A study on the determinants in the relationship: gender and healthcare utilisation

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Abstract
Women tend to visit the doctor more often is the common expectation. But why? It seems to become a long-lasting academic puzzle which is still not solved. First, it is a relevant issue because of this unclarity it is not clear whether these gender differences are actually desired, by society but also by the men and women themselves. Therefore, this study focusses on the factors which are expected to determine the relationship between gender and healthcare utilisation, operationalized as doctor visits. The theoretical framework consists of three theories: social constructionism theory, social role theory and the theory of planned behaviour. Based on this theoretical framework, hypothesis have been formulated for every factor which is expected to determine the researched relationship. The actual and perceived health status were expected to make the gender difference bigger: the level of health and perceived health status is expected to be more a reason for women to visit the doctor than it would be for men. The second factor is mental health. This factor does not have a expected direction but still, a gender difference is expected. The same is the case for the fourth and fifth included factor: 'education level' and 'financial situation and job status'. The third factor is risk aversity and this factor is expected to more a reason for men to visit the doctor or not than it would be for women. This is the opposite of what is expected with the factor actual and perceived health status. These expectations got tested by an OLS regression model in a cross-section study. 26 independent variables are included which are mostly part of the operationalisation of the five factors. 7,313 respondents form the selected sample. These variables and respondents are retrieved from the SHARE database wave 5, which refers to the year 2013. However, the results could not confirm the expectations formulated in the theoretical framework. None of the null hypotheses, which expected no intervention of the factor on the correlation between gender and healthcare utilisation could be rejected. This raises the need for further research in this direction, concrete suggestions have been formulated at the end of this study.

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1. Introduction

The purpose of this thesis is to analyse what the determinants are that intervene in the relationship between gender and healthcare utilisation. Many have proven that there is a relationship between gender and healthcare utilisation. But much less have studied and compared the different determinants that could declare this relationship. The academic puzzle of how gender influences health utilisation is still unsolved (Koopmans & Lamers, 2007). This thesis will try to contribute to this gap in knowledge. First the broader picture will be presented in 1.1. This part will be followed by the problem statement in 1.2. Afterwards, the research design will be summarized and the relevance of this relationship will be specified. The readers' guide will conclude this chapter.

1.1 Background

In this part, the background of the relationship between healthcare utilisation and gender will be elaborated. First, the background of healthcare utilisation in general will be worked out. Afterwards, healthcare utilisation will be specified as doctor's visits and the background of gender in the academic literature will be presented. Concludingly, the focus will be on medical conditions as the main explainer of this relationship. This paragraph will be followed by 1.2 the 'problem statement'. In this paragraph, some details which apply to this thesis will be provided to present the relevance of this relationship.

Much is written about the utilisation and accessibility of healthcare. 'Everyone should be able to receive the healthcare that a person necessary needs' is the overall consensus, Joseph and Phillips (1984) call this statement even crucial. Thus, we, as a society, don't want to be the threshold to use healthcare to become too high, as necessary healthcare should be able to utilize for everyone. Therefore, accessible healthcare is a common value. But, at the same time, we, as a society, don't want to be the threshold to utilize healthcare to become too low as well. Namely, a threshold which is too low would lead to a higher level of health utilization than societal desired, healthcare could be used more than is needed. This is where moral hazard comes in: using something just because it is accessible and cheap or even free. For a long time is thought that moral hazard was not a factor in healthcare utilization. People, academics as well, assumed one only visits the doctor when it is really needed. So, the assumption was that moral hazard did not apply to health utilization. But it is found that moral hazard does play a role in this. Aron-Dine, Einav and Finkelstein (2013) proved that people tend to visit the doctor more often if they have to pay less. They showed that medical insurance increases the demand for medical care. So, too accessible healthcare, mainly in terms of price, would lead to an unnecessarily high level of health utilization. Therefore, health shouldn't be too accessible, in terms of price. This leads to a dilemma: when are we, as a society, content with the balance between the price we have to pay and the accessibility of the healthcare we would like to receive? Well, this question is not easy to answer, if it is at all. To get closer to the answer, more knowledge about health utilization in general is needed. The more knowledge is available about this subject, the more governments will be able to make more precise considerations about this dilemma.

Since healthcare utilisation in general in itself is too broad to study, it should be conceptualized. This thesis will look into doctor's visits as a conceptualisation of health utilization. Visiting the doctor is most of the time the first step people do concerning their health. Therefore, the accessibility of the doctor is very important. Also, visiting the doctor could be the first step in a health procedure. So, it is a great indicator of health utilization in

general. The further conceptualisation of this variable will be done in chapter 2 and the operationalisation in chapter 3.

Well then, the background of the concept of healthcare utilisation, and especially doctor's visits, is provided. Now, the background of the role of gender will be discussed. The role of gender has become more and more of a societal and academic topic over the years (Goldin, 2002; Pearson, 2005). Especially, the relationship between gender and the labour market has become very important. While the traditional male breadwinner model fades out and got more and more substituted by a perspective which is aimed at equality, the labour market changes similarly. For example, this process had led to more participating women and more part-time jobs in Western societies (Booth & Van Ours, 2013).

Logically, one visits the doctor more often, when one is less healthy. Maybe gender does play a role in how healthy people feel and maybe gender implies another threshold when someone feels 'sick enough' to visit the doctor. But, a less healthy person is more likely to visit the doctor more often than a healthy person, no matter gender. So, actual health would be the main explainer when watching healthcare utilisation. This study will look into the relationship between gender and healthcare utilisation and actual health becomes therefore one of the explainers, which should be therefore controlled for. It will be interesting to see what the relationship between gender and health utilisation would be when actual health is kept stable. Because there will be controlled for actual health, the effect of other gender-related factors could become visible as well.

1.2 Problem statement

Generally, women feel less healthy (Ross & Bird, 1994), are more risk-averse (Sapienza, Zingales & Maestripieri, 2009), and visit the doctor more often (Harvard Health, 2019). While, in fact, men are less healthy (Harvard Health, 2019). So, there are gender differences, but do these factors actually make women visit the doctor more often than men? It is not gender in itself which influences the number of doctor visits. It should be a factor or a set of factors that cause a difference in health. So, it is not gender itself, it is what gender implies.

Hence, there is a difference in healthcare utilising behaviour between males and females. This relationship is demonstrated by many academic studies, it is the overall consensus that women visit the doctor more frequently. The study of Bertakis et al. (2000) is one of the most prominent studies to find this difference. Even after controlling for health status, sociodemographic characteristics and clinic assignments, they find a gender difference in healthcare utilisation. It set the ground for other academics to find out why this difference is present. Possible causes for this research have been researched in many studies. But, there is still no overall consensus on what the precise determinants are, that make women visit the doctor more often than men. Still, a process has been made in the last decades, over time several factors are highly suggested to be determining in this relationship. Some important studies will be discussed below.

In 2007, Koopmans and Lamers (2007) tried to explain this relationship via mental health differences in gender. But they had to conclude that this academic puzzle was still not solved, even though mental health did play a role in the relationship, it couldn't declare every variation in healthcare utilisation. Ten years later, Noh et al. (2017) found out that the doctor visiting behaviour for both men and women is significantly associated with socioeconomic factors, such as age, education level and marital status. Because these outcomes are

significant for both men and females, Noh et al. (2017) couldn't declare the gender difference. They did actually find one gender difference: women with a higher household income tend to visit the doctor more often than women with a lower household income. This association was not found for men. It implies that women in lower-income households would like to visit the doctor more often, but are not able to do that. Noh et al. (2017) suggest that policymakers should pay special attention to these women. As expected, women did visit the doctor more often in their sample. Noh et al. (2017) couldn't explain this gender difference via socioeconomic factors, as these factors are nearly the same for men and women. Therefore, they state that pregnancies, childbirths, gynaecologic health checks and the fact that women perceive health as poorer make women visit the doctor more often. Actually, they did not test this assumption. They based this assumption on two studies. One of which is the study of Vaidya, Partha and Karmakar (2012). They did not look into pregnancies, childbirths or gynecologic health checks. They did show the association that women perceive health as poorer. The other source they consulted for this assumption is a study by James (2012). James (2012) didn't look into pregnancies, childbirths or gynecologic health checks as well. Therefore, the assumption that women visit the doctor more often because of these factors, is not well defended by Noh et al. (2017).

Although it is a reasonable assumption made by Noh et al. (2017), they did not test this. Thereby, they did control for factors which are associated with outpatient medical utilisation by gender, they did not include the number of children or the perceived health, to check for this assumption. Nor did they control for mental health, which is a relevant variable according to Koopmans and Lamers (2007). This leaves room for improvement. This thesis hopes to fill in this gap in academic knowledge. All kinds of studies will be discussed to get to a complete as possible list of variables which could declare this relationship between gender and healthcare utilisation. More concerning the research design will be discussed in 1.3 'used methods'. In order to fill this gap in academic knowledge, the research question is formulated as follows:

‘What are the factors which determine the effect of gender on health utilization?’

This thesis builds on, among others, the study of Noh et al. (2017) and Koopmans and Lamers (2007). This thesis will combine the possible factors which could declare the gender difference in health utilisation. In the analysis, it will be tested what factors make women visit the doctor more often than men. As this thesis builds on other studies, some assumptions must be made. Fundamentally, the main assumption is that women tend to use healthcare more often than men. Besides these assumptions, it is assumed that there are specific factors that make women make use of healthcare more frequently despite their actual health.

1.3 Used methods

In this thesis, survey data of SHARE will be used (SHARE Data, n.d.; Börsch-Supan et al., 2013, Börsch-Supan et al., 2015; Malter & Börsch-Supan, 2015). This is a cross-national panel data aimed at health, ageing and retirement in Europe. 7,313 respondents are included in this study, all of whom are European citizens. This is, however, a quite old sample, with an average age of 61. One wave of this panel data is used as the main sample in this thesis, which makes this cross-sectional research. This is the fifth wave, measured in 2013 (Börsch-Supan, 2022a). As some variables are only measured once, some data has to be imputed from the fourth wave (Börsch-Supan, 2022b). As stated in 1.2, an as complete as possible list of

factors will be used in this thesis. Each factor will be represented by one or a set of variables. For example, the factor of mental health will be represented by several variables which together measure the mental health of a respondent. The amount of doctor visits is measured via this survey as well. The respondents are asked how often they have talked to a doctor in the last twelve months. An ordinary least squares (OLS) regression method is used as the main method in this thesis. One table which uses OLS will be presented as the main table. This table will start with the first model, this model excludes all possible factors which determine the relationship between gender and healthcare utilisation. This first model will therefore present the baseline. Afterwards, a factor will be added per model. Eight separate factors will be taken into account, this leads to a total of 6 models, presented in Table 2 in chapter 4. If the coefficient of association between gender on healthcare utilisation becomes insignificant, it could be stated that the relationship between gender and healthcare utilisation works through the factors in that specific model. This could be concluded in that case, because the included variables in a model are kept stable. More on the research design and the analysis will be presented in chapter 3 and 4.

1.4 Relevance

First, the societal relevance will be discussed. One could state that gender in this context is not socially relevant because it is not about gender itself, but about what gender implies. Studying all the factors separately would be more effective than, for example, studying how risk adversity differs between men and women. Hence, gender is relevant because it is easily measurable. Namely, for example, it is much easier to observe if someone is a man or woman than it is to find out how risk-averse someone is. Thus, it is the differences in characteristics overall and the ease of observation, which makes gender relevant to study. Ease of observation is important for, among others, policymakers. Namely, it is much easier to make different policies for men and women, or to target men or women, than it is to target more risk-averse people. If a policymaker wants to stimulate risk-averse people to do something and it is known that women are more risk-averse, it is more efficient to target women in that case. In short, it saves a lot of transaction costs for policymakers and the government in general. Therefore, gender is socially relevant to study in this context.

The relationship between gender and healthcare utilisation is socially relevant as well. As stated above, is it useful for society to be on an efficient balance between the costs and benefits of healthcare utilisation. But a balance presumes an equal point, but what is equal? Should everyone receive the same, or should the ones who need more, receive more? It is a long ongoing debate between 'equity' and 'equality' (Grogan, 1999). This thesis will not dive into this question, as first needs to be discovered what determines this difference between men's and women's health utilising behaviour. Thus, by producing more knowledge about gender differences concerning health utilisation, governments will be able to make more complete considerations in this regard. Therefore, it is socially relevant to know more about these differences.

This thesis is academically relevant because it will try to fill a gap in academic knowledge. As illustrated in 1.2, the problem statement, the academic puzzle is still not solved, as Koopmans and Lamers (2007) concluded strikingly. Although they concluded this in 2007 and the academic process has been made, it could still be claimed that this puzzle is not solved. Whereas many studies look into one possible factor or a set of possible factors in a specific direction which could determine this relationship. This thesis will try to combine this

knowledge and will try to test what factors determine the relationship and which do not. The aim is to get a complete overview of all the factors that are possibly determining this relationship.

More concretely, the current state of knowledge will be specified here below. Every factor which will be included in this thesis will be discussed. Noh et al. (2017) found that socioeconomic factors, such as age, education level and marital status are significantly associated with doctor-visiting behaviour for both men and women. Therefore such variables will be included in this thesis as well. Thereby, Noh et al. (2017) assumed that women visit the doctor more often because of childbirth et cetera. Here will be controlled for, via a variable which measures the number of children. As stated in 1.1, the actual health should be the main explainer of why someone visits the doctor, therefore, there will be control for the actual health of the respondent. Noh et al. (2017), the Harvard Medical School (Harvard Health, 2019), Koopmans and Lamers (2007) and many others pointed out that perceived health is an important determinant in this relationship. For that reason, this factor is included as well. Pinkhasov et al. (2010) state that men are less likely to visit the doctor, because of their high-risk behaviour. Therefore, risk aversion is a possible factor in this study as well. Koopmans and Lamers (2007) showed that mental health is a relevant variable when watching the utilisation of healthcare and that gender is correlated with differences in mental health. Therefore, variables which measure mental health will be included in this model. Koopmans and Lamers (2007) did not look into other factors besides mental health. Shariff and Singh (2002) found in a case study in India that women who earned more themselves were able to find professional help more often. Thus, the financial situation of the respondent is included as a factor as well.

None of the named studies looks into all the possible determinants. Instead, they looked into the factors separately. This thesis hopes to be academically relevant by combining these factors and providing a comprehensive and clear overview.

1.5 Reading guide

This thesis consists of five chapters. This chapter, the first one, consists of the introduction. Here, the background is provided, the problem is outlined, a short overview of the research design is given and the societal and academic relevance is discussed. This chapter will be followed by chapter 2 which discusses the theory and literature and in particular the theories which could declare specific phenomena. The main used theories are social constructionism theory, social role theory and the theory of planned behaviour. These theories will be applied to the context of this study, which will result in five hypotheses. This chapter is followed by the methodology. In this chapter, the following will be discussed: the data collection method, the analysing method, the operationalisation and the validity and reliability. Furthermore, the fourth chapter will present the statistical analysis. Attention will be given to descriptive statistics, in which, gender plays an important role. The hypotheses formulated in chapter 3 will be tested via an OLS regression model. The concluding chapter consists of the conclusion and a discussion. This chapter consists of the limitations and suggestions for following research as well.

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2. Literature and theory

In this chapter, a theoretical framework will be built in order to answer the research question. It will be based on three theories which together form a coherent framework. After this framework is discussed, it will be applied to each potential factors that determine the relationship between gender and healthcare utilisation. Based on this framework, there will be an expectation formulated for each of the factors. These formulated hypotheses will be tested in chapter 4.

2.1 Theoretical framework

Three theories will be discussed. First, every theory will be discussed separately. Every theory provides a possible explanation for why there could be gender differences, also with regard to health utilisation. In other words, every theory provides a possible answer to the research question. Afterwards, the theories will be weaved together, which culminates into the theoretical framework. Through this framework, the factors that could determine the relationship between gender and healthcare utilisation will be analysed in paragraph 2.2.

The first theory to be discussed is the social constructionism theory. This theory is developed by Schneider and Ingram (1993) in 1993. Since then, it has been one of the most prominent theories for understanding policymaking and the further policy process (Pierce, Siddiki, Jones, Schumacher Pattison & Peterson, 2014). This theory assumes that choices individuals make, are based on the social construct in which someone lives (Allen, 2005). Or, in other words, the culture and the time in which someone lives determine the choices this person considers and makes. So, considerations and decisions are not made objectively, as there will always be a bias it which is formed by the society someone lives in. Although Schneider and Ingram (1993) didn't mention it in the first place, the concept of bounded rationality plays a main role in this theory. Bounded rationality refers to the human incapability to oversee all the options and make a perfect consideration Jones (1999). Therefore, humans make suboptimal decisions. Which aspects are taken into consideration and which are not, depends on the social construct in which someone lives according to this theory. In this way, bounded rationality is related to this theory. As stated above, this theory has increasingly been used concerning policy design (Pierce et al., 2014). These authors write this about the relationship to policy-making: "To that end, the theory focuses on the socially constructed values applied to target populations and knowledge, and the consequent impact these values have on people and democracy" (Pierce et al., 2014, p.3). So, policymakers look at the socially constructed values and norms of certain groups, before a policy will be designed for this target population. Actually, some policy instruments would affect one targeted population, while they won't have an effect on another. According to this theory, this is the case due to differences between groups in socially constructed values. The concept of 'group' may be a bit vague, but it refers to micro, meso and macro-level groups.

Gender differences could be analysed through this theory as well, as gender roles and gender-specific considerations are socially constructed as well. Namely, the roles women and men fulfil differ over the world. For example, Payne, Swami and Stanistreet (2008) try to declare the fact that women in developed Western societies attempt suicide more often than men, through the social constructionism theory. Note that this theory does not state that an individual does specific acts or takes in a specific role because that role is enforced on them, but because these acts belong to the social construct in which they live. Does this mean the examples aren't fitting? This makes it interesting to know what the current gender roles are in

European countries, as this is relevant to this study. This will be discussed at the end of this paragraph.

The second theory is the social role theory. This theory is developed by Eagly (1987) and has been tested many times since. The theory proves to be still relevant, as it is still often used to declare specific phenomena. In short, this theory is about different roles specific groups are imposed to fulfil. This theory is often used on gender and thereby, is often used in combination with stereotyping. The study of Koenig and Eagly (2014) and the study of Kaur, Ricciardelli and Clow (2023) are examples of this. It is about the typical roles that society expects someone to fulfil. Contrary to the social constructionism theory, this theory does not reject the idea that an individual does specific acts or takes in a specific role because that role is socially enforced on them. The social constructionism theory does not emphasize this perspective, as it mainly focuses on the considerations of individuals and the choices that are followed by this. This theory aims at behaviour and the role of the environment in it and could include therefore environmental factors, such as stereotyping. These differences seem quite in a niche, but they are still quite important. The theories will be compared more extensively later on. So, in short, this theory expects gender differences to be present because individuals could be socially imposed to take in a specific role and to act according to that role. This theory is aimed at gender differences since the beginning Eagly (1987). The theory assumes specific social roles for both men and women to be present. Where the role of men is more to be assertive and competitive, which implies, for example, risk-taking behaviour. The role of women, however, is to be more careful and cautious, which implies risk-averse behaviour (Fyall et al., 2015).

The third theory is the theory of Planned Behaviour (TPB). This theory is developed by Ajzen (1991) and is based on the theory of Reasoned Action (Conner & Armitage, 1998). This theory, which belongs to social psychology, tries to predict the nonvolitional behaviours of individuals. Other than the theory of Reasoned Action, this theory takes more variables into account, among which is the perception of control, according to Conner and Armitage (1998) who compare both theories and elaborate on them. Although the theory has been developed several decades ago, it is still used in many studies nowadays. Bosnjak, Ajzen and Schmidt (2020) analysed the recent advances and applications of this theory and concluded that the theory is still used as a framework for analysing individual behaviour. But at the same time, they found that the theory has been adjusted and extended as well. Although these adjustments are not ground-breaking and the original theory is still viable, it is a work in progress. The base model is as follows: the beliefs of an individual of the likely consequences of certain behaviour, the behavioural beliefs, that lead to a certain attitude towards this behaviour, could be negative as well as positive. The belief of the expectations of others (normative beliefs) leads to a subjective norm, this consists of the social pressure or assumed norm someone experienced. The belief of possible intervening factors, control beliefs, leads to the perceived behavioural control or, simply formulated, self-efficacy (Bosnjak, Ajzen and Schmidt, 2020). A positive attitude towards certain behaviour and an as supportive perceived social norm in combination with a high level of self-efficacy would lead to a strong intention to perform that specific behaviour. This is graphically illustrated in Figure 1 here below. In this figure, 'actual behavioural control' relates to the opportunity to actually express certain behaviour. If the opportunity is present, the intention can be expressed in the form of behaviour.

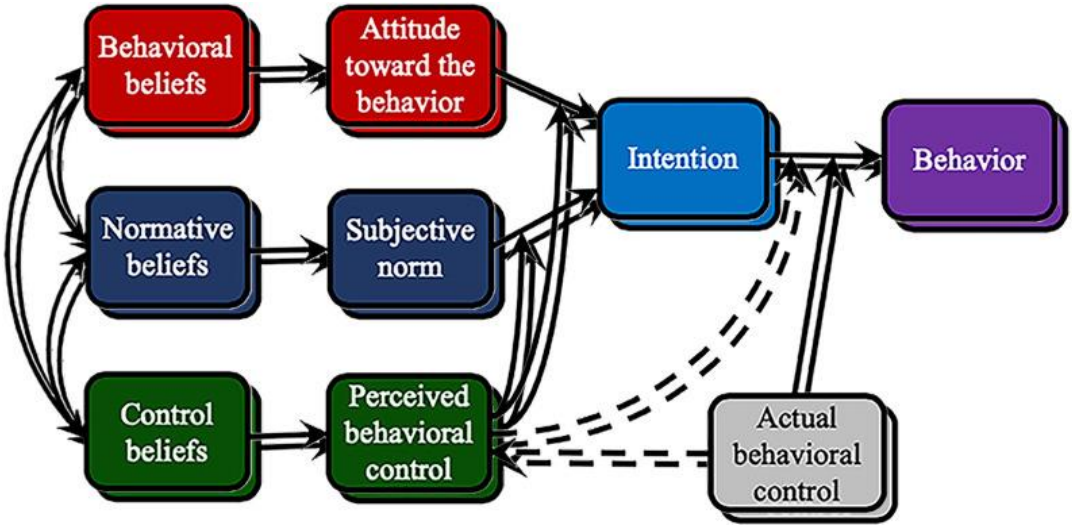

Figure 1
Theory of Planned Behaviour shown graphically (Ajzen, 2019)

This theory is originally not aimed at declaring gender differences. Still, the theory has been used for that purpose afterwards. Mo and Mak (2009) for example, try to examine the social-cognitive factors that could affect help-seeking behaviour and include gender in their study as well. They only found no gender effect. Still, this study shows that the relationship between gender and healthcare utilisation could be declared by the theory of Planned Behaviour. Mo and Mak (2009) used Chinese survey data that measured the mental health status as well as the measurements needed to test this theory: attitude towards behaviour, subjective norm, perceived behavioural control and help-seeking intention. López-Mosquera (2016) tried to explain differences in willingness to pay between genders via this theory. She hypothesized that gender would influence every aspect of the theory including the intention and behaviour. Behaviour is in this case the willingness to pay. These two studies illustrate the point that gender can be combined with the theory of planned behaviour. There are much more studies which combine these two. Most of these studies utilise surveys which question the subjects of this theory. Based on these studies, it is to be assumed that this theory can be used in this thesis as well in order to formulate expectations on the relationship between gender and healthcare utilisation. Although the subjects of this theory aren't included in the survey which will be used in this thesis, this theory could still be used as a theoretical framework through which expectations for the researched relationship can be formulated.

Combining these three theories would lead to the theoretical framework. All three of the consulted theories: social constructionism, social role theory and the theory of planned behaviour, are originally aimed at declaring gender differences or are often used for that objective. This is important because these theories will be used for that objective in this study as well. Every theory has its own identity including specific strengths and weaknesses which makes it impossible to combine these three theories into a one-dimensional framework. Instead, a theoretical framework which includes several dimensions and perspectives will be provided. Still, even though the theories have their own uniqueness and can be separated from each other, these theories show quite some overlap. The main overlap is that all three of the theories look into the social environment of an individual. In social constructionism, the social environment is called the social construct and this determines the considerations and choices of an individual. In the social role theory, the social environment puts, sometimes stereotypical, expectations on an individual which influences his or her choices and behaviour. The theory of planned behaviour perceives the social environment as one of the

three determinants that lead to a certain attitude which eventually leads to certain behaviour. Although, there are some important differences as well. Social constructionism is the only one to look at the considerations and choices and not per se at behaviour. This theory is the only one to mention the importance of bounded rationality as well. Social constructionism together with the social role theory focuses on the role of the social environment, while the theory of planned behaviour more looks into the cognitive processes, in which the social environment plays a role as well. Social constructionism and the social role theory do not elaborate on the cognitive aspect. It could be stated that, in terms of the theory of planned behaviour, the other two theories only look into normative beliefs and the following subjective norm, especially the social role theory as social constructionism has got a small aspect of behavioural beliefs. Although this is an oversimplification of the other two theories, there is a grain of truth in it. Because the theories overlap, they can be used in one theoretical framework, but because of the differences between the theories, not all three of the theories may apply to all of the factors that could determine the relationship between gender and healthcare utilisation.

2.2 Application of the theoretical framework

Before every factor that could determine the relationship between gender and healthcare utilisation will be discussed, the sequence of these factors will be discussed. The same sequence of factors that will be used here, will also be used in the statistics and the analysing models. Therefore, this sequence is quite important. This sequence is quite arbitrary to determine as it is all about categorical differences. Thereby, no studies applied this amount of factors in a study in this academic field which makes it impossible to use that sequence or improve it. Still, it is actually possible to rank these factors, even though it is still debatable. The factor that is expected to have the biggest impact will be presented first, and the factor with the lowest expected impact will be presented last. In the end, the sequence is not as crucial as it is about the combination of all the factors that determine the relationship between gender and healthcare utilisation. For the sake of structure, the same sequence will be used from now on. For every factor, a short justification will be given why this variable is in that specific place in the sequence.

There are two variables which are included in this study even though they are not part of a specific factor. These variables will be shortly discussed. To start with the variable age. Age is a very obvious variable when the dependent variable is health utilisation. Namely, older people have a higher chance of becoming sick (Atella et al., 2019). Nearly every study that has healthcare utilisation as the dependent variable, includes age as an independent variable. Age does not intervene between gender and health utilisation, besides the fact that women become older than men and maybe, therefore, need more health utilisation. Therefore, this variable is not included in a factor or is formulated as a factor itself. It is expected that age strongly correlates with actual and perceived health, as this is probably the way through which age affects healthcare utilisation. The amount of children is the second variable that is not included in a factor. The reason why this variable is included can be found in 1.4. But, in short, Noh et al. (2017) assumed that women visit the doctor more often because of, among others, childbirth which obviously only affect women. To test this assumption, the amount of children is included. This variable does not fall under the factors discussed below. Thereby, the variable is expected to have too weak of an impact to have its own factor.

Based on the theoretical framework provided in 2.1, a hypothesis will be formulated for each factor. For every formulated alternative hypothesis, a null hypothesis (H_0) will be added as well. This is the starting point of the research. The starting assumption is that there is no relationship between the variables included in the alternative hypothesis. The aim is to reject this null hypothesis. This will be discussed more extensively in the following chapters. This way, the factors will be conceptualised. Which variables measure these concepts will be discussed in paragraph 3.3 in the operationalisation.

2.2.1 Actual health and health perception

Actual health is the most intuitive and seemingly logical factor that makes someone visit the doctor. Actually, a sick person is more likely to visit the doctor than a healthy person. Therefore, the actual health is the first factor that will be discussed. But, actual health cannot be seen separately from perceived health. How healthy someone is and how healthy someone feels should be strongly correlated but there could be a discrepancy in this. Actually, there seems to be a gender difference in this. There are a lot of studies which point out that women have lower perceived health status overall than men do (Hosseinpoor, 2012; Pino-Domínguez et al., 2016). Chen, Chang and Yang (2008) even speak about a 'gender gap' in this context. This would be logical if women's actual health is actually poorer than men's. But, this is not the case per se. The Harvard Medical School (Harvard Health, 2019) as well as Pinkhasov et al. (2010) state that men are less healthy, while women visit the doctor more often. The Harvard Medical School (Harvard Health, 2019) state that there is a gender gap in health because men have poorer health overall than women. While Chen, Chang and Yang (2008) state that there is a gender gap in perceived health because women perceive their health poorer than men do. The conclusion of the Harvard Medical School (Harvard Health, 2019) suits the conclusion of Chen, Chang and Yang (2008) because the Harvard Medical School (Harvard Health, 2019) concludes that women visit the doctor more often, despite the poorer health status of men. Pinkhasov et al. (2010) came to a similar conclusion, they tested this in the United States. On top of that, they didn't only find that men have poorer actual health, but that men have a less healthy lifestyle than women as well. They state that interventions are needed to solve this disbalance in perceived health and actual health between men and women. This less healthier lifestyle in combination with a relative high perceived health status of men suggests that women care more about their health than men do. Therefore, women perceive their health probably not poorer because of solely an poorer actual health status but because they care more about their health as well. This makes the perceived health status a relevant variable to include in this study, as it apparently does not completely overlap with the actual health status and these differ per gender.

A possible declaration for this discrepancy lies in possible gender differences in communicating and reporting health issues. A very recent study by Burton et al. (2022) suggests that this is very relevant nowadays. Women may be more inclined to express and discuss health concerns, while men may tend to do the opposite. This could declare the difference between men and women in self-reported health. Another explanation for it could be that society is reasoning from the men's perspective and women fall by the wayside earlier. Howard, Ehrlich, Gamlen and Oram (2017), as well as Collins, Bardwell, McNeil and Boyd (2019), report a bias in the 'gender neutral' approach. Howard, Ehrlich, Gamlen and Oram (2017) found that studies which try to be gender-neutral, are actually gender biased. Collins, Bardwell, McNeil and Boyd (2019) found that the way the media characterized an overdose crisis in North America was meant to be gender-neutral, but was, in fact, gender biased. Both studies concluded that it was aimed at the men's perspective, instead of a true gender-neutral

perspective. Still, this does not mean that the actual health status is irrelevant to the study. Because, it is still to be assumed that an individual with a poorer health status is more likely to visit the doctor than a completely healthy person, of the same gender.

Now, the theoretical framework will be applied to this factor. The social role theory fits the best to this factor. This theory emphasizes the expectations of the social environment and the imposed social role men and women have to fulfil, according to the social environment. By means of the study of Burton et al. (2022), it is already shown that this stereotype of the stoic man and the emotional woman has an effect on healthcare utilisation differences between men and women. This study fits in the social role theory, it could be stated that it is just not the role of the men to perceive poor health, even despite a probable unhealthier lifestyle. And for women, it could be the other way around. This leads to the first hypothesis:

Hypothesis I: the actual and perceived health status positively intervenes in the correlation between gender and healthcare utilisation.
H_0: the actual and perceived health status do not intervene in the correlation between gender and healthcare utilisation.

As the hypothesis may seem complicated, it will be briefly explained. It comes down to the expectations that women care more about their health. This would lead to the case that the health status of women, both actual and perceived as they are related to each other, make them visit the doctor more than it makes men visit the doctor. This is what the hypothesis implies. Because men will be defined by zero and women by a one in the operationalisation, it is 'negatively'. The other hypotheses will be formulated in the same way and won't be clarified the way it is done here. Only when the direction changes or is missing, a clarification will be given.

Both concepts, actual and perceived health, are included in this hypothesis to provide an as complete overview of health as possible. Both measurements cannot be separated from each other, as the actual health status should affect both the perceived health status as well as the number of doctor visits. It is expected that women perceive their health as poorer overall and therefore visit the doctor more often. Besides this academic argument to fit these two aspects in one model, there is a practical reason for it too. Namely, sometimes it is debatable whether or not someone belongs to actual health or perceived health. Mobility limitations for example. Health contains mobility limitations as well. It is debatable whether it falls under perceived actual health, as it is subjective whether getting up out of a chair was difficult, for example. Thereby, the expectation is that the mobility limitation variables correlate strongly with age, as mobility limitations usually come with old age.

2.2.2 Mental health

Here, mental health will be discussed as the second factor that could determine the relationship between gender and health utilisation. Because actual and perceived health is discussed above, mental health will be discussed directly afterwards. This way, a complete as possible overview of health will be presented, as health status and gender differences in this status is on first sight the most logical reason to determine the relationship between gender and healthcare utilisation. Because mental health is substantially different from actual and perceived health, even though they are expected to have a strong correlation, mental health has got its own factor.

There are three standard propositions in the literature in relation to gender and mental health issues. These propositions are in short: (1) men and women have overall equal rates of mental

issues; (2) women's mental issues are mainly depression, while men's issues are mainly behavioural; and (3) the reaction to a stressful condition differs per men and women. Hill and Needham (2013) tested if these propositions actually hold or not. All three of these propositions did not hold in their sample. The results are mixed up and differ per situation in their conclusion. There is not one obvious direction as the strength and direction of the relationship depend on the situation. Rosenfield and Mouzon (2013) also find that both men and women have mental issues. They, actually, do argue that the kind of issue is gender dependent, which is in line with the second proposition. Although, this could still be in line with Hill and Needham (2013), as Rosenfield and Mouzon (2013) only look at the U.S., and their findings could fall under the statement of Hill and Needham (2013) that the outcome depends on the situation. The same is the case for Koopmans and Lamers (2007). They find that women use higher levels of speciality care due to mental health issues, conceptualised as somatic morbidity and mental distress. But, again, this research was based on only a part of The Netherlands, so it could be situational as well. Therefore, it is to be expected that mental health intervenes in the relationship between gender and health utilisation because there are actually gender differences observed. But, in what direction and to what extent mental health determines this relationship, is not clear based on the current state of knowledge.

Applying the theoretical framework to this factor would lead to the social role theory and the study of Burton et al. (2022) once again. Maybe the stereotypes of the communicating and emotional women and the stoic and strong men prevent men from sharing mental health issues untroubled while these stereotypes would lead to the opposite for women. It wouldn't be an odd explanation, following the social role theory. This could lead to differences in mental health between men and women, which are suggested to be present by the studies consulted here above. Still, the theoretical framework does not suggest a certain direction, it only acknowledges that it could be harder for men than for women to talk about mental health issues, not if men or women have more or less health issues. Therefore, mental health is to be expected to intervene in the relationship, as more mental health issues would likely lead to more doctor visits. But, there is no specific gender direction expected, therefore, there is no direction included in the hypothesis. This leads to the second hypothesis:

Hypothesis II: the mental health status intervenes in the correlation between gender and healthcare utilisation.
H_0: the mental health status does not intervene in the correlation between gender and healthcare utilisation.

2.2.3 Risk aversion

The third factor to be discussed is risk aversion. In literature, there is not much disagreement about risk aversion differences per gender. The consensus is that women are overall more risk-averse than men. Risk aversion differences between genders have been an academic point of discussion for decades. Jianakoplos and Bernasek (1998) wrote one of the most famous articles in this context. They found that women in the U.S. are more risk-averse than men with regard to financial decision-making. This could explain the differences in wealth between men and women as well. An increasing number of articles which proved quite the same were published in these years. At the beginning of this century, the assumption was that women are more risk-averse than men. This assumption got tested in all kinds of fields afterwards. Not only behavioural studies but also experimental studies suggested this difference in risk aversion to be present. Sapienza, Zingales and Maestripieri (2009) for example, found this difference between men and women in risk aversion to be present in their sample through a

testosterone test in an experimental context. Because there is nearly no debate about this factor, this factor is the third in the sequence of factors, behind all the health-related factors.

As stated above, the assumption that women are more risk-averse got tested in several academic fields. In this study, it will be applied to health utilisation. Pinkhasov et al. (2010) actually watch this relationship, as they conclude that men are less likely to visit the doctor, because of their high-risk behaviour. Thereby, overall, women visit the doctor more frequently (Koopmans & Lamers, 2007; Harvard Health, 2019) which suggests a higher level of risk aversion. Intuitively, when someone is more afraid of possible risks (i.e., more risk averse) it seems logical to visit the doctor more often, in order to control these threats. At the same time, as is pointed out by Pinkhasov et al. (2010), it makes sense that men visit the doctor less, even though they are less healthy according to Pinkhasov et al. (2010), solely because they are less risk averse, or even risk-seeking.

Now the relevance of this factor is discussed, the theoretical framework will be applied in the context of this factor. The social role theory is maybe one of the best applicable theories in this case. The role for men is to be more risk-taking, this fits their imposed social role to be assertive and competitive. While the role of women is to be more risk-averse in their behaviour because their imposed social role is to be careful and cautious (Fyall et al., 2015). Because this is the general social construct in Western societies, men and women are inclined to behave according to this role division. Due to bounded rationality, individuals often don't consider deviant alternatives to this role division. This would be the declaration of social constructionism. The theory of planned behaviour could be applied to this factor as well. Sapienza, Zingales and Maestripieri (2009) pointed out that this difference in risk aversion could also be declared by different testosterone levels, and thus not only social environmental factors. This would imply a difference in behavioural beliefs and to it associated attitudes toward the behaviour. Or, in other words, that would imply gender differences are present, even when the social environment is left out of account. The normative beliefs, and to it associated subjective norms, are expected to be in line with the above-mentioned social environmental factors. Therefore, the difference in the level of risk aversion between genders could be declared by the theory of planned behaviour as well. Therefore, when applying the theoretical framework, a difference in the level of risk aversion between gender is to be expected. Men are expected to be less risk averse while women are expected to be more risk averse. It cannot be concluded whether the less risk aversity of men affects their, expected to be, lower level of healthcare utilisation affects the healthcare utilisation more than the women's higher risk aversity affects their higher level of risk aversity. Therefore, there is not a direction included in this hypothesis. This leads to the third hypothesis:

Hypothesis III: the level of risk aversion negatively intervenes in the correlation between gender and healthcare utilisation.
H_0: the level of risk aversion does not intervene in the correlation gender and healthcare utilisation.

2.2.4 Education

As a fourth factor, education level will be discussed. In Europe, there is not a gender gap in education such as in health. Actually, there are even more women than men in current higher education (Van Bavel, 2012). Even though there is not a problematic gender gap, education is still a very relevant variable considering the relationship between gender and health utilisation. For example, Koopmans and Lamers (2007), Kang and Deren (2009) and Patel and Chauhan (2020) all include education in their model as a control variable, while having

health utilisation as the dependent variable. A higher education level could lead to a higher help-seeking propensity and a higher level of healthcare utilization, which is most of the time the reasoning behind the inclusion of this variable. Therefore, this variable could intervene in the researched relationship. But, as the expectation is that there are no significant gender differences in this factor, the intervening effects of this factor aren't expected to be impactful as well. Still, it is a relevant variable to control for. If there is a gender-related variation in this factor, it could declare a part of the relationship between gender and health utilisation.

When applying the theoretical framework to this factor, the theory of planned behaviour may be the best applicable theory. Namely, education may influence behavioural beliefs as education provides more insights to an individual, which could make this individual change his or her attitude. As written above, more education could eventually lead to a higher help-seeking propensity and a higher level of healthcare utilization. This statement is in line with the theory of planned behaviour. It also has some point of contact with social constructionism, in the sense that bounded rationality got declined, even though this would still play a role as bounded rationality is only reduced, not disappeared. Therefore, education is to be expected to affect the level of healthcare utilisation. This leads to the fourth hypothesis:

Hypothesis IV: the level of education does intervene in the correlation between gender and healthcare utilisation.
H_0: the level of education does not intervene in the correlation between gender and healthcare utilisation.

Because this factor hasn't got a strongly suggested gender difference, the hypothesis is neutrally formulated, i.e. there is no specific expected gender direction formulated as is the case for the third hypothesis. This factor is because of this lack of expected gender difference, this factor is behind the level of risk aversion in the factor sequence. The same is the case for the next factor: the financial situation.

2.2.5 Financial situation

The final included factor is the financial situation. Shariff and Singh (2002) found in a case study in India that women who earned more themselves were able to find professional help more often. A higher income means a lower threshold to visit the doctor. Therefore, household income is relevant. This measurement covers more than individual income would do, as the income of a potential partner is included as well. This factor could intervene in the researched relationship if there are differences in the financial situation between men and women in the sample. Mangalore (2006) concluded that income has a delayed effect on the current healthcare utilisation and health status, she based this conclusion on British longitudinal data. Bertakis, Azari, Helms, Callahan and Robbins (2000) included income as a control variable in their study which is comparable to this one as they look into factors that could declare gender differences in health utilisation. They found that men in their sample had a higher income, while women used healthcare utilization more. They found that income had a significant effect on health utilisation as well, this would suggest that people with a higher income use healthcare more often. They did not look into the gender difference in this respect as detailed as Shariff and Singh (2002), so a similar conclusion could not be drawn from this study. Still, the significant coefficient of income suggests quite the same, even though gender difference is not included. Roy and Chaudhuri (2008) actually did conclude something similar to Shariff and Singh (2002). In their study, based on survey data from India as well, did they conclude that older women who are financially empowered might have a health advantage and could use healthcare more because of that empowerment. In nearly all of these studies, men had a

higher income and a higher income is correlated with better health. The study of Noh et al. (2017), which has been discussed in 1.4, found that women in lower-income households would like to visit the doctor more often, but are not able to do that. This correlation was not found significantly for men. This would suggest a gender difference in this respect.

When applying the theoretical framework to this factor, the social constructionism theory seems to be the best fit because this theory is the most aimed at the environment. Household income can be seen as an environmental factor and less as a cognitive factor, such as education. This division is quite arbitrary as the justification for this theory lies in such nuanced differences. Even though, social constructionism focuses, among others, on expectations from the social environment. People with a lower income may are expected to care less about their health, as 'surviving' is more important. While people with a higher income have the 'luxury' to care about much more than only surviving. This is in line with Maslow's hierarchy of needs, which states that the basic needs need to be met in order to think about further needs (McLeod, 2007). This theory does not declare gender differences in this context. Therefore, the following hypothesis isn't directional:

Hypothesis V: the financial situation does intervene in the correlation between gender and healthcare utilisation.
H_0: the financial situation does not intervene in the correlation between gender and healthcare utilisation.

3. Methods and data

The hypotheses formulated in chapter 2 need to be tested. In this chapter, the aim will be on the method and the data that will be used to test the hypotheses in order to answer the research question. First, in 3.1, the case selection will be discussed together with the data collection method. So, this paragraph will be about the selected dataset, the selected wave of this dataset and the selected countries. Second, in 3.2, the method of analysis will be discussed and in 3.3, the variables will be operationalized. This means that the conceptualized terms in chapter 2 will be made measurable. In conclusion, the reliability and validity of this research will be discussed in 3.4.

3.1 Data collection

In this research, data from the SHARE dataset is used (SHARE Data, n.d.; Börsch-Supan et al., 2013; Börsch-Supan et al., 2015; Malter & Börsch-Supan, 2015). This is cross-national panel data aimed at health, ageing and retirement in Europe. The respondents are European women and men between the age of eighteen and one hundred and four years old. There was much relevant data available per person, which makes this dataset appropriate and fitting to the research question. Because this thesis is a cross-section, one wave had to be chosen. Wave 7 had the most observations and wave 8 was the most recent data available. Even though, this thesis is based on wave 5, which is measured in 2013. The reason for this is that the most relevant variables were available with the least missing observations. For example, the variable that measures if a respondent didn't visit the doctor because of costs, is only measured in wave 5, while this is a relevant variable for this thesis. Thereby, this wave has significantly less missing data than waves 7 or 8. This is because some variables are only measured once, namely, the moment that someone starts participating in the panel data. The assumption for these variables is that they did not change over time. Therefore, some variables have only been measured in one wave. Wave 4 and wave 5 have been the first waves of most participants, which led to many observations for these variables in these waves. As many started in the fourth wave as well, some variables had to be imputed from wave 4 (Börsch-Supan, 2022b). The advantage of wave 5 is that there is only a timespan of two years between these two waves, as wave 4 is measured in 2011. This makes it even more likely that the values of these variables didn't change indeed. These variables will be discussed in paragraph 3.3 in more detail.

Eighteen countries are included in the SHARE dataset: Austria, Belgium, Czech Republic, Switzerland, Germany, Denmark, Estonia, Spain, France, Hungary, Italy, Israel, Luxembourg, Netherlands, Poland, Portugal, Sweden and Slovenia. All of these are European countries, except for Israel. Therefore, Israel has been excluded from this study. It only added a few observations to the final sample and, thereby, it is convenient regarding the conclusions of this thesis. These can now be based on Europe, and not Europe and Israel. It seems to be dissonant in the dataset and is, therefore, excluded.

There are 109,798 respondents in the dataset of wave 5. The selected sample consists of 7,313 respondents. This is a huge decline compared to the available population. This is due to many variables included in this study. The average age of this sample is 61. This is quite an old age which will be keep in mind when coming to the results and conclusions. This many variables had to be included, as the relationship between gender and health utilisation is broad. In order to declare this relationship, this much variables needed to be included. This could lead to a loss of significant outcomes and representativeness because the amount of observations normally declines as more variables are included. On the other hand, a wide variety of

variables included should lead to more declaring the power of this study. Moreover, in the population, there are missing values, in the sample there are not. In the end, the number of observations, 7,313 per variable, should be enough in order to get significant outcomes. However, to come from data to test the hypotheses, a research method is needed. This method will be discussed in the next paragraph.

3.2 Method of analysis

This is a quantitative deductive study. The main regression will be based on an ordinary least squares (OLS) regression and will be a multiple linear regression because there are several independent variables. Gauss developed and used this method first in 1795 (Stigler, 1981). The method has been increasingly used since, meanwhile, it is one of the most used research methods (Krueger & Lewis-Beck, 2008). OLS tries to fit a line through a set of points, this line is determined by the minimum total amount of squared residuals (Dismuke & Lindrooth, 2006). If there is a linear relationship between the dependent (Y) and independent (X) variables, the estimated line should have a good fit. In this case, the model works well in predicting this relationship between X and Y. How well this goodness of fit is, is expressed by the R-squared (R2) (Dismuke & Lindrooth, 2006). The R-squared states what proportion of the variance in the dependent variable(s) is declared by the independent variable(s). One means that the line perfectly explains all the variation between X and Y. Zero means the opposite. Everything in between means that the independent variables explain some of the variation between X and Y, but not everything. Note that this is all about linear regression, which means that the relationship between X and Y is estimated to be linear. More of X would correlate with more of Y for a positive sign and more of X would correlate with less of Y for a negative sign. As the R-squared states what proportion of the variance in the dependent variable(s) is declared by the independent variable(s), it is a fitting method for answering the research question. Actually, this question is about the variance in the dependent variable, healthcare utilisation, and by which degree it is declared by the independent variables, the discussed factors in chapter 2. Therefore, the OLS method is used to test the hypotheses in order to formulate an answer to the research question. More practically, the regression analysis will start with the base model, which only includes gender and non-factor-related variables. Afterwards, per model, a factor will be added. Per model especially the coefficient and the level of significance of gender will be analysed. If the coefficient between gender and healthcare utilisation becomes insignificant, its effect on healthcare utilisation had apparently been determined by the included factors in that model. These regressions, but all the other data-related actions have been done with STATA.

As stated above, only one wave will be analysed. Therefore, this is a cross-section study. Despite the fact that the SHARE database (SHARE Data, n.d.) has well-organized panel data, this decision is made because it fits better with the research question. This is the case because many variables are time-invariant, such as risk aversion, martial state, education level, etc. All these variables won't change or won't change much over time. If panel data was used, either fixed or random effects method must be used as well. The Durbin-Hausman pointed out that random effects would be biased, therefore, fixed effects should be used (Choi, 1994). The fixed effects method drops out all the variables which are stable over time. As many relevant variables are stable over time, a cross-section is used instead of panel data. Therefore, a cross-section study is applied. This means that fixed effects cannot be used anymore, as fixed

effects refer to keeping variables stable over time, but there is no time unit in a cross-section study.

3.3 Operationalisation

Now the data and the research method are clear, the variables themselves can be analysed. Until now, the conceptualisation had taken place and the factors are identified in chapter 2. Thereby, the used data is discussed as well in 3.1. Therefore, it is now time to discuss the variables so that the identified factors in chapter 2 became measurable. Every variable will be defined including the measurement itself, the level of measurement and the meaning of the possible values. All the references to the survey, refer to the SHARE database (SHARE Data, n.d.). All the variables are retrieved from or based on this database. The same sequence as in paragraph 2.2 will be used. This paragraph is summarized in Table 1 in Appendix A.

Before the independent variables will be discussed, first, the dependent variable: healthcare utilisation. In order to make healthcare utilisation measurable, it must be operationalised. This is to say, it must be broken down into measurable aspects; variables. In this thesis, healthcare utilisation is measured as doctor's visits. The first reason for this decision is that it is not uncommon in literature to operationalize it this way. Agerholm et al. (2013) for example, also use doctor's visits as operationalisation of healthcare utilisation. Many other studies used doctor's visits as one of the determinants of healthcare utilisation Frimmel and Pruckner (2020) for example, used doctor visits, medication prescriptions and hospital days as well. The second reason to operationalise healthcare utilisation as doctor's visits is the argument that a doctor is at the start of that medical processes in general, this argument is provided by Agerholm et al. (2013) as well. Healthcare utilisation is only operationalised by doctor visits in this study, and not, as in the study of Frimmel and Pruckner (2020), by several variables. This is because of the already broadly defined measurement of 'doctor visits'. Namely, it is measured via a question in the SHARE survey: "Times talked to medical doctor/nurse about your health last 12 months." So, the term 'doctor visit' is actually a simplification. Doctor refers to doctors as well as to nurses and visits refer to times talked to. Because nurses are included as well, the definition goes further than just a family doctor; a GP. Namely, nurses work in among others residential care homes and hospitals. Therefore, this is quite a broad definition. Still, the term 'doctor visit' will be used in this thesis for practical reasons, but it refers to this measurement. Because it is about the number of times talked, it is an interval-ratio variable.

Now, the independent variables will be discussed. To start with the main independent variable, which is gender. Gender is a dummy variable and is measured as male (0) or female (1). As there is no category between both, it is a nominal variable. Here, the two other variables which don't belong to a factor will be discussed as well. Age is measured in years and is an interval-ratio variable. The amount of children is an interval-ratio variable as well.

Then, the first factor will be discussed: actual and perceived health status. Objective or actual health is a versatile variable, for which there are several variables to catch this concept. One or two variables would not be sufficient to catch the versatility of this concept. The first variable to catch this concept is the variable 'long term illnesses'. This is a dummy variable. Respondents who have a long-term illness were supposed to answer yes (1) and if they were healthy, they were supposed to answer no (0). Second, the variable that measures 'health problem that limits paid work'. This variable is chosen, as it relates besides to actual health, to

the financial section as well and fits therefore in this study as a whole. The different subjects cannot be seen separately, they're interconnected with each other. This variable is measured the same way as long-term illness and, therefore, is a dummy variable as well. Third, the body mass index. From the SHARE dataset, the length in centimetres and weight in kilograms from every respondent is retrieved. Via a formula, the BMI could be calculated. The Centres for Disease Control and Prevention (CDC) (2022) made a categorial index for every outcome. The BMI variable is used in this category. A score of 18.5 or lower means underweight (1), a score of 18.5-24.9 means a healthy weight (2), a score of 25-29.9 means overweight (3) and a score of 30 and higher means obesity (4). It is an ordinal variable. Then, not per se an indicator of bad health, but more an indicator of an unhealthy lifestyle, the variable which measures "how many drinks in a day?" The answers are the estimated number of drinks per day according to the respondent. This is an interval-ratio variable. As discussed in the final section of section 2.2.1, mobility problems correlate with age as well as with health. But whether or not this measurement is perceived or objective, is harder to say than for long-term illness, for example. The first mobility variable measures if the respondents experience difficulties walking 100 metres. The second mobility variable measures if the respondent experiences difficulties getting up from a chair. Bot answers could be answered by either yes (1) or no (0).

Then, the factor of mental health will be discussed. This concept is operationalized using three variables. First, this concept is operationalized by self-perceived health on the U.S. scale. The respondents were asked what their health is in general. The answer options were: poor (1), fair (2), good (3), very good (4) and excellent (5). This is an ordinal variable. Second with the statement 'Sad or depressed last month'. This statement could be answered by either yes (1) or no (0). This is a dummy variable. Third, the statement 'feels lonely' was given to the respondents. The answer options were: hardly ever or never (1), some of the time (2) and often (3). So, a higher score means a higher level of loneliness. In conclusion, the variable life satisfaction. The respondents were asked to answer the question: "How satisfied are you with your life?" on a scale from 0 to 10. This is an ordinal variable.

Then, the factor of risk aversion will be discussed. Risk aversion is measured in two ways. First, the respondents were asked to reveal their level of risk aversion. There were four options for the respondents to choose from: take substantial financial risks expecting to earn substantial returns (1), take above average financial risks expecting to earn above average returns (2), take average financial risks expecting to earn average returns (3) and not willing to take any financial risks (4). So, a higher score stands for a higher level of risk aversion. This is an ordinal variable. Second the insurance status is included in this factor as well, as it is expected to provide more information on the risk aversity. People with a higher level of risk aversion are expected to be insured more often. Because it is in the context of health, the chosen way to operationalize is via this statement in the survey: "Has supplementary health insurance." It could be answered by either yes (1) or no (0). It is a dummy variable. This variable is included as a sort of control for the ‘main’ risk aversion variable. This variable actually measures if people handle risk averse or not. The assumption here is that only the most risk averse respondents have supplementary health insurance. Therefore, this variable is included in this concept as well.

Afterwards, the concept of education will be operationalised. This concept is operationalised using two variables as well. This is because via several ways of measuring, a more complete operationalisation of this concept will be used. Although, the variables probably correlate

strongly with each other. Whether this is problematic or not, will be discussed in chapter 4 under multicollinearity. In the first place, this concept is made measurable by the variable which measures the highest school degree obtained. The answer refers to which education country-specific category the respondent belongs. A higher category means a higher obtained school degree. There are twenty-five categories. It is an ordinal variable. Secondly, this variable is measured as years of education. In one way, this variable says less about the education level concept, as more years of study don't necessarily mean a higher obtained degree. Still, this measurement is widely used in academic literature, as it is easy to measure and easier to compare. It is an interval-ratio variable.

In conclusion, the concept financial situation will be discussed. This is a versatile concept as well and there are therefore several variables included to catch this concept. This concept is first operationalized by the question: "Was there a time in the past 12 months when you needed to see a doctor but could not because of cost?" This variable is only measured in wave 5, which is one of the arguments to use this wave. This variable fits this thesis very well as it refers to costs, the decision to use healthcare and not and as it explicitly refers to the doctor, exactly how healthcare utilisation is operationalised. This question could be answered by either yes (1) or no (0). This is a dummy variable. Then, the household income variable. "Total income received by all household members an average month last year" is the measurement in the survey. This answer could be answered by an amount of money. Because some oddly high incomes had been reported, which would disrupt the OLS regression, this variable is made categorical. The categories are quite equally distributed in the sample. It is categorised as follows: €0 (0), €1-€2000 (1), €2001-€4000 (2), €4001-€6000 (3) and €6001 and more (4). Because it is made categorical, it is an ordinal variable.

In line with this variable, but maybe even more explaining to some extent, the variable 'household meets ends', is measured via the statement "household is able to make ends meet". It is measured as an ordinal variable, where a higher category means more agreeing with the statement, so, more likeliness to make ends meet. The answer options are: with great difficulty (1), with some difficulty (2), fairly easily (3) and easily (4). As many of these variables refer to households, it is useful to know whether someone is married and living together or not. This is measured as a dummy variable where 1 stands for that this is the case and 0 for not. Job status is a very commonly included variable when healthcare utilisation is the dependent variable. Because job status would be a nominal variable and this category of variables cannot be included in an OLS model effectively, this term has been split into several dummy variables. These dummy variables are: retired (1) or not (0); employed or self-employed (1) or not (0); unemployed (1) or not (0); permanently sick or disabled (1) or not; and homemaker (1) or not. These dummies together measure the job status of the respondent.

Concludingly, all the conceptualised factors in paragraph 2.2 were operationalised, which is to say: made measurable. Most of the time, this is done by using several variables, as the concepts are too broad to catch in one single variable. The factors are healthcare utilisation, gender, actual and perceived health, mental health, risk aversion, education and financial situation.

3.4 Validity and reliability

First, the validity of this study will be discussed, and afterwards, the reliability will be discussed as well. Peeters and Harpe (2020) did quite recently a study on validity and how it

is used in the health literature. They found that there is no consistent framework which is used and that the conceptualisation of validity has changed several times over the last decades. Peeters and Harpe (2020) state that validity was in the first place aimed at generalisability, whether or not the result of a study is generalisable to the whole population. This conceptualisation of validity is called criterion validity or external validity. Later on, construct validity or internal validity, was added to the conceptualisation of validity as well. This conceptualisation is aimed at the measurements and if it really measures the aspects it should measure. One of the main claims of Peeters and Harpe (2020) is that a measurement cannot just be valid, without stating how it is used and what the context is. They claim that validity is not a property which can be claimed on a certain measurement, instead validity is a matter of interpretation. Something can be valid in a certain group with a certain purpose, it cannot be valid in general, is what they claim. This contemporary framework will be applied in this study as well.

First, the criterion validity of this study will be discussed. Through the framework of this conceptualisation of validity, this study cannot simply be claimed to be valid. An argument in favour of criterion validity is the fact that the respondents of the SHARE dataset are selected randomly. In wave 5, 109,798 respondents are included. This sample is expected to be valid, in terms of criterion validity, for the included countries in that year, 2013. However, the sample of this interviewed population consists of 7,313 respondents, which is less than 10% of the population. This is quite a small proportion, which threatens the criterion validity. Still, in order to be as valid as possible, the characteristics of this sample will be compared to the characteristics of the interviewed population. If these characteristics correspond, it is an argument in favour of criterion validity, it would be an argument that the sample is representative of the interviewed population. This will be done in paragraph 4.1. Still, this study can be valid for the included countries in the year 2013 at most, this is in line with the contemporary framework which is provided by Peeters and Harpe (2020).

Second, the construct validity will be analysed. In the previous paragraph, the concepts are operationalised quite extensively. This makes it plausible that has been measured what should have been measured. For example, health utilisation is conceptualised as doctor's visits and this concept is operationalised via a question in a survey which asks for precisely this event. This example is illustrating both conceptualisation and operationalisation: everything is reduced to a quite specific term. Another example is the concept of actual health. This concept is operationalised using objective measurements (for example long-term illness), lifestyle measurements (for example drinks per day) and mobility measurements (for example difficulties coming out of a chair). All these aspects are taken into account, which makes it more plausible that the actual health is actually measured. Still, some arbitrary choices have been made which are debatable. For example, the measurement of doctor's visits is expected to be construct valid, but doctor's visit as a conceptualisation of healthcare utilisation is quite a limited measurement. Therefore, the measurement of healthcare utilisation in general cannot be claimed to be construct valid per definition. Thereby, what weakens the construct validity as well, is the fact that this is a cross-section study, only data from the year 2013 is included. In that sense, panel data is expected to be more construct valid, as it takes several years into account what controls for odd statistics. It would reduce a possible bias in the dataset. Although 2013 wasn't an odd year in Europe, as the Euro crisis was almost and there was no main crisis, it cannot just be assumed that this year is representative of the surrounding years. Therefore, in line with the framework provided by Peeters and Harpe (2020), this study is

expected to be construct valid for the included countries for 2013 for the measured variables. However, validity on a more covering level cannot be claimed without several assumptions.

In conclusion, validity cannot just be claimed on a higher level than the measured year, 2013, and the included countries. 'Claiming' validity is even wrong in general, according to Peeters and Harpe (2020). In order to achieve validity on a higher level, for example on the level of health utilisation in general, some assumptions had to be made to consider doctor's visits as representable for health utilisation in general. These necessary assumptions weaken the validity.

This study is expected to be reliable because it is quite easily reproducible. The only obstacle could be that the SHARE database is not open access. But access will be provided when it is legitimately requested. Furthermore, all the used datasets are part of the SHARE database, which makes all the data-related actions reproducible. To make it even easier to repeat this study, a table is added in the appendix which presents all the used variables and their variable names including the belonging dataset. This table can be found in Appendix A. This table makes this study more transparent and reliable. All the used academic and non-academic sources which are consulted are accessible as well.

4. Results

In this chapter, the results will be discussed. In 4.1 the descriptive statistics will be presented. This includes the basic descriptive statistics for the variables, sample and population comparisons in order to check for criterion validity and a check on multicollinearity. In 4.2, the analysis will be presented. The method of analysis, discussed in 3.2, will be applied in this section. Here, either the alternative hypotheses or the null hypotheses, which are formulated in chapter 2, will be rejected. The results will be in line with the aim of the research questions and the theoretical framework, formulated in chapter 2. Therefore, the research question will be repeated here:

'What are the factors which determine the effect of gender on health utilisation?'

For the sake of clarity and structure, only the most important tables are shown in this chapter. Some less relevant tables are shown in Appendixes B, C and D.

4.1 Descriptive statistics

To start, the basic descriptive statistics of the sample will be presented per variable in Table 1. Only the most remarkable or important statistics will be explained. Chapter 2 plays an important role in this analysis as quite a lot of expectations were formulated here. Here, it will be tested whether these expectations are present in the used sample. There will be referred to Tables 1, 2 and 3 in Appendix C, as these tables present the same as Table 1 below, but more in detail. In Table 1 here below, only the mean and the standard deviation are presented. In the tables in the appendix, the minimum and maximum are presented as well, even as statistics for all genders together, these are presented in Table 1. Thereafter, the criterion validity will be analysed: the characteristics of the sample and the interviewed population will be compared in order to figure out to what degree the sample is generalisable to the interviewed population. In conclusion, a brief check on multicollinearity will be done.

So, the descriptive statistics will be discussed. As stated above, the main descriptive statistics can be found in Table 1 here below. It can be seen that women tend to visit the doctor more often than men, in 2013 on average around 0.6 times more. Although, this difference falls in the margin of the standard deviation, which means that this difference is not significant. Even though, this outcome would confirm the expectations based on the theoretical framework presented in chapter 2. Therefore, it is not odd to see this gender difference in this sample as well. The gender ratio is around 0.5, which means an equal distribution. The average age is striking as well, as the average age of the sample is around 61 years, see Appendix C, Table 1. This is a relatively old sample while the standard deviation is quite small as well, around 7 years. This could declare that nearly 40% of the sample is already retired. This makes the conclusions of this study can only be generalised to the elderly.

Both the level of the variable BMI and the drinks per day are higher for men than for women. This is in line with, in paragraph 2.2.1, formulated expectations that men have a less healthy lifestyle and are less healthy as well. Opposite to the formulated expectations in 2.2.1, is that the perceived health of women is not lower than for men. However, the perceived health status of women is not significantly higher, while the actual health of women seems to be better. This could suggest that women perceive their health as lower, or in other words, are more critical of their own health. This would be in favour of the expectations formulated in 2.2.1, but it cannot be proven.

Table 1: descriptive statistics comparing genders (N = 7313)

	male		female	
	Mean/Prop.	SD	Mean/Prop.	SD
Healthcare utilisation	5.37	8.82	6.02	9.22
Age	61.38	7.06	59.96	7.04
Number of children	2.08	1.22	2.06	1.20
Long term illness	.41	.49	.43	.49
Health problems limit work	.15	.36	.17	.37
BMI	2.87	.71	2.65	.79
Drinks per day	3.35	6.32	2.53	5.03
Difficulties walking 100m	.03	.17	.03	.17
Difficulties getting of chair	.10	.30	.13	.34
Perceived health	3.36	1.04	3.41	1.04
Sadness	.29	.45	.43	.49
Loneliness	1.17	.44	1.21	.48
Life satisfaction	8.09	1.44	8.06	1.54
Risk aversion	3.42	.70	3.60	.60
Insurance status	.49	.50	.48	.50
Education level	6.02	4.02	6.04	4.06
Years of education	12.57	4.54	12.32	4.43
Not visit doctor due to cost	.01	.12	.03	.17
Household income (€)	1.85	.87	1.84	.88
Household make ends meet	3.44	.78	3.37	.83
Marital status	.76	.42	.70	.46
Retirement	.42	.49	.34	.47
Employed or self-employed	.53	.50	.53	.50
Unemployed	.02	.14	.03	.17
Permanently sick	.03	.16	.03	.16
Homemaker	.00	.05	.07	.25

The proposition that men and women overall have the same rate of mental issues does not hold in this sample. Especially the variable sadness shows gender differences. Rejecting this proposition is in line with the study of Hill and Needham (2013) which rejects this proposition as well. The level of risk aversion of women is indeed higher than for men, this was the expectation based on the, in section 2.2.3 reviewed, literature. Education level is indeed quite similar, women have a higher education level while men have more years of education, but the differences are relatively small. This is in line with 2.2.4. The factor financial situation consists of a few household variables, which makes it important that there are no substantive differences in household characteristics between men and women. Men are slightly married more often than women. This difference could influence the household variables. Overall, the financial situation of men and women are quite comparable. Only the retirement rate of men (0.42) is notably higher than this rate of women (0.34). Furthermore, there are no remarkable differences between both genders in this respect.

Criterion validity

As been presented a few times already, the sample size is much smaller than the interviewed population: 7,313 in the sample against 109,798 respondents in the population. Arguments for this big of a difference have been provided in chapter 3. However, such a big difference threatens the criterion validity: is the sample representative of the interviewed population? This question will be ought to be answered here. As is discussed in paragraph 3.4, the interviewed population is likely to be generalisable for the whole population, as it is quite a big sample and the respondents have been chosen randomly by SHARE. Therefore, the selected sample should have similarities with the interviewed population, in order to provide a clear argument in favour of the criterion validity. The characteristics of the sample have been discussed here below and can be found in Appendix C as well. The characteristics of the population can be found in Appendix B. Remarkable differences or similarities will be discussed below.

First, the proportion of the countries will be discussed. The respondents per country for the population are presented in Table 5 of Appendix B. In Appendix C, Table 4, these statistics for the sample can be seen. For how many respondents have been dropped, the proportion of countries is quite the same. However, besides the research design decision to drop out Israel from the dataset (see 3.1), three other countries have been dropped as well. These countries are Hungary, Poland and Portugal. But, these countries had a quite small proportion in the sample as well. Therefore, it is not problematic per se. More threatening is the huge change in the proportions of some countries. Germany has doubled the percentage, from around 7% to 14% and the proportion of Denmark had increased even more, from around 5% to 13.5%. While the proportions of Spain and France strongly declined, respectively from around 9.5% to 3.5% and from around 7% to 0.5%. There could be a bias in these differences. For example that the respondents care more about these subjects and therefore have been dropped less. However, this is not testable. This weakness will be discussed in more detail in chapter 5.

Second, the sample will be compared to the interviewed population. First, to declare the big difference in size between the population and sample, Tables 1 and 6 of Appendix B provide some information on the observations per variable (Table 1) and how these observations decline over de models (Table 6). Note that the population size is officially 109,798, but that the first model of Table 6 consists already of 44,373 observations. This is due to the missing values. Now, the differences between both will be analysed by use of Table 2 in Appendix B and Table 1 in Appendix C. Again, only the remarkable differences will be pointed out. The healthcare utilisation in the population is around 1.3 times per year higher than in the sample. This could correlate with the differences in the variable which measures the difficulties walking 100 metres. In the sample, 2.9% experiences difficulties with this, while in the population this percentage is 11.2%. Although, this difference is not significant, as it falls within the margin of the standard deviation. But still, it seems that the sample is more healthy than the population. In the population, a slight majority of the respondents are female, while in the sample a slight majority are men. This could declare that the variable that measures drinks per day has a higher mean in the sample as men are expected to drink more per day than women. Also quite remarkable is the difference in household income. The average category in the sample is 1.8, which is between €1-€2000 (1) and €2001-€4000 (2). While in the population, the average category is 2.7. This is between 2001-€4000 (2) and €4001-€6000 (3). So, the sample has a seriously lower household income than the population has. Remarkable in this perspective is that the households in the sample can make ends meet more easily than in the population. The last noteworthy difference between both is in the job status.

In the sample, the majority is employed or self-employed, thus working, while in the population the majority is retired. This difference is a quite big one.

Overall, there are some quite important differences between the sample and the population. Although there are many similarities, some differences are strikingly and important to notice. This hurts the criterion validity. This weakness will be discussed more in depth in chapter 5. However, the gender differences between both the population and the sample are very similar. These can be seen in Table 1 above for the sample and in Table 1 of Appendix B for the population. The only remarkable difference is that the perceived health status of women is higher than the men's in the sample but lower in the population. That these proportions don't differ furthermore, suggests that the gender differences and similarities presented in Table 1 are probably actually present.

Multicollinearity

Table 5 of Appendix C controls for multicollinearity. In this table, all the independent variables are correlated with each other. A Pearson's R bigger than 0.7 is problematic because the variables explain roughly the same phenomenon in that case. This is called multicollinearity. This is not the case for all the correlations between the independent variables besides the variables age and retired. This is very well explainable, as retirement is related to age. It is to be expected that one of them will be insignificant when both variables are included in the same OLS regression model. This is not problematic, both are more or less expected to explain the same, to some extent. In line with this reasoning, it is not odd to see a big negative correlation between being (self-)employed or not and age. Furthermore, this means that every variable could have a quite independent effect on health utilisation, the dependent variable. The biggest correlations after these two are -0.47 and -0.41, this is quite far below 0.7 which means that multicollinearity is not the case. Most of the variables correlate between 0 and 0.2 with each other. This means that the coefficients of the results in 4.2 could be interpreted independently to some extent. Although 26 variables are included in this study, very few correlate strongly with each other. This suggests that the variables are well chosen; there is little overlap. This is an argument in favour of the strength of the construction validity. Namely, it improves the change that measures what is meant to be measured.

4.2 Analysis

The results of the OLS regression are presented in Table 1 here below. The reasoning behind this specific sequence of models is provided in paragraph 2.2 where the theoretical framework got applied. The reasoning behind the included variables per model is provided in paragraph 3.3 where the operationalisation is discussed. As discussed in paragraph 3.2, the research method is aimed at testing the hypothesis. Per model, after base model 1, a hypothesis will get tested. Model 1 is the first model and consists of no suggested determining factors. Afterwards, a factor is added per model. This culminates in model 6, where all factors are included. As discussed in 3.2 as well, it is mainly about the coefficient and level of significance of the variable gender. In model 1, the base model, the correlation between gender and healthcare utilisation will be measured. Only the non-factor included variables are held kept stable in this model. The coefficient and level of significance of gender in this model is the starting position. Every change in direction, strength and significance in the following models will be analysed particularly. Obviously, the dependent variable in this analysis is healthcare utilisation.

Table 2: OLS regression analysis on healthcare utilisation

	(1) Base model	(2) Perceived & actual health	(3) Mental health	(4) Risk aversion	(5) Education level	(6) Financial situation
Gender	.74***	.681***	.566***	.637***	.658***	.583***
	(.21)	(.196)	(.198)	(.197)	(.197)	(.197)
Age	.067***	.019	.026*	.033**	.039***	-.001
	(.015)	(.015)	(.015)	(.015)	(.015)	(.021)
Number of children	-.283***	-.214**	-.217**	-.204**	-.202**	-.192**
	(.09)	(.085)	(.085)	(.085)	(.085)	(.084)
Long term illness		1.789***	1.757***	1.749***	1.717***	1.724***
		(.209)	(.207)	(.207)	(.207)	(.208)
Health prob. lim. work		2.842***	2.795***	2.857***	2.916***	2.357***
		(.457)	(.456)	(.456)	(.454)	(.449)
BMI		.338**	.353**	.383**	.414***	.413***
		(.159)	(.159)	(.159)	(.159)	(.156)
Drinks per day		-.025	-.025	-.023	-.024	-.023
		(.015)	(.015)	(.015)	(.016)	(.016)
Diff. walking 100m		1.731	1.743	1.661	1.647	1.27
		(1.087)	(1.079)	(1.076)	(1.075)	(1.087)
Diff. getting of chair		1.677***	1.63***	1.581***	1.595***	1.517***
		(.51)	(.513)	(.512)	(.512)	(.508)
Perceived health		-1.621***	-1.527***	-1.576***	-1.612***	-1.526***
		(.121)	(.13)	(.131)	(.133)	(.131)
Sadness			.972***	.904***	.895***	.872***
			(.222)	(.22)	(.22)	(.219)
Loneliness			-.364	-.385	-.385	-.466*
			(.28)	(.278)	(.278)	(.283)
Life satisfaction			-.088	-.121	-.103	-.046
			(.094)	(.094)	(.094)	(.099)
Risk aversion				-.108	-.042	-.107
				(.144)	(.149)	(.15)
Insurance status				1.367***	1.274***	1.259***
				(.201)	(.211)	(.212)
Education level					.042	.031
					(.027)	(.026)
Years of education					.066**	.083***
					(.027)	(.027)
No doctor due to costs						1.356
						(.992)
Household income						-.274**
						(.11)
Household make ends						-.158
						(.154)
Marital status						-.054
						(.231)
Retirement						-2.391
						(1.838)
(Self-)employed						-3.33*
						(1.794)
Unemployed						-3.5*
						(1.849)
Permanent sick						1.243
						(2.305)
Homeworker						-2.084
						(1.887)
Constant	1.836*	7.813***	7.954***	7.589***	5.821***	11.687***
	(.957)	(1.27)	(1.45)	(1.583)	(1.658)	(2.598)
Observations	7313	7313	7313	7313	7313	7313
R-squared	.005	.134	.137	.143	.145	.153

Robust standard errors are in parentheses
**** p<.01, ** p<.05, * p<.1*

The stars next to the coefficients refer to the P-value. Three stars refer to a P-value of less than 0.01, two stars refer to a P-value of less than 0.05 and one star refers to a P-value of less than 0.1. This does not mean that these coefficients are for 99%, 95% or 90%, not a coincidence. Greenland et al. (2016) wrote an article about all the misconceptions about the P-value and statistical significance. The interpretations of the significance levels will be done through this perspective. They emphasize the importance of the assumptions of the statistical model. Long (2008) provides these assumptions for the Ordinary Least Squares method. The assumptions will be discussed briefly. OLS assumes no missing values, this is the case in this study, every model consists of 7,313 observations. Also in terms of measurement, OLS assumes low measurement errors. This refers to criterion validity which has already been discussed, mainly in 3.4 and 4.1. The measurement error cannot just be assumed to be low, based on this discussion. Now, the specification error assumptions will be discussed. The first is that no relevant independent variables are excluded. The aim of this study is to provide an as complete as possible overview of the relationship between gender and healthcare utilisation. Therefore, this assumption is expected to be justified. Another assumption states the opposite: no irrelevant independent variables are included. This might be the case because some independent variables correlate strongly with each other. There will be controlled for this by dropping out these specific variables, this can be seen in Appendix D Table 1, model 3 and 4. Model 3 drops out age and model 4 drops out the retirement variable, the most correlating variables. Still, no noteworthy changes occurred. The last assumption in this category is that the relationship is linear. In general, this is expected to be the case. The last category in which Long (2008) discusses is 'error terms'. The first assumption in this category is that there is no autocorrelation. This means that errors of observations don't correlate with each other. Because this is a cross-section study, the residuals cannot be serially correlated. Then, this assumption refers to heteroskedasticity or spatial correlation. This is already controlled in STATA. Therefore, this assumption is correct. Then the assumption of multicollinearity. This has already been discussed above. This should not be a problem. The next assumption of OLS is an expected mean of error term of zero. For this is controlled within STATA as well. The same is the case for the last assumption: error terms are normally distributed. Because STATA controls for this one, it is correct as well. Furthermore, the P-value assumes the following as well: the null hypothesis, randomness in sampling, treatment assignment, and lost and missing observations. So, the P-value is about much more than only comparing the alternative hypothesis to the null hypothesis, in fact, it doesn't even compare both (Greenland et al., 2016).

Model 1: the base model

Model 1 consists mainly of the effect of gender. This is, so to say, the fundamental correlation between gender and health utilisation. In line with the academic expectations, this coefficient is statistically significant and positive. The statistical significance tells that there is indeed a correlation between gender and health utilisation. Its P-value is below 0.01. Such a low P-value does not mean per definition that this relationship is present in the population. However, it does mean that it is a very unusual outcome, assuming the null hypothesis, which assumes no relationship, and the above-stated assumptions are correct. This, in combination with many discussed studies which conclude this relationship to be present, would suggest that the relationship is present. The positive sign tells that women are correlated with a higher level of health utilisation, conceptualised as a doctor's visit. This is in line with the academic view on this, which is described in chapter 2. If none of the factor-related variables is held stable, the

coefficient is .74, which suggests that women visit the doctor 0.73 times more often than men, on average in 2013. This coefficient will be the reference point in the other models.

The coefficient of gender should be interpreted as follows: a positive sign is expected to refer to a positive relationship between gender and health utilisation. As 0 stands for male and 1 for female, a positive sign should be interpreted as follows: being female is correlated with more doctor's visits and being male is related to fewer doctor's visits, compared to being female. A negative sign would suggest the opposite of this. A smaller coefficient means a smaller relationship between gender and health utilisation. An insignificant coefficient would suggest that there is no relationship between gender and health utilisation. Following this reasoning, a significant and great value of gender suggests that there are gender differences in health-utilising behaviour. If variables got added to the model and the coefficient of gender stays significant but declined, apparently these variables made women visit the doctor more often. Namely, controlling for variables in a model makes that these variables are kept stable, which is to say: these variables will be 'ignored' in declaring the variation in healthcare utilisation. So, the effect these variables have also dropped out for the correlation between gender and healthcare utilisation. So if the coefficient of gender becomes less positive and still significant, apparently these variables made that this correlation was higher in the previous model; they are suggested to make women visit the doctor more often. If variables are added and the coefficient of gender becomes insignificant, then the effect of gender on healthcare utilisation is probably ruled out by the other variables. Or, in other words, the correlation between gender and healthcare utilisation consists of the logic of these certain variables. Now these variables are kept stable, the effect won't be present anymore as well.

From now on, variables will be added which are to be expected to determine this correlation. Every factor discussed in paragraph 2.2 has its own model which consists of its own variables. The expectation is that the correlation between gender and health utilisation will become less significant or even insignificant. This expectation is based on the theoretical framework which tried to formulate all the possible factors that could determine the relationship between gender and healthcare utilisation. If the variables which determine this correlation got controlled for, i.e., are kept stable, the correlation between gender and health utilisation should become insignificant. In this model, the variables age and the number of children are included as well.

Age is included because of the expected effect of age on health utilisation. Leaving this variable out could lead to the omitted variable bias, as a variable which correlates with the dependent as well as with the independent variable is excluded. The same is the case for the number of children. This variable is not gender-biased; women do not get more children than men in principle. Still, this variable is included to control for the possibility that women visit the doctor more often because of the fact they have children. This possibility is assumed to be true by quite some authors, under which Noh et al. (2017). This specific case is discussed in more detail in 1.4. If these variables will be omitted, the coefficient of gender will be .662, see Appendix D, Table 1, model 2. This does not imply anything, it is just included as a control. The coefficients of both variables will be discussed after the factors have been discussed because these two variables have no priority. First, the models, which consist of the factors, and their hypotheses will be discussed one by one here below.

Model 2: actual and perceived health

This model is aimed at the actual and perceived health of the respondents, the first discussed factor in 2.2.1. As formulated in this section, these variables are expected to be the most

decisive and important in the relationship between gender and health utilisation. The actual health status is measured by the seven first included variables in this model and perceived health is measured by the last included variable. Apparently, controlling for actual and perceived health makes women go visit the doctor less as the coefficient decreases by .059 between model 1 and 2, within the same significance level. In other words, ruling out the effect of actual and perceived health makes women visit the doctor more, compared to a scenario where actual and perceived health is not controlled for. This suggests that women base their decision more on their absolute and perceived health than men do. Namely, if men would base their decision of visiting the doctor less on actual and perceived health than women do, the sign of gender would increase instead of decrease as is the case now. Remember, a negative sign would mean that men visit the doctor more often. So everything in that direction suggests that it applies more to men than to women. Therefore, between both genders is an effect of zero, there is no gender effect anymore in that scenario. It moves in that direction in this model, as apparently variables which made women visit the doctor more often are 'excluded' from the correlation between gender and healthcare utilisation.

It is interesting to see the coefficient of gender declining as it indeed suggests that men and women are less separated from each other when actual and perceived health are held stable; are 'ignored' so to say. Still, the difference is not extremely big and it even falls within the confidence interval. Therefore it can be concluded that actual and perceived health probably does determine some part of the relationship between gender and health utilisation, but the effect of it is less than many would expect. Because mainly actual, but perceived health as well, were expected to be the main explainers in the relationship between gender and healthcare utilisation. However, there is still a significant and quite big gender difference so there are still factors which determine this relationship as well.

It would not be odd to suggest that actual and perceived health is more important for the healthcare utilisation decisions for men than for women. This is due to the fact that the actual as well as the perceived health status of men seems to be lower than for women in the used sample, see Table 1. However, even in the regression table for the whole population, presented in Appendix C, Table 6, the coefficient of gender decreases, in this case from .641 to .383. While in the whole population, the perceived health of men is higher than for women while it is lower in the sample, see Appendix C, Table 1. However, this regression table cannot be interpreted the same as Table 2 here above as the sample size varies over the model. This makes the outcomes less trustworthy. Still, it is a piece of argument in this discussion.

The hypothesis that belongs to this model is repeated here below:

Hypothesis I: the actual and perceived health status positively intervenes in the correlation between gender and healthcare utilisation.
H_0: the actual and perceived health status do not intervene in the correlation between gender and healthcare utilisation.

As discussed in 2.2.1, the expectation here is that a change in actual and perceived health status makes women visit the doctor more than it makes men visit the doctor. Table 2 suggests that the actual health and perceived health status indeed correlate differently per gender with the level of healthcare utilisation. This is shown by the change in the coefficient of gender which is discussed above. Note that the expected positive intervention, formulated in the hypothesis, does not contrast with the declining coefficient of gender. This is because there is control for actual and perceived health in this model. When moving one model back, to model

1, there is not been controlled for actual and perceived health and its influence on the correlation between gender and healthcare utilisation is inside the coefficient of .74. So, this would suggest that the actual and perceived health status make women utilise health more than men and when got controlled for these factors, the coefficient declines. This decrease in gender coefficient does not contrast with the positive coefficients of the variables which measure actual health. This is because the actual health variables are defined in a way that a higher value of the variable refers to a poorer level of health. One exception to this is the variable which measures the drinks per day. However, this coefficient is close to zero and insignificant. Thereby, This variable is the only one related to the health-related lifestyle of the respondent. Its negative sign could be declared by the assumption that people who have a less healthy lifestyle, care less about their health and therefore visit the doctor less often. But this cannot be proved and, thereby, doesn't need to be proved because of the insignificance in combination with the small coefficient. The change in the coefficient in gender would suggest that this factor does actually impact the correlation between gender and healthcare utilisation. However, The null hypothesis cannot be rejected because the change of the coefficient lies within the standard error of the gender coefficient in model 1. When leaving out the perceived health as well, just as a control, some remarkable changes occur. This can be seen in Appendix D, Table 1, model 5. Age becomes significant in this case and all the coefficients of the actual health status become higher. It could be stated that the perceived health status lowers the actual health status variables. Even the coefficient of gender drops further, to .626. However, this is still not a significant change.

Model 3: mental health

This model includes the variables which measure mental health. Three variables are added to this model: sadness, loneliness and life satisfaction. These variables together make the coefficient of gender decline by .155 which makes the gender coefficient .566 this is the lowest coefficient in all models which suggests that the following factors, overall, make the gender differences bigger. The decline in the coefficient of gender means once again that the combination of included variables suggests leading to less health utilisation of women, relative to that of men, the same as was the case in model 2. In this case, it is about mental health. So, apparently, bad mental health is a factor that makes women visit the doctor more than it makes men visit the doctor. It is possible that mental issues make men visit the doctor more as well, but this change in the coefficient of gender suggests that mental issues make women visit the doctor even more. However, the correlation between gender and healthcare utilisation is still significant which means that the included variables aren't all the mechanics through which these two correlate. The variable that measures sadness is positive which seems logical as sadness could be defined as a mental issue and more mental issues could lead to more doctor visits. Actually, this is even the expectation, formulated in section 2.2.2. At the same time, the negative coefficient of life satisfaction fits this reasoning as well. Lower satisfaction with life, which could mean more mental health issues, correlates with a higher level of health utilisation. Only, this coefficient is not significant. The same is the case for loneliness. The coefficient of this variable is negative, this can't be explained by the theoretical framework and its application in 2.2.2. However, it could be that respondents who talk more to nurses or doctors, about how healthcare utilisation is operationalized, feel less lonely because of these talks. This could declare the negative sign of this variable. The expectations based on 2.2.2 would be that loneliness would lead to mental issues which would correlate with more doctor visits. However, this is not the case in the sample. All the variables which belong to the second factor did not notable change in this model. Once again, the

variables age and number of children will be discussed at once after the factors have been discussed. The hypothesis formulated in 2.2.2 is as follows:

Hypothesis II: mental health status intervenes in the correlation between gender and healthcare utilisation.
H_0: the mental health status does not intervene in the correlation between gender and healthcare utilisation.

In contrast to hypothesis I, this hypothesis does not have a specific direction in it, this is because the literature does not agree upon in what direction it would change. In the end, the conclusion of Hill and Needham (2013) that it is too dependent on the situation to formulate general propositions could not be denied by other authors. The change in the coefficient in gender would suggest that this factor does actually impact the correlation between gender and healthcare utilisation. However, The null hypothesis cannot be rejected because the change in the coefficient lies within the standard error of the gender coefficient in model 2.

Model 4: risk aversion
This factor is aimed at the risk aversion variables and is based on section 2.2.3. Two variables are added in this model: the level risk aversion stated by the respondents themselves and insurance state, whether the respondents have a supplementary health insurance, to test if the respondents actually behave risk averse. Adding these variables is suggested to lead to an increase in the coefficient of gender. This is contrast to the previous two models in which the coefficient of gender decreased. It increases from .566 with .071 to a coefficient of gender in this model of .637. This increase implies that the level of risk aversity was more determining for the health utilisation behaviour of men than for women. As can be seen, the level of risk aversion for men is lower and the variance is wider, illustrated by a bigger standard deviation. This implies that the level of risk aversity of men varies more, which could suggest that the level of risk aversion of men is more situational dependent. Using an overstatement to illustrate this point: the level of risk aversion of women, on the other hand, varies less and is suggested to be less dependent of other factors. This would indeed lead to the scenario in which the level of risk aversion is for women less relevant then for men, women are more risk averse anyway. Something which is more fixed cannot change the variance in something else, in this case the amount of health utilisation. So far the overstatement to illustrate this point. Namely, this is an overstatement in this context because of several reasons. First, the differences between men and women in both ‘risk aversion’ and ‘insurance state’ in Table 1 are small. Second, this argument is related to the first one, the level of risk aversion is insignificant in this model and it won’t be significant in the following models. Third and most important, the coefficient of gender does not change by a lot. Still, however, this is expected to be the reasoning behind this change in the gender coefficient. To complete the analysis of this model, the coefficient of gender stays significant for $p<0.01$, adding more factors did not determine the relationship between gender and healthcare utilisation enough to replace the relationship. The coefficients and significance levels of the variables of the previous models did not change noteworthy in this model. The corresponding hypothesis to this factor is the third one:

Hypothesis III: the level of risk aversion intervenes in the correlation between gender and healthcare utilisation.
H_0: the level of risk aversion does not intervene in the correlation between gender and healthcare utilisation.

In the section 2.2.3, a brief discussion is presented on why no direction is included in this hypothesis. This is because it was unclear based on literature whether the impact of the low risk aversity of men or the impact of the high risk aversity of women would be bigger. This is more nuanced in this sample, as the level of risk aversion seems not to differ that much as can be seen in Table 1. Still, the increase of the gender coefficient implies that the level of risk aversity is more determining for the health utilisation behaviour of men than for women. The change in the coefficient in gender would suggest that this factor does actually impact the correlation between gender and healthcare utilisation. However, The null hypothesis cannot be rejected because the change of the coefficient lies within in the standard error of the gender coefficient in model 3.

Model 5: education

This model is aimed at education. The variables of education level and years of education are the operationalisation of this factor. The inclusion of these variables changes the coefficient of gender just slightly. It increases by .021 which makes the coefficient in this model have a value of .658. The increase in the coefficient of gender suggests that years of education make men visit the doctor more than it does make women visit the doctor more. All though, the difference is quite small. This was expected as the literature as well as Table 1 didn't suggest a gender direction. As can be seen in Table 1, the gender differences for these variables are minimal. No other coefficients or significance levels changed in this model. The hypothesis that corresponds to this factor is the following:

Hypothesis IV: the level of education does intervene in the correlation between gender and healthcare utilisation.
H_0: the level of education does not intervene in the correlation between gender and healthcare utilisation.

The change in the coefficient in gender would suggest that this factor does actually slightly impact the correlation between gender and healthcare utilisation. However, The null hypothesis cannot be rejected because the change in the coefficient lies within the standard error of the gender coefficient in model 4.

Model 6: financial situation

This model is aimed at the financial situation, which also includes job status. Nine variables have been included of which the five last are about the job status and of which the marital state is one as well. This factor makes the coefficient decrease by .075 which makes the coefficient of gender becomes .583 in this model. This decrease suggests that the financial situation, the martial state and the job status together are more important for women than it is for men concerning healthcare utilisation behaviour. The same reasoning as for the other factors applies to this statement. This is in line with the conclusion of Noh et al. (2017). They concluded that women would like to use healthcare more often but are not able to do that because of their household income. This was not a problem for men as they had enough money anyway. Or, actually, that was the case in their sample and they assumed it would be the case in general. Something the same is presented here, the financial situation is more important for women in their health-utilising behaviour. This is remarkable as the variable that measures the household income actually only shows little differences between both genders in this sample.

The coefficient of household income is significant in its correlation with healthcare utilisation. A positive direction was expected based on the theoretical framework which is applied in this

context in 2.2.5. Namely, people in a household with a higher income were expected to have less of a financial barrier to visit the doctor, this would suggest that respondents who live in a household with a higher income would visit the doctor more often. However, this is apparently not the case in this sample as the coefficient is negative. This suggests that a higher household income correlates with less healthcare utilisation. It could be because income positively correlates with health in general. This correlation is presented in Appendix C, Table 1, model 6. In this model, household income is the dependent variable, all the health-related variables are the independent variables. It shows that household and income indeed seem to correlate strongly with each other. Furthermore, two measurements of job status are significant: (self-)employed or not and unemployed or not. This means that being retired or not is not expected to impact healthcare utilisation. However, as discussed in 4.1, this variable does strongly correlate with age. This could declare this insignificance, however, this is not the case. Actually, in Appendix D, Table 1, model 3 excludes age and model 4 excludes the retirement variable. This did not lead to noteworthy changes. But apparently, taking the two significant job status measurements together, the state of employment (unemployed, self-employed or employee) does negatively affect healthcare utilisation. This could be declared by age as well. This subsample is expected to be younger and would therefore be less in need of healthcare.

The hypothesis which belongs to this section is the following:

Hypothesis V: the financial situation does intervene in the correlation between gender and healthcare utilisation.
H_0: the financial situation does not intervene in the correlation between gender and healthcare utilisation.

The change in the coefficient in gender would suggest that this factor does actually impact the correlation between gender and healthcare utilisation. However, The null hypothesis cannot be rejected because the change in the coefficient lies within the standard error of the gender coefficient in model 5.

Concluding remarks
Here, remarks which are applicable to the whole regression analysis will be discussed. First, the most important conclusion: all the gender coefficients are within their standard errors. Even the gender coefficient of the last model, which includes all the variables, is not statistically significantly different from the gender coefficient in the first model, which includes a minimal amount of variables. And the gender coefficient in the model in which it is the lowest, .566 in model 3, is not significantly different from the gender coefficient in the model in which it is the highest, .74 in model 1. Therefore, it cannot be concluded that the included factors intervene in the relationship between gender and healthcare utilisation. Although the coefficient did change according to the expectations formulated in chapter 2, or were in line with its reasoning, the variance of the coefficient was not big enough to conclude a difference. This explains the fact that the coefficient of gender is significant for $P<0.01$ in all the models: the included variables didn't intervene in its correlation significantly. This would suggest that there must be other factors that determine this relationship.

Now, the coefficients and significance levels of the variables age and number of children will be briefly discussed. First the variable age will be discussed. While it is significant for $P<0.01$ in model 1, it is insignificant in model 2. This is probably because age affects healthcare utilisation mainly through health status mechanisms: being older makes health poorer overall.

Controlling for health should make age indeed insignificant, following this line of reasoning. As more age-irrelated variables got added, they became more significant over the models. Probably, the health-related variables which are not included in this model and other variables which make older people visit the doctor more often gained more and more impact, as other variables got controlled for. However, in model 6 age-related variables got added again: the job status measurements. This makes age insignificant once again. The change of the variable 'number of children' over the models seems to be less interesting as it stays quite stable, no matter what variables were included or excluded. The significance level didn't drop below $P<0.05$ and its coefficient didn't change significantly, according to the same reasoning for which the coefficients of gender didn't change significantly. Though the coefficient seems to increase over the models. It had to be concluded that the assumption of Noh et al. (2017), which lead to the inclusion of this variable, could be questioned. Their assumption was that women visit the doctor more often because of childbirth and other pregnancy- and child-related factors. However, the coefficient is statistically significant and negative in all the models. This would suggest that having more children makes men visit the doctor more often, instead of women, what Noh et al. (2017) assumed. Concluding notes for both variables, the fact that age seems to react stronger to the presence of variables in a model than the number of children does could be confirmed by the multicollinearity table, shown in Appendix C, Table 5. Age correlates with a higher level with much more variables than the number of children does.

Now, the constant will be interpreted. The constant stands for the average level of health utilisation if all variables are equal to zero. Assuming all the variables to be zero, would lead to quite odd outcomes. For example, a household income of zero is, however some of such cases are present in the sample, quite an odd situation. This declares the fact that the level of the constants varies strongly over the models and does not come close to the mean in sample 5.686, see Table 1 of Appendix C. Because assuming all the variables to be equal to zero is quite an extreme assumption, the constant has some extreme values as well.

Then, the R-squared. Every model contributed to a higher R-squared. One model is more than the other one. Model 5 for example, only increases the R-squared by .02. The R-squared in the final model is .153. This means that these variables are expected to declare approximately 15% of all the variance in healthcare utilisation. This seems to be a low percentage but this study is not aimed at declaring the variance in healthcare utilisation. Actually, it is aimed at finding what determinants declare the correlation between gender and healthcare utilisation. Because this is obviously linked to healthcare utilisation, it is not odd that this model explains some of its variance. But it is not the aim, therefore the R squared is not relevant for this study's aim.

Also important to discuss are the assumptions that are formulated at the start of this paragraph. Not all assumptions can just be seen as correct in this study. The measurement error, for example, cannot just be assumed to be low. This assumption is about the case that the values of the variables in the sample are the same as in the population. This has been discussed in 4.1 under 'criterion validity'. There had to be concluded that the sample did not have exactly the same characteristics as the interviewed population. Thereby, it is expected that the interviewed population is representative of the whole population, but this cannot be tested. Another unsure assumption is the assumption that no irrelevant independent variables are included. This might be the case because some independent variables correlate strongly with each other, see the discussion on multicollinearity. These are all OLS assumptions. Some

assumptions of the P-value are uncertain as well. The P-value assumes, among others, randomness in sampling. Well, because this study is about a sample of a sample (the interviewed population) it would be premature to expect this assumption to be correct.

5. Conclusion and discussion

First, the thesis will be summarised. All the main elements of the thesis will be briefly discussed. Afterwards, the research question will be answered by use of this summary. A short recapitulation of the used theoretical framework will be provided thereafter. This will be described in paragraph 5.1 conclusion. In the second paragraph, the limitations of this thesis will be discussed. These limitations in combination with some other arguments will lead to suggestions for further research.

5.1 Conclusion

First, the thesis will be summarised. It started with the background and problem statement. Here is argumentized why gender differences are relevant, and could be even problematic, in relation to healthcare utilisation. It could be even problematic because it could lead to inequality or gender inequality could even be the cause of this difference. However, first needed to be clear what factors do determine this relationship between gender and healthcare utilisation. This needs to be known in order to know if there is a problem and if so, what important factors could be in that case that make this difference present. This led to the following research question: 'What are the factors which determine the effect of gender on health utilization?' Now, it must become clear how this would be researched. In paragraph 1.3, the method of data gathering and method of analysis were briefly discussed. A cross-section study will be done, even though panel data was available. However, panel data wouldn't fit the variables, which would be discussed later on. The article of Noh et al. (2017) had a main role in this part of the thesis. As this study was quite comparable but had some different differences as well. This was discussed in the academic relevance, in order to show that this thesis would be relevant. The article of Koopmans and Lamers (2007) was important as well. As they confirmed that this puzzle was still not solved. However this statement was made in 2007, no articles claimed to have solved the puzzle since. However, progress had been made. This thesis tries to support this progress, in order to solve this puzzle one day.

In the theoretical framework, three theories had been included: social constructionism theory, social role theory and the theory of planned behaviour. They seemed to have some overlap but had their own unique explanatory power as well. This led to a theoretical framework which was coherent but versatile as well. Based on much gathered academic literature, five factors were formulated which were to be expected to intervene in the relationship between gender and healthcare utilisation. Because intervening factors are what this thesis is about. The research question refers to this by the term 'determine': what makes gender influence health utilisation leads to the practical question: what factor connects gender to healthcare utilisation; what factor is in between both? So, the five factors were determined and based on the theoretical framework, each of the factors had its own hypothesis which expects an intervention of this variable.

Now, these factors had to be made concrete and measurable. Also, it must be made clear how the data was actually gathered and handled and how it would fit in the method of analysis, which had to be discussed as well. Remarkable in the data discussion was the fact that the interviewed population, which was already a sample itself, had to become much smaller in order to have a (sub)sample which includes all the factors formulated in chapter 2. In the method of analysis, discussion became clear that a cross-section study had to be done instead of a panel study because the included variables did not fit in panel data which had to be handled by a fixed effects method. The validity and reliability were discussed in this chapter as well. It had to be concluded that validity was not self-evident. This was among others the

case because of the small sample of a sample, the interviewed population. Reliability however was much more obvious.

Now everything was prepared for the analysis, first, the descriptive statistics had to be discussed. These were aimed at gender differences. It became clear that some expected differences, based on the theoretical framework, were not present in this sample. The main found discrepancy was the fact that women had a higher self-perceived health status than men. The criterion validity, which is about generalisability, was discussed afterwards. It had to be concluded that the small sample of the interviewed population could become problematic. Multicollinearity was not a big issue overall. The results, presented through an OLS regression, actually proved all the expectations wrong. None of the factors made the coefficient of gender change significantly. So, either there has to be other factors that determine this relationship between gender and healthcare utilisation or some assumptions had been denied. It could be possible that the chosen sample is not representative of the population. However, in the whole population, the coefficients of gender will stay significant as well. Besides the factors, the number of children had been included as well. This was because of the assumption of Noh et al. (2017) that child-related factors primarily made women visit the doctor more often. However, this is not the case in this study. It is actually significantly in favour of men, instead of women.

Answering the research question, it could be said that the actual, perceived and mental health status, the level of risk aversion, the education level and the financial situation including household income, marital state and job status do not statistically significantly determine the relationship between gender and healthcare utilisation, based on a small and quite old European sample in 2013. However, there were some signs that the factors actually did affect the studied correlation in a specific way. However, the used models lacked explanatory power.

The theoretical framework consisted of, as described above, the social constructionism theory, the social role theory and the theory of planned behaviour. The framework was expected to be coherent but versatile as well. Despite the fact that none of the factors had a statistically significant effect on the correlation between gender and healthcare utilisation, the theoretical framework is not expected to be inappropriate in most cases. Namely, most of the time, the theoretical framework did expect the direction of change in the coefficient of gender correctly. It seems that the model lacks statistical power but the theoretical framework was appropriate most of the time. However, this study did not enrich either theory noteworthy as the outcomes aren't significant. More concrete, based on the theoretical framework two directional hypotheses had been formulated. For the other factors, it was unclear whether men or women would correlate with the relationship between gender and healthcare utilisation. This directional hypothesis was formulated for the factor 'actual and perceived health status'. A positive direction of the gender coefficient was expected and this was actually the case, however, not statistically significant. A negative direction of the gender coefficient was expected for the factor 'risk adversity'. This was actually the case in the results as well, however, again being insignificant. The other three factors 'mental health', 'education' and 'financial situation' had no direction in their hypothesis. For mental health and financial situation because it was unclear whether women or men would influence the coefficient more. However, gender differences were expected. This was indeed the case and the outcomes could be declared by the theoretical framework. Only the factor of education could not provide gender differences. It is not odd to see in the results that this factor had the smallest impact on

the coefficient of gender. Therefore, many expectations formulated in the theoretical framework seem to be correct. However, they're not statistically significant.

5.2 Limitations and suggestions for future research

First, the limitations will be discussed. Suggestions for future research will be provided based on them. Most of the limitations of this study relate to the dataset, variables and criterion validity. All these limitations have in common that they relate to the data. First, the limitations of the data will be discussed. Some data had to be imputed from another wave. This led to an extra assumption which had to be included, namely that these variables did not have changed over the years. An extra assumption weakens the explanatory power of the thesis. The study is based on a survey. The population as well as the selected sample are quite old, this suggests that the conclusions of this study can only be generalised to the elderly.

Second, the limitations of variables will be discussed. There is no variable that measures the individual income only one which measures the household income. As this study is about gender differences, household income is not the best measurement of income as men and women could live together. This rules out gender differences. No country-related variables are included while there are several different countries. Even though all the countries are from the same continent, cultural differences are expected to be present. There has not been controlled for this in any included variable. Healthcare utilisation has only been operationalised by one variable. Although this variable is versatile and broad and it makes the thesis less complicated, it does not catch every aspect of the broad concept of 'healthcare utilisation'. As last in the category within data, the limitations of weak criterion validity will be discussed. The sample selected from the interviewed population was less than 10% of this interviewed population. Thereby, there were some differences in characteristics between the sample and population, among others in the proportion per country. This could have led to the low explanatory power of the OLS regression model. And even if the outcomes would have been significant, a high level of cautiousness would be appropriate with the interpretation of this. Because it is questionable whether the sample is representative of the whole population.

Furthermore, there are some limitations to the analysis method as well. These will be briefly discussed as well. An OLS regression model does only estimate a linear regression. This is a limitation because relationships don't have to be linear at every level. Thereby, OLS cannot prove causality. In the end, a method which can point out causality is needed in order to understand the relationship between gender, healthcare utilisation and possible determining factors better. Concludingly, a model which is aimed at mediating variables could provide a more complete overview. This is not used either as the main model or as a controlling method in the appendix, which is a limitation of this study.

Based on these limitations, there would be enough suggestions for further research. It is important to conclude that the puzzle is still not solved. Some concrete suggestions will be formulated now. The results may suggest that the theoretical framework actually was appropriate, but the model lacked explanatory power. Therefore, the first suggestion for future research is to get a more representative sample to improve the possibility of getting statistically significant outcomes. Then, it could be shown that the factor actually changes the gender coefficient. However, even with a more representative sample, these factors are not expected to determine the correlation between gender and healthcare utilisation completely. A significant coefficient is still expected. Therefore, more factors should be added. At the same time, the factor of education may be dropped as this variable didn't show any explaining power throughout the whole thesis. This change of included factors is the second suggestion

for further research. As a last suggestion, the assumption that women visit the doctor more because of child-related factors seems to be not true, based on the results. However, this thesis only included this variable as a control variable. Therefore, future research should test this assumption.

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Appendixes

Appendix A. Variable names in SHARE

Table 1: codes of variables in SHARE database

Declaring factor; model	Variables	Measurement variables: Statements	Code in SHARE [Dataset, Variable name]	Values
Dependent variable; Model 1	Health utilization	Times talked to medical doctor/nurse about your health last 12 months	HC, hc002	Any value
Main independent variable; Model 1	Gender	Gender	CV, gender	1 = male 2 = female
Control variable; Model 1	Age	Age	CV, age	Any value
Control variable; Model 1	Number of children	How many children do you have?	CH, ch001	Any value
Actual and perceived Health; Model 2	Long term illness	Do you have a long term illness?	PH, ph004	0 = no 1 = yes
	Health problem that limits paid work	Health problem that limits paid work	PH, ph061	0 = no 1 = yes
	BMI on scale	n.a.	Self-made via PH, ph012 ph013	1 = <18.5 = underweight 2 = 18.5-24.6 = healthy weight 3 = 25-29.9 = overweight 4 = >30 = obesity
	How many drinks in a day (lifestyle)	How many drinks in a day	BR, BR019	Any value
	Difficulties: walking 100 metres (mobility limitations)	Difficulties with walking 100 metres	PH, ph048d1	0 = not an issue 1 = this is an issue
	Getting up from chair (mobility limitations)	Difficulties getting up from chair	PH, ph048d3	0 = not an issue 1 = this is an issue
	Self-perceived health – US scale	Health in general	PH, ph003	5 = excellent 4 = very good 3 = good 2 = fair 1 = poor
Mental health; Model 3	Sad	Sad or depressed last month	MH, mh002	0 = no 1 = yes
	Lonely	Feels lonely	MH, mh037	1 = Hardly ever or never 2 = Some of the time 3 = Often
	Life satisfaction	How satisfied with life	AC, AC012	Scale from 0-10
Risk aversion; Model 4	Risk aversion	Risk aversion	EX, ex110	1 = Take substantial financial risks expecting to earn substantial returns 2 = Take above average financial risks expecting

				to earn above average returns 3 = Take average financial risks expecting to earn average returns 4 = Not willing to take any financial risks
	Insurance status	Has supplementary health insurance	HC, hc113	0 = no 1 = yes
Education; Model 5	Education level	Highest school degree obtained	DN , dn010	Which education country-specific category
	Years of education	Years of education	DN, DN041	Any value
Financial situation; Model 6	Not visiting the doctor due to costs	Was there a time in the past 12 months when you needed to see a doctor but could not because of cost?	HC, hc114	0 = no 1 = yes
	Total income received by all household members an average month last year	Money amount	HH, hh017e	0 = €0 1 = €1-€2000 2 = €2001-€4000 3 = €4001-€6000 4 = >€6001
	Household able to make ends meet	Household able to make ends meet	CO, co007	1 = With great difficulty 2 = With some difficulty 3 = Fairly easily 4 = Easily
	Martial state	Married and living together	DN , dn014 (adjusted)	0 = not 1 1 = Married and living together with spouse
	Current job situation	Retired or not	EP, ep005	0 = not 1 1 = Retired
		Employed or self-employed or not	EP, ep005	0 = not 1 1 = Employed or self-employed
		Unemployed or not	EP, ep005	0 = not 1 1 = Unemployed
		Permanently sick or disabled or not	EP, ep005	0 = not 1 1 = Permanently sick or disabled
		Homemaker or not	EP, ep005	0 = not 1 1 = Homemaker

Appendix B. Results in population

Table 1: Descriptive Statistics fort the population per gender (N = 109798)

	male		female	
	Mean/Prop.	SD	Mean/Prop.	SD
Healthcare utilisation	6.63	9.84	7.18	9.95
Age	60.62	16.78	62.51	15.75
Number of children	2.10	1.41	2.15	1.40
Long term illness	.49	.50	.52	.50
Health problems limit work	.22	.42	.23	.42
BMI	2.88	.74	2.76	.84
Drinks per day	3.11	6.11	2.21	4.34
Difficulties walking 100m	.10	.29	.12	.33
Difficulties getting of chair	.16	.36	.23	.42
Perceived health	2.89	1.09	2.83	1.09
Sadness	.30	.46	.47	.50
Loneliness	1.22	.51	1.34	.61
Life satisfaction	7.64	1.80	7.52	1.86
Risk aversion	3.62	.64	3.77	.50
Insurance status	.40	.49	.39	.49
Education level	5.04	3.53	4.88	3.47
Years of education	11.44	4.48	10.98	4.25
Not visit doctor due to cost	.04	.18	.05	.22
Household income (€)	2.69	.69	2.67	.71
Household make ends meet	3.05	.97	2.87	1.00
Marital status	.77	.42	.63	.48
Retirement	.62	.49	.51	.50
Employed or self-employed	.30	.46	.27	.44
Unemployed	.03	.18	.03	.16
Permanently sick	.04	.19	.04	.19
Homemaker	.00	.05	.14	.35

Table 2: descriptive statistics for the population

Variable	Obs	Mean	Std. Dev.	Min	Max
Healthcare utilisation	65001	6.935	9.905	0	98
Gender	93257	.531	.499	0	1
Age	86886	61.627	16.264	19	104
Number of children	45026	2.134	1.405	0	17
Long term illness	65887	.506	.5	0	1
Health problems limit work	52425	.225	.417	0	1
BMI	64383	2.812	.797	1	4
Drinks per day	44336	2.664	5.325	0	70
Difficulties walking 100m	65882	.112	.315	0	1
Difficulties getting of chair	65882	.195	.396	0	1
Perceived health	65881	2.858	1.088	1	5
Sadness	64799	.394	.489	0	1
Loneliness	64631	1.288	.569	1	3
Life satisfaction	64085	7.575	1.836	0	10
Risk aversion	68970	3.702	.574	1	4
Insurance status	65459	.397	.489	0	1
Education level	58724	4.912	3.613	1	25
Years of education	45520	11.148	4.36	0	25
Not visit doctor due to cost	65763	.045	.207	0	1
Household income (€)	83870	2.745	.639	1	3
Household make ends meet	43618	2.944	.991	1	4
Marital status	62432	.685	.464	0	1
Retirement	65120	.561	.496	0	1
Employed or self-employed	65153	.281	.45	0	1
Unemployed	65153	.029	.168	0	1
Permanently sick	65153	.036	.186	0	1
Homemaker	65153	.082	.274	0	1

Table 3: descriptive statistics for the population (male)

Variable	Obs	Mean	Std. Dev.	Min	Max
Healthcare utilisation	28675	6.628	9.842	0	98
Gender	43762	0	0	0	0
Age	40486	60.619	16.779	19	103
Number of children	18479	2.104	1.407	0	16
Long term illness	29028	.493	.5	0	1
Health problems limit work	23221	.223	.416	0	1
BMI	28397	2.877	.741	1	4
Drinks per day	22331	3.108	6.111	0	70
Difficulties walking 100m	29026	.096	.294	0	1
Difficulties getting of chair	29026	.156	.363	0	1
Perceived health	29026	2.888	1.088	1	5
Sadness	28474	.303	.46	0	1
Loneliness	28393	1.219	.506	1	3
Life satisfaction	28164	7.641	1.799	0	10
Risk aversion	28755	3.616	.64	1	4
Insurance status	28867	.4	.49	0	1
Education level	21139	5.036	3.526	1	25
Years of education	18573	11.442	4.481	0	25
Not visit doctor due to cost	28970	.035	.185	0	1
Household income (€)	34213	2.692	.688	1	3
Household make ends meet	18041	3.052	.965	1	4
Marital status	22358	.766	.424	0	1
Retirement	28759	.62	.485	0	1
Employed or self-employed	28771	.301	.459	0	1
Unemployed	28771	.033	.18	0	1
Permanently sick	28771	.036	.185	0	1
Homemaker	28771	.003	.052	0	1

Table 4: descriptive statistics for the population (female)

Variable	Obs	Mean	Std. Dev.	Min	Max
Healthcare utilisation	36326	7.178	9.948	0	98
Gender	49495	1	0	1	1
Age	46400	62.507	15.75	19	104
Number of children	26547	2.155	1.403	0	17
Long term illness	36859	.516	.5	0	1
Health problems limit work	29204	.227	.419	0	1
BMI	35986	2.76	.835	1	4
Drinks per day	22005	2.213	4.339	0	70
Difficulties walking 100m	36856	.125	.331	0	1
Difficulties getting of chair	36856	.226	.418	0	1
Perceived health	36855	2.834	1.088	1	5
Sadness	36325	.465	.499	0	1
Loneliness	36238	1.343	.608	1	3
Life satisfaction	35921	7.524	1.864	0	10
Risk aversion	36039	3.767	.505	1	4
Insurance status	36592	.394	.489	0	1
Education level	26202	4.884	3.471	1	25
Years of education	22778	10.976	4.249	0	25
Not visit doctor due to cost	36793	.053	.223	0	1
Household income (€)	33116	2.673	.71	1	3
Household make ends meet	25577	2.869	1.001	1	4
Marital status	27945	.627	.484	0	1
Retirement	36361	.514	.5	0	1
Employed or self-employed	36382	.266	.442	0	1
Unemployed	36382	.026	.159	0	1
Permanently sick	36382	.036	.186	0	1
Homemaker	36382	.144	.351	0	1

Table 5: respondents per country in population

	Freq.	Percent	Cum.
Austria	6634	6.04	6.04
Belgium	9249	8.42	14.47
Czech Republic	8922	8.13	22.59
Switzerland	4930	4.49	27.08
Germany	8148	7.42	34.50
Denmark	5655	5.15	39.65
Estonia	8676	7.90	47.55
Spain	10394	9.47	57.02
France	7558	6.88	63.90
Hungary	3072	2.80	66.70
Italy	7952	7.24	73.94
Luxembourg	2717	2.47	76.42
Netherlands	6093	5.55	81.97
Poland	1733	1.58	83.55
Portugal	2013	1.83	85.38
Sweden	6276	5.72	91.10
Slovenia	5672	5.17	96.26
Israel	4104	3.74	100.00
Total	109798	100.00	

Table 6: OLS regression analysis (population)

	(1) Base model	(2) Perceived & actual health	(3) Mental health	(4) Risk aversion	(5) Education level	(6) Financial situation
Gender	.641***	.383***	.227**	.256**	.384***	.587***
	(.096)	(.108)	(.109)	(.111)	(.141)	(.197)
Age	.102***	.026***	.027***	.029***	.026**	0
	(.005)	(.008)	(.008)	(.008)	(.01)	(.021)
Number of children	.022	-.081*	-.089**	-.089**	-.109*	-.182**
	(.036)	(.044)	(.044)	(.044)	(.057)	(.083)
Long term illness		1.963***	1.9***	1.897***	1.774***	1.722***
		(.114)	(.114)	(.114)	(.145)	(.207)
Health prob. lim. work		2.212***	2.213***	2.269***	2.62***	2.366***
		(.213)	(.214)	(.215)	(.269)	(.449)
BMI		.043	.052	.078	.24**	.413***
		(.079)	(.079)	(.08)	(.104)	(.155)
Drinks per day		-.02**	-.019**	-.015*	-.021**	-.025
		(.009)	(.009)	(.009)	(.01)	(.016)
Diff. walking 100m		2.667***	2.673***	2.619***	2.147***	1.163
		(.464)	(.467)	(.467)	(.619)	(1.085)
Diff. getting of chair		1.366***	1.345***	1.338***	1.315***	1.496***
		(.225)	(.227)	(.229)	(.299)	(.506)
Perceived health		-1.493***	-1.493***	-1.548***	-1.538***	-1.514***
		(.065)	(.068)	(.069)	(.089)	(.13)
Sadness			.884***	.847***	.785***	.877***
			(.12)	(.12)	(.152)	(.218)
Loneliness			.263**	.261**	.238	-.469*
			(.128)	(.128)	(.172)	(.281)
Life satisfaction			.147***	.122***	.068	-.06
			(.041)	(.041)	(.053)	(.099)
Risk aversion				-.055	-.09	-.104
				(.086)	(.117)	(.149)
Insurance status				1.188***	1.332***	1.266***
				(.11)	(.155)	(.211)
Education level					.068***	.032
					(.021)	(.026)
Years of education					.055***	.083***
					(.02)	(.027)
No doctor due to costs						1.474
						(.978)
Household income						-.278**
						(.109)
Household make ends						-.151
						(.153)
Marital status						-.03
						(.23)
Retirement						-2.387
						(1.839)
(Self-)employed						-3.309*
						(1.795)
Unemployed						-3.493*
						(1.85)
Permanent sick						1.488
						(2.304)
Homeworker						-2.088
						(1.887)
Constant	-.218	7.365***	5.638***	5.38***	4.611***	11.635***
	(.331)	(.655)	(.714)	(.795)	(1.093)	(2.59)
Observations	44373	24349	24213	23955	14904	7365
R-squared	.012	.13	.133	.138	.139	.154

*Robust standard errors are in parentheses: *** p<.01, ** p<.05, * p<.1*

Appendix C. Descriptive statistics in sample

Table 1: descriptive statistics for the sample (all genders)

Variable	Obs	Mean	Std. Dev.	Min	Max
Healthcare utilisation	7313	5.686	9.02	0	98
Gender	7313	.486	.5	0	1
Age	7313	60.69	7.086	26	80
Number of children	7313	2.068	1.208	0	15
Long term illness	7313	.416	.493	0	1
Health problems limit work	7313	.157	.364	0	1
BMI	7313	2.763	.76	1	4
Drinks per day	7313	2.952	5.742	0	70
Difficulties walking 100m	7313	.029	.169	0	1
Difficulties getting of chair	7313	.114	.318	0	1
Perceived health	7313	3.384	1.042	1	5
Sadness	7313	.355	.478	0	1
Loneliness	7313	1.188	.459	1	3
Life satisfaction	7313	8.078	1.489	0	10
Risk aversion	7313	3.507	.663	1	4
Insurance status	7313	.485	.5	0	1
Education level	7313	6.03	4.041	1	25
Years of education	7313	12.452	4.489	0	25
Not visit doctor due to cost	7313	.021	.144	0	1
Household income (€)	7313	1.845	.877	1	3
Household make ends meet	7313	3.405	.805	1	4
Marital status	7313	.731	.443	0	1
Retirement	7313	.381	.486	0	1
Employed or self-employed	7313	.527	.499	0	1
Unemployed	7313	.025	.155	0	1
Permanently sick	7313	.027	.161	0	1
Homemaker	7313	.034	.182	0	1

Table 2: descriptive statistics for the sample (male)

Variable	Obs	Mean	Std. Dev.	Min	Max
Healthcare utilisation	3757	5.371	8.819	0	98
Gender	3757	0	0	0	0
Age	3757	61.378	7.059	36	80
Number of children	3757	2.076	1.22	0	15
Long term illness	3757	.407	.491	0	1
Health problems limit work	3757	.148	.355	0	1
BMI	3757	2.869	.715	1	4
Drinks per day	3757	3.353	6.318	0	70
Difficulties walking 100m	3757	.03	.172	0	1
Difficulties getting of chair	3757	.097	.297	0	1
Perceived health	3757	3.356	1.039	1	5
Sadness	3757	.286	.452	0	1
Loneliness	3757	1.168	.438	1	3
Life satisfaction	3757	8.093	1.44	0	10
Risk aversion	3757	3.419	.703	1	4
Insurance status	3757	.492	.5	0	1
Education level	3757	6.023	4.021	1	25
Years of education	3757	12.573	4.542	0	25
Not visit doctor due to cost	3757	.014	.118	0	1
Household income (€)	3757	1.846	.872	1	3
Household make ends meet	3757	3.437	.779	1	4
Marital status	3757	.765	.424	0	1
Retirement	3757	.417	.493	0	1
Employed or self-employed	3757	.526	.499	0	1
Unemployed	3757	.021	.143	0	1
Permanently sick	3757	.026	.159	0	1
Homemaker	3757	.003	.054	0	1

Table 3: descriptive statistics for the sample (female)

Variable	Obs	Mean	Std. Dev.	Min	Max
Healthcare utilisation	3556	6.02	9.218	0	98
Gender	3556	1	0	1	1
Age	3556	59.962	7.043	26	76
Number of children	3556	2.06	1.196	0	10
Long term illness	3556	.426	.495	0	1
Health problems limit work	3556	.166	.372	0	1
BMI	3556	2.651	.789	1	4
Drinks per day	3556	2.529	5.029	0	70
Difficulties walking 100m	3556	.028	.165	0	1
Difficulties getting of chair	3556	.132	.338	0	1
Perceived health	3556	3.414	1.044	1	5
Sadness	3556	.427	.495	0	1
Loneliness	3556	1.21	.48	1	3
Life satisfaction	3556	8.062	1.539	0	10
Risk aversion	3556	3.6	.604	1	4
Insurance status	3556	.478	.5	0	1
Education level	3556	6.037	4.063	1	24
Years of education	3556	12.323	4.429	1	25
Not visit doctor due to cost	3556	.029	.167	0	1
Household income (€)	3556	1.844	.882	1	3
Household make ends meet	3556	3.371	.83	1	4
Marital status	3556	.696	.46	0	1
Retirement	3556	.342	.474	0	1
Employed or self-employed	3556	.528	.499	0	1
Unemployed	3556	.029	.167	0	1
Permanently sick	3556	.027	.163	0	1
Homemaker	3556	.067	.25	0	1

Table 4: respondents per country in sample

	Freq.	Percent	Cum.
Austria	697	9.53	9.53
Belgium	904	12.36	21.89
Czech Republic	455	6.22	28.11
Switzerland	626	8.56	36.67
Germany	1046	14.30	50.98
Denmark	984	13.46	64.43
Estonia	297	4.06	68.49
Spain	248	3.39	71.89
France	26	0.36	72.24
Italy	166	2.27	74.51
Luxembourg	443	6.06	80.57
Netherlands	435	5.95	86.52
Sweden	951	13.00	99.52
Slovenia	35	0.48	100.00
Total	7313	100.00	

Table 5: multicollinearity of the independent variables

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) Gender	1.000												
(2) Age	-0.100	1.000											
(3) Num of child	-0.007	0.043	1.000										
(4) Long term ill.	0.020	0.068	-0.016	1.000									
(5) Health work	0.024	0.000	0.000	0.399	1.000								
(6) BMI	-0.143	0.037	0.008	0.141	0.090	1.000							
(7) Drinks a day	-0.072	0.001	-0.008	-0.008	0.010	0.051	1.000						
(8) Walking 100m	-0.007	0.069	-0.013	0.148	0.235	0.084	0.018	1.000					
(9) Get up chair	0.054	0.072	0.012	0.257	0.290	0.146	-0.009	0.244	1.000				
(10) Perceived h.	0.028	-0.121	0.037	-0.472	-0.406	-0.204	-0.032	-0.221	-0.287	1.000			
(11) Sad	0.147	-0.056	-0.010	0.136	0.124	-0.008	-0.002	0.051	0.104	-0.185	1.000		
(12) Lonely	0.046	0.010	-0.052	0.087	0.084	-0.004	0.004	0.083	0.096	-0.157	0.254	1.000	
(13) Life sat.	-0.010	0.071	0.050	-0.157	-0.184	-0.056	-0.020	-0.118	-0.135	0.363	-0.260	-0.302	1.000
(14) Risk aversion	0.136	0.083	-0.034	0.056	0.060	0.033	0.039	0.055	0.060	-0.150	0.047	0.038	-0.100
(15) Insu. stat.	-0.014	-0.062	-0.023	-0.042	-0.054	-0.043	-0.015	-0.004	-0.012	0.088	0.020	-0.004	0.068
(16) Edu. lev.	0.002	-0.106	-0.010	-0.033	-0.076	-0.040	0.002	-0.011	-0.027	0.054	0.028	0.031	-0.052
(17) Yrs edu.	-0.028	-0.133	-0.013	-0.040	-0.069	-0.089	0.000	-0.041	-0.063	0.135	-0.003	-0.018	0.006
(18) Doc costs	0.051	-0.049	-0.023	0.043	0.072	0.000	0.013	0.025	0.049	-0.103	0.081	0.103	-0.157
(19) HH income	-0.001	-0.131	0.027	-0.048	-0.048	0.013	0.053	-0.015	-0.032	0.035	0.009	0.014	-0.054
(20) HH me	-0.041	0.058	-0.020	-0.106	-0.130	-0.086	-0.036	-0.090	-0.098	0.244	-0.135	-0.171	0.356
(21) Marital st.	-0.078	0.018	0.131	-0.008	-0.012	0.024	-0.020	-0.014	-0.013	0.031	-0.067	-0.194	0.156
(22) Retired	-0.078	0.747	-0.003	0.050	0.010	0.047	-0.008	0.061	0.084	-0.115	-0.044	0.008	0.050
(23) (self-)emp	0.002	-0.669	-0.006	-0.111	-0.130	-0.052	-0.001	-0.112	-0.128	0.202	-0.007	-0.065	0.037
(24) Unemp	0.026	-0.088	-0.004	0.027	0.065	-0.003	0.021	0.004	0.012	-0.044	0.028	0.075	-0.096
(25) Per. sick	0.004	-0.068	-0.006	0.167	0.332	0.052	0.023	0.183	0.138	-0.222	0.080	0.082	-0.157
(26) Homework	0.177	-0.019	0.037	0.001	-0.021	-0.029	-0.016	-0.015	-0.008	-0.013	0.035	0.013	0.001

Table 5 (continued): multicollinearity of the independent variables

(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)
1.000												
-0.027	1.000											
-0.024	0.249	1.000										
-0.166	0.040	0.343	1.000									
0.056	-0.046	0.010	-0.014	1.000								
-0.049	-0.051	-0.032	0.059	0.035	1.000							
-0.139	0.138	0.044	0.096	-0.198	-0.038	1.000						
0.005	0.009	-0.034	-0.012	-0.050	-0.016	0.105	1.000					
0.095	-0.048	-0.080	-0.143	-0.037	-0.136	0.019	0.030	1.000				
-0.130	0.048	0.076	0.180	-0.011	0.134	0.054	-0.034	-0.827	1.000			
0.018	-0.041	-0.011	-0.023	0.056	0.021	-0.119	-0.029	-0.125	-0.168	1.000		
0.042	0.001	-0.001	-0.038	0.070	-0.012	-0.110	-0.018	-0.130	-0.175	-0.026	1.000	
0.055	0.034	0.013	-0.061	0.009	-0.020	0.002	0.056	-0.147	-0.198	-0.030	-0.031	1.000

Appendix D. Results in sample

Table 1: controlling models

	(1) healthut	(2) healthut	(3) healthut	(4) healthut	(5) healthut	(6) hhisc
Gender	.587***	.662***	.587***	.586***	.626***	
	(.197)	(.21)	(.195)	(.197)	(.198)	
Age	0			-.006	.038***	
	(.021)			(.021)	(.014)	
Number of children	-.182**		-.182**	-.182**	-.252***	
	(.083)		(.083)	(.083)	(.085)	
Long term illness	1.722***		1.722***	1.723***	2.901***	-.052**
	(.207)		(.206)	(.207)	(.21)	(.024)
Health prob. lim. work	2.366***		2.367***	2.368***	3.902***	-.08**
	(.449)		(.448)	(.449)	(.469)	(.032)
BMI	.413***		.413***	.414***	.582***	.027*
	(.155)		(.155)	(.155)	(.157)	(.014)
Drinks per day	-.025		-.025	-.024	-.018	.007***
	(.016)		(.016)	(.016)	(.015)	(.002)
Diff. walking 100m	1.163		1.162	1.14	2.458**	-.012
	(1.085)		(1.084)	(1.085)	(1.092)	(.068)
Diff. getting of chair	1.496***		1.496***	1.495***	2.196***	-.048
	(.506)		(.506)	(.507)	(.516)	(.035)
Perceived health	-1.514***		-1.514***	-1.511***		.034***
	(.13)		(.13)	(.13)		(.012)
Sadness	.877***		.877***	.88***		.011
	(.218)		(.218)	(.218)		(.023)
Loneliness	-.469*		-.469*	-.464*		.004
	(.281)		(.28)	(.281)		(.024)
Life satisfaction	-.06		-.061	-.065		-.044***
	(.099)		(.098)	(.099)		(.008)
Risk aversion	-.104		-.104	-.11		
	(.149)		(.15)	(.149)		
Insurance status	1.266***		1.266***	1.262***		
	(.211)		(.21)	(.211)		
Education level	.032		.032	.032		
	(.026)		(.026)	(.026)		
Years of education	.083***		.083***	.083***		
	(.027)		(.027)	(.027)		
No doctor due to costs	1.474		1.475	1.499		
	(.978)		(.978)	(.977)		
Household income	-.278**		-.278**	-.273**		
	(.109)		(.109)	(.109)		
Household make ends	-.151		-.152	-.146		
	(.153)		(.154)	(.153)		
Marital status	-.03		-.029	-.032		
	(.23)		(.232)	(.231)		
Retirement	-2.387		-2.39			
	(1.839)		(1.814)			
(Self-)employed	-3.309*		-3.307*	-1.036***		
	(1.795)		(1.804)	(.29)		
Unemployed	-3.493*		-3.492*	-1.218**		
	(1.85)		(1.856)	(.541)		
Permanent sick	1.488		1.489	3.774***		
	(2.304)		(2.312)	(1.42)		
Homeworker	-2.088		-2.088	.211		
	(1.887)		(1.887)	(.603)		
Constant	11.635***	5.366***	11.607***	9.685***	-.088	2.022***
	(2.59)	(.146)	(2.346)	(2.06)	(1.027)	(.095)
Observations	7365	7365	7365	7365	7365	7365
R-squared	.154	.001	.154	.154	.111	.012

*Robust standard errors are in parentheses: *** p<.01, ** p<.05, * p<.1*