Waiting for a doctor's appointment:

The influence of filled time on the wait experience

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PREFACE

The paper in front of you is my master thesis for the Master Business Administration, specialization Operations and Supply Chains, at the University of Groningen. I conducted a study on wait experience at the outpatient clinic of the department Obstetrics and Gynecology of the University Medical Center of Groningen.

This study has been a challenging experience in which I have learned a lot. I would like to thank some people, who have helped and supported me during my study.

First, my thanks goes to R. Warners, the coordinator of the outpatient clinic O&G. She gave me the opportunity to conduct this research in the outpatient clinic and she provided me with all the information I needed. I also would like to thank J.Pols of the student bureau of the UMCG, who introduced me to R. Warners and who has coached me during the process of my study. In order to place some content on the new displays in the outpatient clinic, F. Erich, P.Pelsma and J. Bijleveld helped me to work with the different possibilities of the presentation system. I would like to thank them also. Of course, my thanks goes to the doctor's assistants, doctors and co-assistants, who provided a part of the data I needed for my research and who helped me taking some nice pictures to show on the displays, used for my study.

Moreover, a special thanks goes to my supervisor dr. H. (Manda) Broekhuis. She provided me with useful insight and feedback during the process of my study. I also would like to thank my second assessor, J.E.M. van Nierop, who helped me with the analyses conducted in my research.

Rianna Spriensma
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CONTENTS

ABSTRACT

Purpose – The purpose of this study is to improve the wait experience of the patients in the outpatient clinic of the department Obstetrics and Gynecology of the University Medical Center of Groningen. It will be investigated what the influence is of filling the waiting time of these patients on their wait experience, consisting perceived waiting time and wait evaluation. Also the influence of the prediagnostic anxiety of patients on this relationship will be investigated.

Design/methodology/approach – To find an answer to the research question , a survey was conducted in the waiting room of the outpatient clinic Obstetrics and Gynecology. Subjects were patients with an appointment at the outpatient clinic and who had to wait in the waiting room.

Findings – Filled time shows to have an indirect negative effect on perceived waiting time, mediated by prediagnostic anxiety. No direct influence of filled time on perceived waiting time was found. Actual waiting time has a strong positive influence on perceived waiting time. Perceived waiting time has a strong negative effect on wait evaluation.

Conclusion/managerial implications/limitations – In health care, filled waiting time appears to have an indirect influence on wait experience, mediated by the patient's prediagnostic anxiety. In order to improve the wait experience of patients in the outpatient clinic of Obstetrics and Gynecology, the clinic can reduce their prediagnostic anxiety. This anxiety can be reduced by filling the waiting time of patients by offering different activities, service related and non-service related activities. The outpatient clinic should especially focus on providing reading on different topics and on using displays for 'activity purposes', by showing health care related information. Also, the outpatient clinic has to stay alert on making the actual waiting times of patients as short as possible. This will also improve the wait experience. Limitations of this research are related to the health care setting in which the study was conducted.

1 INTRODUCTION

The University Medical Centre of Groningen (UMCG) is one of the largest hospitals in the Netherlands. Ten thousand employees are working in this hospital. They provide care and also focus on scientific research. Another important task of the hospital is education, which is provided in cooperation with the University of Groningen. Patients visit the UMCG for basic care, but also for specialized diagnoses, investigation and treatment. The UMCG is divided in different departments, to provide this specialized care. One of these is the department of Obstetrics and Gynecology (O&G). Obstetrics is the specialism that focuses on pregnancies (website UMCG; department Obstetrics and Gynecology). Gynecology is concerned with abnormalities and diseases in the female genitals. The specialism Reproductive medicine is also settled in this department. This department has an outpatient clinic where patients can make an appointment to obtain care without the need for an overnight stay (day care).

The coordinator of the outpatient clinic believes that waiting times are high in the clinic and that patients have negative perceptions about the wait. For the outpatient clinic it is important to focus on these waiting times, because several researchers (e.g. Bitner, Booms and Tetreault, 1990; Taylor, 1994; Pruyn and Smidts, 1998) found that waiting strongly influences customer satisfaction in service sectors. Just as in other service sectors, customer satisfaction has appeared to be very important in health care (Andaleeb, 1998). Customer satisfaction represents a profitable competitive strategy variable in health care. Hospitals delivering higher customer satisfaction have been able to translate this into increased utilization and market share. Patients are inclined to pay more for care from quality institutions which are better disposed to satisfy customers' needs (Boscarino, 1992; In Andaleeb, 1998). That is why this study will focus on improving the waiting situation of the patients in the outpatient clinic of Obstetrics and Gynecology. This will be done by focusing on the wait from a psychological perspective, the wait experience.

The problem of the company will further be elaborated on in section 2 'Problem statement'. In this section also will be discussed why this study focuses on the wait experience. To get more insight into the problem and possible solutions, a preliminary study has been performed. This preliminary study will be discussed in section 2.1. After this preliminary study, the exact research objective and research questions were formulated (section 2.2). Section 2 will end with the practical and scientific relevance of this study (section 2.3). Section 3 discusses results of previous research on wait experience, divided in perceived waiting time and wait evaluation, and factors that influence this wait experience. To find an answer to the research question of this study, a survey was conducted in the outpatient clinic Obstetrics and Gynecology. The exact method used for this survey is discussed in section 4. Next, the results of this study are being discussed in the 'Results' section (section 5). Finally, the findings of this study are discussed and summarized and some managerial implications of these findings are provided for the outpatient clinic. This can be found in section 6.

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2 PROBLEM STATEMENT

During the entire day patients with an appointment enter the outpatient clinic of the department Obstetrics and Gynecology. When they arrive, they first have to check in at a desk where the assistants of the doctors register their presence. Next they wait in the waiting room until it is their turn to see the doctor. The coordinator of the outpatient clinic believes that patients often have to wait a long time both in front of the check-in desk as well as in the waiting room. Based on some earlier patient satisfaction surveys she also has the feeling that the waiting is the most important thing patients find annoying. However, these surveys appeared not to be representative. So the outpatient clinic does not have any representative data about the actual length of the waiting times or about the opinion of the patients about waiting. This limits their insight into the problem.

As mentioned above, for the outpatient clinic it is important to focus on waiting times, because several researchers (e.g. Bitner, Booms and Tetreault, 1990; Taylor, 1994; Pruyn and Smidts, 1998) found that waiting strongly influences customer satisfaction in service sectors. The clinic tried several times to shorten the actual waiting times, which proved to be very difficult. It seems that there is a tradeoff between shorter waiting times for patients and occupancy rates of doctors which limits options to reduce patients' waiting times. However, several researchers (e.g. Taylor, 1994; Thompson et.al., 1996; Davis and Heineke, 1998; McGuire et. al., 2010) show that the perceived waiting time of patients has an equal or even stronger influence on customer satisfaction and their wait evaluation than the actual waiting time. Patients can perceive their waiting time as long or short regardless the time they actual had to wait. This perception is called the perceived waiting time. Also was found that the emotional response of a customer towards the wait, called wait evaluation, influences customer satisfaction (Katz, Larson and Larson, 1991; Taylor, 1994; McGuire et. al. 2010). That is why it was decided to look at the waiting time in the outpatient clinic from a psychological perspective. It will be investigated how the outpatient clinic can improve the waiting situation of its patients, focusing on their perceived waiting time and their wait evaluation. The combination of the perceived waiting time and

the wait evaluation of a patient will be called the patient's wait experience. So there will be a focus on the wait experience of patients, when improving their waiting situation. Before deciding on the exact research objective of this study, more insight needs to be gained into the extent of the problem. To make a good decision on a research question, more insight needs to be gained into the possible influence of different factors on perceived waiting time and wait evaluation, the wait experience. For this reason a preliminary study has been performed. This study is described below.

2.1 PRELIMINARY STUDY

As mentioned before, the coordinator of the outpatient clinic has the idea that waiting times in front of the desk and in the waiting room are too long, but she does not have any actual data. To gain more insight into the problem and its causes, a preliminary study was conducted. The preliminary study served four purposes. First, to get insight into the extent of the problem, it is important to know how long actual waiting times really are and how patients experience their wait.
Second, more insight had to be gained into the possible effects of different factors on perceived waiting time and wait evaluation. In literature several factors are discussed that seem to have an influence on perceived waiting time. Detailed analyses of already known literature about these factors and their effects can be found in section 3. Literature shows that the time customers actually have to wait in the waiting room influences their perceived waiting time (e.g. Pruyn and Smidts, 1998). In a healthcare setting, the anxiety patients perceive before their doctor's appointment (prediagnostic anxiety) can also be an important influence factor. Literature shows that anxiety influences perceived waiting time (e.g. Maister, 1985). Also a relationship between perceived waiting time and wait experience can be found in literature. It is stated that the longer the perceived waiting time, the more negative the feelings of the customer towards the wait (Pruyn and Smidts, 1998). In the preliminary study it was investigated whether there are

also some indications for the above effects in the context of the outpatient clinic. This was necessary to decide whether it was useful to take these effects into account in the main study. The model used in the preliminary study can be found in figure 1. The model was tested for both waiting in front of the desk and waiting in the waiting room.
Third, literature also indicated that filling the waiting time of customers influences their perceived waiting time (e.g. Maister, 1985). To gain insight into the possible activities that can be used to fill waiting time of patients in the main study, it was investigated in the preliminary study what kind of activities patients do and prefer to do during waiting. Finally, a preliminary study helps to get more insight into the best possible procedure for the main study. In the preliminary study waiting in front of the desk was also taken into account and the study was conducted in a health care setting. Most studies only investigate waiting in a waiting room in service sectors other than health care. That is why it was not possible to take a procedure already used in literature, but it was necessary to first test the specific procedure in this health care context.
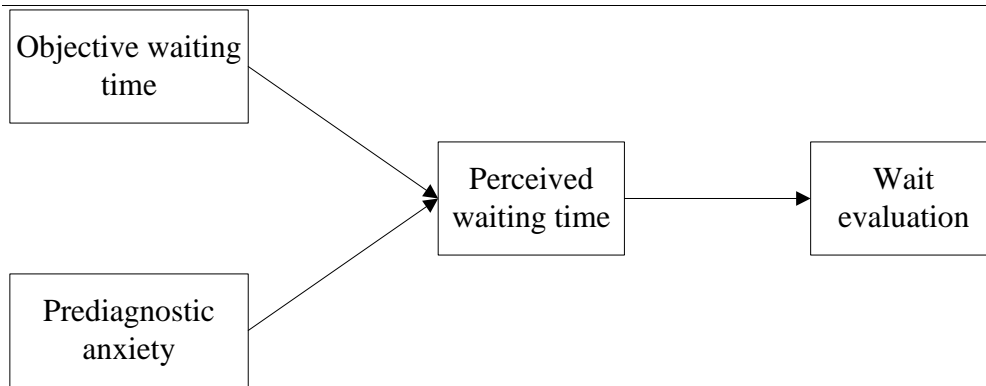
Figure 1 Conceptual model of the preliminary study.

2.1.1 VARIABLES

The *objective waiting time* is the actual time in minutes a patient has to wait (Davis and Heineke, 1998). The objective waiting time in front of the desk is the time patients have to wait in line until a doctor's assistant helps them at the desk. The objective waiting time in the waiting room is the delay of the appointment after the appointment time. *Prediagnostic anxiety* is defined as a patients feelings of tension, nervousness or worry in anticipation of his or her appointment with a doctor (Gaberson, 1995). *Perceived waiting time* is the perception of the time span of the wait in terms of long or short (Pruyn and Smidts, 1998). The *wait evaluation* is the emotional response of the patient towards the wait (Pruyn and Smidts, 1998). Based on the literature above it was expected that the objective waiting time and prediagnostic anxiety have an effect on perceived waiting time. Besides, the influence of perceived waiting time on wait evaluation was investigated.

2.1.2 METHODOLOGY

Research moment
For this preliminary study it was important to select the right moment to do this study. First of all, to derive some useful results, an amount of fifty to one hundred respondents was necessary. Also was it necessary to pick a time period in which there was a considerable chance of high variance in waiting times, to investigate the different effects of high and low waiting times. To look at the effect of anxiety on the perception of waiting times, the following question was raised: Is there a moment that the chance of 'bad news' for the patients is high, which raises the chance of high prediagnostic anxiety? A high variance in prediagnostic anxiety would improve the results, regarding different ef-

fects of high and low anxiety. Table 1 shows a general week of the outpatient clinic and important details regarding the right moment to conduct the preliminary study.

Day	Number of patients scheduled for an appointment	Important details
Monday morning	118	
Monday afternoon	84	
Tuesday morning	123	9.00 – 12.00 : 2 oncologists are having consults
Tuesday afternoon	72	11.45 – 16.45: some consults always causing long waiting times
		16.00 – 18.35: multi-disciplinary oncology consultation
Wednesday morning	103	
Wednesday afternoon	64	
Thursday morning	121	Circa 8.30 – 12.00: 3 oncologists and one nurse for oncology are having consults
Thursday afternoon	95	12.00 – 16.15: 2 oncologists and 1 nurse for oncology are having consults
Friday morning	80	
Friday afternoon	39	

Table 1   Patient and consult overview of week 9 2011 of outpatient clinic Obstetrics and Gynecology.

The table shows that it is possible to reach the amount of fifty to one hundred respondents in one day, because every day about 200 patients have an appointment at the outpatient clinic. It was difficult to find a moment with a considerable probability of high waiting time variance, because doctor's assistants told that they find it difficult to predict when waiting times will be high. However, one exception could be made for the Tuesday afternoon. On Tuesday afternoon the waiting times are mostly high because of some consults always causing long waiting times. The chance that a patient receives bad news is always there, there is no particular moment for 'bad news conversations'. However, for the oncology specialization of gynecology it could be said that the chance for bad news is relatively higher compared to the other specializations. This statement is based on the experience of the coordinator of the outpatient clinic. The decision was made to do the preliminary study on a Tuesday. Tuesday, because there will be enough patients on this day and the chance of high waiting times is higher compared to other days. Also some consults of oncology are scheduled on this day, which probably increases the chance of anxious patients, because the chance of 'bad news' is relatively higher. The sampling method described above is a kind of non-probability sampling, namely convenience sampling.

Subjects
In the preliminary study 89 respondents participated. After checking for errors and missing values, data of 84 respondents was left to analyze. The majority of the respondents were women between the age of thirty and thirty-nine years old, who had an appointment at the specialism gynecology. Appendix 1 shows the sample characteristics of the preliminary study.

Procedure
To find an answer to the questions of the preliminary study, quantitative data and some qualitative data was gathered. Data about objective waiting times was gathered using a form on which arrival time into the outpatient clinic, the time the patient meets the assistant at the desk, appointment time and doctor's meeting time could be filled in by respectively the researcher, doctor's assistants and doctors (see appendix 2.1). After the appointment, the patient took the form with him or her and gave it back to the researcher. Then patients were asked to fill out a questionnaire (see appendix 2.2) with some quantitative questions to measure the different variables and two qualitative questions about the activities they did and would prefer doing while waiting. The questions are discussed in detail in the next paragraph.

Measures

The *objective waiting times* were measured by the form on which the arrival time into the outpatient clinic, the time the patient meets the assistant at the desk, the appointment time and the doctor's meeting time were noted (appendix 2.1). The objective waiting time in front of the desk was calculated as the time interval in minutes between the time the patient entered the outpatient clinic (arrival time clinic) and the time the doctor's assistant behind the desk helped this patient (desk meeting time) . The objective waiting time in the waiting room was measured as the time interval between the appointment time and the time the patient saw the doctor (doctor's meeting time). These objective waiting times are depicted in figure 2. When patients happened to see the doctor before their appointment time, this was reported as an objective waiting time of zero.
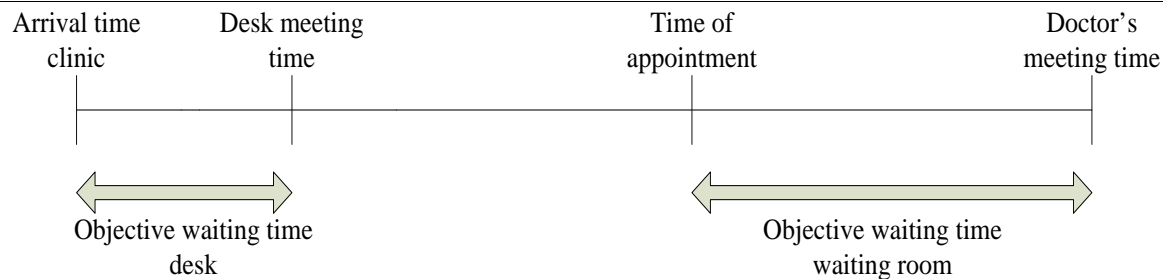
Figure 2 Visual presentation of objective waiting time in front of the desk and in the waiting room

Both the variables *perceived waiting time* and *wait evaluation* were measured with one five-points semantic differential item. For the perceived waiting time patients had to indicate whether they perceived their wait as short or long, and for the wait evaluation patients were asked to indicate their annoyance (after recoding: 1= really annoying to 5= not annoying). So a high wait evaluation indicates a positive wait evaluation and a low wait evaluation a negative one. For both perceived waiting time and wait evaluation respondents were asked to indicate these variables regarding their wait in front of the desk and regarding their wait in the waiting room. *Prediagnostic anxiety* was measured using two five-points semantic differential items. These two items measured the degree of nervousness and tension of the patients while they were waiting for their appointment with the doctor. A reliability analysis on the items of this variable showed a high Cronbach's alpha (α=0,938) and a corrected item-total correlation of 0,884. This means that prediagnostic anxiety can be measured in a reliable way by putting the items about nervousness and tension in one scale.

To get an impression of the activities patients do and prefer to do during waiting, two additional questions were added.

The first question was an open question and respondents were invited to mention one or more things the respondent wanted to see or do during waiting in the waiting room to make the wait less annoying or to perceive the wait as less long. The second question asked respondents to indicate what they actually had been doing during waiting. This last question was not an open question. Respondents could select one or more options. The options were: Reading a magazine or brochure from the outpatient clinic about health care or parenthood, reading a magazine or paper about another topic, reading something from home about health care or parenthood, reading something from home about another topic, doing a puzzle, talking with the person who accompanied the patient during his visit (friend or family), talking with other waiting patients, nothing (although the patient had to wait), nothing (because the patient did not have to wait), something else.

Further, In the preliminary study three control variables were measured: Age, gender and the specialism the respondent has an appointment at (gynecology, obstetrics, reproductive medicine, clinical genetics).

Data analyses

First, descriptives were provided of the objective and perceived waiting times of the respondents and their wait evaluations. Also overviews of the activities patients did during their wait and the missing possibilities to fill time mentioned by patients were composed. Bivariate regression analyses were performed to test the effect of objective waiting time and prediagnostic waiting time on perceived waiting time, and the effect of perceived waiting time on wait evaluation. To test for the possible influences of some control variables on the model, two correlation analyses has been performed. One to check for the correlation between prediagnostic anxiety and the spe cialism a patient has an appointment at, and one to check for the correlation between age and perceived waiting time.

2.1.3 RESULTS

Descriptives

Table 2 shows an overview of the general descriptives of the variables.

	Mean	Mode	Standard Deviation	Minimum	Maximum
In front of the desk:					
Objective waiting time	1,58 min	0 min	1,51 min	0 min	6 min
Perceived waiting time*	1,31	1	0,60	1	4
Wait evaluation*	4,8	5	0,64	1	5
In the waitingroom:					
Objective waiting time	7,62 min	0 min	10,97 min	0 min	64 min
Perceived waiting time*	1,87	1	1,07	1	5
Wait evaluation*	4,48	5	0,90	1	5
Prediagnostic anxiety*	1,87	1	1,07	1	5

* Measured on a scale from 1 to 5
Table 2   Descriptives summary of the variables

In front of the desk, patients wait on average 1,58 minutes (table 2). 23,8% of the patients had to wait 3 minutes or longer, 10,7% 4 minutes or longer and 3,6% 5 minutes or longer with a maximum of 6 minutes (table 3). On average the waiting time in front of the desk is perceived as very short (mean = 1,31 in table 2). Only 4,8% says that the waiting time is somewhat lengthy (score 3) till very long (score 5 in table 4). The wait evaluation of the respondents is on average really positive (mean = 4,8 in table 2). 96,4% of the patients think that the waiting time in front of the desk is not annoying. (score 5 and 4 in table4)

Objective waiting time (desk)	Frequency	Percent	Cumulative percent
0 min	33	39,3 %	39,3 %
1 min	2	2,4 %	41,7 %
2 min	29	34,5 %	76,2 %
3 min	11	13,1 %	89,3 %
4 min	6	7,1 %	96,4 %
5 min	2	2,4 %	98,8 %
6 min	1	1,2 %	100 %

Table 3   Frequency distribution of objective waiting times in front of the desk

	Perceived waiting time desk (1=very short, 5=very long)			Wait evaluation desk (1=really annoying, 5=not annoying)		
	N	%	Cum. %	N	%	Cum.%
1	63	75,0%	75,0%	1	1,2%	1,2%
2	17	20,2%	95,2%	1	1,2%	2,4%
3	3	3,6%	98,8%	1	1,2%	3,6%
4	1	1,2%	100%	8	9,5%	13,1%
5	0	0,0%	100%	73	86,9%	100%

Table 4   Frequency distributions of perceived waiting time and wait evaluation of the wait in front of the desk

On average patients wait in the waiting room 7,62 minutes after their appointment time until a doctor comes to see them (table 2). However, there is a large variance (SD = 10,97 minutes). 23,8% of the patients wait longer than 10 minutes, 6% longer than 20 minutes and 4,8% even longer than 30 minutes with a maximum of 64 minutes (table 5). This waiting time is on average perceived as short by the patients (mean = 1,87 in table 2). 19% thinks that the waiting time is somewhat lengthy (score 3) until very long (score 5 in table 6). The mean of the wait evaluation of the wait in the waiting room lies between annoying (score 4) and very annoying (score 5). Though 11,9% thinks the waiting time is somewhat annoying (score 3) until very annoying (score 5 in table 6).

Objective waiting time (waiting room)	Frequency	Percent	Cumulative percent
0 min	31	36,9%	36,9%
1 – 5 min	19	22,6%	59,5%
6 – 10 min	14	16,7%	76,2%
11 – 15 min	8	9,5%	85,7%
16 – 20 min	7	8,3%	94,0%
21 – 25 min	1	1,2%	95,2%
> 25 min	4	4,8%	100%

Table 5   Frequency distribution of objective waiting times in the waiting room

	Perceived waiting time waiting room (1=very short, 5=very long)			Wait evaluation waiting room (1=really annoying, 5=not annoying)		
	N	%	Cum. %	N	%	Cum.%
1	39	46,4%	46,4%	1	1,2%	1,2%
2	29	34,5%	81,0%	4	4,7%	5,9%
3	7	8,3%	89,3%	5	6,0%	11,9%
4	6	7,1%	96,4%	18	21,4%	33,3%
5	3	3,6%	100%	56	66,7%	100%

Table 6   Frequency distributions of perceived waiting time and wait evaluation of the wait in the waiting room

The average prediagnostic anxiety of the patients participating in the preliminary study is low. Most people do not feel tense or nervous regarding their doctor's appointment.

In appendix 3 two tables show the activities patients did during their wait and the missing possibilities to fill waiting time that patients mentioned. The activities that are most mentioned and most noticeable are: Talking to other persons (social interaction), reading about health care and parenthood and reading about something else. Patients also indicate that they miss a television. Different content for this television is mentioned; clinic related content and non-clinic related content.

Model testing
To test the effect of objective waiting time on perceived waiting time two regression analyses are performed, one for the waiting time in front of the desk and one for the wait in the waiting room. The objective waiting time in front of the desk has a significant positive influence on perceived waiting time (β=0,391). Furthermore, objective waiting time in the waiting room has a significant and strong positive effect on the perceived waiting time of a patient (β=0,675).
Another regression showed that the perceived waiting time has a significant and strong negative effect on wait evaluation for both situations, in front of the desk and in the waiting room. The standardized Beta's were respectively -0,717 and -0,785. So when patients perceive that they have to wait longer, they evaluate their wait as more negative.

The influence of prediagnostic anxiety on the perceived waiting time of patients in front of the desk, showed no significant effect. So it is not proven that prediagnostic anxiety has an influence on the perceived waiting times of patients in front of the desk. Analyses showed a significant and weak positive effect of prediagnostic anxiety on the perceived waiting time in the waiting room (β=0,226, p < 0,04)
To test for the influence of the control variables age and specialism on the model, correlation analyses have been performed. These analyses showed that there is no correlation (p > 0,1) between the specialism a patient has an appointment at and his or her prediagnostic anxiety. So it can not be predicted which patients will be more nervous,

based on their specialism. It was also found that there is no significant correlation (p > 0,4) between age and perceived waiting time. So the age of patients does not matter for the way they perceive their waiting time.

2.1.4 CONCLUSION AND DISCUSSION
Regarding the extent of the problem, it can be concluded that on average the objective waiting times in front of the desk are short . There are only a few patients who think the wait in front of the desk is long (4,8%) or annoying (3,6%). These results give the impression that there is no real problem regarding the waiting times in front of the desk, especially from the perspective of the patient. Patients do not perceive this waiting in front of the desk as a problem. That is why is decided that 'waiting in front of the desk' will not be a part of the main study. The main study will focus on 'waiting in the waiting room'.
The average waiting time in the waiting room does not appear to be very long (mean=7,62 minutes), but the variance is high. There are some patients who have to wait for a long time and a part of the patients perceives the waiting times as long (19%) or annoying (11,9%). The negative wait experience of these patients can negatively influence their customer satisfaction. Reducing the variance in wait experience, by decreasing the perceived waiting time and increasing the wait evaluation, can have a positive influence on the customer satisfaction. So it can be beneficial for the outpatient clinic to focus on improving the wait experience of patients in the waiting room.

The second objective of the preliminary study was to investigate whether there are some indications for influences of different factors on perceived waiting time and wait evaluation in the context of the outpatient clinic. Because it was decided that 'waiting in front of the desk' will not be a part of the main study, only the influences on the wait experience in the waiting room will be discussed. Objective waiting time and prediagnostic anxiety show to have an effect on perceived waiting time in the preliminary study. To investigate whether these influences can be generalized for the clinic the variables objective waiting time and prediagnostic anxiety will be taken into account in the main study. Statistical indications were found for the influence of perceived waiting time on wait evaluation. Perceived wait-

ing time shows to have a strong influence on wait evaluation in the preliminary study. This suggests that it is important to focus on the perceived waiting time, when you want to upgrade the wait evaluation of patients. For this reason, this influence will be taken into account in the main study. This also suggests that it is important to focus on the perceived waiting time, when you want to upgrade the wait evaluation of patients. Age does not seem to influence perceived waiting time. People of different ages perceive waiting time in the same way. Because the focus of this study is on the influences of different factors on perceived waiting time and wait evaluation, age will not be taken into account in the main study. Also the specialism a patient has an appointment at does not influence a patient's prediagnostic anxiety. So it cannot be predicted which patients will be more nervous, based on their specialism, and there is no point in taking the specialism into account in this study, predicting prediagnostic anxiety.

Third, the preliminary study has provided some insight into the possible activities that can be used to fill waiting time of patients in the main study. In the main study it is important that respondents perform the different activities a lot, in order to reach a high variance in the variables and to get the most reliable results. In the preliminary study, activities regarding social interaction, reading and watching a display were most often mentioned by patients as activities they do or prefer to do while waiting. For this reason, activities regarding these three activity categories will be used in the main study. Further explanation can be found in the 'Methodology' section of the main study.

Finally, the preliminary study was intended to investigate whether the survey procedure can also be used in the main study. In general, the procedure using the two forms is an applicable procedure in the outpatient clinic. Despite the stress and emotions patients perceive at the outpatient clinic, most patients are willing to participate in the research. So the general procedure will also be used in the main study. However, it appeared that doctors tend to keep the forms of the patients in the consult rooms. The consequence is the loss of important data, because the objective waiting times on one form cannot be gathered together with the other measurements on the questionnaire. To prevent this from happening in the main study, the doctors

need to be informed very clearly that it is necessary to give the form back to the patients after the consults. The reason for this necessity needs to be explained to the doctors. In the main study it is also important to take into account that there are patients who enter the clinic but not have an appointment, for example when they come to let nurses take blood samples at the laboratory. So the researcher has to ask every respondent whether he comes for an appointment at the outpatient clinic, before asking him or her to participate in the study. Otherwise this will lead to confusion.

A last remark about the measurement has to be made. In the preliminary study, only the objective waiting time of a patient has been measured. However, during this study the question raised whether it is possible that not only the objective waiting time has an effect on a patients wait experience but also the total time a patient spends in the waiting room, due to an early arrival time. For this reason in the main study the whole actual waiting time will be taken into account, divided in the early arrival waiting time and the objective waiting time. This is further explained in the 'Methodology' section of the main study (section 4).

2.2 RESEARCH OBJECTIVE AND RESEARCH QUESTION OF THE MAIN STUDY

Based on the preliminary study, it can be concluded that the perceived waiting time and wait evaluation of the patients in the waiting room of the outpatient clinic experience a high variation. A substantial part of the patients perceives their waiting time in the waiting room as long and annoying. Literature shows that perceived waiting time and wait evaluation both have a strong influence on customer satisfaction (e.g. Katz, Larson and Larson, 1991; Taylor, 1994; Thompson et.al., 1996; Davis and Heineke, 1998; McGuire et. al., 2010). In order to improve this customer satisfaction, it will be investigated how the outpatient clinic can improve the perceived waiting time and wait evaluation of its patients. In other words: How can the clinic improve the wait experience of its patients? So the research objective of this study will be the following: Improving the wait experience of the patients in the waiting room of the outpatient clinic of Obstetrics and Gynecology of the UMCG.

Results from studies in different service sectors show that the wait experience can be improved by filling the waiting time of customers with different activities (Maister, 1985; Davis and Heineke, 1994; Taylor, 1995; Jones and Peppiatt, 1996; Pruyn and Smidts, 1998). When customers have something to do during their wait, their perceived waiting time will be shorter which improves their wait evaluation. However, this relationship has not been investigated in the health care sector. So it can be expected that filling waiting time will improve the wait experience of the patients in the outpatient clinic of O&G based on research in other service sectors, but it is not known whether filled time will have the same influence in this health care setting. That is why this study will investigate the influence of filled waiting time on the wait experience of patients in the outpatient clinic of O&G.

Typical in a health care setting is the anxiety regarding the core service, the doctor's appointment, called prediagnostic anxiety, that patients perceive in the waiting room. This anxiety is typical for health care, because in other service sectors the anxiety of customers is not related to the core service, but to other characteristics of the service, like waiting in a line. In order to investigate the influence of filled time in a health care setting, this prediagnostic anxiety will also be taken into account in this study. The preliminary study shows that prediagnostic anxiety can influence the perceived waiting time of the patients in the clinic. This finding is supported by studies on the influence of anxiety on perceived waiting times (Maister, 1985; Davis and Heineke, 1994). Other research shows the influence of filled waiting time on anxiety (David et. al., 2004; Patel et. al., 2006). These findings together suggest that anxiety influences the relationship between filled waiting time and the customer's wait experience. However, studies on the influence of (prediagnostic) anxiety on the relationship between filled time and perceived waiting time, taken in one model, are missing. For this reason, the influence of health care related anxiety, prediagnostic anxiety, on the relationship between filled waiting time and the patient's wait experience will be investigated. The research question of this study will be the following:

What is the influence of filling the waiting time on the wait experience of patients in the health care setting of the outpatient clinic of Obstetrics and Gynecology and how will

the prediagnostic anxiety of patients influence this relationship?

2.3 PRACTICAL AND SCIENTIFIC RELEVANCE

This study will be relevant for the outpatient clinic of Obstetrics and Gynecology, because it will provide more insight into the waiting situation in the clinic and it will show possibilities to improve the wait experience of patients. Improving this wait experience will improve the customer satisfaction (e.9. Taylor, 1994).

  The study is also scientifically relevant in two ways. First, several researchers investigated the influence of filled time on the wait experience of customers (e.g. Taylor, 1995; Jones and Peppiatt, 1996). They conducted their studies in different service sectors, but the influence of filled time on wait experience has not been investigated in the health care sector before. Typical in the health care sector is the anxiety and the negative feeling patients perceive in advance regarding the core service of this sector, providing care for health problems. Patients feel anxious because this core service is negatively related to their body and health, which are very important for most people. Patients do not like to experience this core service, but they have to go, because health care is very important. Grönroos (1990) has developed the augmented service offering in which the service concept is divided in this core service, facilitating services and supporting services. This model helps to explain that the anxiety regarding the core service of health care facilities distinguishes the health care sector from other service sectors. In other service settings it is also possible for patients to experience anxious or negative feelings, however mostly these feelings are related to the facilitating or supporting services of the service concept. For example, when customers go to a team park, they will not worry in advance about the fun they will experience regarding the attractions (core service). When they do worry about this, they simply will not go to the team park. However, customers can be afraid that it will be really crowded in the team park and there will not be enough space on the parking lot (facilitating service). That is why they want to arrive early. So they feel anxiety regarding the facilitating service. The anxiety regarding the core service in health care, called prediagnostic anxiety in this study, makes it interesting to

investigate the influence of filled time in this sector also. Is it possible that patients experience filled time in another way, caused by this anxiety? Does this experience influence the effect of filled time on their perceived waiting time? In this study this will be investigated by conducting a study in the health care sector and taking the prediagnostic anxiety of patients into account in the conceptual model.

This study will also try to fill another literature gap, also related to the prediagnostic anxiety. Several researchers (e.g. David et. al., 2004; Patel et. al., 2006) found that filled waiting time has a negative influence on (prediagnostic) anxiety. Other studies show that anxiety has a positive influence on perceived waiting time (Maister, 1985; Davis and Heineke, 1994). However, there is a gap in literature about the influence of anxiety on the relationship between filled time and perceived waiting time, taken in one model. This study will investigate the influence of prediagnostic anxiety on this relationship and will try to fill this gap.

3 THEORY

3.1 PERCEIVED WAITING TIME AND WAIT EVALUATION

When looking at a waiting situation, the focus can be on the time a customer actually has to wait, but different researchers state that it is equal or even more important to look at the perceived waiting time of the customer (e.g. Taylor, 1994; Thompson et. al., 1996; Davis and Heineke, 1998; McGuire et. al., 2010). Consumers can estimate the duration of their waiting time themselves, often resulting in an over or underestimation (Taylor, 1994). This estimation of waiting time is called the perceived waiting time (Jones and Peppiatt, 1996). Pruyn and Smidt (1998) define the perceived waiting time as the perception of the time span of the wait in terms of long or short. This definition of perceived waiting time reflects the cognitive component of the appraisal of the wait. Besides the perceived waiting time, a customer can also have positive or negative feelings regarding the wait, the wait evaluation. This reflects the affective component of the appraisal of the wait (Pruyn and Smidts, 1998). This affective component – also denoted as wait evaluation – is the "emotional response to waiting, such as irritation, boredom, stress, etc.' (Pruyn and Smidts,1998, p. 322).
Literature shows that there is a relation between the time a customer perceives he has to wait and his emotional response towards this wait. Recently, McGuire et. al. (2010) showed that perceived waiting duration has a negative effect on the wait experience evaluation of a customer. Pruyn and Smidts (1998) state that the longer the perceived waiting time, the more negative the feelings of the customer towards the wait. Also Taylor (1994) supports this statement, by finding that a longer perceived waiting time causes a negative affective reaction to the delay. The studies mentioned above are conducted in different service sectors. For the health care sector the same influence of perceived waiting time on wait evaluation is expected. That is why this study will use the following hypothesis:

Hypothesis 1: The time patients perceive they have to wait has a negative effect on their wait evaluation.

Below the influence of filled waiting time, prediagnostic anxiety and actual waiting time on the perceived waiting time of patients will be discussed.

3.2 FILLED TIME

One important way to reduce the perceived waiting time of a customer is to fill the waiting time with different activities, keeping the customer busy. One of the first researchers that introduced this statement was Maister (1985). He was one of the first to develop a framework that identified situations in which waits were perceived either longer or shorter as a result of the circumstances of the wait. Although Maister's model was conceptual rather than a result of structured empirical study, it has been widely accepted because of its strong face validity (Davis and Heineke, 1998). His model consists of eight propositions of which one is the basis of this study: 'Occupied time feels shorter than unoccupied time'. Before Maister, Hornik (1984) already proved that subjects have a tendency to underestimate active durations and overestimate passive durations. Jones and Peppiatt (1996) also tested this statement by installing a TV in a service environment. Their results supported the proposition of Maister, as they recorded a shorter perceived waiting time of the customers after the installation of the TV. Also Davis and Heineke (1994) stated that customers who are unoccupied tend to perceive longer waiting times than customers who are occupied during their waits.
Studies of Taylor (1995) and Pruyn and Smidts (1998) support the reducing effect of filled time on perceived waiting time. They give the scientific explanation for this effect, called the attentional model of time perception. Filling the waiting time of a customer increases the customer's cognitive activity during the wait. This is because his cognitive systems are processing (non-temporal) external stimuli, like the images on a television in a waiting room. Customers are distracted by these cognitive activities and attention is drawn away from the internal clock responsible for the perception of time. In this manner, filled time distracts the customer from focusing on the passage of time and makes

the wait seem shorter than it actually is. Because all these studies are conducted in the service sector, it is argued that filled time will also have an influence on perceived waiting time in the health care service sector. This reasoning results in the following hypothesis:

Hypothesis 2: 'Filling' the waiting time of patients has a negative effect on the time patients perceive they have to wait.

Another important question mentioned in literature is whether the way of filling time may have different effects. Different possibilities for distracters that fill the time of the customer are mentioned, like posters, reading material, TV's and also social interaction with other customers. In 1985, Maister already proposed that solo waits feel longer than group waits. This statement is supported by several authors (Taylor, 1994; Davis and Heineke, 1994; Jones and Peppiatt, 1996; Harris and Baron, 2004) and recognizes that social interaction with other waiting customers decreases the perceived waiting time of the customer.

There is a discussion in literature about whether an organization should use activities that are related to the upcoming service encounter (service related activities) or activities that are not related to the upcoming service encounter (non-service related activities) to fill the waiting time of customers. Maister (1985) argues that an organization should provide service-related activities, because customers will then have the feeling that they already entered the service encounter. Furthermore, customers will be annoyed by non-service related activities because their mind is already set on the upcoming service. Maister (1985) did not really test these ideas and there is evidence from empirical studies that an organization can use both service related and non-service related activities to reduce perceived waiting time and improve wait evaluation. Taylor (1995) performed a study in which students who had an appointment to work on an interactive computerized career counseling program were kept waiting ten minutes before they were called for their appointment. One service related filler, a career counseling magazine, and one non-service related filler, a national news magazine, were provided during the wait. Results showed that there was no difference between the effect of both kinds of fillers on perceived waiting time and wait evaluation. McGuire et. al. (2010) performed an

experiment in a computer lab. Undergraduate subjects were asked to login on a dating site which they were asked to evaluate. When they tried to log in, they were told that they had to wait due to limited capacity. During waiting, the computer offered the respondents different activities to do. McGuire et. al. found that the activity type was not significant. It did not matter what respondents were given to do, filling time always had a significant influence on perceived waiting time. These findings argue that it may not matter what customers are given to do during the wait as long as it distracts them from the passage of time. The attentional model of time perception explains this finding. Both service related and non-service related activities will increase the customers' cognitive activity during the wait which draws away their attention from the passage of time. This is why the following hypotheses will be used in this study:

Hypothesis 2a: 'Filling' the waiting time of patients with service related activities has a negative effect on the time patients perceive they have to wait.

Hypothesis 2b: 'Filling' the waiting time of patients with non-service related activities has a negative effect on the time patients perceive they have to wait.

Although it is stated that there is no difference between the direct influence of service related and non-service related activities on perceived waiting time, below will be discussed why it is important to take the difference between both kinds of activities into account in a health care setting. It is important to make this difference, because of the prediagnostic anxiety patients perceive, typical for a health care setting.

3.3 PREDIAGNOSITIC ANXIETY

In the healthcare environment of an outpatient clinic there is also another factor that can influence the time a patient perceives he or she has to wait. This is the anxiety related to the appointment with the doctor. Patients can be worried about what the doctor might say. In this study this kind of anxiety is called prediagnostic anxiety and is defined as a patient's feelings of tension, nervousness or worry in antic-

ipation of his or her appointment with a doctor (Gaberson, 1995).

Maister (1985) introduced the proposition 'anxiety makes waits seem longer'. When the anxiety level of a customer or patient increases, the wait seems longer and less bearable. Davis and Heineke (1994) agree with this proposition and state that anxiety regarding the nature of the service, like prediagnostic anxiety, can have a positive effect on the perceived wait duration of a customer. Hornik (1992) gives an explanation for the influence of anxiety on perceived waiting time. He states that people experiencing positive affect tend to underestimate the duration of recent activities, whereas those experiencing negative affect tend to overestimate them. He argues that individuals in 'bad moods' experience a situation negatively and may wish for time to pass quickly. This makes them pay more attention to the passage of time, which makes them overestimate clock time when asked for time estimations. When people have a high level of anxiety, this can be seen as a negative affect or a 'bad mood'. So with a high level of anxiety the waiting time seems longer than with a low level of anxiety. This can also be stated for prediagnostic anxiety. This reasoning results in the following hypothesis:

Hypothesis 3: The prediagnostic anxiety of patients has a positive effect on the time patients perceive they have to wait.

Because the prediagnostic anxiety of a patient can increase his or her perceived waiting time, it can be beneficial for an organization to make the prediagnostic anxiety as small as possible (Maister, 1985). Several researchers tested the influence of filled time on the core service related anxiety in a healthcare environment, using different ways of filling the waiting time of patients.

For instance, Patel et. al. (2006) evaluated the influence of a handheld video game on reducing preoperative anxiety in children. Findings showed that the children who played with the video game before operation had a decrease in anxiety compared to the children without a video game. They concluded that a handheld video game can be offered to most children as a low cost, easy to implement, portable, and effective method to reduce anxiety in the preoperative area. Distraction with a pleasurable and familiar activity provides anxiety relief.

David et. al. (2004) studied the effect of music on preprocedure anxiety in Hong Kong with Chinese day patients. They found some significant results: Patients who listened to music before their procedure reported lower anxiety levels compared with patients who did not listen to music. They argue that this effect is caused by the relaxing and distracting effect of the music. They also tested the effect of other relaxing and distracting activities, and concluded that all these activities had a decreasing effect on preprocedure anxiety. These findings show that it does not matter which activities are offered, as long as these activities are relaxing and distract the patient from the upcoming service. Nilsson (2008) also stated that music can have a reducing effect on anxiety. He reviewed different studies and found that in 50% of the studies the music intervention reduced the anxiety scores significantly.

Another study on the effect of humorous and musical distraction on preoperative anxiety has been done by Gaberson (1995). Unfortunately he did not find a significant effect of these kinds of distraction on anxiety. However, some methodological problems may have contributed to these insignificant findings. The test population consisted of elderly people for example, who had difficulties to understand and fill in the questionnaire. This will not be the case in the health care settings of an Obstetrics and Gynecology department.

The examples above all make use of an activity to fill the time of the patients, which distracts their mind from the upcoming health care operations. So these activities are not related to the upcoming service. Rondeau (1998) supports the use of distracting activities. He states that reducing the anxiety related to the upcoming service requires forcing the customer or patient to engage his or her mind elsewhere. Nilsson (2008) gives the underlying theory for this effect. The commonly accepted theory is that activities should act as a distracter to reduce anxiety and stress. They should focus the patient's attention away from negative stimuli to something else which occupies their mind. When patients do not think about the upcoming medical appointment anymore, their anxiety will decrease. So to reduce anxiety, the activity should not only distract the patient from time, which decreases the perceived waiting time, but the activity should also distract the patient from the upcoming service. It can be argued that only non-service related activities will reduce the prediagnostic anxi-

ety of a patient, because they make the patient think about something else than the service. Service related activities do not have this effect. The following hypothesis is stated:

Hypothesis 4: 'Filling' the waiting time of patients with non-service related activities has a negative effect on the prediagnostic anxiety of these patients.

3.4 ACTUAL WAITING TIME

The last explaining factor of the variance in perceived waiting time is the actual waiting time. When people really have to wait a long time the chance that they perceive this waiting time also as long is high. Hornik (1984) conducted a study on retail checkout lines and he found that the actual waiting time of a customer explained most of the variance in the estimated waiting time.

Pruyn and Smidts (1998) also found a significant effect of real waiting time on perceived waiting time. Davis and Heineke (1998) investigated the impact of waiting time on customer satisfaction and their results showed that there is a correlation between actual and perceived waiting time. These findings result in the following hypothesis:

Hypothesis 5: The actual time patients have to wait has a positive effect on the time patients perceive they have to wait.

Hypothesis 1 to 5 are depicted in the conceptual model (figure 3).
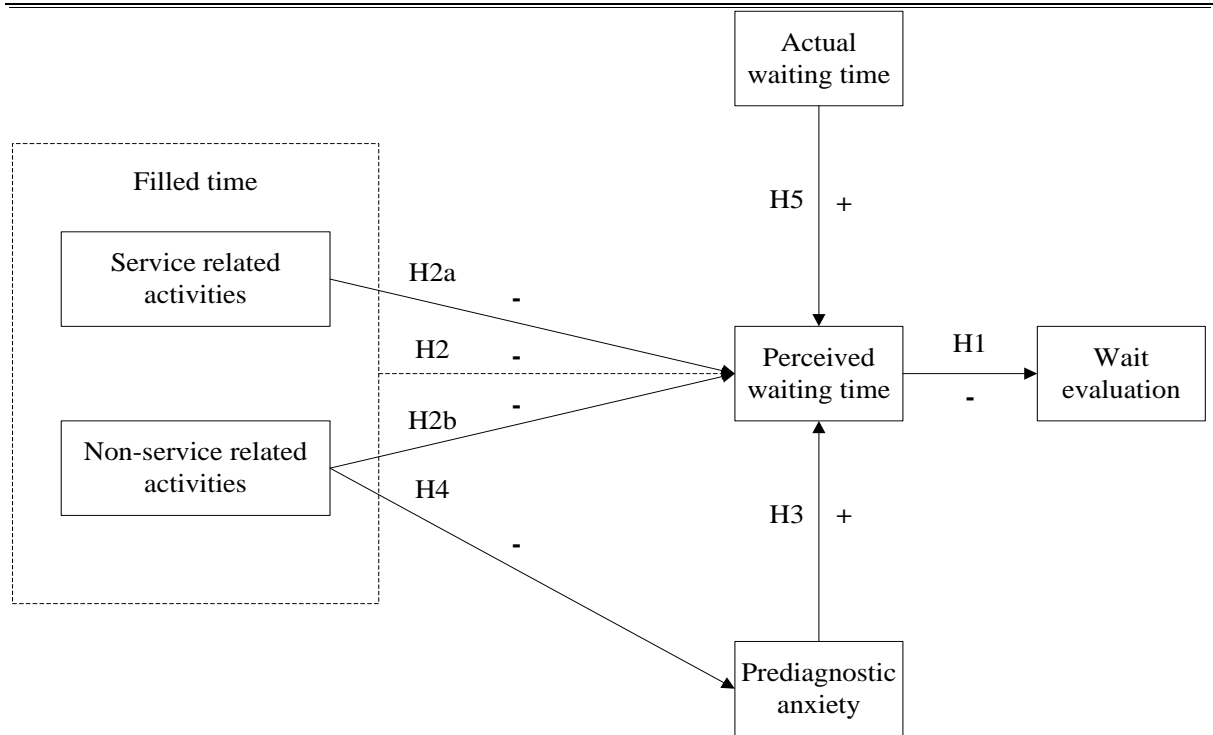
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Figure 3 Conceptual model

3.5 Mediation

Based on the conceptual model, it can be seen that some mediating influences arise out of the sum of the single hypotheses. Prediagnostic anxiety seems to have a mediating influence on the relationship between filling the waiting time with non-service related activities and perceived waiting time. Filling the waiting time with non-service related activities appears to have a negative influence on prediagnostic anxiety (e.g. Patel et. al.) and it was stated that prediagnostic anxiety on turn influences perceived waiting time (e.g. Maister, 1985). These two direct influences result in the following hypothesis:

Hypothesis 6: The prediagnostic anxiety of patients mediates the relation between 'filling' the waiting time of these patients with non-service related activities and their perceived waiting time.

It was already stated that prediagnostic anxiety can have a positive effect on perceived waiting time (e.g. Maister, 1985). Also a negative influence of perceived waiting time on wait evaluation was found (e.g. Taylot, 1994). These two direct effects suggest that perceived waiting time has a mediating influence on the relationship between prediagnostic anxiety and wait evaluation. The following hypothesis will be used:

Hypothesis 7: The perceived waiting time of patients mediates the relation between their prediagnostic anxiety and their wait evaluation.

Perceived waiting time seems to have a mediating influence on the relationship between actual waiting time and wait evaluation. It can be argued, based on Pruyn and Smidts (1998) for example, that actual waiting time has a positive influence on perceived waiting time. As mentioned above, also evidence was found that perceived waiting time has a negative influence on wait evaluation (e.g. Taylor, 1994). Based on these findings, the following hypothesis is stated:

Hypothesis 8: The perceived waiting time of patients mediates the relation between their actual waiting time and their wait evaluation.

Finally, a negative relationship between filled time and perceived waiting time has been found (e.g. Jones and Peppiatt, 1996). This relationship counts for both filling the waiting time with service related activities and filling it with non-service related activities (Taylor, 1995). These findings in combination with the negative influence of perceived waiting time on wait evaluation result in hypothesis 9, 9a and 9b.

Hypothesis 9: The perceived waiting time of patients mediates the relation between 'filling' their waiting time and their wait evaluation.

Hypothesis 9a: The perceived waiting time of patients mediates the relation between 'filling' their waiting time with service related activities and their wait evaluation.

Hypothesis 9b: The perceived waiting time of patients mediates the relation between 'filling' their waiting time with non-service related activities and their wait evaluation.

In this study hypothesis 1 trough 9b will be tested to find an answer to the research question. In the following two sections it will be explained which method is used to test these hypotheses and what results were found.

4 METHODOLOGY

4.1 SETTING

The setting of the data collection of this study was the waiting room of the outpatient clinic of Obstetrics and Gynecology. In this waiting room patients who have an appointment at the specialism gynecology, obstetrics, reproductive medicine or clinical genetics can wait on their turn. Different reading materials (papers, magazines with different topics and brochures) are spread through the waiting room. Lately, two displays are placed at the side of the waiting room, one display on each side. In order to conduct this study, content for both displays was created. For one display multiple pictures were taken of the outpatient clinic (for some examples see appendix 4). A slide show of these pictures was shown on the display, alternated by the room schedule of the doctors of that day. On

the other display a banner with current news information was created and shown below the other part of the room schedule.

4.2 SUBJECTS

In this study a sample of 271 respondents was used. The majority of the respondents were women between the age of thirty and thirty-nine years old. Only five men participated in the study. This is caused by the nature of the outpatient clinic, focusing on health care for women. The men who participated had an appointment at the clinic together with their female partner, but answered the questionnaire alone. The table below shows the sample characteristics of the whole sample.

	Man	Woman	Total
< 20 years old	0 0%	4 1,5%	4 1,5%
20 – 29 years old	1 4%	75 27,7%	76 28%
30 – 39 years old	3 1,1%	130 48%	133 49,1%
40 – 49 years old	0 0%	33 12,2%	33 12,2%
50 – 59 years old	0 0%	17 6,3%	17 6,3%
60 – 69 years old	1 0,4%	4 1,5%	5 1,8%
> 69 years old	0 0%	3 1,1%	3 1,1%
Total	5 1,8%	266 98,2%	271 100%

Table 7 Sample characteristics

4.3 Procedure

The data collection of this study was performed in one week, from Monday till Friday, every day between 8 am and 4 pm. This particular week was a representative week as there was a usual number of consults during this week and the usual doctors were doing these consults. During this week the patients who entered the outpatient clinic of Obstetrics and Gynecology and who came for an appointment were asked to participate in this study. The patients who had an appointment at the specialism clinical genetics were, due to circumstances, not included in this study. Because it was decided in advance who would be asked to participate in the study, namely the patients of the outpatient clinic of O&G who had an appointment at the clinic at this particular week, this sampling method is a form of non-probability sampling, called convenience sampling. This sampling method was chosen to include all the different days of the week in this study. This is important, because during the week there can be a lot of variance in the actual waiting times and in the wait experiences of the patients. To get reliable results, it is important to include this variance in the study.

In this study quantitative data were gathered by two forms: One form on which different points of time related to a patient had to be filled in (appendix 2.1) and one questionnaire with closed questions to be filled in by the patients. The items used in the questionnaire are shown in appendix 2.3. The procedure was the same as in the preliminary study. Data about the actual waiting time was gathered by giving the respondent a form and filling in the following moments of time: The time the patient arrives in the clinic, the time the patient meets the doctor's assistant at the desk, the appointment time of the patient and the time the patient meets the doctor. These times were filled in respectively by the researcher, the doctor's assistants and the doctors. After finishing the appointment, the patient took the form with him or her and gave it back to the researcher. Then patients were asked to fill in the questionnaire to measure the variables other than actual waiting time. Both forms were attached to each other.

4. 4 Measures

The form with the points of time (appendix 2.1) and the items of the questionnaire (appendix 2.3) were used to measure the different variables of the model. As can be seen on these forms, also some data about the wait in front of the desk was gathered. However, this study will focus only on the wait experience of the patients in the waiting room.

The *actual waiting time* was measured by the form on which the points of time had to be filled in. The actual waiting time is composed of two different kinds of waiting time in the waiting room: The *early arrival waiting time* and the *objective waiting time* (see figure 4). The early arrival waiting time is measured by the time interval between the 'point of time when the doctor's assistant helps the patient at the desk' (desk meeting time) and the 'time of the patient's appointment'. This is the time a patient has to wait in the waiting room because he arrived too early at the clinic. This measurement is possible because the 'point of time when the doctor's assistant helps the patient at the desk' is assimilated with the point of time the patient enters the waiting room. The time patients spend at the desk is most of the time really short, so this point of time is almost the same as the arrival time in the waiting room. When patients arrived after their appointment time, their early arrival waiting time was measured with a negative score. The objective waiting time is measured by the time interval between 'the time of the patient's appointment' and the 'point of time when the patient meets the doctor' (doctor's meeting time). This is the time a patient has to wait because the doctor is not able to meet the patient on time. When the doctor was able to meet the patient before the appointment time, the objective waiting time was measured with a negative score. The sum of these two waiting times is defined as the actual waiting time, the total time a patient spends waiting in the waiting room. These waiting times were measured in minutes.
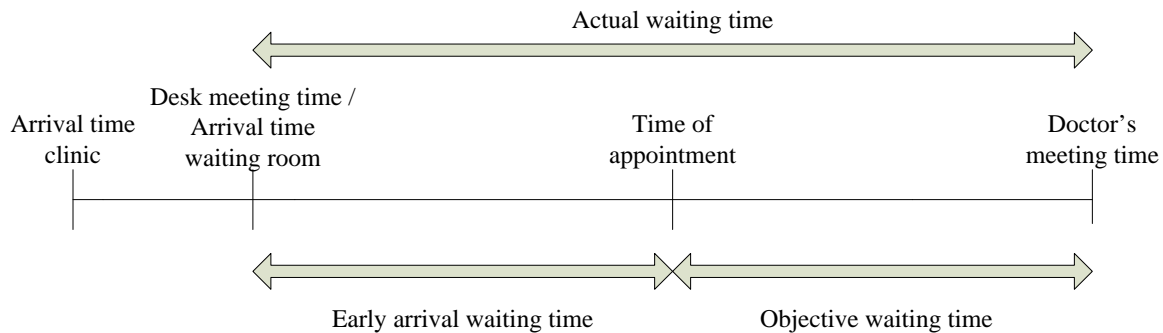
Figure 4 Visual presentation of actual waiting time

The variable *perceived waiting time* was measured with one item on a seven-points semantic differential scale. Respondents had to respond to the statement 'I perceived the time I had to wait in the waiting room as' with a score on the scale from 'very short' till 'very long'. This is the same measurement as Pruyn and Smidts (1998) used for their cognitive component of the appraisal of the wait. As people are not very accurate in estimating time duration (Cameron et. al., 2003), it was decided to measure the perceived waiting time in short or long instead of measuring in minutes. Hornik (1984; In Cameron et. al., 2003) found that people tended to overestimate actual time duration and Hirsch (1956; In Cameron et. al. 2003) found that short time durations tended to be underestimated.

Wait evaluation was measured with five items based on the items used by Pruyn and Smidts (1998) for the affective component of the appraisal of the wait and the items used by McGuire (2010). Respondents were asked to rate on a seven-points semantic differential scale whether they perceived the time they had to wait in the waiting room as very irritating/not irritating, fair/not fair, very annoying/not annoying, very boring/not boring and very acceptable/unacceptable. A high score on these items implies a positive feeling about the wait.

Prediagnostic anxiety was measured by three items in the questionnaire based on the items used by Richins (1997). The respondents were asked to rate on a seven-points Likert scale whether they agreed on sentences about their level of nervousness, worry and tension regarding their ap-

pointment with a doctor while they were waiting. The variable prediagnostic anxiety was rated as 'high' when respondents experience a high level of prediagnostic anxiety. The variable *filled time* and the sub-variables *service related activities* and *non-service related activities* were measured in a different way. To find out what respondents did while waiting, they were asked to divide their waiting time of 100% over eight different options that they could have done while waiting. Respondents who waited less than one minute in the waiting room, were asked not to fill in this question, because they did not have time to perform activities while waiting (n=30). The sum of the percentages of the time spent on all the activities above was used to measure the variable filled time. So the filled time could range from 0% till 100%. The eight different options consisted of three service related activities, three non-service related activities, the option of 'doing nothing' (non-filled time) and the open item of 'something else'. It appeared that all the things mentioned at 'something else' were activities that could be classified as one of the other seven options. The six different activities could be categorized in three activity categories: reading, display watching and social interaction. The items used to measure the different activities are shown in table 8.

The sub variables service related activities and non-service related activities were measured with the sum of the three corresponding activities each (table 8). Each activity is one item, so both variables were measured with three items.

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Service related activities	Non-service related activities
- *Reading*: Reading a magazine or brochure about health care or parenthood - *Display watching*: Watching the pictures of the out-patient clinic on a display at the side of the waiting room - *Social interaction*: Talking to other visitors in the waiting room about the doctor's appointment, healthcare or parenthood	- *Reading*: Reading a magazine or paper that did <u>not</u> cover the topics health care or parenthood - *Display watching*: Watching the news information on a display at the side of the waiting room - *Social interaction*: Talking to other visitors in the waiting room about topics that are not related to the visit to the outpatient clinic

Table 8   Activity items

A KMO of 0,802 and a significant Bartlett's Test of Spericity (p < 0,001) showed that it was suitable to perform a factor analysis on the items of all the variables. The strength of the relationship among the variables is strong enough. The factor analysis (table 9) showed that the items of wait evaluation and the items of prediagnostic anxiety have enough consistency with each other and enough distinction with the items of other variables. The extractions are very high and all the items are classified in one component with high factor loadings. Reliability analyses (table 9) showed that the variables wait evaluation and prediagnostic anxiety are also sufficiently reliable (respectively α = 0,952 with corrected item-total correlations > 0,70 and α = 0,938 with corrected item-total correlations > 0,80). So both multi item constructs exceed the criteria of validity and reliability for using the variables in model testing.

The factor analysis (table 9) also showed that the activity items are not divided in a 'service related activities factor' and a 'non-service related activities factor'. This means that service related activity items cannot be taken together to measure the variable service related activities and the same holds for the items of the variable non-service related activities. The <u>not</u> non-service related reading item cannot be classified into a factor because it loads on two factors. This leaves three factors: One with the service related display watching item and the non-service related display watching item, the 'display watching factor', one with the service related social interaction item and the non-service related social interaction item, the 'social interaction factor', and one only with the service related reading item. To check whether the display watching and the social interaction factors can be used as variables in the model, reliability analyses were performed (table 9). These showed that these factors are insufficient reliable (respectively α = 0,550 and α = 0,431). So it was also not possible to make a 'display watching variable' and a 'social interaction variable' based on these items. Based on all these findings, it was decided to use the single items (table 8).

4.5 DATA ANALYSES

First, descriptive of all variables were determined. Also correlations between the different activity items were determined. Hypotheses were tested using bivariate and multiple regression analyses. In these analyses the data of the 30 respondents who did not fill in the questions about filled time were left out. Also the mediating effects of prediagnostic anxiety and perceived waiting time were tested, using the method of Baron and Kenny (1986).

Items	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Wait evaluation:					
Boredom	0,859				
Irritation	0,931				
Acceptability	0,937				
Fairness	0,896				
Annoyance	0,935				
Prediagnostic anxiety:					
Nervousness		0,950			
Worry		0,905			
Tension		0,951			
Activity items:					
Service related display watching			0,822		
Non-service related display watching			0,832		
Service related social interaction				0,684	
Non-service related social interaction				0,738	
Service related reading					0,900
Non-service related reading				(0,572)	(0,611)
Reliability (α)	0,952	0,938	0,550	0,431	

Table 9 Factor analysis and reliability

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5 RESULTS

5.1 DESCRIPTIVES

Table 10 shows an overview of the general descriptives of the variables.

	Mean	Mode	Standard Deviation	Minimum	Maximum
Actual waiting time	15,99 min	6 min	13,05 min	0 min	66 min
Early arrival waiting time	9,20 min	5 min	9,74 min	-22 min	56 min
Objective waiting time	6,85 min	0 min	10,82 min	-15 min	52 min
Perceived waiting time*	2,20	1	1,53	1	7
Wait evaluation*	6,05	7	1,21	1	7
Prediagnostic anxiety*	2,82	1	1,77	1	7
Filled time	66,7%	100%	39,247%	0%	100%

* Measured on a scale from 1 to 7

Table 10 Descriptives summary of the variables

On average, patients of the outpatient clinic appear to have spent 15,99 minutes in the waiting room (actual waiting time in table 10). 27,3% more than 20 minutes with a maximum of 66 minutes. Most people spent between 1 and 25 minutes in the waiting room (table 11).

Actual waiting Time	Frequ ency	Percent	Cumulative percent
0 min	4	1,5%	1,5%
1 – 5 min	48	17,7%	19,2%
6 – 10 min	54	19,9%	39,1%
11 – 15 min	55	20,3%	59,4%
16 – 20 min	36	13,3%	72,7%
21 – 25 min	31	11,4%	84,1%
26 – 30 min	12	4,5%	88,6%
31 – 35 min	7	2,5%	91,1%
36 – 40 min	8	3%	94,1%
41 – 45 min	5	1,8%	95,9%
46 – 50 min	2	0,8%	96,7%
> 50 min (max.66 min)	9	3,3%	100%

Table 11 Frequency distribution of actual waiting times

The actual waiting time is divided in the early arrival waiting time and the objective waiting time. On average patients arrive 9,2 minutes before their appointment at the outpatient clinic (table 10). There is a high variation (SD = 9,74 minutes) in the early arrival waiting time. 37,3% of the patients is more than 10 minutes early (table 12) with a maximum of 56 minutes. 53,1% arrives between 0 and 10 minutes before the appointment. One patient is far too late for the appointment, which leads to a minimum early arrival time of -22 minutes. 8,9% arrives between 1 and 10 minutes late. Most people (mode) arrive 5 minutes before their appointment

Early arrival waiting time	Frequency	Percent	Cumulative percent
< 0 min (max. -22 min)	26	9,6%	9,6%
0 min	13	4,8%	14,4%
1 – 5 min	68	24,7%	39,1%
6 – 10 min	64	23,6%	62,7%
11 – 15 min	49	18,1%	80,8%
16 – 20 min	23	8,5%	89,3%
21 – 25 min	15	5,5%	94,8%
25 – 30 min	7	1,9%	96,7%
> 30 min (max. 56 min)	9	3,3%	100%

Table 12 Frequency distribution of early arrival time

The time patients have to wait after their appointment time (objective waiting time) has a mean of 6,85 minutes (table 10) . The objective waiting time shows a large variation (SD = 10,82 minutes). A lot of the patients are seen by a doctor exactly on time (12,2%) or before their appointment time (17,7%). However, 10% has to wait longer than 20 minutes and 3% longer than 30 minutes with a maximum of 52 minutes (table 13).

Objective waiting time	Frequency	Percent	Cumulative percent
< 0 min (max. -15 min)	48	17,7%	17,7%
0 min	33	12,2%	29,9%
1 – 5 min	65	24,0%	53,9%
6 – 10 min	60	22,1%	76,0%
11 – 15 min	23	8,5%	84,5%
16 – 20 min	15	5,5%	90,0%
21 – 25 min	9	3,4%	93,4%
26 – 30 min	10	3%	97,0%
		3%	100%
> 30 min (max. 52 min)	8		

Table 13 Frequency distribution of objective waiting time

From table 14 some insight can be gained into the distribution of objective waiting times throughout the week. This overview shows that the variation in objective waiting time is large on each day, from a standard deviation of 8,13 minutes on Wednesday till a standard deviation of 12,71 minutes on Tuesday. The average objective waiting time is clearly the lowest on Monday (3,55 minutes). On Wednesday and Friday the waiting times are 'medium' with an average of respectively 6,04 minutes and 6,87 minutes and patients do not wait longer than respectively 30 en 35 minutes. On Tuesday the objective waiting times are clearly higher with an average of 8,42 minutes and a maximum waiting time of 46 minutes. On Thursday the patients have to wait the longest after their appointment time with an average of 9,43 minutes and a maximum of 52 minutes.

Daily objective waiting time	Mean	Mode	Standard Deviation	Minimum	Maximum
Monday	3,55 min	0 min	9,14 min	-15 min	33 min
Tuesday	8,42 min	0 min	12,71 min	-15 min	46 min
Wednesday	6,04 min	6 min	8,13 min	-15 min	30 min
Thursday	9,43 min	0 min	12,95 min	-15 min	52 min
Friday	6,87 min	5 min	9,75 min	-15 min	35 min

Table 14 Descriptives summary of daily objective waiting times

Table 10 shows that on average patients perceive their waiting time as short (mean = 2,2). 19,9% perceived the waiting time as somewhat long (score 4) till very long (score 7) (table 15). Also the wait evaluation is evaluated positive on average (mean = 6,05 in table 10). 14,4% however has a somewhat negative (score 4) till very negative (score 1) opinion about the wait (table 15). The prediagnostic anxiety in the waiting room of a lot of the respondents is low (score 1) (table 15), but the anxiety of the other respondents is really diverse. On average the patients are somewhat anxious (mean = 2,82 in table 10

	Perceived waiting time (1=very short, 7=very long)			Wait evaluation (1=negative, 7=positive)			Prediagnostic anxiety (1=not anxious, 7=very anxious)		
	N	%	Cum. %	N	%	Cum.%	N	%	Cum. %
1	128	47,2%	47,2%	3	1,1%	1,1%	101	37,3%	37,3%
2	60	22,1%	69,4%	3	1,1%	2,2%	56	20,6%	57,9%
3	29	10,7%	80,1%	15	4,9%	7,1%	37	13,7%	71,6%
4	24	8,9%	88,9%	18	7,3%	14,4%	28	10,3%	81,9%
5	18	6,6%	95,6%	38	14,0%	28,4%	28	10,4%	92,3%
6	8	3,0%	98,5%	94	34,7%	63,1%	13	4,7%	97,0%
7	4	1,5%	100%	100	36,9%	100%	8	3%	100%

Table 15 Frequency distributions of perceived waiting time, wait evaluation and prediagnostic anxiety

On average patients fill 66,7% of their time with activities. 33,3% of their time they do nothing. The distribution of their time over the different activities is shown in table 16. Patients spent the most time (28,3%) on non-service related reading and after that on service related reading(11,5%). They spent least time on service related display watching (2,7%). Patients spent the most time on reading in general (39,8%), after that they talk a lot to other people (social in-teraction: 18,7%) and they spent least time on watching the display content (8,3%). Another finding is that patients spent more time on all non-service related activities compared to the service related activities of the same activity category (reading, watching display or social interaction). In general patients spent more time on non-service related activities (43,8%) than on service related activities.

	Mean	Mode	Standard Deviation	Minimum	Maximum
Service related reading	11,5%	0%	26,45%	0%	100%
Non-service related reading	28,6%	0%	39,18%	0%	100%
Service related display watching	2,7%	0%	8,40%	0%	80%
Non-service related display watching	5,6%	0%	12,10%	0%	62,5%
Service related social interaction	8,7%	0%	20,81%	0%	100%
Non-service related social interaction	10,0%	0%	21,27%	0%	100%

Table 16 Descriptives summary of the filled time items

5.2 CORRELATIONS OF ACTIVITY ITEMS

In order to investigate which activity combinations patients perform, a correlation matrix has been created (table 17). The service related display watching item correlates positive with the non-service related display watching item. This positive correlation also counts for the correlation between the service related social interaction item and the non-service related social interaction item. So people tend to watch both displays when they look around in the waiting room. Respectively, when people talk to each other, they talk about a lot of different topics, both service related and non-service related topics.

Another finding is that the items of service related and non-service related reading correlate negative with eachother. This means that when a patient reads a magazine about one topic the probability that he also will read a magazine about another topic is low, because people do not seem to switch a lot between different readings. Mostly patients read one kind of literature. The last notable finding is the negative correlation between the two social interaction items and the reading items. So the service related and non-service related activity of one category will mostly be combined, except for the reading category. A combination of reading and social interaction during waiting is not likely.

	1	2	3	4	5	6
1. Service related reading	1					
2. Non-service related reading	-0,23**	1				
3. Service related display watching	-0,12	-0,20*	1			
4. Non-service related display watching	-0,09	-0,14*	0,41**	1		
5. Service related social interaction	-0,11	-0,26**	0,04	-0,01	1	
6. Non-service related social interaction	-0,13*	-0,26**	-0,01	-0,05	0,014*	1

Table 17 Correlations between activity items
* Correlation is statistically significant at $p < 0,05$
** Correlation is statistically significant at $p < 0,001$

5.3 HYPOTHESES TESTING

Hypothesis 1 concerns the negative effect of perceived waiting time on wait evaluation. To test this effect a bivariate regression analysis was conducted (table 18). It appears that 75,8% of the variance in wait evaluation is explained by perceived waiting time ($R^2 = 0,758$). Based on a significant F-value ($p < 0,001$) and a significant Beta ($\beta = -0,871, p < 0,001$) it can be concluded that the time patients perceive they have to wait has a strong negative influence on their wait evaluation. When patients' perceived waiting time is long, their wait evaluation will be negative. This finding supports hypothesis 1.

Hypothesis 2 states the negative effect of filled time in general on the time patients perceive they have to wait. Table 19 shows a nonsignificant Beta ($p > 0,2$) for this influence of filled time. So no evidence of the negative effect of filled time on perceived waiting time has been found and hypothesis 2 is not supported.
It was not possible to support hypothesis 2a and hypothesis 2b. In section 4 it was found that it was not possible to create the variables service related activities and non-service related activities out of the items of this study. The effect of the single activity items on perceived waiting time was analysed. None of these items showed a significant effect ($p > 0,1$). This means that the single activity items have no significant influence on perceived waiting time. The positive influence of prediagnostic anxiety on perceived waiting time is stated in hypothesis 3.
Table 19 shows that prediagnostic anxiety has a significant influence on perceived waiting time ($p < 0,02$). It could be concluded that the prediagnostic anxiety of patients has a moderate but significant positive influence ($\beta = 0,141$) on the waiting time they perceive. Hypothesis 3 is supported.

This means that when the prediagnostic anxiety of patients increases, they will perceive a longer waiting time.

It was not possible to support hypothesis 4, because it was not possible to take the non-service related activites items into one variable. So it can not be concluded that non-service related activities have an influence on prediagnostic anxiety. However, the influence of filling the waiting time in general on the patient's prediagnostic anxiety was tested. It was found that filled time has a significant influence on prediagnostic anxiety (β = -0,180, p < 0,01). This means that filled time has a moderate negative effect on prediagnostic anxiety. So filling the waiting time of patients has no direct influence on perceived waiting time (hypothesis 2), but it has a decreasing effect on prediagnostic anxiety.

Also the influence of all the single activity items on prediagnostic anxiety was tested. In this analysis not only the non-service related activity items were used, but also the service related activity items were included. This was done to check whether these service related items also have an influence on prediagnostic anxiety, although not hypothesized based on literature. The results of this analysis are shown in table 19. It shows that service related reading, non-service related reading and wachting the display with service related content all have a significant negative effect on prediagnostic anxiety (respectively β=-0,142 and p < 0,05; β=-0,216 and p < 0,005; β=-0,156 and p < 0,03). So performing these specific activities decreases the prediagnostic anxiety of patients. Non-service related reading has the strongest decreasing influence on the prediagnostic anxiety of patients. The influences of watching the display with non-service related content, service related social interaction and non-service related social interaction are not significant. So no decreasing influence of these items on prediagnostic anxiety was found.

Hypothesis 5 concerns the positive influence of actual waiting time on perceived waiting time. It was found that the actual waiting time has a significant and strong positive influence on the waiting time a patient perceives (β=0,529, p < 0,001). Compared with the effect of prediagnostic anxiety (β=0,141), the actual waiting time has the strongest effect (β=0,529) on perceived waiting time. To test for the influence of both the early arrival waiting time and the objective waiting time a multiple regression analysis was performed, also shown in table 19. Both waiting times appeared to have a significant positive influence on the perceived waiting time of a patient (p < 0,001). However the influence of the objective waiting time on perceived waiting time is a lot stronger (β=0,670), compared to the influence of the early arrival waiting time (β=0,198).

Dependent variable	Independent variable	Rsquare	F	Sig.* p <	Standardized Beta	Sig.** p <
Wait evaluation	Perceived waiting time	0,758	748,411	0,000	-0,871	0,000
Prediagnostic anxiety	Filled time	0,032	8,011	0,005	-0,180	0,005

Table 18 Overview bivariate regression analyses
* Significance of F-value
** Significance of Beta

Dependent Variable	Independent variables	Adjusted Rsquare	F	Sig.* p <	Standardized Beta	Sig.** p <
Perceived waiting time	Actual waiting Time	0,320	38,561	0,000	0,529	0,000
	Filled time				0,045	ns
	Prediagnostic anxiety				0,141	0,011
Perceived waiting time	Early arrival waiting time	0,421	88,309	0,000	0,198	0,000
	Objective waiting time				0,670	0,000
Perceived waiting time	Service related reading	0,017	1,672	ns	ns	ns
	Non-service related reading				ns	ns
	Service related display watching				ns	ns
	Non-service related display watching				ns	ns
	Service related social interaction				ns	ns
	Non-service related social interaction				ns	ns
Prediagnostic anxiety	Service related reading	0,039	2,638	0,017	-0,142	0,040
	Non-service related reading				-0,216	0,004
	Service related display watching				-0,156	0,027
	Non-service related display watching				0,091	ns
	Service related social interaction				-0,026	ns
	Non-service related social Interaction				-0,112	Ns

Table 19 Overview multiple regression analyses
* Significance of F-value; ns denotes p > 0,10
** Significance of Beta; ns denotes p > 0,10

5.4 MEDIATING EFFECTS

To test for the expected mediating effects in hypotheses 6 through 9, the four steps of Baron and Kenny (1986) were used. The first step mentioned by Baron and Kenny is to prove that the independent variable X has a direct effect on the dependent variable Y (see figure 5; path c). Step 2 tests the influence of X on the mediating variable M (path a). Forstep 3, the influence of M on Y needs to be tested (path b). When these three analyses show significant relationships, step 4 can be performed. In step 4 a multiple regression analysis with X and M predicting Y needs to be conducted (path c and b). Some form of mediation is supported if the influence of M (path b) remains significant after controlling for X. If the influence of X (path c) is no longer significant when M is controlled, the finding supports full mediation. If both X and M significantly predict Y, the finding supports partial mediation.
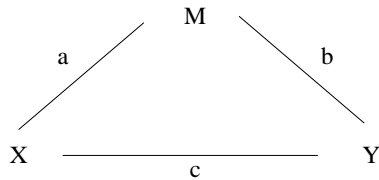
Figure 5 Mediaton model

Hypothesis 6 predicts that prediagnostic anxiety mediates the relationship between filling the waiting time with non-service related activities and perceived waiting time. It is not possible to support this hypothesis, because it is not possible to take the items of non-service related activities into one variable, as shown in section 4. That is why the mediating effect of prediagnostic anxiety on the relation between filled time in general and perceived waiting time was tested (table 20). For step 1, tests show that there is no significant direct effect of filled time (X) on perceived waiting time (Y) ($p > 0,2$). However, MacKinnon et. al. (2007) argue that the requirement that there should be a significant X to Y relation in the Baron and Kenny causal steps test severely reduces power to detect mediation, especially in the case of full mediation. They state that there are many cases in which there is no direct effect of the independent variable (X) on the dependent variable (Y) but there still exists a mediating effect between these two variables. This happens a lot in studies using inconsistent mediation models. An inconsistent mediation model is a model in which at least one mediated effect has a different sign than other mediated or direct effects in the model. The model of the mediating influence of prediagnostic anxiety on the relation between filled time and perceived waiting time is an inconsistent mediation model, because it has two different signs. One negative sign for the negative influence of filled time on prediagnostic anxiety and one positive sign for the positive influence of prediagnostic anxiety on perceived waiting time (figure 3). For this reason it is allowed to test for mediation using the steps of Baron and Kenny (1986), regardless of the fact that there is no direct effect of filled time on perceived waiting time. For step 2, the direct influence of filled time (X) on prediagnostic anxiety (M) (path a) showed to be significant ($p < 0,01$). Also prediagnostic anxiety appears to have a significant effect ($p < 0,01$) on perceived waiting time (path b). Results show that prediagnostic anxiety was still significantly related ($p < 0,001$) to perceived waiting time, after adding filled time. The influence of filled time on perceived waiting time is still not significant ($p > 0,2$). Therefore, it can be concluded that prediagnostic anxiety has a full mediating effect on the relation between filled time and perceived waiting time. It can also be concluded that prediagnostic anxiety has a full mediating influence on the relation between the activity items service related reading, non-service related reading and service related display watching and perceived waiting time. These activity items have also a significant direct effect on prediagnostic anxiety ($p < 0,05$) in step 2 and the other steps show the same results as described above.

Step	Model	Significance
1.	Prediagnostic anxiety Filled time —✕— Perceived waiting time	Filled time has no significant effect on perceived waiting time ($p > 0,2$), but MacKinnon et.al. (2007) argues that it is still possible to detect a mediating effect.
2.	Prediagnostic anxiety Filled time — Perceived waiting time	Filled time has a significant effect ($p < 0,01$) on prediagnostic anxiety.
3.	Prediagnostic anxiety Filled time — Perceived waiting time	Prediagnostic anxiety has a significant effect ($p < 0,01$) on perceived waiting time.
4.	Prediagnostic anxiety Filled time —✕— Perceived waiting time	With multiple regression the effect of prediagnostic anxiety stays significant ($p < 0,001$) and the effect of filled time is still not significant ($p > 0,2$).
	Prediagnostic anxiety Filled time — Perceived waiting time	Prediagnostic anxiety has a full mediating effect on the relation between filled time and perceived waiting time.

Table 20 Testing the mediating effect of prediagnostic anxiety on the relationship between filled time and perceived waiting time.

For testing the mediating effect of perceived waiting time on the relation between prediagnostic anxiety and wait evaluation, as predicted in hypothesis 7, the same procedure has been applied (table 21). Results show that the three direct effects are significant (path a; $p < 0,001$, path b; $p < 0,005$ and path c; $p < 0,001$). It was found that the influence of perceived waiting time on wait evaluation is still significant ($p < 0,001$) after controlling for prediagnostic anxiety. The effect of prediagnostic anxiety on wait evaluation was no longer significant ($p > 0,2$). Therefore, it can be concluded that perceived waiting time has a full mediating effect on the relation between prediagnostic anxiety and wait evaluation, and hypothesis 7 is supported. There is no direct influence of prediagnostic anxiety on wait evaluation, only an indirect effect through perceived waiting time.

Step	Model	Significance
1.	Perceived waiting time Prediagnostic anxiety ——————— Wait evaluation	Prediagnostic anxiety has a significant effect on wait evaluation (p < 0,001).
2.	Perceived waiting time / Prediagnostic anxiety Wait evaluation	Prediagnostic anxiety has a significant effect on perceived waiting time (p < 0,01).
3.	Perceived waiting time \ Prediagnostic anxiety Wait evaluation	Perceived waiting time has a strong significant effect on wait evaluation (p < 0,001).
4.	Perceived waiting time \ Prediagnostic anxiety ——X—— Wait evaluation	With multiple regression the effect of perceived waiting time on wait evaluation is still significant (p < 0,001). Prediagnostic anxiety does not have a significant effect on wait evaluation any more (p > 0,2).
	Perceived waiting time / \ Prediagnostic anxiety Wait evaluation	Perceived waiting time has a full mediating effect on the relation between prediagnostic anxiety and wait evaluation

Table 21 Testing the mediating effect of perceived waiting time on the relationship between prediagnostic anxiety and wait evaluation

Hypothesis 8 predicts that perceived waiting time mediates the relation between actual waiting time and wait evaluation. Analyses show (table 22) that the three direct relationships of path a, b and c are significant (p < 0,001). Also, the influence of perceived waiting time on wait evaluation is still significant (p < 0,001) after controlling for actual waiting time. A full mediating effect is supported, because the influence of actual waiting time on wait evaluation is no longer significant (p > 0,5). It can be concluded that perceived waiting time has a full mediating effect on the relation between actual waiting time and wait evaluation. Hypothesis 8 is supported. The time patients actually have to wait has an indirect effect on their wait evaluation, because it first positively effects perceived waiting time and this variable negatively effects wait evaluation. There is no direct negative effect of actual waiting time on wait evalua-

tion. It can also be concluded that perceived waiting time has a full mediating influence on the relation between the independent variables early arrival waiting time and objective waiting time and the dependent variable wait evaluation. These two variables also have a significant direct influence on wait evaluation (p < 0,001) and on perceived waiting time (p < 0,001). The influence of early arrival waiting time and objective waiting time on wait evaluation is no longer significant (p > 0,5), after adding perceived waiting time. So both variables show the same behavior in the four steps of Baron and Kenny (1986) as actual waiting time does.

Step	Model	Significance
1.	Perceived waiting time / Actual waiting time — Wait evaluation	The effect of actual waiting time on wait evaluation is significant (p < 0,001).
2.	Perceived waiting time / Actual waiting time — Wait evaluation	Actual waiting time has a significant effect on perceived waiting time (p < 0,001).
3.	Perceived waiting time \ Actual waiting time — Wait evaluation	Perceived waiting time has a strong significant effect on wait evaluation (p < 0,001).
4.	Perceived waiting time \ Actual waiting time ✕ Wait evaluation	The influence of perceived waiting time on wait evaluation is still significant (p < 0,001) when controlling for actual waiting time. The influence of actual waiting time is not (p > 0,5).
	Perceived waiting time / \ Actual waiting time Wait evaluation	Perceived waiting time has a full mediating effect on the relationship between actual waiting time and wait evaluation.

Table 22 Testing the mediating effect of perceived waiting time on the relationship between actual waiting time and wait evaluation

Hypotheses 9 concerns the mediating influence of perceived waiting time on the relation between filled time and wait evaluation. Analyses show that filled time has no significant effect ($p > 0,8$) on wait evaluation (path c) and also no significant effect ($p > 0,2$) on perceived waiting time. So the mediating influence in hypothesis 9 is not supported. Hypotheses 9a and 9b concern the mediating influence of perceived waiting time on the relation between service related activities (hypothesis 9a) and non-service related activities (hypothesis 9b) and wait evaluation. Analyses in section 4 showed it is not possible to create the variables service related activities and non-service related activities out of the items of this study. So hypotheses 9a and 9b can not be supported.

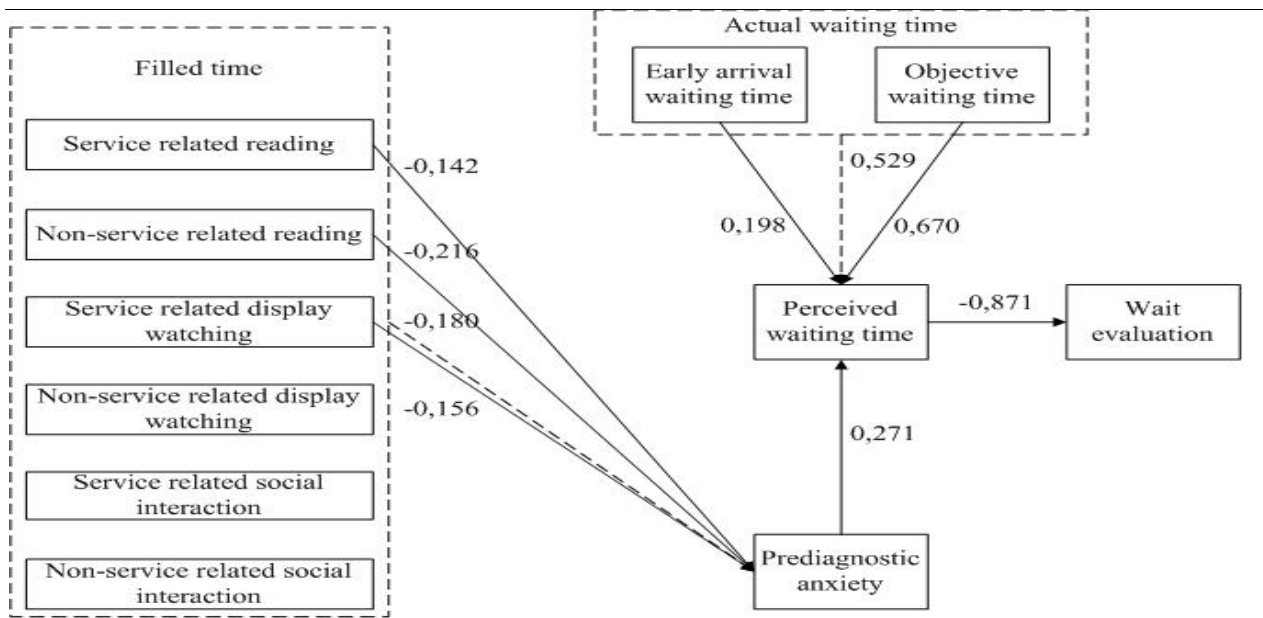The results of this study are depicted in the following model:

Figure 6 Model of the influence of filled time, prediagnostic anxiety and actual waiting time on the wait experience

6 CONCLUSIONS AND DISCUSSION

6.1 CONCLUSIONS AND DISCUSSION

The objective of this study was to improve the wait experience of the patients in the waiting room of the outpatient clinic of Obstetrics and Gynecology of the UMCG. To improve this wait experience, the following research question has been investigated: What is the influence of filling the waiting time on the wait experience of patients in the health care setting of the outpatient clinic of Obstetrics and Gynecology and how will the prediagnostic anxiety of patients influence this relationship? The wait experience of patients was divided in their perceived waiting time and their wait evaluation. Also the influence of actual waiting time on perceived waiting time has been investigated.

It appears that perceived waiting time has a strong negative influence on wait evaluation. When patients perceive their waiting time as long, they will have a negative opinion about the wait as a whole. When they perceive the waiting time as short, they will have a far more positive feeling about the wait. So the perceived waiting time is an important factor for patients in their wait evaluation. This supports the findings of Taylor (1994), Pruyn and Smidts (1998) and McGuire et. al. (2010). They also state that the longer the perceived waiting time, the more negative the feelings of the customer towards the wait.

No direct influence of filled time, and the single activities that can be used to fill time, on perceived waiting time was found. This is contrary to the proposition of Maister (1985) and the results and statements of different researchers, like Davis and Heineke (1994), Taylor (1995) and Pruyn and Smidts (1998). The attentional model of time perception, that states that the cognitive activity caused by filled time distracts patients from their internal clock and makes the wait seem shorter, is not supported by this study. However, an indirect effect of filled time on perceived waiting time has been found. Results show that prediagnostic anxiety has a full mediating effect on the relationship between filled time and perceived waiting time. Filled time in general and three filled time activities have a moderate negative effect on prediagnostic anxiety. This means that when pa

tients fill more waiting time with activities, their anxiety about the doctor's appointment will decrease and they will become more relax. This finding supports the results of Taylor (1994), Davis and Heineke (1994), David (2004) and Patel et. al. (2006). On its turn, prediagnostic anxiety has a moderate positive influence on the waiting time a patient perceives. A decrease in a patient's prediagnostic anxiety will also decrease the waiting time the patient perceives. This effect is explained by Hornik (1992). People experiencing negative affect, like a high anxiety, tend to overestimate the duration of activities, like waiting. People who experience a positive affect, like a low prediagnostic anxiety, tend to underestimate waiting time. So in this way filled time has an indirect negative effect on perceived waiting time. Increasing the filled waiting time of a patient will indirectly decrease the patient's perceived waiting time.

The fact that no direct effect of filled time on perceived waiting time was found but only an indirect effect, can probably be explained by two reasons. First, some authors (Taylor, 1994; Baker and Cameron, 1996; McGuire et. al., 2010) already argued that filled time does not directly influences perceived waiting time, but first leads to some emotional response which on its turn effects the time someone perceives he has to wait. McGuire et. al. (2010) suggest that filled time not makes the wait feel shorter, but it makes emotions during the wait more positive. Prediagnostic anxiety is an emotion patients perceive during their wait. This study also suggests that filled time does not make the wait seem shorter by distracting waiting people from their internal clock, but it causes a positive emotional response which on its turn makes the wait feel shorter. However, when arguing that filled time causes an emotional response, you would wonder why filled time does not influence the wait evaluation. Probably this is caused by the following: When asking for patients' wait evaluation, mostly they will judge the wait based on waiting time. So this judgment is mostly not based on the activity options present in the waiting room. This assumption is supported by the strong correlation between actual waiting time and wait evaluation, found when conducting the mediation analyses. The second explanation for the indirect effect of filled time on perceived waiting time is related to

the health care setting in which the study was conducted. An important difference between a health care setting and another service setting is the role of prediagnostic anxiety, as mentioned in section 2.3. A lot of patients in the waiting room experience some form of this core service related anxiety which people in waiting rooms of other service settings mostly not experience. Because of the positive effect of prediagnostic anxiety on perceived waiting time, probably filling the waiting time of patients can not just distract patients from time and make the waiting time seem shorter. It is important to first reduce the prediagnostic anxiety, before the perceived waiting time can be reduced. So it is found that in health care filled time influences perceived waiting time in a different way than in other service sectors, where filled time has an direct influence on perceived waiting time (e.g. Davis and Heineke, 1994; Taylor, 1995; Pruyn and Smidts, 1998). This difference is caused by the core service related, prediagnostic anxiety patients experience in health care.

It seems that three activities, that can be used to fill time, have a decreasing influence on prediagnostic anxiety. Non-service related reading has the strongest influence on this anxiety. Also service related reading and watching a display with service related content, like pictures of the outpatient clinic, have a decreasing influence on prediagnostic anxiety. It has been shown that watching the display with non-service related content and service related and non-service related social interaction do not have an influence on prediagnostic anxiety. It seems that the activity category reading can best be used to decrease the prediagnostic anxiety of patients in waiting rooms, because this is the only category for which both the service related and non-service related activities have an influence on prediagnostic anxiety. Social interaction does not seem to have any influence. Based on the influence of the single activities, it was found that both service related and non-service related single activities can have an influence on prediagnostic anxiety. Different than expected, no difference can be made between the influence of these two kinds of activities. The influence of non-service related activities can be explained by the theory of Nilsson (2008). These activities distract the patients mind from the upcoming medical appointment and in this way their prediagnostic anxiety will decrease. However, service related activities do not distract patients from the service. An explanation for the effect of service related

activities on prediagnostic anxiety is that they have a decreasing influence on uncertainty. When patients already get some information about the upcoming service or service related topics, they will be more relax about what is going to come. This because this information can reduce their uncertainty. Taylor (1994) also showed that filled time can have a reducing influence on uncertainty. An example of this reducing influence is the following: The pictures on the display in the waiting room of the outpatient clinic of O&G show already some consultation rooms from inside, including some gynecological chairs. When patients see these pictures they know already what they can expect when a doctor calls them inside a consultation room. This can reduce their uncertainty and so their prediagnostic anxiety.

Also was found that prediagnostic anxiety has an indirect negative influence on wait evaluation. When patient perceive a high anxiety before their doctor's appointment, they perceive the wait as long. This will negatively influence their wait evaluation.

The actual time a patient spends in the waiting room has a significant positive influence on perceived waiting time. The longer someone actually waits the longer he feels he has to wait. This finding is in coherence with the findings of Hornik (1984), Pruyn and Smidts (1998) and Davis and Heineke (1998). New in this study was the difference that was made between early arrival waiting time and objective waiting time. Both the time patients have to wait because they are early for their appointment and the time the appointment is delayed influence the time patients perceive they have to wait. Noticeable is that the effect of objective waiting time on perceived waiting time is stronger than the effect of early arrival waiting time on this perceived waiting time. When patients are still waiting in the waiting room after their appointment time, they will focus more on time and the waiting seems longer. Before their appointment time patients focus less on time, which makes the influence of early arrival waiting time on perceived waiting time less strong.

The actual waiting time, divided in objective waiting time and early arrival waiting time, also shows to have an indirect negative influence on wait evaluation. When patients actually have to wait a long time, they will perceive this waiting

time also as long. This will decrease their wait evaluation and they will have a negative opinion about the wait.

Summarizing, perceived waiting time is very determining for the wait evaluation of patients. Objective waiting time also has an effect on wait experience, but this is an indirect effect. This supports the opinion of different researchers (e.g. Taylor, 1994; Thompson et. al., 1996) that it is equal or even more important to look at the perceived waiting time of customers, compared to their objective waiting time. There are two variables that influence perceived waiting time. First, this is the objective waiting time, which has the strongest influence. Perceived waiting time is also influenced by prediagnostic anxiety which on its turn can be influenced by filled time.

In this study an answer has been found on the research question: "What is the influence of filling the waiting time on the wait experience of patients in the health care setting of the outpatient clinic of Obstetrics and Gynecology and how will the prediagnostic anxiety of patients influence this relationship?" It shows that filling the waiting time has a decreasing influence on prediagnostic anxiety, which on its turn has a positive influence on the first factor of a patient's wait experience, the waiting time a patient perceives. So filled time only has an indirect influence on perceived waiting time. This perceived waiting time influences the wait evaluation, the second factor of the patient's wait experience.

6.2 Managerial implications

For the management of the outpatient clinic of Obstetrics and Gynecology of the UMCG it is important to know how long patients actually have to wait and how patients experience his wait. This information indicates whether it is really necesarry to improve the wait experience of the patients. For this reason, first a summarizing overview will be provided of the waiting situation in the waiting room of O&G.

The time patients have to wait due to a delay on the schedule of the doctor (objective waiting time) is on average not long (6,85 minutes) and most of the time patients perceive this waiting as short and positive. Some patients are even seen by the doctor exactly on time or before their ap-

pointment time. However, the variance in these waiting times and the opinions of patients is large. There are also patients who have a really long waiting time, perceive waiting as very long and/or perceive the wait as very negative. The objective waiting times differ per day. On Monday the waiting times are the lowest and on Tuesday and Thursday patients have to wait the longest. This is not surprising because Tuesday and Thursday are the days with the busiest schedules for the doctors at the outpatient clinic. It was also found that patients spent a significant part of their hospital visit in the waiting room. On average they wait 15,99 minutes in the waiting room (actual waiting time). It was also found that when patients fill their time during wait, most of the time they do this with reading. When making a difference between service related and non-service related activities, results show that patients spend the most of their time on non-service related activities.

Patients of the outpatient clinic of Obstetrics and Gynecology of the UMCG spend a significant part of their hospital visit in the waiting room. Therefore it is important to make their waiting experience as positive as possible. In this outpatient clinic the waiting situation is not really alarming, as on average the waiting times are low and perceived waiting times and wait evaluations are positive. However, the variance in these wait experiences could be decreased. There are still patients who evaluate the wait as long (19,9%) or negative (14,4%). To make the wait evaluations of these people more positive it is important for the outpatient clinic to focus first on the time patients perceive they have to wait, rather than focus on the actual waiting times. This because it was proven that perceived waiting time has a direct influence on the wait evaluation. So this perceived waiting time has to be decreased.

The clinic can decrease the perceived waiting time of its patients by reducing their prediagnostic anxiety. This anxiety can be reduced by filling the waiting time of patients by offering activities. It is important that the clinic offers service related and non-service related activities to the patients, so every patient can do what he or she prefers. The most important activity the clinic has to provide is reading. It is important that there is enough reading material in the waiting room; From papers, till magazines, till brochures. This reading has to be up to date (see preliminary study) and varied, about health care related

topics and all kinds of other topics. Now, especially up to date and varied magazines are missing. It is also important that the doctor's assistants make sure that the reading can be found at multiple and clear spots, so every patient can see it. Clear signs will help. The clinic should also focus on using the displays for 'activity purposes' especially by showing health care related information, pictures or video's. To increase the effect of these displays it is important that more displays are placed, so every patient has the opportunity to look at it. At the moment the displays are mostly used to show the room schedules of that specific day. However, this limits the potential to decrease the perceived waiting time with these displays a lot. The outpatient clinic is recommended to look for other options to show the room schedule. It would be very useful if their was a small display with this schedule behind the desk, so the doctor's assistants could still use the schedule but the large displays can be used for other purposes. Maybe the clinic can come up with some other possibilities to fill the waiting time of the patients, like offering computers with free internet.

The actual waiting times in the clinic also have a strong influence on the time patients perceive they have to wait. Therefore, the outpatient clinic has to stay allert on making the actual waiting times of patients as short as possible. It is most important that appointments are delayed as less as possible. The clinic has to make sure that it is possible for the doctors to work on schedule and doctors do their best to keep this schedule during the day. Further the clinic can also try to shorten the time patients actually have to wait by reducing the waiting time caused by early arrival. This can be done by advising patients to arrive only for example 10 minutes before their appointment time. This advice can be given when a new appointment is made. Doctor's assistants can also advice patients who are more than 20 or 30 minutes early to first stay somewhere else, for example in the canteen to have a coffee . This is only possible when doctors work on schedule. When it occasionally happens that patients are being called in the consultation rooms before their appointment time, patients will have the tendency to arrive early and they will not feel the ease to leave the waiting room and return later.

6.3 LIMITATIONS AND FURTHER RESEARCH

The most important limitation of this research is that it appeared to be impossible to create the variables service related activities and non service related activities out of the used items. This was caused by the fact that the patients in the waiting room did not only perform service related or non-service related activities, but always a combination of both. In advance this possibility was unfortunately not taken into account. However, in a health care setting it is very difficult to perform a study where you know for sure that patients will only perform one of the two kinds of activities, because this setting is limited in its possibilities to change the waiting room conditions. To take the prediagnostic anxiety of patients in account though, it was necesarry to perform the study in this health care setting. Respondents will only experience this prediagnostic anxiety when they are in the waiting room before their doctor's appointment. In order to test for the difference in influence between service related and non-service related activities, it is adviced to perform a future study on the topic of filled time in a laboratorium. In a lab it is possible to create circumstances in which a respondent only can perform one of the two kinds of activities. Under these circumstances, the difference in effect between service related and non-service related activities could be tested.

In this study it was only possible to ask respondents to fill in the questionnaire after their appointment with a doctor. This was caused by the health care setting the study was conducted in. However, when patients already saw a doctor and got some good or bad news, it is possible that the mood they are in after that appointment influences their opinion about the wait before their appointment. For example, it can be that a patient got really good news from the doctor, which makes the long and frustrating wait before seem not a big problem any more. This problem is also difficult to solve in a health care context. This is another reason to recommend future research in a laboratory, where respondents do not have to go to a real appointment. A disadvantage of a lab however is that it is not possible to measure the real health care related feelings respondents experience in a waiting room of an outpatient clinic.

To focus and limit the scope of this research, a choice was made to focus only on reducing the perceived waiting time for the outpatient clinic. The results however show that the actual waiting time has a large influence on this perceived waiting time and indirectly on the wait evaluation. So in future research it can also be very useable for the outpatient clinic to investigate how it can decrease the average and variance of the actual waiting times. To investigate this, a whole new study is necesarry because of the multiple factors that influence this actual waiting time.

In this study it was not taken into account whether the respondents liked the possibilities to fill their time or not. This was done because of limiting reasons and because of the foreseen methodological problems when this factor would also be taken into account. For a future research which can be done for a longer period of time, it can be possible to think about the possibility to take this factor into account. For example, a preliminary study can be done to investiagte which activities respondents like in general and which they do not.

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	Man Gynecology	Obstetrics	Reproductive Medicine	Clinical Genetics	Woman Gynecology	Obstetrics	Reproductive Medicine	Clinical Genetics	Total
< 20 years old	0 0%	0 0%	0 0%	1 1,2%	1 1,2%	0 0%	0 0%	1 1,2%	3 3,6%
20 – 29 years old	0 0%	0 0%	1 1,2%	0 0%	10 11,9%	4 4,8%	2 2,4%	0 0%	17 20,2%
30 – 39 years old	0 0%	0 0%	1 1,2%	1 1,2%	17 20,2%	6 7,1%	13 15,5%	1 1,2%	39 46,4%
40 – 49 years old	0 0%	0 0%	0 0%	0 0%	8 9,5%	1 1,2%	2 2,4%	1 1,2%	12 14,3%
50 – 59 years old	0 0%	0 0%	0 0%	1 1,2%	7 8,3%	0 0%	0 0%	1 1,2%	9 10,7%
60 – 69 years old	0 0%	0 0%	0 0%	0 0%	2 2,4%	0 0%	0 0%	0 0%	2 2,4%
> 70 years old	0 0%	0 0%	0 0%	0 0%	2 2,4%	0 0%	0 0%	0 0%	2 2,4%
Total	0 0%	0 0%	2 2,4%	3 3,6%	47 55,6%	11 13,1%	17 20,2%	4 4,8%	84 100%

APPENDIX 2 **FORM AND QUESTIONNAIRES USED IN PRELIMINARY AND MAIN STUDY (IN ENGLISH AND DUTCH)**

2.1 FORM FOR MEASURING ACTUAL WAITING TIME (PRELIMINARY STUDY AND MAIN STUDY):

Waiting time study outpatient clinic Obstetrics and Gynecology

To make the visit of patients to the outpatient clinic Obstetrics and Gynecology as pleasant as possible, the clinic would like your perceived waiting time to be as short as possible. To achieve this, we would like to collect some data.
   We would like to ask you to take this form with you to the desk, in the waiting room, to your appointment with the doctor and finally back to the researcher at the exit. The doctors assistants and the doctors will then fill in the data asked below. After your visit we would like to ask you some additional questions.

Thank you for your cooperation!

The following questions need to be filled in by the researcher and the doctors assistant

Number of respondent/ patient: ………..
Point of time when the patient enters the clinic: …..:….. hours
Point of time when the doctors assistant helps the patient at the desk: …..:….. hours
Time of the patient's appointment: …..:….. hours

The following question need to be filled in by the doctor when the patient enters the doctor's office

Point of time when the patient meets the doctor: …..:….. hours
 (point of time when the appointment with the doctor really starts)

We would like to ask you to hand in this form after you appointment at the table at the exit of the outpatient clinic. Also we want to ask you to fill in a short questionnaire about your waiting experience, which you will receive from the researcher at the table. Thank you very much for your cooperation!

2.2 DUTCH FORM FOR MEASURING ACTUAL WAITING TIME (**PRELIMINARY STUDY AND MAIN STUDY**)

Wachttijd onderzoek polikliniek Obstetrie en Gynaecologie

Om het polikliniekbezoek van patiënten zo prettig mogelijk te maken, wil de polikliniek van Obstetrie en Gynaecologie graag dat de wachttijd zoals u die ervaart zo kort mogelijk is. Om dit mogelijk te maken, willen wij graag enkele gegevens verzamelen. Zou u zo vriendelijk willen zijn om dit formulier mee te nemen naar de balie, in de wachtruimte, naar de dokter en weer terug naar de onderzoekster bij de uitgang? Onderstaande gegevens zullen dan door de doktersassistent achter de balie en door de dokter ingevuld worden. Na afloop van uw bezoek willen wij u graag enkele vragen voorleggen.

Bedankt voor uw medewerking!

De volgende vragen dienen ingevuld te worden door de onderzoekster en doktersassistent

Nummer van respondent/ patiënt: ………..
Tijdstip van binnenkomst van de patiënt: …...:….. uur
Tijdstip waarop de patiënt geholpen wordt aan de balie: …...:….. uur
Tijdstip waarop de patiënt een afspraak heeft: …...:….. uur

De volgende vraag dient bij binnenkomst in de spreekkamer van de dokter door de dokter ingevuld te worden

Tijdstip waarop de patiënt geholpen wordt door de dokter: …...:….. uur
 (starttijd van de afspraak met de dokter)

Wij willen u vriendelijk verzoeken om na uw afspraak met de dokter dit formulier bij de tafel bij de uitgang in te leveren. Ook willen wij u vragen om daar een korte vragenlijst over uw wachttijd ervaring in te vullen, die u zal krijgen van de onderzoekster. Hartelijk dank voor uw medewerking!

Questionnaire wait experience outpatient clinic O&G

Number of respondent/patient: …..
Age: …… years old
Gender: Man / Woman
I had an appointment at the specialism: Gynecology / Obstetrics / Reproductive Medicine / Clinical Genetics / None of the above

Can you indicate for each of the following statements whether you do most agree with the word on the left or with the word on the right? (1=Totally agree with the left word, 5= Totally agree with the right word; You can choose 2, 3 or 4 when your opinion lies somewhere between the extremes)

1. While waiting to see the doctor I was
    Not nervous   1 2 3 4 5   Very nervous
2. While waiting to see the doctor I felt
    Not tense   1 2 3 4 5   Very tense
3. I perceived the time I had to wait in front of the desk as
    Very short   1 2 3 4 5   Very long
4. I perceived the time I had to wait in front of the desk as
    Not annoying   1 2 3 4 5   Very annoying
5. I perceived the time I had to wait in the waiting room as
    Very short   1 2 3 4 5   Very long
6. I perceived the time I had to wait in the waiting room as
    Not annoying   1 2 3 4 5   Very annoying

7. Can you mention one or some things you would like to see or do in the waiting room, in order to make the wait less annoying or less long in your perspective?:
....

8. Can you indicate what you did while waiting in the waiting room and in front of the desk? (multiple answers are possible):
o   Reading a magazine or brochure from the outpatient clinic about health care or parenthood
o   Reading a magazine or paper from the outpatient clinic about another topic
o   Reading something from home about health care or parenthood
o   Reading something from home about another topic
o   Making a puzzle (like a sudoku)
o   Talking with the person(s) who accompanies me during this visit (e.g. family, friend)
o   Talking with other waiting patients
o   Nothing, but I did wait for a while
o   Nothing because I did not had to wait
o   Something else, namely……………………………………………..

Could you please hand this questionnaire to the researcher at the exit of the outpatient clinic?
Thank you for your cooperation!

Vragenlijst wachttijdbeleving polikliniek O&G
Nummer van respondent/patiënt:…..
Leeftijd: …… jaar oud
Geslacht: Man / Vrouw
Ik had een afspraak bij het specialisme: Gynaecologie / Verloskunde / Voortplantingsgeneeskunde / Klinische genetica/ Geen van allen

Wilt u bij onderstaande stellingen op een schaal van 1 tot 5 aangeven of u het meer met het linkerwoord of meer met het rechterwoord eens bent? (1= helemaal met het linkerwoord eens, 5= helemaal met het rechterwoord eens; 2,3 en 4 kunt u kiezen als uw mening tussen de uitersten in ligt)

1. Terwijl ik wachtte totdat ik geholpen werd door de dokter was ik
        Helemaal niet zenuwachtig   1 2 3 4 5   Erg zenuwachtig
2. Terwijl ik wachtte totdat ik geholpen werd door de dokter was ik
        Helemaal niet gespannen   1 2 3 4 5   Erg gespannen
3. Ik heb de tijd die ik voor de balie moest wachten ervaren als
        Erg kort   1 2 3 4 5   Erg lang
4. Ik heb de tijd die ik voor de balie moest wachten ervaren als
        Helemaal niet vervelend   1 2 3 4 5   Erg vervelend
5. Ik heb de tijd die ik in de wachtruimte moest wachten ervaren als
        Erg kort   1 2 3 4 5   Erg lang
6. Ik heb de tijd die ik in de wachtruimte moest wachten ervaren als
        Helemaal niet vervelend   1 2 3 4 5   Erg vervelend

7. Kunt u één of enkele dingen noemen die u graag in de wachtruimte zou willen zien of doen om het wachten minder vervelend of voor uw gevoel minder lang te maken? :
....
8. Kunt u aangeven wat u in de wachtruimte en eventueel voor de balie gedaan heeft tijdens het wachten (meerdere antwoorden zijn mogelijk):
o   Een tijdschrift of informatiefolder van de polikliniek over gezondheidszorg of het ouderschap gelezen
o   Een tijdschrift/krant van de polikliniek over een ander onderwerp gelezen
o   Van thuis meegenomen lectuur over gezondheidszorg of het ouderschap gelezen
o   Van thuis meegenomen lectuur over een ander onderwerp gelezen
o   Een puzzel (bijvoorbeeld Sudoku) gemaakt
o   Gepraat met mijn begeleider tijdens dit bezoek (bijv. familie, vriend(in))
o   Gepraat met andere wachtenden
o   Niets, maar ik heb wel een tijdje gewacht
o   Niets, omdat ik niet/nauwelijks hoefde te wachten
o   Anders, namelijk ……………………………………………………………..
Zou u zo vriendelijk willen zijn om deze vragenlijst weer in te leveren bij de onderzoekster bij de uitgang van de poli?Hartelijk dank voor uw medewerking!

2.5 QUESTIONNAIRE ITEMS MAIN STUDY

Age: …. years old
Gender: male / female (circle the right answer)

Perceived waiting time (Pruyn and Smidts, 1998; α = 0,80)
Can you indicate for each of the following statements whether you do most agree with the word on the left or with the word on the right? (1=Totally agree with the left word, 7= Totally agree with the right word; You can choose 2, 3, 4, 5 or 6 when your opinion lies somewhere between the extremes)
In waiting room:
1. I perceived the time I had to wait in the waiting room as
             Very short   1 2 3 4 5 6 7   Very long

In front of desk:
1. I perceived the time I had to wait in front of the desk as
             Very short   1 2 3 4 5 6 7   Very long

Wait evaluation (Pruyn and Smidts, 1998; α = 0,80; McGuire et. al., 2010)
Can you indicate for each of the following statements whether you do most agree with the word on the left or with the word on the right? (1=Totally agree with the left word, 7= Totally agree with the right word; You can choose 2,3 and 4 when your opinion lies somewhere between the extremes)
In waiting room:
1. I perceived the time I had to wait in the waiting room as
             Not irritating   1 2 3 4 5 6 7   Very irritating (RECODE)
2. I perceived the time I had to wait in the waiting room as
             Fair   1 2 3 4 5 6 7   Not fair (RECODE)
3. I perceived the time I had to wait in the waiting room as
             Not annoying   1 2 3 4 5 6 7   Very annoying (RECODE)
4. I perceived the time I had to wait in the waiting room as
             Not boring   1 2 3 4 5 6 7   Very boring (RECODE)
5. I perceived the time I had to wait in the waiting room as
             Very acceptable   1 2 3 4 5 6 7   Unacceptable (RECODE)

In front of desk:
1. I perceived the time I had to wait in front of the desk as
             Not irritating   1 2 3 4 5 6 7   Very irritating (RECODE)
2. I perceived the time I had to wait in front of the desk as
             Fair   1 2 3 4 5 6 7   Not Fair (RECODE)
3. I perceived the time I had to wait in front of the desk as
             Not annoying   1 2 3 4 5 6 7   Very annoying (RECODE)
4. I perceived the time I had to wait in front of the desk as
             Not boring   1 2 3 4 5 6 7   Very boring (RECODE)
5. I perceived the time I had to wait in front of the desk as
             Very acceptable   1 2 3 4 5 6 7   Unacceptable (RECODE)

Prediagnostic anxiety (Richins, 1997: α = 0,77)
In which degree do you agree with the statements below? Can you indicate this on a scale from 1 to 7? (1=Not agree at all, 7=Totally agree)
1. While waiting in the waiting room I was nervous for my appointment with the doctor
        Not agree at all   1 2 3 4 5 6 7   Totally agree
2. While I was waiting in the waiting room I was worried about what the doctor was going to say
        Not agree at all   1 2 3 4 5 6 7   Totally agree
3. When I was waiting in the waiting room I felled tense because of my appointment with the doctor
        Not agree at all   1 2 3 4 5 6 7   Totally agree

Filled time (Only answered by respondents who waited more than one minute in the waiting room)
With this question we like to get some more insights into how patients spent their time while waiting. Can you please indicate behind each activity how much percent of your waiting time you spend to that activity? Divide a total of 100% over the different activities. For example: You spend 60% of your waiting time on reading a brochure about health care and 40 % of your time you did nothing. Then you write these percentages behind these activities. Did you not spend any time to one of the activities below? Please read first all options before dividing the percentages.

-     Reading a magazine or brochure about health care or parenthood*   _____ %
-     Reading a magazine or paper that did <u>not</u> cover the topics health care or parenthood**   _____ %
-     Watching the pictures of the outpatient clinic on a display at the side of the waiting room*   _____ %
-     Watching the news information on a display at the side of the waiting room**   _____ %
-     Talking to other visitors in the waiting room about your doctor's appointment, healthcare or   _____ %
      parenthood*
-     Talking to other visitors in the waiting room about topics that are not related to your visit to the outpa-   _____ %
      tient clinic**
-     Doing nothing, during (a part of) my waiting time I did nothing   _____ %
-     Something else, namely….   _____ %

Total of all the activities during waiting   **100 %**

* item of the service related activities variable
* *item of the non-service related activities variable

<u>Vragenlijst wachttijdbeleving polikliniek O&G</u>

Nummer van respondent/patiënt:….. (in te vullen door onderzoekster)
Leeftijd: ……. jaar
Geslacht: Man / Vrouw (graag het juiste antwoord omcirkelen)

Wilt u bij onderstaande stelling op een schaal van 1 tot 7 aangeven of u het meer met het woord aan de linkerkant of meer met het woord aan de rechterkant eens bent? (1= helemaal met het linkerwoord eens, 7= helemaal met het rechterwoord eens; 2, 3, 4, 5 en 6 kunt u kiezen als uw mening tussen de uitersten in ligt)

1. Ik heb de tijd die ik **<u>voor de balie</u>** moest wachten, ervaren als

Helemaal niet irritant	1 2 3 4 5 6 7	Erg irritant
Erg kort	1 2 3 4 5 6 7	Erg lang
Erg rechtvaardig	1 2 3 4 5 6 7	Erg onrechtvaardig
Helemaal niet vervelend	1 2 3 4 5 6 7	Erg vervelend
Helemaal niet saai	1 2 3 4 5 6 7	Erg saai
Erg acceptabel	1 2 3 4 5 6 7	Erg onacceptabel

2. Ik heb de tijd die ik **<u>in de wachtruimte</u>** moest wachten ervaren als

Helemaal niet saai	1 2 3 4 5 6 7	Erg saai
Helemaal niet irritant	1 2 3 4 5 6 7	Erg irritant
Erg acceptabel	1 2 3 4 5 6 7	Erg onacceptabel
Erg kort	1 2 3 4 5 6 7	Erg lang
Erg rechtvaardig	1 2 3 4 5 6 7	Erg onrechtvaardig
Helemaal niet vervelend	1 2 3 4 5 6 7	Erg vervelend

In welke mate bent u het eens met onderstaande stellingen? Zou u dit willen aangeven op een schaal van 1 tot 7? (1=Helemaal niet mee eens, 7=Helemaal mee eens; de overige getallen kunt u kiezen als uw mening tussen de uitersten in ligt)

3. Tijdens het wachten in de wachtruimte was ik **nerveus** voor mijn afspraak met de dokter
Helemaal niet mee eens   1 2 3 4 5 6 7   Helemaal mee eens
4. Terwijl ik wachtte in de wachtruimte **maakte** ik mij **zorgen** over wat de dokter zou gaan zeggen
Helemaal niet mee eens   1 2 3 4 5 6 7   Helemaal mee eens
5. Toen ik in de wachtruimte aan het wachten was, voelde ik dat ik **gespannen** was voor mijn afspraak met de dokter.
Helemaal niet mee eens   1 2 3 4 5 6 7   Helemaal mee eens

6. Heeft u langer dan één minuut gewacht in de wachtkamer?
   (kruis het juiste antwoord aan)

o   Ja

o   Nee

o   Weet ik niet

Heeft u bij vraag 6 'Ja' of 'Weet ik niet' ingevuld, dan wil ik u verzoeken om vraag 7 op de volgende pagina ook in te vullen. Heeft u bij vraag 6 'Nee' ingevuld, dan mag u de volgende vraag overslaan.

<u>Vraag 7</u>

Met deze vraag willen wij graag inzicht krijgen in de tijdsbesteding tijdens het wachten. Zou u per onderstaande bezigheid willen aangeven hoeveel procent van uw wachttijd u aan die bepaalde bezigheid heeft besteed? Verdeel een totaal van 100% over de verschillende bezigheden. Het kan bijvoorbeeld zo zijn dat u 60 % van uw tijd een folder over gezondheidszorg heeft gelezen en 40% van uw tijd niks heeft gedaan. Dan vult u die percentages in bij de betreffende bezigheden. Het is aan te raden eerst alle mogelijkheden goed door te lezen voordat u de percentages verdeeld.

- Een tijdschrift of informatiefolder over gezondheidszorg of het ouderschap gelezen

                     _____ %

- Een tijdschrift of krant gelezen dat <u>niet</u> over gezondheidszorg of het ouderschap ging

                     _____ %

- Naar de nieuwsinformatie op een tv-scherm aan de zijkant van de wachtruimte of boven de balie gekeken

                     _____ %

- Naar de foto's van de polikliniek op een tv-scherm aan de zijkant van de wachtruimte gekeken

                     _____ %

- Met andere bezoekers van de poli gepraat over uw afspraak met de dokter, over gezondheidszorg of over het ouderschap

                     _____ %

- Met andere bezoekers van de poli gepraat over onderwerpen die niets te maken hebben met uw bezoek aan de poli

                     _____ %

- Niks, ik heb tijdens (een deel van) mijn wachttijd niets gedaan

                     _____ %

- Anders, namelijk…………………………………………

                     _____ %

Het totaal van alle activiteiten tijdens het wachten   **100 %**

Zou u zo vriendelijk willen zijn om deze vragenlijst weer in te leveren bij de onderzoekster bij de uitgang van de poli?

Hartelijk dank voor uw medewerking!

Activities patients did during wait	Frequency
Talking with the person(s) who accompanies me during this visit (e.g. family, friend)	**26**
Talking with other waiting patients	4
Reading a magazine or brochure from the outpatient clinic about health care or parenthood	**12**
Reading a magazine or paper from the outpatient clinic about another topic	**22**
Reading something from home about health care or parenthood	0
Reading something from home about another topic	3
Making a puzzle (like a sudoku)	2
Playing with phone	2
Nothing, but I did wait for a while	3
Nothing because I did not had to wait	20
Total	**94**

Missing possibilities to fill time mentioned by patients	Frequency
Up to date and varied magazines	**9**
Current papers	**5**
Different magazines on other topics than health care	**2**
TV with information about poli	**1**
TV with news	**1**
TV in general	**1**
Music	2
Something to drink (water)	2
Something to drink (coffee)	1
More and different toys for kids	1
Total	**25**

APPENDIX 4 PICTURES OF OUTPATIENT CLINIC O&G USED AS SERVICE RELATED CONTENT ON DISPLAY