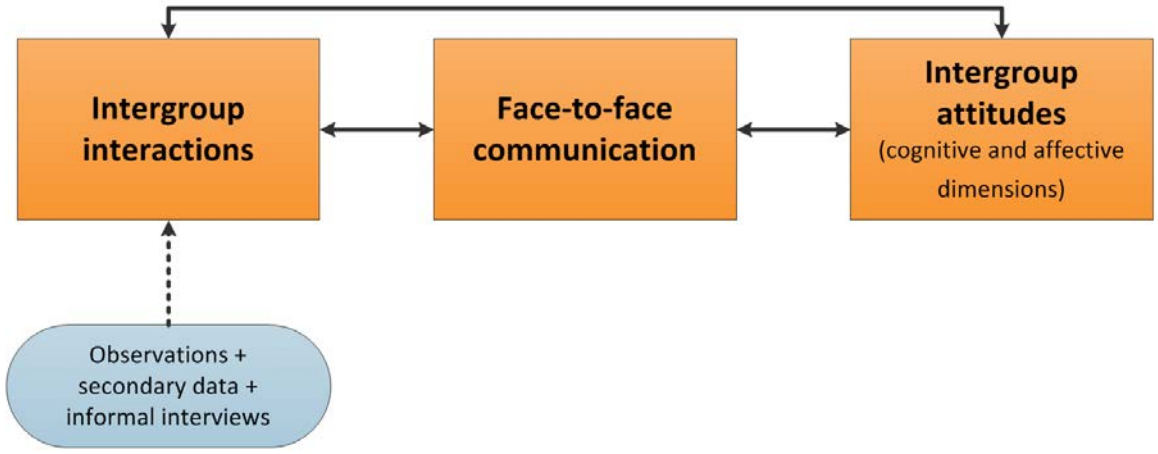

Figure 2: Work model for Part 1: data collection (dotted line) in relation to the diagnosis of the intergroup situation

Firstly, secondary data were used to understand the context of the investigated intergroup interactions before setting an intervention up. Marie (2016) has collected data about the consequences that implementing HIS and digitalizing paper medical records have on intergroup interaction. In addition, previous internal evaluations of the consultation hours were examined to acquire practical examples of intergroup interactions. Both information sources provided insights into how tasks are divided and existing agreements about intergroup interactions within work processes for the consultation hours. They also provided other perspectives on intergroup interaction and thus enhanced the study's reliability (van Aken et al., 2012).

Secondly, the work processes were observed during the consultation hours. The observations helped the researcher to gain knowledge of daily activities and social behaviours. Multiple days were arranged to enable the researcher to follow different individuals and observe their tasks and how they interact with individuals from other disciplines. Information was gathered about how communication and collaboration occurred between the three disciplines (namely medical specialists, nurses, and medical secretaries). For example, the researcher recorded what each discipline has to do from the moment a patient arrives at the outpatient clinic to the time he/she leaves, as well as how the disciplines depend on each other. Appendix B presents an observation guide that reveals what the researcher focused on while observing the consultation hours. The observation guide enhanced this study's controllability and internal validity (van Aken et al., 2012). The researcher also took field notes to use in analysing situations.

Thirdly, the researcher engaged participants in informal conversations when the opportunity arose during the observations. Individuals were questioned to obtain a deeper insight into the tasks that people have to perform and how people interfere with each other when performing their tasks. These conversations were also used to capture people's opinions about the intergroup interaction. Furthermore, unstructured interviews were held with two managers to delineate the intergroup situation from another perspective.

3.3.2 Part 2: Intervention

To investigate whether face-to-face communication improves intergroup interactions and attitudes, the researcher set up and evaluated an intervention. Semi-structured interviews and observations were also performed to capture the effects of the interventions on intergroup interaction and attitudes. Figure 3 provides more detail concerning how data was collected during the research process for Part 2.

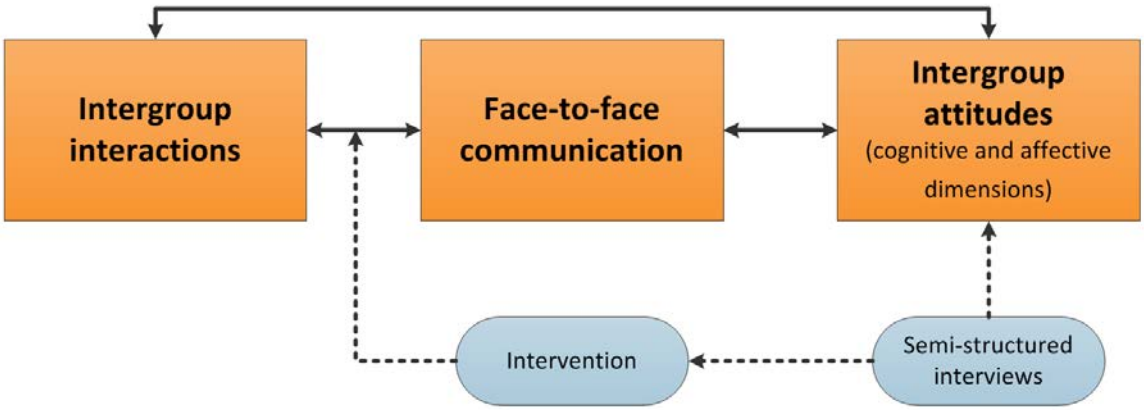

Figure 3: Work model for Part 2: data collection (dotted line) in relation to the intervention

The intervention was intended to implement a series of events of intergroup face-to-face contact. These moments entailed a joint meeting during which delegations from all three disciplines exchanged information about the consultation hours just held. Immediately after the last patient left the consultation room, the involved participants gathered: the medical specialist who had sat behind the front desk during the consultation hours, one or two nurses and the medical specialist the patients had come to see. The staff members reviewed difficulties in the work process they had just performed and the related consequences for each discipline. To conclude the consultation hours properly, they also discussed the task related

issues in which someone was affected by a member of another discipline. Three different types of consultation hours (n) were selected for executing the intervention. The intervention was executed over a period of four weeks, which meant a total of 12 (3(n) x4) joint meetings were observed.

This intervention design was chosen for several reasons. The intervention was seen as a structured face-to-face meeting. The researcher opened the meeting and asked the participants whether they had something to share and how they would evaluate of the consultation hours just held. By trying to make the joint meetings positive intergroup contact moments, the researcher attempted to help alter intergroup attitudes (Pettigrew & Tropp, 2006). It was useful to have a neutral person in the intergroup setting to ensure that all participants had an equal chance to speak and to determine the topic of the discussion. In line with this latter argument, the joint meetings also gave participants the opportunity to raise any subjects that were on their minds, which they had no time for in the past. The participants were therefore stimulated to become aware of their own and each other's tasks, as well as to perceive issues about the intergroup interaction (Watson et al., 2015). Participants were motivated to focus on their similarities and the common goal they have during consultation hours (Al Ramiah & Hewstone, 2013; Riek et al., 2006). They exchanged information directly, without needing to send emails back and forth at the cost of time and effort (Reddy & Spence, 2008).

The researcher took notes about the execution of the intervention and gathered information about which subjects were discussed and how. It was a challenge for the researcher to take objective notes, seeing as she also took an active role in the interventions. However, the notes were primarily meant to delineate the situation; the interviews were the main source of information about how the interventions were undertaken.

Semi-structured interviews were also conducted to obtain a more in-depth understanding of the multidisciplinary teams' experiences and collect the effects of the intervention. This study's level of analysis therefore concerns the disciplines, namely medical specialists, nurses and medical secretaries. The intervention's effects on intergroup interaction and attitudes were measured along both cognitive and emotional dimensions. The questions about cognitive dimensions related to the level of insight into each other's situations that people thought themselves to have; for example, "*To what extent do you think the other professionals have better knowledge of you and your work and what has the intervention contributed to this?*"

The questions about the affective dimensions concerned feelings of trust and mutual respect, but also the general atmosphere; for instance, "*To what extent do you feel appreciated for your work during consultation hours and how has the intervention influenced these feelings?* Furthermore, participants were also asked about the effectiveness and performance of the overall work process and whether these issues were influenced by the intervention.

During the interviews, the researcher asked specific questions (as elaborated above); however she also used probing to motivate the participants to tell their story (Hennink et al., 2011). Each interview took approximately 45-60 minutes. In total, ten participants were interviewed: three medical specialists, two nurses, four medical secretaries and one manager. All participants had attended one or more intervention meetings. With the approval of the participants, the interviews were audio recorded to make processing and reviewing the data easier and more structured.

An interview protocol was used to structure the interviews, which contributed to the study's controllability and construct validity (van Aken et al., 2012). Reliability was ensured by employing an interview guide that standardized the interviews to some extent. The research made sure that the focus was on the same topics across all of interviews. The interview protocol was reviewed by managers and academic professionals to obtain more valid results. All interviews were held in Dutch, given that this was the native language of the participants (see Appendix C for the Dutch version, Appendix D for the English version).

3.4 Data analysis

Analysing the data involved multiple steps, which were in line with those proposed by Hennink et al. (2011, pp. 208-209). Transcription began after the first interviews were conducted. In this first step of analysis, not only what was said but also some aspects of speech were noted; this helped to interpret the meaning of what was said. All participants received the transcript of their interview to check that interpretations of the audio recording had been written correctly. Once interviews were conducted and transcribed, the data was anonymized (see Table 2).Codes were also developed to make it possible to analyse the answers in relation to the specific concepts used for this research. They were derived from both inductive and deductive methods and referred to topics that were relevant to answering the research question; more details about the codes are presented in Appendix A. Thereafter, data was compared and patterns were identified. The previously described steps were also executed for the observation notes and secondary data. For this study, the intergroup attitudes of the medical specialists, nurses and medical secretaries were analysed separately. This was helpful for investigating the intergroup interaction from multiple perspectives and thus contributes to the study's internal validity (van Aken et al., 2012). Based on from the conclusions, several propositions for further research were identified.

Disciplines	Code (# = personal code for participant)
Medical secretaries	T1.#
Nurses	T2.#
Medical specialists	T3.#

Table 2: Codes for anonymizing the participants

4. RESULTS

This section presents data derived from the observations and interviews conducted as part of this study. Firstly, results are shown that reveal impressions of the intergroup situation before (Part 1) and after (Part 2) an intervention was executed. Thereafter, intergroup attitudes are summarized and compared among the three disciplines, namely the medical secretaries (T1), nurses (T2) and medical specialists (T3).

4.1 Part 1: Diagnosing the intergroup situation

4.1.1 Intergroup interaction: insufficient means of communication

This subsection describes the diagnosis of the intergroup interaction, which answers (Part 1 of the research question). Generally, all disciplines offered clear and similar answers about their shared goal: everyone strives to provide the best service and medical healthcare to all patients. However, almost all participants exhibit some level of dissatisfaction with the effectiveness of the work process. The workflow is not effective enough, due to inaccurate communication during consultation hours. All participants believe that too many mistakes happen and that these mistakes cause frustrations for all involved parties. One participant notes that "*Many mistakes have been made recently, and I think that also the medical specialists are sick of. I really can imagine that"* [T1.4].

Furthermore, participants talked with a certain melancholy about the time when paper medical records were still being used. After these files were digitalized over a two-year period, the distribution of tasks changed intergroup interaction significantly. This is especially true for medical specialists and medical secretaries, who no longer need to meet face to face given that communication can take place via the information system or e-mail. As one medical specialist states, "*Nothing has really replaced the old system … we no longer have an invitation to come to their office. And I think that is a problem"* [T3.1]. All participants acknowledge the value of cosiness (in Dutch *gezelligheid*) across the department, which particularly influences the way the participants experience the work atmosphere. People can perform their tasks without direct contact, but doing so affects their job-related motivation and satisfaction levels. According to all participants, the balance in the means of communication they use needs to be restored. Primarily medical secretaries and medical specialists express frustration about their interaction via e-mail: "*Yes, via e-mail we get a lot of things. And you are hoping you get an answer. Sometimes you need to send the same e-mail*

three times, before you finally get any contact. That annoys us" [T1.2]. A medical specialist states that "*95% of the mails are about things that are insufficiently handled. That doesn't mean that they are not doing their job, but because the interaction is wrong*" [T3.1].

Especially the medical secretaries miss the former mode of personal interaction. As one medical secretary notes, "*We did not only discuss work back then, but also private things. Like, you would ask how is your son or daughter doing or what are your plans for the holiday. Nowadays, it is very impersonal. Also, we used to discuss work life, wouldn't it be better to do it like this or this. Or they said, 'this isn't the way to handle things'. It didn't go as smooth today'. {…} We don't do that anymore"* [T2.2]. The way medical secretaries experience their work highly depends on the intergroup interaction. They would find it pleasant if nurses and medical specialists would come more often to chat or complete work-related matters. Direct contact is more important to them than it is for medical specialists.

The observations revealed that the nurses find it easier that the others to talk face to face to the members of the other disciplines. They depend more on this type of communication to perform their tasks, but it seems that they also naturally make more small talk. Not very much has changed yet for the nurses, as their files are still on paper. However, their means of communications will also be changed due to the extension of the HIS, which will certainly affect the intergroup interaction of and with the nurses.

4.1.2 Additional findings that influence the intergroup interaction

In addition to the findings described above, three additional factors influence the intergroup interaction and are worth mentioning: the high workload, the implementation of many organizational changes and the dynamics in one of the disciplines. The factors cause a certain level of stress among the participants, which was noticeable in the intergroup interaction observations

Firstly, all participants experience high workloads. The department must process many patients, which "*has many negative repercussions"* [T3.1]. Medical secretaries are faced with difficulties related to scheduling all patients. However, due to the rearrangement of tasks, it is medical specialists and medical secretaries who experience larger workloads. As one medical secretary explains, "*They* [the other disciplines and the manager] *say you can do that 'on the side'. No, that is not true. That {new task} is not 'just a moment' "* [T1.2]. However, at the

same time all disciplines show empathy towards each other's situations, as they see each other struggling with their large work. As the same participant notes, "*The medical specialists are under increasing pressure. Hardly any time. {…}. They got much busier. And you could notice that. They push themselves to the limit, really*" [T1.2].

Secondly, medical secretaries and nurses experience stress due to the implementation of different organizational changes. As one nurse remarks, "*Yes, developments go very fast. There is so much information, you cannot even understand. That makes it sometimes very difficult {…} I think it is very exhausting. You become a bit touchy*" [T2.2]. Having to deal with many changes simultaneously makes some participants uncertain about their performance. They must expend more effort than they are used to, which in combination with the high workload means that the medical secretaries are experiencing particular pressure. Some of the medical secretaries and nurses find it hard to keep up with the changes, which also cause them stress.

Thirdly, it is interesting to note that the dynamics in one discipline also in some way affected interaction with the other disciplines and the intergroup attitude. As one of the participants states, "*In the interaction, I asked about it. And you notice their disturbance. It is not that their work suffers, but they are occupied with it. Like, how will things be…?"* [T2.1]. Another participant comments that "*there was a time in which reorganization had to take place {…}. That was a burdened period {…}. There are many things. So, you notice. It has an impact on their job satisfaction. But I do not have further details about these things"* [T3.2].

4.1.3 Intergroup attitudes

During the observations and interviews, participants expressed different intergroup attitudes that contribute to the identification of the intergroup situation (Part 1). In the first place, positive intergroup attitudes can be seen. The medical specialists and nurses are especially positive about each other and their interaction. One nurse observes "*We do have nice doctors, who work nicely and are able to work together"* [T2.2]. The same participant states the following about the collaboration: "*If you could manage something together and find out what the real problem is, and you're also able to do something about that. That is absolutely great"* [T2.2]. One of the medical specialists says the following about this relationship: "*We are a team"* [T3.1]. The intergroup attitudes of the medical specialists and nurses relate to both affective and cognitive aspects. Furthermore, the medical secretaries exhibit positive

attitudes about their relationship with the nurses. As one medical secretary notes, "*To the nurses, hats off. They work really hard, truly. They have everything in place. They also communicate when something is not possible. They come with a solution. You can always go to them"* [T1.2]. Overall, members of all disciplines are positive about each other when they talk about personal contact. However, when it comes to work-related factors, participants are more sceptical. As one of the medical specialists explains, "*Look, if you are talking about things you check, you don't talk about personal distrust. I mean as a human being I trust them for sure. If someone of them tells me I could have a nice dinner over there, I would trust that person that I will eat good food. But that is not the point. Here, it is about work. And in that way, it is about the quality of someone's work. And that is sometimes poor"* [T3.2".

It thus seems clear that some positive intergroup attitudes are not mutual or shared in all directions of the intergroup triangle of medical specialists, nurses and medical secretaries. Firstly, striking negative intergroup attitudes related to affective dimensions are found from all three perspectives. The fact that flaws in the work processes occur on a regular basis seems to be related to this issue. The interviews revealed that people do not trust others to do their work properly. The manager comments that "*Well it is bad, the appointments that are scheduled are checked by the other disciplines. And nine out of ten flaws are there. That does not allow for much of a trustful feeling from either side*" [manager]. Following this same line of reasoning, dissatisfaction occurs regarding mutual appreciation. As one of the medical specialists explains about the current atmosphere concerning the intergroup interaction, "*I think a negative idea exists about the interaction. And that doesn't make it more positive. A negative loop"* [T3.1]. Another medical specialist reports that the following happens due to the above-described feelings: "*I think it is both ways. You have the feeling that that is a way of abdicating. That we have a strong idea or think that should be done by them and we don't have to do that. But that would be the same in the other direction"* [T3.2]. The observations confirm the negative atmosphere during the consultation hours, as a great deal of sigh of exasperation is observed when people exhibit intergroup behaviour.

Secondly, negative intergroup attitudes are also found in cognitive dimensions. The majority of the participants share the opinion that people from the out-group do not have enough knowledge about the in-group's situation. As one participant remarks, "*It is a huge pressure to keep everything running. I do not know whether they always see this"* [T3.1]. All of the participants acknowledge the value of work shadowing for a day or even just a few hours. As

a medical secretary points out, "*They should have a look in our office to see how busy we are"* [T1.3]. Different participants phrased this as the importance of being aware of each other's situation and understanding the "why". In a similar vein, another medical secretary explains that "*If you have more insight into their daily schedule and their tasks; for example, then maybe you could gain more respect for what that person does"* [T1.1]. These quotations show that a certain level of knowledge along the out-group is desired about the in-groups daily struggles. However, this entails a difficulty, as one of the medical specialists puts forward: "*Can we expect that they fully understand what we do in the consultation-room? {…} I really don't know"* [T3.3]. Furthermore, across all disciplines people question the degree of motivation that other disciplines have to perform their tasks as well as their ability to have an integrative perspective and think along with each other. As a manager says about this matter, "*I call it task maturity. That is a sense of responsibility, which I think that you should be coordinating and directing your own abilities. That is... well maybe the high workload, I don't know... but that is not always right"* [manager].The following quotation also brings out the fact that different participants acknowledge that some sense of social cohesion is missing: "*Ownership, I guess {…} no active attitude. It looks like, I'm going to sit here and just let it happen to me, instead of 'we run this consultation hour together'"* [T3.3].

4.2 Part 2: How face-to-face communication influence intergroup interaction and attitudes

4.2.1 Evaluating the intervention

Overall, all participants are positive about the purpose of the intervention executed for this study, as described below. Concerning this specific intervention set-up, one medical secretary notes "*If you have any problem, you could discuss that at that moment. You don't have to wait another week to see the {members of the other disciplines}"* [T1.1]. Another participant remarks "*I think it is a good thing. Otherwise you go home thinking this could have happened differently or asking yourself 'Why didn't we discuss this earlier?' Or something like that. And it gives you the opportunity to express your opinion"* [T2.1]. Yet another comments "*There is something every day!"* [T2.2]. In addition, a few participants think that the intervention would be helpful to gain insights into each other's situations, which relates to the problems addressed in subsection 4.1. The observations reveal that having a short gathering

after the consultation hours, enables staff members to share some practical examples that enhance their knowledge of each other's situations. The department has already used some feedback obtained through the intervention to improve what happens during and after consultation hours.

However, all participants were also sceptical that this specific form of enhancing face-to-face communication would be successful in the future. The risk of having consultation hours running overtime or other things becoming more important is too high. This makes it hard to plan and execute the intervention structurally, as confirmed by several observations. Not even half of the planned joint closures were executed. Apart from the availability of time, several participants also question the multidisciplinary teams' commitment to continuing to implement the intervention. As one nurse explains, *"But I think that there are people that say after five minutes waiting, oh she is not there yet, I'm off. I think that is what will happen. Maybe for the first two weeks, but after that it will be going downhill"* [T2.2].

4.2.2 The effect of face-to-face communication on intergroup interactions

This subsection elaborates on the findings that are helpful for answering the second part of the research question. Firstly, the medical secretaries believe that more face-to-face communication is desired because it makes intergroup interaction cosier and more personal. As one of them explains, *"If you see each other, you talk about more things. You are probably also more open towards each other. Well, more open, how do you say that. You say things easier"* [T1.2]. Medical secretaries also feel that this type of communication makes collaboration easier because information can be discussed more quickly: *"Via face-to-face communication you're able to say much more. It is not one subject that you could discuss, but you could often put two or more subjects forward when you speak with each other face to face"* [T1.2]. They believe that face-to-face communication positively affects the conclusion of the consultation hours.

Secondly, the nurses also underline the importance of face-to-face communication, despite the fact that most of their work has not yet been digitalized. As one member of this discipline explains, *"If you have a busy day, ask yourself 'What went wrong? Could we make anything better for the next time?' If you do it every day, you should put it on the table. Then you do not have to act so difficultly. Like, hey you, what did you do wrong. That's not it. Because sometimes it is just structure"* [T2.2]. All of the nurses who were interviewed think it is very

important to communicate about things openly, as it stimulates a quicker and effective workflow. Face-to-face communication is valuable for critically reviewing work processes together, as well as for learning and becoming better at one's job.

Medical specialists view the contribution of face-to-face communication slightly differently, as it seems to be less necessary for them in performing their tasks. They believe that face-to-face communication should be used to support the intergroup interaction and make the intergroup atmosphere more pleasant. However, they also cite the same reasons as the other disciplines. They recognize the value of receiving feedback on their work and their role in the intergroup interaction. Nevertheless, one medical specialist does not see much value for himself in enhancing direct contact, as he is not very inconvenienced by the current distribution of communication facilities. However, he states that *"I could imagine that they {members of other disciplines and of his own discipline} think it is important. And for that reason, it should be important for me, too"* [T3.2]. This quotation summarizes the general opinion of the medical specialists. When the out-group depends more on face-to-face communication to execute their tasks, the in-group also becomes dependent on this type of contact, given that they are reliant on the quality of the other disciplines' work.

4.2.3 Changing intergroup attitude

One of the aims of this study is to investigate whether face-to-face communication influences intergroup attitudes, which is addressed by the second part of the research question. Different answers can be distilled from the interviews in relation to the possibilities for changing intergroup attitudes with face-to-face communication. Firstly, multiple participants are slightly sceptical about this matter and feel it would take a great deal of time to implement such a change. As one participant notes, *"I have known them [medical specialists] already for a long time. So, for me... I have a good impression of who is who. I don't know whether this would change that much"* [T1.4]. Another participated comments that *"A lot needs to be changed structurally"* [T1.1]. Additionally, a manager from the investigated department states that people's willingness to change requires some improvement, which would take a substantial amount of time: *"All parties accept the situation as it is. Like, we do this already for over a decade and you should not change that. But I think we can approach this much more positively"* [manager]. Furthermore, some participants are clear that they do not see possibilities for any kind of change. However, others disagree: *"The answer is yes {…}. But if the idea that people have about each other would change positively or negatively, I am not*

sure. That is what we should have gotten clear in the past weeks, but that did not happen" [T3.1]. Another medical specialist is more positive: "*I think it would matter. That is, you see each other in a different way, like a human being, you would be able to tolerate more of each other. And that would change maybe your interpretations about how you could ask a person something"* [T3.3]. As one of the nurses also explains, "*You get to know each other better perhaps. Yes, trust. I don't know whether you trust each other at once. It is more a matter of seeing how someone else responds and how you would respond to that yourself. The interaction"* [T2.1].

4.3 Summary of the main findings

The developments related to HIS seem to threaten the balance of intergroup communication means. According to the participants in this study, face-to-face communication remains valuable mainly to the multidisciplinary work atmosphere. Firstly, it provides people an opportunity to share thoughts and experiences and thereby establish a mutual understanding of each other's work situations. Secondly, direct personal contact makes the workplace "cosier" which is important for people's job motivation. Both of these findings contribute to the strengthening of feelings such as mutual appreciation and trust. A work environment in which people communicate more openly seems to be a positive and desired result in this regard. Some additional findings related to the context in which the intergroup interactions occur also emerged. The large workloads, high turnover of organization implementation (such as the digitalization of work processes) and the dynamics within one of the disciplines seem to be negatively influencing the intergroup interaction.

5. DISCUSSION

The findings presented in the previous section, provide deeper insight into the diversity of intergroup attitudes (Part 1). Moreover, extended knowledge is gained on the role of face-to-face communication in improving intergroup attitudes and interactions (Part 2). This section provides more details about the theoretical and managerial implications of the most notable results, as well as suggestions for further research.

5.1 Main theoretical implications

Figure 4 depicts the theoretical model as based on the study's results. This subsection discusses the findings using this model.

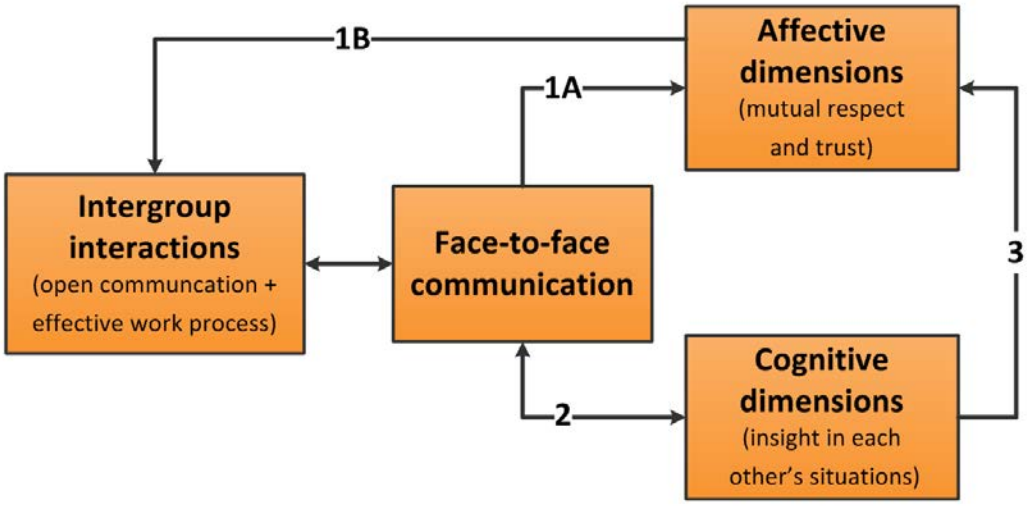

Figure 4: Resulting theoretical model: propositions (indicated by numbers) concerning the influence of face-to-face communication on intergroup interactions and attitudes among medical specialists, nurses and medical secretaries at an outpatient clinic.

5.1.1 Affective dimensions: mutual trust and appreciation

As regards the affective dimensions of intergroup attitude, the results have identified the following. The main affective intergroup attitudes are the feelings of mutual trust and appreciation, which show similarities with Landry and Erwin's (2015) characteristics of effective intergroup interaction. It is clear that the lack of mutual trust is related to other negative intergroup attitudes, such as not feeling respected and uncertainty about the out-group having knowledge about one's own perspective. These findings therefore indicate a conflict that pertains to intergroup relationship issues (De Dreu & Weingart, 2003). For example, medical specialists check the work of the medical secretaries, seeing flaws arise on a

regular basis. Medical secretaries know they are being checked, which gives them the feeling that their work is not appreciated. On the other hand, medical secretaries are sceptical towards the medical specialists as they are not sure that the specialists answer their email or properly finish consultation hours. Negative intergroup attitudes arise due to the lack of trust, which reflects on the intergroup interaction. People react in an irritated and short manner, as was noticed during the observations. When people do not see each other, they do not receive valuable information such as body language, social norms and verbal cues, as also found by other researchers (Lira et al., 2008; Sassenberg & Boos, 2003). This research is in agreement with Harwood (2010) , as it shows that negative intergroup attitudes often continue to develop and cause a negative loop when negative intergroup interactions keep occurring.

However, at the same time the participants argue that face-to-face communication would make intergroup interaction easier and more pleasant. It enables people to get to know each other on a more personal level. The participants note that they are also better able to evaluate someone's behaviour and interpret it more positively. The results acknowledge the role of trust in positive direct intergroup interaction, as Turner et al. (2013) also suggest. This leads to the first proposition resulting from this study: Affective intergroup attitudes such as mutual trust and appreciation, are positively influenced by face-to-face communication (see arrow 1A in Figure 4), which in turn stimulates positive intergroup interactions and open communication (see arrow 1B in Figure 4).

5.1.2 Cognitive dimensions: having knowledge of the out-groups situation

In this study, all participants believe that the out-group does not have enough insight into the in-group situation, especially in relation to issues that members of this group are struggling with. For example, the nurses and especially the medical secretaries have no idea what happens in the consultation room when a patient visits a medical specialist. The intervention shows that face-to-face contact provides employees an opportunity to share small details that affect their work, such as the fact that it takes some time to reassure a screaming child and his/her parents after a medical diagnosis and further treatment required have been presented. This is in agreement with another researcher (Harwood, 2010), who states that without face-to-face communication it can be difficult to gain knowledge and understanding of the out-group situation. This indicates signs of task conflict (De Dreu & Weingart, 2003). Consequently, this study supports the literature by stating that positive intergroup interactions

and attitudes occur when individuals understand each other's point of view. In this manner, people are better able to think along with each other and collaborate effectively (Riek et al., 2006; Watson et al., 2015). This paragraph thus provides a second proposition (see arrow 2 in figure 4): face-to-face communication positively contributes to gaining knowledge of the out-group's work situations and related difficulties.

Moreover, this study indicates that the cognitive dimensions contribute to the affective dimensions of intergroup attitudes. When people have sufficient knowledge of the out-group's struggles, it is easier for them to gain empathy and show their trust and appreciation. This finding gives rise to a third proposition for further testing in future research (see arrow 3 in Figure 4): affective dimensions of intergroup attitudes, such as mutual trust and appreciation, are influenced by cognitive dimensions of intergroup attitudes by gaining knowledge of the out-group's work situation. This indicates that affective dimensions of intergroup attitudes are more (directly and indirectly) influenced by face-to-face communication than cognitive dimensions are and therefore supports the existing literature (Harwood, 2010).

5.1.3 Intergroup interaction: open communication

As already pointed out above, this study supports the findings of Pettigrew and Tropp (2006), seeing as all participants believe that intergroup interactions can be improved when face-to-face communication is stimulated. People seem to value a pleasant environment in which communication flows naturally, as the literature also states (Agarwal et al., 2010). Participants in this sturdy argue that face-to-face communications is helpful for creating a climate in which work processes thus occur effectively and people communicate openly – in other words, an atmosphere in which people talk with each other and do not feel any related hindrances. The reduction of misunderstandings plays an important role in this regard, as previous research has also indicated (Landry & Erwin, 2015).

The described findings present an interesting link. This study has identified both task and relationship intergroup conflicts, which seem to be influenced by face-to-face communication. As discussed in subsection 5.1.1, task conflict occurs when face-to-face communication is insufficient. However, open communication enhances the way in which people discuss each other's work critically with the goal of learning from each other and improving the work process (cognitive dimensions of intergroup attitudes). By stimulating a "cosy" work climate, face-to-face communication plays a role in relationship conflict as discussed in subsection

5.1.2. Such as climate makes that people feel connected to each other in a more personal way (affective dimensions of intergroup attitudes). Drawing from the forgoing, this study suggests that task conflict is often more related to cognitive dimensions and that relationship conflict can be placed among the affective dimensions. This study also shows that task related issues often set the stage for frustrations, although they can also contribute to underlying relationship issues as was explained in subsection 5.1.1. In conclusion, this study is in agreement with De Dreu and Weingart (2003), as it finds that both types of conflict negatively influence intergroup interactions and attitudes, which in turn diminishes the effectiveness of workflows and the open manner in which things can be discussed. Future research could thus focus on gaining more insight into the role that face-to-face communication plays in the cognitive and affective dimensions of intergroup attitudes to make these attitudes more positive and diminish intergroup conflict.

5.3 Contextual conditions

This study also identifies that the implementation of digital information systems is not the only reason for difficulties among healthcare teams. Agarwal et al. (2010) have stated that cognitive stress can be caused by insufficient intergroup interactions. However, this current research just indicates that miscommunication and ineffectiveness between disciplines are caused by cognitive stress. Two of these stressors have emerged in this study.

Firstly, in the investigated department, one discipline in-group dynamic has been struggling since the arrival of new members. This study therefore indicates that attitudes towards the in-group can also be negatively loaded, which contradicts previous studies (Harwood, 2010). The in-group favourability as described by the same author is found to only a small degree within the discipline that is experiencing internal difficulties. The results show that frustrations are arising and effecting job satisfaction within this discipline. The out-group has noticed the diminished job motivation, seeing as it seems to trigger negative intergroup interactions. This finding gives rise to an interesting avenue for further research, as it would be relevant to explore how in-group favourability varies between disciplines and how these differences influences the multidisciplinary intergroup interactions.

Secondly, this study has found that large workloads are causing significant levels of stress in all three disciplines. All of the disciplines need to process the same high number of patients and deal with the implementation of multiple organizational changes. However, they are not

focussing on their similarities, even though the findings also show that people feel empathy for each other on this matter. It seems that the large workloads are creating gaps between the disciplines, which implies that this type of stressor has a negative effect on the intergroup interactions. Negative intergroup interactions diminish the feeling of "we" between the in-group and the out-groups. This study therefore underlines the complexity of having a sense of social cohesion among teams (as previous research also shows (Dovidio et al., 2009)) especially within the multidisciplinary context in health care. Further research to investigate how teams differ when dealing with similar stressors and how these differences affect intergroup interaction thus seems relevant.

5.4 Managerial implications

This research provides managers with extended knowledge and insights into intergroup interactions and attitudes in healthcare. It supports Setchell et al. (2015) by stating that managers need to take the intergroup nature of healthcare into account when implementing a change or improving the effectiveness between teams. In practice, this means that delegations from all parties need to be involved when managers trying to alter the overall work process of the consultation hours. Discussing the practical execution of the work process in greater detail within an intergroup setting and establishing intergroup agreement, also seem to be a suitable solution; however, the practicalities of facilitating these intergroup contacts seem to be a challenge. Each day is different due to the high levels of exception and urgencies, as Landry and Erwin (2015) have also stated. This makes it difficult to implement and maintain new structural agreements, as the execution of this study's intervention has shown. Moreover, intergroup interaction such as small talk is omitted from all of the other tasks that people have to do as a result of large workloads. However, this study identifies the importance of such communication given that it positively influences the experiences of employees, as Agarwal (2010) has stated. This study also supports previous research by underlining the importance of managers ensuring that a sufficient balance between different communication media is maintained (Reddy & Spence, 2008; Sassenberg & Boos, 2003).

Moreover, most interviewees in this study were moderately sceptical about the degree to which negative intergroup attitudes would be changed when enhancing the face-to-face communication. The continuance of negative intergroup interactions perpetuates negative intergroup attitudes (Harwood, 2010). Even though face-to-face communication contributes to more individual and personal forms of contact, as other authors have suggested it would also

generalize positive intergroup attitudes (Al Ramiah & Hewstone, 2013; Riek et al., 2006). This study identifies the difficulties this form of communication encounters in a context in which people have already known each other for a long time. It suggests that certain levels of effort and structural changes (both interpersonal and organizational) are needed to break through the negative loop and to change teams' perspectives. Major changes need to be implemented to shake people out of their routines. The desire for such alteration is high, especially among the medical specialists and the medical secretaries. But the study's participants seem to have no ideas for suitable solutions. This emphasizes the need for further research on improving intergroup contexts when teams have already knows each other for a long time.

Lastly, this research provides a better understanding of the perspectives and intergroup attitudes of medical secretaries. It demonstrates that medical specialist, nurses and medical secretaries all have different needs, as previous case studies have also shown (Laerum et al., 2004; Marie, 2016). Face-to-face communication is more essential for medical secretaries and their affective dimensions of intergroup attitudes, than other disciplines. Their job satisfaction depends heavily on the intergroup interaction, as supported by the interviews. The argument that these employees need a different kind of work environment than members of other disciplines is in line with the findings of Hertting et al. (2003).

5.5 Research limitations

As with all research, this study has encountered limitations that may provide additional suggestions for further research. Firstly, the fact that the observations and the intervention were executed within only one department makes the transferability of the findings to other departments difficult. However, within the investigated hospital all departments deal with the same implementation of HIS, which suggests that other departments are experiencing the same changes in relation to the digitalization of intergroup processes. This makes transferability to other departments more viable, at least within the same hospital. However, further research is needed to obtain better insight into how to facilitate the contextual conditions and team characteristics that would positively influence intergroup interactions and attitudes, as described in previous subsections. This increases the possibility to generalize the knowledge to other medical settings. Furthermore, as only one intervention has been executed during this research, no information is given about alternative enhancements of face-to-face communication. Nevertheless, some participants offered suggestions in this regard, such as

teams officially scheduling their gatherings or holding meetings before the consultation hours instead of after. On the basis of the above discussion, more research is needed to gain knowledge concerning how to enhance face-to-face communication in practice.

Secondly, insufficient data has been collected about the hierarchy among the disciplines and the role it plays in the intergroup context. Nonetheless, this study supports previous research by stating that hierarchies among multidisciplinary teams in healthcare do affect intergroup interactions and attitudes (Landry & Erwin, 2015; Watson et al., 2015). The interviews identified that people have a strong "us versus them" perspective, and the observations reveal that the nurses and medical secretaries behave with a certain distance mainly towards the medical specialists. However, the younger medical specialists do not intentionally provoke this attitude. Furthermore, almost everyone (from all disciplines) approaches members of the out-group by their first name. More research on this topic is needed, since it is clear that this matter affects intergroup attitudes.

Thirdly, the objectivity of the researcher could be called questioned, due to her close relationship with the participants. During the interviews, it became clear that intergroup interactions and attitudes are sensitive subjects. People require a certain level of mutual trust to feel comfortable talking openly about their thoughts and opinions; the chosen research approach seemed to work positively in this regard. It would be valuable for future studies to include multiple researchers, as doing so would allow multidisciplinary teams to be investigated from different perspectives. Nevertheless, the fact remains that intergroup attitudes – especially their affective dimensions - are subjective and therefore difficult to grasp in a comprehensible way.

A final limitation of this study related to its duration. The intervention was executed within a limited period of time; it is possible that more effects could have been discovered had it been longer. A longitudinal study is thus desired, as it would reveal further insight into the effects on changing intergroup attitudes, especially within an intergroup situation in which people have already known each other for a long time (as explained above).

5.6 Summary of the discussion

In general, this research supports the existing literature by stating that face-to-face communication positively influences intergroup interaction in several manners; in particular, direct personal contact contributes to the establishment of a “cosy” work environment, which also supports obtaining a better understanding of out-group’s difficult work situations among the teams at an outpatient clinic. Furthermore, extended knowledge has been gained about the occurrences and evolution of intergroup attitudes. This study also identifies several suggestions for further research to investigate the specific needs and behaviours of medical secretaries, nurses and medical specialists even more closely, with the goal of improving the effectiveness of the intergroup work flow.

6. CONCLUSION

This research aimed to answer to a two-part research question. The first part of the question is, "*How does the interplay between intergroup interactions and attitudes occur among the disciplines (namely medical specialists, nurses and medical secretaries) that work together during consultation hours at an outpatient clinic?*" The increasing digitalization of healthcare work processes has caused the balance of communication to shift, which has resulted in less face-to-face contact among medical specialists, nurses and medical secretaries. In this regard, the investigated department has shown less positive affective and cognitive dimensions. This study thus suggests that feelings of mutual trust and appreciation decrease as a result of less face-to-face communication. Furthermore, people have felt the need to enhance the out-group knowledge of the in-group work situation. However, other factors also play a role in the overall intergroup atmosphere and effectiveness, including the overall large workloads (which stem from the high numbers of patients), the dynamics within the discipline and the high turnover of organizational implementations.

The second part of the research question is: "*In what way does increased face-to-face communication influence intergroup interaction and attitudes among the disciplines (namely medical specialists, nurses and medical secretaries) that work together during consultation hours at an outpatient clinic?*" The results demonstrate that enhancing positive face-to-face communication seem to enable people to obtain greater understanding of each other's work situation (cognitive dimensions), which contributes to the positive influence of affective dimensions (feelings of mutual trust and appreciation). Consequently, strengthening the affective dimensions of intergroup attitudes would stimulate a work environment in which people communicate openly and directly. Figure 4 shows this study's findings in relation to how changes in intergroup attitudes occur as a result of positive face-to-face communication, which complement the finding of precious research. However, further (mainly longitudinal) research is needed to ensure the generalizability of the findings and gain a deeper understanding of the specific conditions between and within teams that have already worked with each other for quite some time.

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Appendix A: Code book

A.1 Overview codes

Categories	Healthcare setting	Intergroup interactions	Intergroup attitudes	Intergroup communication	Intervention
Codes	Stressful situations High level of exception Workload Implementation organization changes Hierarchy	In-group Out-group Collaboration Dynamic within a group Atmosphere Integrative perspective Shared goal Social cohesion Purpose interaction: Personal Task related issues Work shadowing	Negative intergroup attitudes Positive intergroup attitudes Change intergroup attitude Cognitive dimensions Knowledge Affective dimensions Trust Appreciation Empathy Willingness Sense of responsibility	Consequences implementation HIS Face-to-face communication E-mail Effective workflow Balance Open communication	Evaluation Practical

A.2 Extended code book

Healthcare setting			
"*Although a number of organizational settings involve teams and team work, few settings are as rich in detail as hospitals. Because of the increasing complexity of patient conditions and treatments, hospitals are turning to patient care teams as a means of managing their patient population. These teams are highly multidisciplinary – consisting of physicians, nurses, pharmacists, physical therapists, and other healthcare workers. Similar to teams in other settings, a patient care team brings together healthcare workers with different backgrounds and expertise to focus on a single patient and the patient's problems. Although each team member may have different concerns, work, and motivations, they must collaborate and coordinate their activities to provide effective patient care*." (Reddy & Spence, 2008)			
Stressful situations	Deductive	"*They are also characterized by high levels of dynamism, frequent exceptions, and urgent circumstances such as a patient requiring immediate attention*". (Agarwal et al., 2010)	T1.2: "*dan had je gezien hoe hectisch het soms kan zijn. Dat het niet lekker gestroomlijnd loopt weet je wel. Dan komt dat er tussen, dan komt dit er tussen. Dan komt er een spoedje tussen. Dan is er geen kamer beschikbaar. En dan komt iedereen tegelijk*"
High level of exception	Deductive	"*They are also characterized by high levels of dynamism, frequent exceptions*". (Agarwal et al., 2010)	T1.2: "*geen dag is hetzelfde*"
Workload	Inductive	"*Job-level workload refers to general and specific demands of the job, including the general amount of work to be done in the day, the difficulty of the work and the amount of concentration or attention required to do it. Resources at this level include time given to complete work, rest breaks and available human (eg, unlicensed assistive personnel) or technological resources*" (Holden, et al., 2011)	T3.1:"*we moeten zorgen dat die belasting minder wordt voor iedereen. Voor de patiënten, zodat die niet meer zo lang hoeven te wachten in de wachtkamer. Voor de dames daar, die krijgen minder gemopper aan hun balie. Voor de {discipline}. Ook zeker voor mezelf, want dit hou ik zo geen dertig jaar vol. Dan heb je ook tijd voor dit soort dingen die je naar een hoger niveau kunnen tellen te plannen*"
Changes	Deductive	"*Strategic change capabilities have become a primary focus as hospitals and healthcare systems attempt to perpetually improve and position themselves in a competitive market characterized by continuous regulatory changes and opportunities for reorganization and growth*." (Kash, Spaulding, Johnson, & Gamm, 2014)	T3.2: "*dat merk je ook wel aan de veranderingen. Dit is natuurlijk ook wel een grote verandering geweest. en er is ook een tijd geweest dat er reorganisaties moesten plaatsvinden. Dan moesten ze allemaal testen doen en alles. Dus dat was wel een beladen periode geweest. en dan nu weer met dat [inplannen nieuwe patiënten]. En er is weer een nieuwe EPD op komst. Dus er zijn wel veel dingen. Dus dat merk je wel. Dat heeft wel weerslag op de werkvreugde bij de medische {discipline} met name. Ik weet daar geen details van of dingen*"
Hierarchy	Deductive	"*The resulting asymmetrical power and status among the levels of hierarchy that leads to the "professional dominance" by the professions considered to be at a higher level in the hierarchy*" (Landry & Erwin, 2015)	T3.1: "*waarschijnlijk. Dat is iets wat men van oudsher heeft meegekregen. Ik moet zeggen dat ik me daar helemaal niet aan hecht. Ik zie wel aan de oudere {medische specialisten}. Dat het vroeger altijd zo gegaan is. Dat je als {discipline} zo alles maar even kan regelen in het ziekenhuis. Ja ik zie mezelf meer als de dokter radar in het grote system. Maar dat is niet de algemene visie van de medische specialist. En dat merk je overal in het ziekenhuis nog steeds*"

Intergroup interaction *"Whenever individuals belonging to one group interact, connect with another group or its members in term of their group identification, we have an instance of intergroup behaviour."* (Sherif, 1966, p. 12)			
In-group	Deductive	"*The "in-group" as the group where people feel they belong* to". (Harwood, 2010)	T1.2: "*en het is ons ook niet kwalijk te nemen. We hebben zo veel werk en te weinig personeel. Het moet er allemaal maar bij. Er bij..*".
Out-group	Deductive	"*The group where people do not feel they belong to*" (Harwood, 2010).	T1.1: "*ze weten soms gewoon niet hoe druk het bij ons kan zijn. Ze verwachten heel veel*"
Collaboration	Deductive	"*Interdisciplinary collaboration in the context of heath care has been defined as an interpersonal process involving healthcare professionals representing multiple disciplines who have shared objectives, decision making, responsibility and power working together to solve problems in the healthcare organization of setting*" (Landry & Erwin, 2015, p. 357)	T2.2: "*als je samen kunt werken. Dat is goede samenwerking. Niet dat ik de zuster ben die daar zit en de dokter daar*"
Dynamic within a group	Inductive	Factors that influence the atmosphere and collaboration within a certain group.	T2.1: "*nou daar is heel veel onrustig. Daar zijn vaste medewerkers weggegaan bij de {discipline} ook met name... Ook nog die dat ze wel of niet mochten blijven. Dat gaf ook heel veel stress. Ach nou weet ik niet meer hoe dat heet.. dan moesten ze weer examens doen. dat gaf ook heel veel stress*"
Atmosphere	Deductive	'*Work place atmosphere' or "work life experiences*" (Hertting et al., 2003)	T3.1: "*daar ben ik gevoelig voor. Zeker. Ik bedoel ik doe liever stom werk in een leuke omgeving dan leuk werk in een stomme omgeving om het zo maar te zeggen. Dat is heel jammer*"
Integrative perspective	Deductive	"*To achieve this, there needs to be a heightening of clinicians' awareness of the role their group memberships play in everyday interactions*". (Watson et al., 2015)	TM: "*weet je natuurlijk moet het niet op het bordje van de {discipline} liggen. Maar wat je wel aan de {discipline} kan vragen is dat je wel bijvoorbeeld optie biedt. Dus niet door te zeggen van ik kan deze patiënt niet plannen, kan jij eens even kijken. Maar door wel te zeggen vanuit de {discipline} van goh ik kan deze patiënt niet kwijt op jouw spreekuur, is het een optie dat ik die bij die inplan. Waarbij je eventueel kan superviseren. Weet je dat er wel wordt meegedacht. En dat gebeurd niet.*"
Shared goal	Deductive	"*Attainment of common goals must be an interdependent effort without intergroup competition*" (Pettigrew, 1998)	T2.1: "*het gezamenlijke doel? Het grootste doel is dat de patiënt zich goed behandeld voelt. Dat die, ook al heeft die een nare uitslag, toch met een goed gevoel hier weer weg gaat. En dat die weet waar die aan toe is en wat er verder gaat gebeuren. En dat zich goed behandeld voelt. En ook goed, niet alleen qua behandelplan maar ook emotioneel gezien. Dat die het gevoel heeft dat die alles heeft kunnen vragen.*

			Ja dat vind ik toch wel".
Collaboration	Deductive	"*Interdisciplinary collaboration in the context of healthcare has been defined as an interpersonal process involving healthcare professionals representing multiple disciplines who have shared objectives, decision making, responsibility and power working together to solve problems in the healthcare organization or setting*" (Landry & Erwin, 2015, p. 357)	T1.4: "*dat iedereen zijn ding doet. En ik ook alles krijg. Dat de alle aanvragen er netjes ingezet worden. Dat de {discipline} netjes op tijd een [handeling] op tijd doen. Dat patiënt daar niet op hoeft te wachten. Dat alles gesmeerd loopt*"
Social cohesion	Deductive	"*Increasing the salience of a more inclusive superordinate identity, so that a shared bond between the groups is perceived*." (Riek et al., 2006, p. 349)	T2.2: "*en als je dat samen voor elkaar kan krijgen. En boven water kan krijgen wat nou eigenlijk echt het probleem is en daar dan ook wat aan kan doen. Dat is hartstikke mooi. En dat is eigenlijk nog iets heel simpels*"
Purpose intergroup interaction: personal	Deductive	"*Intergroup interaction that is used for personal contact, instead of work related purpose. Or "personalized interaction one responds to other individuals in terms of their relationship to self*." (Miller, 2002)	T1.2: "*dan hadden we het niet alleen maar over werk, maar ook wel eens over privé dingen. Dan vroeg je van goh hoe gaat het met je zoon of dochter of wat ga je doen met vakantie enzo. Die dingen heb je nu niet meer. Het is nu zo onpersoonlijk als wat*"
Task related intergroup issues	Deductive	"*Issues that concern task input and deep and deliberate processing of task-relevant information… examples are: distribution of resources, procedures and policies and judgements and interpretations of facts*." (De Dreu & Weingart, 2003)	T1.3: "*ja dat ook. Maar eerst hadden we helemaal geen problemen met het plannen van patiënten. Eerder kwam de {discipline} elke dag even om vier uur langs. Zijn er nog problemen. En dan ging je samen even kijken, hoe los je dit op. En dat vond ik wel heel erg prettig*"
Work shadowing	Inductive	To have someone of the other discipline accompany while preforming work, which could be helpful for the other person to gain insight of the situation.	T3.3: "*soms denk ik van goh laat ze eens op de kruk naast ons zitten. Dat ze het gewoon zien waar het wringt. En daarom bepaalde dingen gaan zoals ze gaan*"

Intergroup attitude			
"*Intergroup attitudes are seen as thoughts, feelings, expectations and opinions that people have about themselves, the people from their own group and the out-group*" (Mackie & Smith, 2015).			
Negative intergroup attitudes	Deductive	"*Positive reactions encompass showing solidarity, tension-reduction, agreement, support, and understanding*" (Molleman, Broekhuis, Stoffels, & Jaspers, 2010)	T1.4: "*ik heb wel eens een nare reactie gehad van een dokter waarvan ik dacht nou zeg*"

Positive intergroup attitudes	Deductive	"*Favourable affective reactions to outgroups*" (Aberson, 2015).	T1.2: "*voor de verpleging neem ik mijn petje af. Die werken keihard echt waar. Die hebben het allemaal goed voor elkaar. Ze zeggen ook als iets niet kan enzo. Die zorgen ook voor een oplossing. Daar kun je altijd bij gerecht*"
Change intergroup attitude	Inductive	Alterations of intergroup attitudes.	T3.3: "*ik denk dat dat wel uitmaakt. Dat als je elkaar ook op een andere manier, meer als mens ziet, dat je ook meer van elkaar kan hebben. En dat je interpretaties van hoe iemand iets aan je vraagt misschien ook wel veranderd*"
Knowledge	Deductive	"*Mental representations that guides the processing of information about individuals or social events*" (Brewer & Kramer, 1985)	T1.3: "*nou ik heb vaak het idee dat ze geen idee hebben..*"
Trust	Deductive	"*Trust can be seen as a psychological means to overcome uncertainty by making benign assumptions about other people's behaviour*". (Kollock, 1994)	T2.2: "*nou dat merk je heel gauw. Als het niet goed gaat. Dat is ook een beetje, een bepaalde vingerspuntzen gevoel. Als je met mensen werkt en dan… dat voel je gewoon aan. Dan gaat het goed of niet goed*"
Appreciation	Inductive	The feeling that someone else appreciates you and the work you do.	T1.4: "*wat ook wel eens {discipline} doen; bedankt voor de samenwerking. Dat vind ik fijn. Niet dat ik aldoor veren in mijn .. moet hebben. Er zijn {discipline} die weglopen en zeggen van bedankt voor de samenwerking, heb jij nog wat? Nee, jij dan? Nee ook niet. Kijk dan wordt het weer gewaardeerd dat je achter de balie zit*"
Empathy	Deductive	"*Empathy refers to the ability to share and understand another person's feelings*" (Al Ramiah & Hewstone, 2013, p. 532)	T1.2: "*ze hebben het veel drukker gekregen die artsen. Tijd hebben amper.. ze moeten ook hun brieven zelf doen. Ze hebben het gigantisch druk gekregen. En dat merk je ook gewoon. Die lopen op hun tenen hoor, echt waar. Die hebben het heel druk gekregen.*"
Willingness	Inductive	In this research the code 'willingness' refers to the alacrity to improve intergroup interaction and the overall work process in a social way.	T3.3: "*ownership denk ik.. is het.. wil je echt dat het zo goed mogelijk loopt of zit je gewoon je uren vol te maken?"*
Sense of responsibility	Inductive	The feeling of being responsible for the effectiveness of intergroup interaction and for the quality of healthcare and services towards patients.	T3.3: "*ik hoop dat het stukje face-to-face contact er toe leidt dat er bij de secretaresses meer het gevoel gaat kweken van wij doen dit samen. En dat ze een stukje verantwoordelijkheid voelen voor het goed reilen en zijlen van die poli. en dat je niet zo iets hebt van ja daar kan ik ook niets aan doen.. van het gaat niet goed, maar ik kan er ook niks aan doen.. dat is jammer voor je. Voor mij maar ook voor de patiënt*"

Communication			
"In healthcare settings, communication is the way people share information" (Landry & Erwin, 2015, p. 357)			
Consequences implementation HIS	Deductive	"*ERP implementations are often accompanied by increasing level of stress in organizations that place pressures on organizational relationships and structures*"(p. 375). (Low & Locke, 2008)	T1.4: "*dat was een hele andere werkomgeving. Daarom mis ik ook nog wel eens het papieren dossier. Dat ze dan weer eens wat vaker zouden komen*"
Face-to-face communication	Deductive	"*Direct intergroup contact, which involves actual, face-to-face contact between members of different groups*" (Al Ramiah & Hewstone, 2013, p. 533)	T1.2: "*als je elkaar meer ziet, dan communiceer je meer. Dan praat je meer over dingen. Je bent waarschijnlijk ook meer opener naar elkaar. Of opener, of hoe zeg je dat. Je zegt wat dingen gauwer*"
E-mail	Deductive	*A message send form one person to another via the computer.*	T1.1: "via de mail moet je toch weer wachten of krijg je verkeerde indruk van een antwoord"
Effective communication flow	Deductive	"*Effective communication among these dispersed parties is critical to ensuring quality and safety in care delivery while improving operational efficiencies." - And - "the effects of poor communications in hospitals that isolates four outcomes: (1) efficiency of resource utilization, (2) effectiveness of core operations, (3) quality of work life, and (4) service quality, identifying specific metrics for each outcome*". (Agarwal et al., 2010)	T1.2: "*weinig communicatie tussen de artsen en de administratie en de verpleegkundige. Iedereen doet eigenlijk maar zijn eigen dingentje. En als er dan iets fout gaat op de poli. Dan krijg je er direct van langs. En dan denk je, ja dan moet er toch wel beter gecommuniceerd worden. Wat is nou precies de bedoeling, wat wil je nou precies*"
Balance	Inductive	The proportion of the usage of the different means of communication is in the right distribution.	T3.3: "*nee totaal niet. Er is nauwelijks face to face. Nee. en daardoor denk ik dat je ook een stuk onbegrip krijgt*"
Open communication	Deductive	"*An open flow of information among team members helps mitigate misinformation or bad information that might otherwise harm team effectiveness*" (Landry & Erwin, 2015)	T3.1: "*dit betekent dus precies de open communicatie waar jij op doelde. Als er eens wat is, dat je dan zou verwachten dat je dat ook terug hoort. Die communicatielijnen zijn er niet. Misschien doen ze dat wel met [collega medisch specialist] of [collega*]"

Intervention			
The intervention contained a joint meeting, where medical specialists, nurses and medical secretaries sat together to exchange information about the past consultation hours.			
Evaluation	Inductive	How the participants reviewed the intervention they participated during this research in general.	MMA1: "*Het is nieuw. Het moet wennen. Het moet er tussen komen*".
Practical	Inductive	How the participants reviewed the usefulness in practice of the intervention they participated during this research.	MMA4: "*eerlijk zeggen? Ik denk het niet omdat heel veel spreekuren uitlopen. Ik denk dat dat het grootste struikelblok is*".

Appendix B: Observation Guide

- What are the main tasks of the employees?
- For which tasks do people depend on individuals from other disciplines?
- How are shortcomings the intergroup interaction shown?
    - How do these shortcomings affect different stakeholders?
- When does the intergroup interaction take place?
- Who is involved in intergroup interactions?
- Who initiates the intergroup interaction?
- How do the intergroup interactions take place?
- How do the employees treat each other?
- Which communication styles are used?
- How does face-to-face communication happen?
    - Who speaks to whom?
    - When do people talk to each other?
    - For how long do they talk to each other?
    - What do they talk about with each other?
    - What is tone of voice do they use?
- What emotions can be observed concerning intergroup interactions?
- How are emotions towards each other demonstrated in employees' behaviour?
- What is the atmosphere during the consultation hours?

Informal conversations

- What are the main tasks of your job?
- For which tasks do you depend on others?
- How would you describe the intergroup interaction during consultation hours?
- How do you communicate with members of other disciplines?
- Is this form of communication satisfying for you?
- Which shortcomings in the intergroup interactions influence you and in what way?
- How do you feel about members of the others disciplines that you work with?
- How would you describe the atmosphere during consultation hours?

Appendix C: Interview protocol (DUTCH)

Geslacht: M / V
Functie: medisch specialist / verpleegkundige / medisch secretaresse

Deel I. Evaluatie van de pilot: gezamenlijke afronding van het spreekuur

1. In de afgelopen weken hebben er verschillende “gezamenlijke afsluitingen van het spreekuur” plaatsgevonden, hoe kijkt u hier over het algemeen op terug?
2. Merkt u dat er zaken anders gaan sinds de pilot?
   - Zo ja, wat?
   - Zo nee, op welke punten denkt u dat de samenwerking tussen de artsen, de verpleegkundigen en de medische administratie verbeterd kan worden?
     - Wanneer verloopt de samenwerking volgens u optimaal?
     - Wat zijn voor u belangrijke punten bij deze samenwerking?
     - Wat zou de rol van face-to-facecontact bij deze samenwerking kunnen zijn?
3. Hebt u het idee dat face-to-facecontact effect heeft op de zorg voor de patiënt? Zo ja, hoe?
4. Hebt u het idee dat face-to-facecontact effect heeft op de samenwerking tussen de artsen, de verpleegkundigen en de medische administratie? Zo ja, hoe?
5. In welke mate heeft face-to-facecontact volgens u effect op de manier waarop open communicatie plaatsvindt?
6. Hoe heeft face-to-facecontact invloed op het beeld dat u hebt van uw indirecte collega’s? Heeft de pilot hier verandering in gebracht?

Deel II. Het cognitieve intergroepsproces

7. Hebt u meer inzicht in - en kennis van - de werkzaamheden van de andere disciplines gekregen dankzij de interventie? Zo ja, hoe?
8. Hebt u het idee dat dankzij face-to-facecontact de andere disciplines meer inzicht in en kennis van uw werkzaamheden hebben gekregen ? Zo ja, hoe?
9. Ben u en uw discipline, volgens u, door face-to-facecontact beter in staat om mee te denken met collega’s van andere disciplines?

Deel III. Het affectieve intergroepsproces

10. In hoeverre voelt u zich gewaardeerd door mensen van andere disciplines? Hoe wordt dit beïnvloed door face-to-facecontact?
11. In hoeverre wordt uw waardering voor mensen van andere disciplines beïnvloed door face-to-facecontact?
12. Hoe heeft face-to-facecontact volgens u invloed op uw gevoel van onderling vertrouwen tussen de drie disciplines?
13. Heeft face-to-facecontact invloed op de sfeer op de afdeling?

Appendix D: Interview protocol (ENGLISH)

Sex: M / F
Function: medical specialist / nurse/ medical secretary

Part I. Evaluating the intervention

1. In the last few weeks, several joint closures of the consultation hours have taken place. What is your overall opinion of them?
2. Do you believe anything has changed since the implementation of the intervention?
   - If yes, how?
   - If not, do you think that face-to-face contact could have a positive influence on intergroup interaction in the future? If not, what would you suggest as anotherpossibility?
     - How do you define optimal intergroup interaction?
     - What arguments are important for you in this regard?
     - What could be the role of face-to-face contact?
3. To what extent do you believe that face-to-face communication influences the quality of healthcare and patient service provided?
4. To what extent do you believe that face-to-face communication has an effect on collaboration?
5. To what extent do you believe that face-to-face communication has an effect on how openly communication takes place?
6. Does face-to-face communication influence how you feel about members of the different disciplines you work with? In what way?

Part II. Cognitive intergroup process

7. Have you gained more knowledge about the work activities of individuals from other disciplines since the intervention?
8. To what extent do you think other disciplines have gained more knowledge of your work activities? How does face-to-face contact influence this process?
9. Do you think people are better capable of thinking along with each other due to face-to-face contact?

Part III. Affective intergroup process

10. To what extent do you feel appreciated by the people you work with during the consultation hours, and how does face-to-face contact contribute to these feelings?
11. To what extent is your appreciation of other disciplines influenced by face-to-face contact?
12. To what extent do you believe that face-to-face contact influences the amount of trust among the disciplines?
13. To what extent do you believe that the atmosphere among the disciplines has been influenced by face-to-face contact?