Preface

With this thesis I will have finalized a master's degree in sociology at the Norwegian University of Science and Technology. I want to use this preface to introduce my interest for the subject of the thesis to my readers as well as thanking the people who have given me invaluable guidance and assistance through the course of my studies in Trondheim.

Sociological health research has always stood out to me as a particularly interesting area of sociology because of the potential it has for discovering and documenting phenomena and patterns in society that are beneficial or detrimental to desirable outcomes, which informs our collective priorities. I want to disclose that I have been an active member of a labor union while I have studied in Trondheim, and I strive to be as transparent as possible to eliminate individual bias. My interest in labor unions and health research inspired me to choose this topic for my thesis.

Firstly I want to thank my councilor, Terje Andreas Eikemo, for helping me plan and produce this thesis. Terje has given me both inspiration and peace of mind in our meetings in his office while I have been working on this project.

Secondly I want to thank my parents, Angunn Kvanli and John Magne Kvanli, as well as my siblings, Vebjørn and Therese. I have always been able to count on their support during my years at the university.

Finally I want to thank the community of students I have had the privilege of working with at NTNU. First and foremost, thank you to Sosiologisk Poliklinikk in Trondheim, where I have gained valuable experience in conducting research, and participated in captivating sociological and political discussions. Additionally I want to thank Studentersamfundet, Socius Extremus, the institute for sociology and political science, and the student council for giving me the opportunity to be involved with both professional and social activities over the years.

Anders Kvanli, Trondheim 31.05.18

Contents

1. Introduction

Can union membership be beneficial to our health? Labor unions are known for advocating the interests of their members in regards to their work situation, most intuitively through keeping compensation ahead of inflation and guaranteeing rest days through weekends and holidays, but could union membership also facilitate good health? This question has not been explored empirically in sociological research so far. My objective in this thesis is to explore the potential impact union membership has on the health of working individuals in European countries.

The purpose of labor unions is to advocate their members' interests in the labor market. This advocacy entails establishing regulations and agreements on workers' wages, safety, free time, psychological and somatic health, and protection against unjustifiable dismissals to name a few (Economou and Theodossiou 2015). On that basis a sociologist might ask if being a member of a labor union which ostensibly exists to promote the general welfare of their members has a noticeable association with the health of these individuals.

An important aspect on the topic of comparing labor unions across European countries is to recognize that these unions operate in different historical, cultural, and political contexts. When this thesis explores the potential association between labor union membership and health in Europe, it is both necessary and sociologically interesting to account for the varying set of rules and regulations unions work under because this policy context can facilitate or impede the unions' potential for affecting their members' working conditions, which I in turn will argue affects their general health.

The prevalence of research on health, the social determinants of health, and health inequalities cuts to the heart of social science as a force for positive change. This research can reveal different kinds of health inequality and, as Marmot et al. says, some of these detrimental phenomena can be avoided with a range of political policies (Marmot et al. 2012). The inequalities that require the least effort to diminish can be looked at as unfair according to Marmot.

The topic of how work influences health is both academically and economically important. A healthy workforce is more productive (Dollard and Neser 2013). The health status of the employed population is not only of importance to the individuals themselves and

their dependents, it is also important for the ability of the economy as a whole to maintain and increase Gross Domestic Product (GDP) outputs. The stress many people experience as a result of their employment represents a substantial negative impact on worker's health, and in turn a substantial negative impact on the economy (Dollard and Neser 2013:114). Work stress caused by bullying at the workplace is estimated to make up 1.5 percent of the GDP in the United Kingdom. This tells us that scientific research on the relationship between employment and worker's health is a valuable tool for individuals and societies both when it comes to facilitating healthy lives and a thriving economy.

This leads me to present the following research question, which will be elaborated in further detail below:

Are union members healthier than non-members? A multilevel analysis of 20 European countries.

1. 1 Structure of the thesis

I will begin by introducing the theoretical foundation of my research question. The theory chapter will present relevant literature on concepts such as the social determinants of health, the relationship between working conditions and health, and finally large-scale conceptualizations of cross-national welfare policy/working conditions policy contexts.

In the next part I will present the methodological approach I have chosen for examining my research question as well as a presentation of the data set used, operationalization, and weighting. I will then go on to presenting the results from my regression analysis.

The final part of the thesis involves a discussion of the results from the regression analysis, an examination of my hypotheses, and finally a conclusion of the thesis where I give a recommendation for what to do with my findings and how to move forward with research on this topic.

2. Theoretical basis

Here I will make a case for health being influenced by certain social determinants, national policy (e.g. variations in health between European countries) and that national policy also affects labor policy which leads to the research question of this thesis; the health associations of union membership.

My first goal is to make a framework for how we can understand how the health of an individual is determined. Some individuals are healthier and some individuals are less healthy. The question then becomes *why is* this is the case. Which set of factors is important for the health outcome of an individual? For this question I will use a contemporary sociological understanding of the social determinants of health in chapter 2.1.

My next challenge is to argue for the connection between labor unions and health. *How* can the activity of labor unions influence the health of their members specifically? I will delve into this question in 2.2 and propose that the connection between certain working conditions and specific health effects gives us a basis for saying labor unions *could* affect the health of their members because, as I will explain, unions can affect working conditions.

The final major theoretical case I will make is to determine that both the health of individuals and the working conditions in the labor market they are in, is dependent on a cross-national macro-level context, which in itself has to be accounted for when we explore the research question of union membership influencing individuals' health. This is covered in 2.3 and 2.4.

2.1 The Social determinants of health

The research question of this thesis is focused on health, and a useful way of conceptualizing health is through the social determinants of health (SDH) which is a central topic to contemporary sociology. The term entails exogenous variables in an individuals' life that could affect that persons' health (WHO 2017; SAC 2017).

Within sociology the social determinants of health have led to a focus on factors such as education, income, and employment when it comes to study the social determinants of health. Social policy becomes a factor in the social determinants of health through providing welfare services such as public hospitals and monetary transfers like unemployment benefits or disability benefits (McNamara 2015). In this thesis I will limit the focus of social

determinants of health to factors that theoretically or empirically can be seen as affected by labor unions in some way.

There are many aspects of employment that can affect an individual's health situation. Both social and material sets of conditions play a role in this. One big factor for the social determinants of health is whether an individual is employed and an active participant in the labor market, or if they are unemployed or underemployed (Marmot et al. 2012). This question makes a strong impact on mapping an individual's SDH because employment affects income and social status significantly. Being unemployed or underemployed is associated with material deprivation, which impacts health negatively.

Furthermore, there are also social characteristics and mechanisms that contribute to how work relates to health. High levels of income inequality within organizations negatively impacts psychological and somatic health (Marmot et al. 2012:30). Status and prestige within the organization bring their own effects on worker health. Status advancement is associated with positive health effects and status regression is unsurprisingly linked to the opposite (Eikemo and Bambra 2018:5). Cases of discrimination and harassment at work deteriorate the victim's status at work, which makes anti-discrimination policies a health issue in part (Marmot et al. 2012:76).

Continuing the topic of how employment impacts health, perhaps one of the most intuitive ways one's health is affected by working is physical threats to the safety of employees. In some occupations the workers are subject to relatively hazardous working conditions (Economou and Theodossiou 2015). For example, accidents involving falling people or objects, chemicals, heavy machinery, physically straining tasks, long or irregular work schedules can all have a direct impact on an individual's health.

The rates of workplace injuries, both fatal and non-fatal, have been declining in Europe in recent decades. Nevertheless, the societal and individual costs of workplace injuries are not insignificant (Economou and Theodossiou 2015). The economic costs of workplace accidents are estimated to compose four percent of the global gross domestic product (GDP). In addition to this, workplace accidents do not only impact the physical and mental health of workers, but they also affect other members of the households of those involved.

Because the research on employment and health is so extensive, some individual characteristics of employment have been established as influencing individual health, and

have to be accounted for in this thesis. I will begin by introducing the concept of socioeconomic status which has been found to influence individual health (Mackenbach et al. 1997). An individual's socioeconomic status is determined by three main parameters; income, education, and occupational class. Accounting for these three facets of an individual can make up a large part of the explanation of their health outcomes. I want to emphasize that socioeconomic status is a measure of a social hierarchical position, and not simply a measure of material or educational worth, as e.g. Gross National Income by capita in itself has less of an impact on health in most of the wealthiest countries in the world (Wilkinson and Pickett 2006:1776). Individual income, education level, and occupational class can all be used to rank individuals hierarchically, and virtually all empirical data indicates that ranking high in socioeconomic status is positively associated with better health. Thus, controlling for socioeconomic status is relevant for the health research in my thesis.

As mentioned, worker safety is an important concern for labor unions. The results from studies on unionization rates and workplace accidents have been varied and challenging to interpret. The theoretical expectation is that higher rates of unionization should be associated with lower rates of workplace accidents. However, the empirical results on this have been ambiguous at face value. In older studies of the impact of unionization on the rates of accidents in U.S. coal mines, the results showed no negative effect between unionization rates and workplace accidents between the 1970's and 1980's (Morantz 2013). Morantz's own study on unionization and workplace accidents and injuries between 1993 and 2010 found a significant negative correlation between unionization rate and traumatic and fatal injuries. Conversely, Morantz found a positive correlation between unionization rates and minor accidents and injuries. This is somewhat surprising based on the different ways unions can promote worker safety, e.g. safety education courses, safety regulations, etc. The answer to this puzzle could lie in methodological flaws in collecting or analyzing data on this issue.

Morantz argues that unionization rates do not necessarily actually increase the likelihood of minor accidents in a workplace, but rather that the unionization rates have an important impact on the framework each workplace uses to track accident statistics. It is her belief that workplaces with higher unionization rates are more fastidious in their accident reporting, both in cases of non-traumatic accidents and traumatic/fatal accidents, while workplaces with lower rates of unionization tend to underreport minor accidents (Morantz 2013:101). Her argument is supported by the results from her study indicating that higher unionization rates are negatively correlated with traumatic and fatal workplace accidents, and

positively correlated with minor accidents. The distinction between more or less serious accidents is tied to their susceptibility for *reporting bias*. As Morantz points out, more seriously traumatic or fatal accidents have less of a chance to go underreported regardless of unionization rates, and these are also the types of accidents that are negatively correlated with higher unionization rates.

Additional literature on unionization and workplace injuries also contribute ambiguous results. Multiple studies have found similar correlation discrepancies between unionization rates and workplace accidents depending on how serious the accidents were (Economou and Theodossiou 2015:138). One factor that Economou and Theodossiou believe is associated with lower fatal work injuries is investment in human capital, which in turn is associated with unions. They conclude by stating unionization is a significant factor in improving the health and safety of workers.

2.1.1 Gender

Having introduced the concepts of the social determinants of health and socioeconomic status, I also want to account for the significance of gender in this research, as understood as the normative dichotomous typology of genders for the sake of the focus of my research question. The statistical inequalities between genders in both the social determinants of health and in socioeconomic status make it necessary to include gender as a theoretical concept (Maclntyre and Hunt 1997). First, we have to determine what the statistical health differences between men and women are. In socioeconomically developed nations the health inequalities form a paradox; women have longer life expectancies than men, but they report higher levels of morbidity (Bambra et al. 2008). In other words, women live longer, but report more health concerns than men. Being female is associated with worse health in most European countries except for England and Finland, where being male is associated with worse health. In Ireland, gender was not found to be associated with either good or bad health (Bambra et al. 2008:39). This could by itself be reason enough to account for gender in my research question.

Gender has another importance for my project other than health inequalities between different genders because of the gender segregation in the labor market. The labor market is segregated by gender horizontally through different genders being over- and underrepresented in certain sectors and professions in the labor market, e.g. mechanics vs. cleaners or engineers vs. nurses (Emerek 2008). Moreover, the European labor market is segregated vertically as well, meaning that different genders are over- or underrepresented in the hierarchical

stratification of a sector or organization. Men are generally overrepresented in positions of leadership in the labor market.

The systematic segregation in the labor market based on gender leads me to control for potential differences between genders and the association between union membership and health.

2.2 How can unions affect individual health?

When we try to conceptualize how unions could affect worker's health, we have to acknowledge that unions don't affect health directly; they affect *working conditions*, which in turn affect health. The health of an individual person is dependent on a vast array of factors in their life course, from their genetic predispositions for certain illnesses, their social network, nutrition habits and, of course, their *work* (Amick, McLeod and Bültman 2015).

A central aspect to my research is work. What *is* work? Since the research question of this thesis concerns work, I feel it is necessary to discuss the definition of work used herein. It is no easy task to provide a sociological definition of work as a phenomenon due to the ambiguity tied to the colloquial use of the word (Grint 2005:7). Work can be defined as performed labor intended for maintaining survival. For the purposes of my thesis, further distinction is needed. I want to focus on how work in the form of paid employment affects health. Because labor union membership largely involves individuals or groups of employees and employers, I am interested in people in Europe who are 1) under a formal employment relation, and 2) receive monetary compensation for their labor.

I also want to clarify what a labor union is and what it does. A labor union is an organization of workers who collectively act to use their power over the economic activity they are employed in to influence their own working conditions and other political matters (Streek 2005:231). The organization of the labor unions is usually financed through membership fees that charge e.g. 1 percent of a member's monthly income. The most typical way a union can influence an individual member is perhaps in terms of monetary compensation. While the effect is not the same in all of Europe, several countries report a wage gap between unionized and non-unionized workers (Goerke and Pannenberg 2010:3). An interesting aspect of the available literature on labor union wage premiums in Europe, is the interactions with wage premiums and gender. In the United Kingdom, the wage premium of women is lower than that of men, while in Norway, the wage premium of women is greater than that of men, though several studies on this issue are contradictory (Bryson, Dale-Olsen,

and Nergaard 2016). The interaction of gender in these empirical studies further justifies a control for gender in my study of union membership and health.

It must also be said that multiple studies on wages by country show little to no difference in wages between unionized and non-unionized workers when controlling for other variables (Bryson, Dale-Olsen and Nergaard 2016). This has been explained through the collective aspect of union wage bargaining. The wage terms unions usually bargain for will often include both unionized and non-unionized workers, which leads to their wages rising equally. This has created a question of what "free passengers" do to the incentives of being a union member where you pay dues to a union for providing pay raises to your non-unionized colleagues. This question has seen some development recently, indicating that there is a pecuniary benefit to being a union member in the form of a lower likelihood of being dismissed form your job specifically in western Germany (Goerke and Panneberg 2010). Being dismissed from your job is associated with a one-time income reduction of 25 percent. West Germany, in the period 1985-2005, had an average annual probability for all workers in the private sector of being dismissed of 3.6 percent. The average probability of unionized workers being dismissed was 1.3 percent. This means that for unionized workers who through the influence of their union membership avoided a dismissal experienced a significant economic benefit compared to someone who were dismissed, in the form of avoiding a substantial one-time income reduction. This finding has been used to explain some of the reason for why people pay large dues to labor unions that bargain in favor of both members and non-members in terms of wages.

Furthermore, I want to bring up *job insecurity* as a relevant theoretical concept in my thesis. Job insecurity refers to the risk of the loss of a job or a valued condition of employment (Eikemo and Bambra 2018). The influence of mental perceptions on one's relationship to the labor market is most likely more significant than what has been assumed until now (Eikemo and Bambra 2018). Epidemiological research on job insecurity has indicated that the rates of workers experiencing insecurity have been increasing in recent decades. In the wake of expanding globalization and liberalization of global markets since the 1980's, the figures on workers experiencing insecurity have risen. Temporary and highly flexible job contracts now comprise 15 percent of paid employment in the EU. Studies on job insecurity and health outcomes has linked precarious employment situation to a range of health problems, such as high cholesterol as well as psychological morbidity (mental illness, depression, etc.).

The relevance union membership and the effect job insecurity has on health is found in how union membership and union density can reduce the factors that lead to job insecurity. Job insecurity is not only a question of potentially losing all or part of one's income, but it entails a substantial loss of social status. A person's employment situation is one of the most fundamental determinants of social prestige and status. The loss of a high-ranking position will not only result in a reduction in income as previously stated, it is also connected to a detrimental effect on an individual's health condition (Eikemo and Bambra 2018). Job insecurity can be understood as a psychosocial working condition; the degree of perceived/experienced insecurity can vary in the labor market, both horizontally between sectors and vertically within organizations.

As union membership has been found to be associated with a reduced risk of being dismissed from one's job, and because the psychosocial condition of job insecurity is associated with health, my research on union membership and health is further warranted. There are several routes labor unions can utilize to reduce job insecurity among their members, e.g. opposing short-term contracts, underemployment, downsizing processes, and privatization processes.

The results from my thesis will potentially shed more light on the "free passenger" question, should my findings indicate union membership is associated with better health. Next, I will move on to more specific associations between work and health.

2.2.1 The Job Demand-Control (-Support) model

We have an extensive body of empirical literature which explains the significance of working conditions and health (Bambara et al. 2009:455). In this project I distinguish between two ways working conditions influence the health of the employed population; physical working conditions and psychosocial working conditions. Following the deindustrialization of developed countries, physical working conditions have become less important for many in the employed population, while psychosocial working conditions have grown more important.

I have chosen the Job Demand-Control/Job Demand-Control (-Support) model (JDC/JDCS) as my framework of understanding the relationship between employment and health. The JDC/JDCS model was first presented by the American sociologist Robert Karasek in 1979, and it has since been expanded by other academics within sociology and psychology (Häusser et al. 2010).

The JDC/JDCS model is a theoretical model that seeks to explain how certain working conditions are linked to wellbeing and health. The model defines job demands as quantitative variables such as assignment loads and time pressure. These demands consist of both physical and psychosocial factors, e.g. lifting heavy loads or performance quotas. Job control is defined as the level of autonomy a worker has over their own labor. This entails the degree to which an employee can influence decisions on which tasks need to be performed and which methods to use to complete those tasks. One aspect of job control covers *skill discretion*, which refers to the opportunity workers have for using specific skills in the work process. This can be understood as a way of measuring skilled vs. unskilled labor. Jobs involving unskilled labor will naturally score lower on measures of skill discretion. The second aspect of job control is decision authority, which is to say how much influence a worker has on how their work is planned and organized (Häusser et al. 2010:2).

Within the JDC/JDCS model, jobs that involve high degrees of job demands and low on job control - so-called "high strain jobs" – are presented as having negative impacts on worker wellbeing and health. On the other hand, "low strain jobs", which involve low degrees of job demands and high degrees of job control, have fewer negative impacts on worker wellbeing and health.

In relation to how higher levels of job control is linked to better health within the JDC/JDCS model, a review of studies on psychosocial working environment and health presents findings suggesting that organization-level changes in the working environment increasing worker autonomy resulted in improved worker health (Bambara et al. 2009:460). Labor unions should theoretically be able to influence both the job demands as well as job control of their members. That is why I want to study how union membership is associated with health, controlling for socioeconomic status to see if the association is different depending on income, education, or profession.

Amick, McLeod and Bültman present three substructures in their analysis of how work relates to health. The first is labor market experiences relating to employment opportunity (the demand for labor in the workforce) and the nature of the job itself (Amick, McLeod and Bültman 2015). There is a gradient for how closely an individual is connected to the labor market, unemployed people are almost completely isolated, while the underemployed are somewhat less connected than they would wish, and some are pressured to work more than what they consider ideal. These are factors dependent on the situation in the

labor market at any one time, and fluctuate in tandem with business cycles and between sectors. The nature of work consists of the conditions people work under; some jobs require physically straining tasks, night work or overtime, handling dangerous chemicals, and other duties involving a degree of risk to worker's health. In addition, the nature of work also entails work arrangements such as working second or third jobs, short-term contracts and the structure of worker compensation.

The second is labor market and social contexts. The social context of individual workers can affect their labor market experiences on multiple levels ranging from the local workplace itself to global economic trends. As an example of a working life course, the authors use an image of a female worker who lacks a completed secondary education as a result of health issues, struggling to find full-time and long-term employment, having to resort to work under conditions that are hazardous to her health, and finally being forced to retire early on unfavorable terms (Amick, McLeod and Bültman 2015:347). On the workplace level, this woman could have benefited from local policies and specialized programs for partly disabled workers. On the labor market level, job training programs and counseling could have reduced durations of unemployment as well as promoting more favorable working conditions. On the societal level, welfare programs such as unemployment or disability benefits could have improved this hypothetical woman's outcomes.

Lastly, the authors combine the understanding of labor market experiences and life trajectories. The point of emphasizing life trajectories is about the changing relationship an individual has with the labor market in the course of a lifetime; there are periods with more and less favorable working conditions such as overtime work, risk of injury, or exposure to other dangers. Times of life transitions such as a change in health status, changing jobs, changing residence, having children, etc. can lead people into critical or sensitive periods which can influence vulnerable an individual's health is as a result of their relationship to the labor market in the course of their lifetime.

To sum up how unions can influence the health of their members, I distinguish between physical injury-related policies unions can bargain for, such as safety training and regulations, and other benefits unions can provide regardless of physical hazards as work, such as higher compensation, or psychosocial working conditions such as worker autonomy, social working environment, and more job security – all of which are associated with better

health. On this basis I want to try to control for whether respondents in my data could benefit from both physical accident risk reduction as well as "general" union benefits.

Now that I have presented the connection between working conditions, union membership, and health, I will continue by examining the varying macro-level contexts these connections happen in.

2.3 How can individual health be affected by macro-level contexts?

It is important to acknowledge that the social determinants of health exist within a context partially determined by the political macro level in society. Most of the variables that affect the social determinants of health are localized on the individual (micro) level such as an individual's age, education, and income. However, the variations in health outcomes by country when controlling for crucial variables suggests that the macro level is not without impact. After all, most European countries have some form of public healthcare services which will vary in terms of resource allocation from government and bureaucratic efficiency.

There are cross-national variations in e.g. workplace regulations such as laws on psychosocial work environment in Sweden and Norway, labor market context, and social protection systems within the European labor market. Some of these variations can be categorized by welfare state regime, as I will come back to (Bambra et al. 2014:114).

National welfare policies do not only influence the health of their citizens through intuitive means such as public healthcare services and welfare programs, they also provide a context of policies that determine the conditions of their national labor markets which in turn affect the health of working citizens (Bambra et al. 2014:116). The set of policies concerning welfare may or may not follow the same patterns as the set of policies concerning working conditions. Exploring this question further will be an objective in this thesis.

In one multilevel study, ten percent of the explained variance in self-reported health could be attributed to individuals' home country (Eikemo et al. 2008). Furthermore, about half of this explained variance is associated with the welfare state regime the country belongs to. I argue this strongly suggests it would be interesting to research the isolated health effects of union memberships across welfare state regimes.

To put things in perspective, we should note that Europeans experience better scores in measures of health condition than many other regions in the world (Marmot et al. 2012). Nevertheless it is important to document the inequalities that exist within this relatively

affluent and healthy region of the world. The health inequality in Europe takes several forms; despite improvements in the general health of the population in all European countries, not all countries experience the same level of improvement and neither do all groups of individuals in these countries. Health inequalities also exist within nation states, varying between workers with different occupations, incomes and education levels. Even richer European countries now experience a rise in health inequality despite general improvements in the health of the population as a whole (Marmot et al. 2012).

2.3.1 The national context of labor unions in Europe

Labor unions traditionally represent the interests of members within a specific field in the labor market, or even members working at a specific workplace (Schnabel and Wagner 2007). For example, many unions organize trade-educated members such as electricians, while others organize university-educated members such as doctors. Another factor that differentiates labor unions is the union policies in the country where the union operates. This leads to a great variation within Europe as to how much influence labor unions can exert, their unionization rate, and their membership basis.

When researching labor unions I want to include a description of some broad developments within European labor unions over the last decades. First of all, there is a great variation within European labor unions in terms of sector of activity, membership rates, and political influence (Fulton 2015). Nordic countries tend to have among the highest rates of unionization in Europe, with Finland topping the list at a 74 percent unionization rate. Other countries experience comparatively low rates such as France with 8 percent and Estonia with 10 percent. An example of how the union policies/benefits union can offer their members impacts unionization rates, is the case of unemployment benefits in the neighboring countries of Norway and Sweden. The unionization rate is 70 percent in Sweden as opposed to 53 percent in Norway. A possible explanation for the significantly higher rate of unionization in Sweden can be found in the differing way these countries organize unemployment benefits. In Norway, unemployment benefits are distributed through national welfare programs independently of union membership, whereas in Sweden unemployment benefits are organized through labor unions.

The general unionization rate in Europe is currently 23 percent, though we should note that some of the most populous European nations such as France and Poland have some of the

lowest rates of unionization. Furthermore, the data on union membership can be challenging to use to compare countries because of differing methods of measuring membership (Fulton 2015).

The unionization rate in Europe has been declining steadily in the latest decades (Nergaard, Barth and Dale-Olsen 2015:2). Some countries have experienced a rise in the number of unionized workers, but this increase has not been proportional to the overall growth of the labor market, leading to a continued decline in unionization rates of the working population. Italy stands out on this issue, experiencing both a rise in unionization, and a decline in workforce participation, thus leading to higher union density.

The public sector has a higher concentration of unionized workers than the private sector in most European countries, though the difference varies considerably (Fulton 2015). The public unionization rate in France is 15.2 percent, while it is 5 percent in the private sector, In Norway the figures are 79 percent vs. 37 percent. In Croatia they are 68 percent vs. 17 percent. Sweden has one of the smallest gaps with a unionization rate of 83 percent in the public sector and 65 percent in the private sector.

Secondly, European labor unions have seen a change in their main membership base, shifting from a male majority among unionized workers to a female majority according to contemporary membership registries (Fulton 2015; Bryson, Dale-Olsen and Nergaard 2016). In Sweden and the UK, union members are now more likely to be female, while in Spain and the Netherlands they are still more likely to be male, though this gap is shrinking. This may well be the result of other macro-developments within the western economy over the last decades, i.e. the transfer of traditional industrial production from west to east, leading to fewer industrial (male) workers in the labor market overall and thus fewer men among labor union members (Bryson, Dale-Olsen and Nergaard 2016). This shift has then led to labor unions representing fewer workers in traditional private sector male-dominated industrial jobs and representing more workers in the public sector, which employs more women.

The power and influence of European labor unions vary as much as the European unionization rate by country. While Denmark has a rate of 84 percent of the work force being union members, Portugal's unionization rate is at 11 percent (Schnabel and Wagner 2007). An additional theoretical support comes from an empirical study on European trade policy and social determinants of health. The preliminary research shows that some protective policies in favor of workers within European countries positively impact the health of the population

(McNamara 2015). Interestingly, these positive effects did not extend to workers who are particularly vulnerable to trade liberalization.

Both in the labor market and in academia there exists a picture of "the workday of tomorrow" as a hyper-individualized, flexible, and autonomous in a post-industrial society (Frisvold and Leiulfsrud 2003). While we definitely see certain sections of the labor market moving in this direction, this description of an average workday in the not-too-distant-future might be premature. In academic research on the state of labor today there is a marked emphasis on *changing* phenomena while research on continuity is awarded less attention. This is understandable because framing/marketing of research has become more important in European academia, and projects that aim to discover or describe things that are new and different could be more likely to get funding. The idea of the individualized and flexible employment of tomorrow could potentially be used to argue that labor unions are becoming, or will become, less relevant in society. The arguments of Frisvold and Leiulfsrud for this belief to be somewhat exaggerated supports the relevance for my research on the more "traditional" labor market and employment paradigm.

2.4 Relation between public policy and the labor market/trade unions

In this section I will argue for the connection between national political contexts and labor unions where I explain that the set of national policies labor unions operate in will have an impact on how they influence their members.

As explained above, contemporary research suggests national policies have an impact on a population's health. Among the countries that are studied, we can take note of certain similarities and contrasts, and thus attempt to categorize these nations based on the overarching political themes of the country in relation to welfare policies or labor market policies.

2.4.1 Welfare state regimes

One well-known and influential academic in the field of categorizing welfare states is Gøsta Esping-Andersen, who's cataloguing of *The Three Worlds of Walfare State Capitalism* serves as a base of inspiration for the categorizations in my thesis (Esping-Andersen 1990). Esping-Andersen distinguishes between three categories of welfare state capitalism, also called welfare state regimes (WSRs). When we perform such categorizations, it is important to remember Weber's definition of *ideal types***.** These theoretical categories are academic tools

used to better understand a social concept, and rely on approximations (Ritzer and Stepinsky 2014:119). The categorizations use the characteristics of the social welfare policy in each country in regards to the market, healthcare as a commodity, and family policy.

The first is the *liberal* welfare state regime, where the national government provides limited welfare services that often are means-tested and the experience of social stigma among welfare recipients is stronger than elsewhere. Furthermore, in this liberal welfare regime, the *market* is encouraged to fulfill traditional welfare service roles, providing a private alternative to public services, or creating competition between private providers subsidized by the state. Thus, liberal welfare state regimes tend to have a higher degree of commodification in public services such as healthcare. Esping-Andersen places countries like the United Kingdom in the liberal category.

The second is the *conservative* welfare regime, where much of the responsibility of welfare services is placed on the family institution. In this regime, the market has less influence on welfare services than in the liberal regime, but social programs can be tied to personal income or be conducted through the employer. Germany can be found in this category.

The third welfare state regime is the *social-democratic*. The characteristics of this mode of welfare state capitalism entail strong government influence over the market, redistributive policies, and universal and relatively generous welfare services. The Nordic countries are examples of what Esping-Andersen would define as social-democratic welfare regimes.

In more recent research on welfare state regimes, the original three categories by Esping-Andersen can be expanded to four, and we use slightly different terminology and definitions: The Anglo-Saxon welfare state regime is the closest category to Esping-Andersen's liberal welfare state regime of countries like the UK. The Bismarckian welfare state regime refers to welfare regimes marked by influence from central European policy similarities. This resembles the original conservative regime. The Scandinavian welfare regime model is the contemporary equivalent of the social democratic regimes. The fourth welfare state regime is called the Southern, and distinguishes the southern European welfare models from their Bismarckian counterparts. This regime entails a segregated system of welfare provision where certain parts of the population enjoy certain protections, while others are neglected.

This four-fold typology is based on Ferrera's 1996 analysis and expansion on Esping-Andersens *Three Worlds* opus, and I have chosen to include it because it has been shown to be one of the more useful typologies for welfare state regimes in explaining cross-regime variation in social expenditure and employee-employer contributions (Bambra 2007). I bring up the *Three Worlds* because of the theoretical basis it gives me to categorize countries based on welfare policy. Despite the fact that these categorizations have been criticized and expanded upon, they provide a good basis for my categorization.

Using welfare state regime typologies for comparing health outcomes across countries have been used in contemporary research, as I will show. A study from 2008 using multilevel analysis indicates that there are systematic differences in health outcomes between individuals (when controlling for individual factors) between welfare state regimes (Eikemo et al. 2008:2289). In this analysis, a fifth welfare state regime category was used, i.e. *Eastern European.* The shared challenges former Soviet states have faced in transitioning to free market economies is named as a basis for expanding Fererras typology by adding Eastern European states as a welfare state regime category (Eikemo et al 2008:2283). In their study, welfare state regime was found to explain approximately half of the variation in self-reported health between the included European countries. An additional example of cross-country variation in a measure of health is infant mortality rate, where welfare state regimes can be ranked social democratic – bismarckian - liberal, from best to worst performance respectively (Eikemo et al. 2008:2290).

A combined table of countries and their categorizations in the WSR typology and the WSI typology can be found at the end of chapter 2.4.2.

2.4.2 Work security index

The existing empirical literature on cross-national variation in health outcomes in Europe merits using a welfare state regime typology in a quantitative analysis and comparison in my thesis. Nevertheless, I also want to look for alternative theoretical typologies for comparing countries in Europe because of some ambiguous study findings I have come across. For example, Bambra and colleagues found, contrary to their own expectations, that Scandinavian welfare state regimes did not show a weaker association between adverse working conditions and negative health outcomes (Bambra et al. 2014:131). Instead the authors suggest that an alternative typology to the welfare state regime model could be used to better understand the issue of working conditions and health across European countries.

As the research question of this thesis is focused on the potential impact of unionization on self-reported health in Europe, I will present an alternative typology which might be better suited for this task.

The alternative typology I have chosen is the *Work Security Index* (WSI) developed by Ellen Rosskam. The WSI is a typology of countries based on an index of protections of workers' health, safety, and well-being (Rosskam 2011:277). This index is based on an understanding of a workers' right not to have to expose themselves to adverse health risks through the nature of their employment (Rosskam 2011:68). *Work Security* is thereby understood as secure working conditions, which include occupational health, safety, and working environment. Work security is then operationalized as a number of specific policies that a country has set in place in order to ensure safe and healthy working conditions for its citizens. Some examples of policies which are counted in the index are paid sick leave, parental leave, safety regulations, overtime regulations and the right to collective bargaining to name a few.

The WSI is composed of three proxy indicators. The first is *Input Indicators*, which measure a country's extent of laws made to strengthen work security. This includes looking at each country's relationship to 11 international labor standards. The more of these international labor standards a country has ratified, the higher they will score in the Input Indicator subindex. The second is *Process Indicators*, which is a measure of the mechanisms each country employs to uphold their rules and regulations, such as labor agencies and inspectors. Another important aspect of the Process Indicators subindex is the level of government expenditure on workers' compensation, such as disability benefits after workplace accidents. The last proxy indicators are the *Outcome Indicators*, which comprise of a measure of a country's outcomes on work security. Examples of which outcomes are included among the Outcome Indicators are statistics on work fatality rates, measures of average working time, and average number of paid vacation days in a year. When combined, the proxy indicators make it possible to categorize countries based on their score in each indicator.

The WSI is made up of four country groupings (Rosskam 2011:269). The first are the *Pacesetters*, which are the countries that achieve high scores in each of the three subindexes (input, process, and outcome indicators). Next come the *Pragmatists*, which are the countries that achieve high scores on outcome measures despite lower scores on the input and/or process measures. The third country category are the *Conventionals*, that is, countries that

score high on input and/or process measures, but low on outcome measures. The fourth and final category is the *Much-to-be-done*-countries. Nations in this category score low on input, process, and outcome measures.

The European countries included in my dataset do all fall into either the Pacesetter category or the Pragmatist category. Thus, my use of the WSI typology will compare two groups of European countries as opposed to the four groups in the welfare state regime model.

Coming back to the JDC/JDCS model, a number of epidemiological studies show lower levels of *high-strain* job effects in countries characterized by more comprehensive welfare states such as in Scandinavia, though other studies have not been able to find the same results (Bambra et al. 2014:131).

Here is a combined table of the countries included in my data sample:

Table 1. Countries by WSR and WSI

Country	**WSR**	**WSI**
Austria	Bismackian	Pragmatists
Belgium	Bismackian	Pacesetters
Czech Republic	Eastern European	Pragmatists
Denmark	Scandinavian	Pacesetters
Estonia	Eastern European	Pragmatists
Finland	Scandinavian	Pacesetters
France	Bismackian	Pacesetters
Germany	Bismackian	Pacesetters
Hungary	Eastern European	Pragmatists
Ireland	Anglo-Saxon	Pragmatists
Lithuania	Eastern European	Pragmatists
Netherlands	Bismackian	Pacesetters
Norway	Scandinavian	Pacesetters
Poland	Eastern European	Pragmatists
Portugal	Southern European	Pacesetters
Slovenia	Eastern European	Pragmatists
Spain	Southern European	Pacesetters
Sweden	Scandinavian	Pacesetters
Switzerland	Bismackian	Pacesetters
United Kingdom	Anglo-Saxon	Pragmatists

2.5 Hypotheses

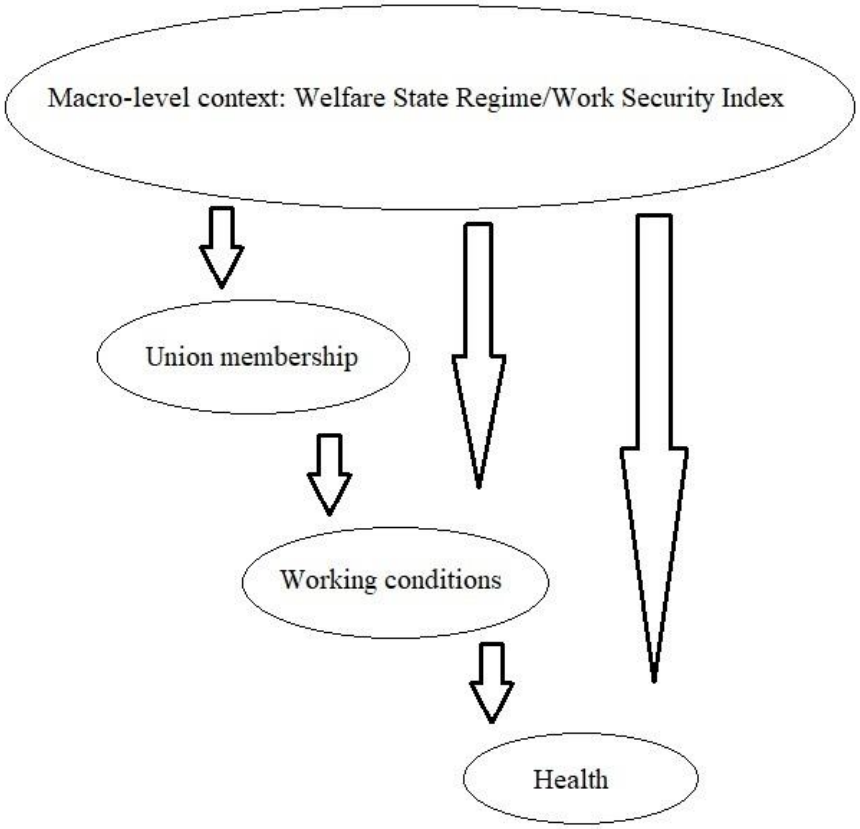
Based on the theoretical literature I have provided, I want to form a set of hypotheses and review them after performing a multilevel logistic regression analysis.

H0: There is no significant association between union membership and health in Europe.

H1: There is a significant positive statistical association between union membership and health in Europe.

H2: There are significant statistical interactions between union membership and the variables which compose socioeconomic status, where the hypothesized positive association between union membership and health is stronger among lower-income, less-educated, working-class individuals.

2.6 Theoretical model



Drawing from the body of literature I have presented in this chapter, I propose two main routes union membership can impact the working conditions which impact individual health; the physical and the psychosocial**.** Labor unions can influence a worker's health

physically through safety training programs and safety regulations that reduce the risk of injury or fatality as a result of accidents. Additionally, they can argue for a reduction in physical job strain through regulating physical work. For example, a union can suggest an investment in machinery meant to lessen the amount of heavy lifting required for specific jobs. The psychosocial working conditions that can be influenced by union membership are for instance job insecurity and job control. Union membership is associated with less job insecurity and thus better health. The other psychosocial condition related to health I argue unions can influence is job control, which is linked to better health; union members might have greater leverage when it comes to maximizing their job control.

Above is a graphical model that depicts the routes of association that are based on the presented theories. It is organized by a stratification of theoretical concepts from the contextual level to the individual level. My focus is on the connection between union membership and health, but to understand that connection, I have to first understand the connections that come before (transnational political/historical/social context) and those that come between (working conditions). We must take into account that the national/political context not only has an impact on individual health by itself through e.g. a public health service, but it also has an impact on each step of the model down to individual health, such as the terms of union membership and working conditions by themselves.

3. Methodology

In this chapter I will present my methodological approaches to the research question. This project has a quantitative research design, where I rely on survey data and employ regression analysis in order to find possible answers.

My research question is concerned with union membership and health in Europe. To account for the contextual difference between respondents originating from different countries (or country typologies), we can use multilevel regression. My dependent variable is self-rated good health (operationalization of variables below), which determines my choice of using logistic regression. Using multilevel logistic modeling in this research design can tell us if the effects of the independent variables on the dependent variable are consistent within level-2 clusters. An association between union membership and health in one European country does not necessarily justify generalizing the effect onto another because the social, historical and political context in one country could theoretically give unions completely different circumstances for affecting the health of their members.

3.1 Data

The data in this thesis comes from the 2014 European Social Survey, round 7 (ESS7). This survey covers 21 countries, all being European with the exception of Israel, which has been excluded from the data set in this thesis on the grounds of confining the data to European countries (ESS round 7 2014). The data from this survey is gathered through random probability sampling and has a target response rate of 70 percent. The country that comes closest to this target is Lithuania with a response rate of 68.9 percent (ESS7 – 2014 Fieldwork Summary and Deviations). The country with the lowest response rate is Germany, with 31.4 percent.

3.1.1 Descriptive statistics

Tables of descriptive statistics of my data can be found on the next pages. The sample size is 31.753 working respondents over 25 years old in 20 European countries (N=31.753). As the tables show, we can see that a greater proportion of respondents in my data sample who are union members report being in good health than their non-member counterparts both overall and within each welfare state regime and WSI category. Additionally, we can see that the welfare state regime and WSI category with the greatest proportion of respondents reporting good health are the Scandinavian WSR and the pacesetter countries, while the lowest proportion is found in the eastern and southern WSRs and in the pragmatist countries.

When comparing unionized respondents with non-unionized respondents by welfare state regime, we can see that the Scandinavian and Bismarckian WSRs are less represented among non-union members, and more represented among union members. The opposite is the case for the other welfare state regimes. Union members make up a smaller percentage of respondents in the lowest income quarter and the same percentage of the second income quarter. However, union members make up a greater proportion of respondents in the third and fourth income quarters. The patterns in my data are reflective of the theoretical and empirical literature I have read on this topic.

One of the most interesting discrepancies between union members and non-union members in my data is found in self-reported health in Eastern-European WSRs. Among non-members in Eastern WSRs, 57 percent report good health, while among union members the figure is 71 percent.

Table 2. descriptive statistics for NON-MEMBERS of a labor union

		WSR/WSI						
Variable	All	Scandinavian	Anglo-saxon	Bismarckian	Eastern	Southern	Pacesetters	Pragmatists
Dependent variable								
Self-reported good health	19756 (64 %)	4456 (75 %)	3419 (75 %)	8089 (70 %)	6230 (57 %)	1760 (56 %)	13392 (70 %)	10562 (63 %)
Socioeconomic status dummy sets								
First income quarter	8719 (31 %)	1329 (24 %)	1670 (45 %)	2791 (28 %)	1975 (29 %)	954 (38 %)	4556 (27 %)	4163 (36 %)
Second income quarter	6069 (21 %)	1019 (19 %)	765 (21 %)	2114 (21 %)	1559 (23 %)	612 (24 %)	3411 (20 %)	2658 (23 %)
Third income quarter	5924 (21 %)	1146 (21 %)	602 (16 %)	2324 (23 %)	1397 (21 %)	455 (18 %)	3711 (22 %)	2213 (19 %)
Fourth income quarter	7780 (27 %)	1968 (36 %)	693 (19 %)	2820 (28 %)	1776 (26 %)	523 (21 %)	5233 (31 %)	2547 (22 %)
Basic education level	8552 (24 %)	1316 (22 %)	793 (18 %)	2884 (25 %)	2080 (19 %)	1479 (48 %)	4859 (26 %)	3693 (22 %)
Secondary education level	12913 (36 %)	1715 (29 %)	1588 (35 %)	3907 (34 %)	5145 (48 %)	558 (18 %)	5825 (31 %)	7088 (43 %)
Higher education level	14177 (40 %)	2883 (49 %)	2140 (47 %)	4635 (41 %)	3483 (33 %)	1036 (34 %)	8365 (44 %)	5812 (35 %)
Working class profession	12961 (40 %)	1940 (34 %)	1586 (39 %)	3439 (33 %)	4801 (50 %)	1195 (44 %)	6009 (34 %)	6952 (47 %)
Middle class profession	8542 (26 %)	1441 (25 %)	1155 (28 %)	3067 (29 %)	2045 (21 %)	834 (31 %)	4954 (28 %)	3588 (24 %)
Upper class profession	11101 (34 %)	2311 (41 %)	1322 (33 %)	4039 (38 %)	2744 (29 %)	685 (25 %)	6773 (38 %)	4328 (29 %)
Dichotomous control variables								
Female	19100 (53 %)	2911 (49 %)	2471 (54 %)	5945 (52 %)	6164 (57 %)	1609 (51 %)	9737 (51 %)	9363 (56 %)
Welfare State Regime								
Scandinavian	5931 (16 %)							
Anglo-Saxon	4541 (13 %)							
Bismarckian	11475 (32 %)							
Eastern-European	10861 (30 %)							
Southern-European	3138 (9 %)							
Work Security Index category								
Pacesetters	19180 (53 %)							
Pragmatists	16766 (47 %)							

Table 3. descriptive statistics for MEMBERS of a labor union

		WSR/WSI						
Variable	All	Scandinavian	Anglo-saxon	Bismarckian	Eastern	Southern	Pacesetters	Pragmatists
Dependent variable								
Self-reported good health	12128 (76 %)	3724 (80 %)	1929 (85 %)	5352 (77 %)	4106 (71 %)	1017 (68 %)	9447 (77 %)	6681 (75 %)
Socioeconomic status dummy sets								
First income quarter	3320 (19 %)	767 (17 %)	545 (28 %)	1141 (18 %)	574 (16 %)	293 (23 %)	1982 (17 %)	1338 (22 %)
Second income quarter	3642 (21 %)	857 (19 %)	441 (22 %)	1265 (20 %)	772 (22 %)	307 (24 %)	2199 (19 %)	1443 (23 %)
Third income quarter	4252 (25 %)	999 (22 %)	440 (22 %)	1650 (26 %)	889 (25 %)	274 (22 %)	2762 (24 %)	1490 (24 %)
Fourth income quarter	6292 (36 %)	1837 (41 %)	549 (28 %)	2186 (35 %)	1334 (37 %)	386 (31 %)	4364 (39 %)	1928 (31 %)
Basic education level	2846 (14 %)	638 (14 %)	157 (7 %)	1192 (17 %)	396 (7 %)	463 (31 %)	1953 (16 %)	893 (10 %)
Secondary education level	7693 (36 %)	1336 (29 %)	770 (34 %)	2349 (34 %)	2930 (51 %)	308 (21 %)	3692 (30 %)	4001 (45 %)
Higher education level	10543 (50 %)	2698 (58 %)	1338 (59 %)	3373 (49 %)	2427 (42 %)	707 (48 %)	6618 (54 %)	3925 (45 %)
Working class profession	7197 (34 %)	1434 (31 %)	727 (32 %)	1961 (29 %)	2522 (44 %)	553 (37 %)	3608 (30 %)	3589 (41 %)
Middle class profession	5666 (27 %)	1144 (25 %)	673 (30 %)	2036 (30 %)	1354 (24 %)	459 (31 %)	3407 (28 %)	2259 (26 %)
Upper class profession	8019 (38 %)	2061 (44 %)	843 (38 %)	2849 (42 %)	1798 (32 %)	468 (32 %)	5171 (42 %)	2848 (33 %)
Dichotomous control variables								
Female	10394 (49 %)	2235 (48 %)	1119 (49 %)	3285 (47 %)	3068 (53 %)	687 (46 %)	5799 (47 %)	4595 (52 %)
Welfare State Regime								
Scandinavian	4678 (22 %)							
Anglo-Saxon	2274 (11 %)							
Bismarckian	6925 (33 %)							
Eastern-European	5806 (27 %)							
Southern-European	1496 (7 %)							
Work Security Index category								
Pacesetters	12300 (58 %)							
Pragmatists	8879 (42 %)							

Table 4. Descriptive statistics of non-dichotomous variables

Variable	Mean	SD	Min	Max
Continous control variables				
Age	45.2	11.3	25	114

3.2 Operationalization of variables

My dependent variable is self-reported good health. This was originally an ordinal variable coded from 1-5, 1 being "very good health" and 5 being "very bad health" as well as including missing values. I have recoded the variable to measure good health, combining the respondents who reported either "very good" or "good" into the value of 1, and the other respondents into the value of 0, thus creating a dummy variable that indicates good health.

My main independent variable is membership of a labor union. The variable measuring the respondent's union member status/history consists of three categories; 1) currently member of a labor union, 2) previously a member, but not anymore, and 3) never been a member. Since I am interested in the working population of Europe, I decided to recode the variable into a dummy variable, where those who are currently members of a labor union gained the value 1, while those who are no longer members of a labor union or never have been members gained the value 0.

Here follows a description of my control variables. These are variables where I have strong theoretical or empirical reasons for including them in my regression model because of their demonstrated influence on self-reported health. My control variables are age, gender, income level, education level, and occupational class.

Age is a continuous variable measuring the respondents' age in years. In order for the education variable to not be skewed as a result of including respondents who are too young to have completed their education and earn an income (the youngest respondents in my data are 14 years old), I have excluded respondents under 25 from my analysis. This variable is important to account for in health research, as worse health becomes more likely among people as they grow older.

The gender variable is dummy coded into male = 0 and female = 1, making my gender variable represent females. I include this variable on the basis of existing theoretical and empirical literature showing the influence of gender on health, which is especially interesting

in a work-related context. I also need it to see if there are any statistical interactions between gender and my other variables.

The income variable is originally ordinal and ranks respondents into ten income groups, from lowest to highest. In my thesis I have recoded the income variable into a dummy set of the first, second, third, and fourth quarters of income earners, the first having the lowest income and the fourth having the highest.

The education variable is made up of a dummy set of education levels based on how many years of education the respondents have completed. I have recoded the variable into three education levels; basic education (less than 10 years of completed education), secondary education (less than 13 years of completed education), and higher education (more than 13 years of completed education).

Occupational class is operationalized through extensive recoding of the occupation variable from ESS7. In this thesis, the understanding of occupational class follows the Erikson/Goldthorpe occupational class schema, only with the number of categories reduced to three, i.e. the working class, the middle class, and the upper class (Erikson, Goldthorpe, and Portocarero 1979).

Table 5. Operationalization of variables

Variable	Value range	Value = 1 criteria	Variable scale
Good self-reported health	0/1	"Good" or "Very good" self-reported health	Nominal
Union membership	0/1	Currently a member	Nominal
Female	0/1	Identifies as female	Nominal
First income quarter	0/1	Income in the lowest 25 %	Nominal
Second income quarter	0/1	Income in the second lowest 25 %	Nominal
Third income quarter	0/1	Income in the second highest 25 %	Nominal
Fourth income quarter	0/1	Income in the highest 25 %	Nominal
Basic education level	0/1	Less than 10 years of completed education	Nominal
Secondary education level	0/1	Less than 13 years of completed education	Nominal
Higher education level	0/1	More than 13 years of completed education	Nominal
Working class	0/1	Erikson/Goldthorpe occ. class schema	Nominal
Middle class	0/1	Erikson/Goldthorpe occ. class schema	Nominal
Upper class	0/1	Erikson/Goldthorpe occ. class schema	Nominal
Age	25-114	N/A. Respondents age by year	Discrete

3.3 Weighting

The European Social Survey delivers unweighted data, which means that the data samples might include some overrepresentation or underrepresentation of certain respondents within a country or across countries depending on the research design of each country collecting data samples. To compensate for this, I employed STATAs dweight (design weight) mechanic, which reduces the statistical influence/weight of overrepresented respondents and increases the influence/weight of underrepresented respondents (Weighting European Social Survey Data 2014). Additionally, the sample sizes (N) themselves vary between countries in the ESS, so I used the pweight mechanic (population size weight) to avoid the respondents from the larger sample sizes contributing skewed estimates because they are overrepresented in the data, but not in the population (Weighting European Social Survey Data 2014). Weighting the data is necessary for a research question such as mine, where I will utilize data from 20 European countries and perform regression analysis using theoretical typologies which classify countries into categories.

3.3.1 Unconditional mean model

In order to ascertain if there is variation (measured by the intraclass correlation coefficient, ICC) in self-reported health between welfare state regimes and work security categories (clusters), I will run an unconditional mean model (Hox 2010:4; Christophersen 2013:108). Higher ICC values indicate a higher degree of variation between groups and thus a larger potential for contextual influences. The ICC value of the model using the WSR typology is 0.075, and the ICC value of the model using the WSI typology is 0.043. Though there is no official critical value for the ICC, we should note that these values are in the lower range of what is desirable using multilevel modeling and that regular logistic regression could be an appropriate alternative.

4. Regression analysis

In this chapter I will present the results from the regression models I have run, as well as discussing these results in regard to the theory chapter.

4.1 Results

As the theory chapter explains, I have explored the potential association between union membership and good health within Europe. To allow for the macro-level contexts having an impact on this study, I chose to perform my regression analysis using two alternative typologies of European countries, namely the Welfare State Regime typology and the Work Security Index typology.

Table 6. Multilevel logistic regression using Work Security Index typology

Variable	**OR**	**Coef.**	**P>Z**
Second income quarter	1.209	0.189	0.002
Third income quarter	1.414	0.346	0.000
Fourth income quarter	1.673	0.514	0.000
Secondary education level	1.270	0.239	0.003
Higher education level	1.432	0.359	0.000
Middle class occupation	1.270	0.239	0.001
Upper class occupation	1.425	0.354	0.000
Female	0.547	-0.601	0.001
Age	0.959	-0.041	0.025
Interaction: female-age	1.007	0.007	0.047
Union membership	1.167	0.154	0.001
Constant	12.450	2.521	0.000

4.2 Interpretation of the tables

Here is a brief instruction for the readers in how to interpret logistic regression models like these. The table lists all the variables I have included in my multilevel logistic regression and their odds ratio (OR), coefficients (Coef.), and their P-value. The variables used to control for socioeconomic status, namely the income, education and occupational class variables are each divided into a dummy set representing their respective component of socioeconomic status. Dummy sets are used for comparing respondents by a certain criteria such as income, education, or occupational class in my case. All respondents in my data set are operationalized into the dummy sets, so we then get groups of respondents based on their

income level, education level, and occupational class. We can then compare all the variable groups in a dummy set to a reference group in the dummy set.

The reference category for income level is the first income quarter, so interpretations of the income-level variables in the regression table must be understood as the difference between the variables listed in the table and the reference category, namely the first income quarter. The odds ratio and coefficient values of the second, third, and fourth income quarters are thus expressed as their difference to the reference category. Beginning with the variable *Second income quarter*, the variable's odds ratio is 1.270 and the coefficient is 0.239, which means that the difference in the odds that a respondent with an income level in the first quarter is in good health, to the odds of a respondent with an income level in the second quarter is 1.270. With a p-value of 0.000 we can generalize this upon the population and say that a person in the second income level quarter has better odds of being in good health compared to a person in the first income level quarter. The same principle applies to the other dummy sets; the variable values of the second and third education levels are both in comparison to the reference category which is the first education level.

The results from the regression model using Welfare State Regimes found no significant association between union membership and self-reported good health. Excluding union membership, the other variables which were included based on theoretical and empirical grounds did show significant associations as expected. Each of the income category variables shows that being in a higher income quintile than the lowest increases one's chances of being in good health. The education category variables show the same; the categories for respondents who have more education are associated with better health. When it comes to occupational class, we can see that both the middle- and upper class have better odds for being in good health than the reference category (working class). The age variable shows that each additional year of a respondent's life reduces their odds of being in good health compared to the year before. I ran additional models for exploring interaction effects between the union membership variable and the other variables. I found no statistically significant interactions between union membership and any of the other variables.

Table 7. Multilevel logistic regression using Work Security Index typology

Variable	OR	Coef.	P>Z
Second income quarter	1.209	0.189	0.002
Third income quarter	1.414	0.346	0.000
Fourth income quarter	1.673	0.514	0.000
Second education level	1.270	0.239	0.003
Third education level	1.432	0.359	0.000
Middle class occupation	1.270	0.239	0.001
Upper class occupation	1.425	0.354	0.000
Female	0.547	-0.601	0.001
Age	0.959	-0.041	0.025
Interaction: female-age	1.007	0.007	0.047
Union membership	1.167	0.154	0.001
Constant	12.450	2.521	0.000

The results from the multilevel logistic regression model using the Work Security Index show statistically significant associations between all the independent variables on our dependent variable, self-reported good health. The central contrast between the models using Welfare State Regime typology and the Work Security Index typology is the statistical significance of union membership. Using the Work Security Index, the model shows that being a union member is positively associated with good health, indicating that being a member of a labor union increases your odds of having good self-reported health. These results give us the grounds for statistical generalization (Ringdal 2013). The common critical value for where you can draw statistical generalizations is if a variable has a 5-percent significance level ($p \leq 0.05$), meaning that there is a less than five percent chance that we are dismissing a true null hypothesis, i.e. that there is no association between union membership and health. With these results, we can generalize the positive association between union membership and health from our data sample to the population the sample was drawn from, which are the 20 European countries in my data set.

The control variables show similar results to the WSR model. Higher levels of income and education are associated with better odds of having good health, being in the middle or upper class gives better odds compared to the working class, and increasing age decreases the odds of having good health. This model also showed no statistically significant interactions between union membership and other variables.

4.3 Pseudo R^2 and margins

Psudo R^2 is a calculation of the explained variance in a logistical regression model. The formula for calculating this is: $R^2 = \frac{Var(e)b - Var(e)m}{Var(e)b}$ (Ringdal and Wiborg 2017). Above the fraction line, you subtract the variance in health at level 2 – in my case Work Security Index categories - of the complete model that includes independent variables from the variance in health of the empty (intercept) model. Beneath the fraction line you place the variance at level 2 from the complete model again. In this case, this is $\frac{0.007234 - 0.000905}{0.007234} = R^2 = 0{,}874 = 87\ \%$. This means that 87 percent of the variance in having good health is explained by the (individual) variables in my model. Relatively little of the variance stems from transnational context, which is in line with the relatively low ICC score on good health of the Work Security Index categories.

Finally I want to discuss the difference in the predicted probability of being in good self-reported health between union members and non-union members. I can do this in STATA by using the *margins* command. If we take two hypothetical respondents with identical values (in this example I use the means of the sample) in all variables with the exemption of union membership, the results show that a non-union member has a probability of 79 percent for being in good health, while the probability of an identical person who is a union member is 82 percent.

5. Discussion

As we saw in the results from the multilevel logistic regression models, union membership was found to have a statistically significant positive impact on self-reported good health when using the Work Security Index typology, but not when using the Welfare State Regime typology. In other words we have an association between union membership and good health, but we do not know of a causal link between them.

5.1 WSR model

Contrary to my expectations, union membership was not found to have a statistically significant association with health when using the Welfare State Regime typology. Though the association is statistically nonsignificant, in contrast to the model using the WSI typology, the association is negative. By simple intuition I would have guessed that the criteria which are used to form the WSR typology would account for patterns in union membership and health, but this assumption looks to be false. This finding is in line with similar research attempts, which also have found the WRS typology to be flawed/less ideal when studying working conditions and health (Bambra et al. 2014). This is not to say that the WRS is not useful, only that it is not useful for every study on a macro-level social phenomenon. Union membership was not found to have any significant interactions with the control variables.

The nonsignificant association between union membership and health in this model notwithstanding, these findings are fruitful to analyze. They tell us that the operationalization used in the WSR typology, namely a focus on welfare policy, does not necessarily account for patterns in union policy and activity. As the ICC test showed, there is significant variation in self-reported good health between Welfare State Regimes, and this typology is widely used in health research within Europe (Bambra 2007). However, the nonsignificant association of union membership and health suggests that the categorizations based on welfare policy do not necessarily match a categorization based on union policy/working conditions policy.

It is not surprising that a typology explicitly focused on working conditions performs better on accounting for union membership associations than one that is firstly focused on welfare policy. We could say this contrast was foreshadowed in the country categorizations in themselves, e.g. Portugal is categorized as a *Southern* WSR, but as a *Pacesetter* in the WSI, Austria and Belgium are both categorized as Bismarckian WSRs, but as a Pragmatist and Pacesetter in the WSI respectively. In defense of my assumption that WSR would better account for working conditions I want to point out that there *is* much intuitive overlap

between the models, such as all Nordic countries being categorized together as Scandinavian in the WSR and Pacesetters in the WSI.

5.2 WSI model

In contrast with the WSR model, the WSI model indicates a positive association between union membership and good health. As presented in the theory chapter, the job Demand Control (-Support) Model postulates that working conditions have certain influences on individual health, and labor unions are mainly focused on improving the working conditions of their members. The results from my regression model indicate that union members have better odds of being in good health than their non-member counterparts. On this basis I would argue that the reason for this positive association between union membership and good health can be understood as a significant statistical tendency for union members to work under working conditions that are more favorable to their health.

Now, why could it be that my results show a positive association between union membership and health? I theorize the reason is that union members tend to work under both physical and psychosocial conditions that are more favorable to their health as a result of being union members.

5.3 Hypothesis discussion

As we learned from the Job Demand-Control (-Support)-Model, our health is impacted by the relationship between job demands and job control. The best combination for good health is to work under working conditions which are characterized by low job demands, i.e. reasonable workloads and deadlines, and high job control, i.e. more autonomy over one's own work.

Because my regression model shows a significant positive association between union membership and good health, and because low-demand high-control working conditions are associated with good health, I theorize that union membership facilitates low-demand and high-control working conditions for their members.

Theoretically I argue that labor unions can influence the working conditions of their members in two ways. The first involves physical working conditions, which involve physical tasks that have been shown to influence health negatively, such as lifting heavy loads or exposure to vibration, as well as physical hazards such as falling objects or exposure to dangerous chemicals. The second involves psychosocial work environment, such as autonomy over one's own work.

5.4 Interactions

In this part I will discuss interactions between the variables in my model. Statistical interaction is the term for when the statistical association between two variables is dependent on a third variable. For example, union membership could hypothetically be positively correlated with good health among women, but not among men. In such a case, the degree to how union membership is correlated to health is dependent on a gender variable.

5.4.1 Socioeconomic status

Socioeconomic status is an important part of the social determinants of health (Flaskerud and DeLilly 2012). Labor unions organize members from a wide range of socioeconomic statuses. This begs the question of how an individual's socioeconomic status influences the possible association between their union membership and their health. To answer this, I performed a series of multilevel logistic regressions to verify expected interaction effects based on presented theory. I did this through running regression models which included interactions between my main independent variable, union membership, and my control variables for socioeconomic status; education, income, and occupational class.

The first component of socioeconomic status I examined for interactions with union membership was education. Is the effect union membership has on health dependent on the individual's education level? It could be that professions that require less education are more hazardous and in turn union-imposed safety training and regulations have a greater potential for being beneficial to our health. Additionally, higher levels of education is generally associated with better health, which further raises the potential for union membership to be particularly beneficial for the health of the less-educated. The results from my regression model dismiss this assumption. I found no statistical interaction between union membership and education levels, indicating that the association between union membership and health is independent of the respondents' education level.

The next component I examined for interactions was income. Does a union membership influence an individuals' health differently depending on their income? If so, how does union membership associate with health among high-income respondents compared to low-income respondents? One could assume that higher incomes are associated with certain working conditions such as more work autonomy, a higher position in the workplace hierarchy, and less exposure to physical risks. As mentioned in the theory chapter, income is associated with better health in several ways, so a check for interaction between union

membership and personal income level is justified. In this case, no statistical interaction could be determined. The association between union membership and health was not dependent on income level.

The third and final component of socioeconomic class is occupational class. Of the three, I would have expected this to be the most likely to include an interaction effect because I imagined both the physical and psychosocial working conditions between a working class individual and an upper class individual to be so different that the way their union memberships correlated with their health would also be different. Both physical and psychosocial working conditions are expected to be less favorable to our health in working class professions as opposed to middle- and upper class professions. In particular, I had expected the psychosocial aspects of those in the upper class occupational status category to make sure there was an interaction effect to be found. Compared with those in "lower" occupational classes, upper class respondents can be expected to experience higher degrees of autonomy over their own work and thus less of a potential for a labor union to improve psychosocial working conditions. Again I found no statistical interaction; the association between union membership and health is not dependent on an individual's occupational class.

In other words, I found no statistical interactions between union membership and socioeconomic status, which implies that the association is independent of socioeconomic status. I hope that my findings can contribute to the contemporary academic research and understanding of the social determinants of health. The association between union membership and health has not been explored before, but I hope union membership will be included in further research on health and work.

5.4.2 Gender

Given how segregated by gender the European labor market is, both vertically and horizontally, I was particularly interested in exploring any interactions between union membership and gender in this thesis (Emerek 2008). Interestingly, I was not able to find any statistically significant interactions by gender, which indicates that the association between union membership and health in my study is independent of gender. This is an interesting result because of how different the average man and woman encounters the labor market. I also ran separate regressions for men and women, but again found no substantive difference.

Forming a hypothesis for how union membership would interact with gender would have been a difficult task because of the average differences between men and women by

socioeconomic status. I could not theoretically make a hypothesis for gender interaction because women and men are each over- and underrepresented in the three component categories of socioeconomic status, which in turn are associated with health. On average, men earn more money than women, but women have more education (Holvino 2010). Additionally, men make up a bigger part of the working class *and* upper class occupational category while women make up a bigger part of the middle class category. Because of the ambiguous gender inequalities in socioeconomic status, forming a hypothesis for which direction a potential interaction between gender and union membership would go is difficult. This is why I controlled for the components of socioeconomic status separately.

Interestingly, gender was not found to interact with union membership in my complete multilevel logistic regression model. Neither could I find a statistical interaction between union membership and my component variables for socioeconomic status when running models for male and female respondents separately. The association between union membership and health seems not to be dependent on gender or even with gender combined with different components of socioeconomic status.

5.5 Model comparison/discussion

It is not a surprise that the WSI model looks to be better suited for cross-country comparisons connected to working conditions than the WSR model, which is focused on welfare policy. From what my findings indicate, the Welfare State Regime model is not able to account for the specifically labor market-oriented question of union membership and health. On the other hand, the Work Security Index typology seems to be better suited for making a theoretical typology for researching labor unions across European nations.

5.6 Possible explanations for the association

In the theory chapter I present multiple theoretical works that help explain how an individual's relationship to the labor market can be beneficial or detrimental to their health. Our employment situation is an important part of the social determinants of health; specifically it is generally beneficial to one's health to be fully employed and to have a low degree of job insecurity. Additionally, the JDSC model postulates that low-strain and high-control working conditions are the most facilitative for good health. My regression analysis points toward there being a positive association between union membership and good health, but it cannot tell us about specific causalities. Because of the positive association I have found, I would argue that union membership influences many of the factors that are known to

be associated with good health among working people in Europe. Possibly, being a member union has a positive impact on the factors that determine whether an individual's employment situation is beneficial or detrimental to their health. Therefore the potential impact union membership has on known determinants of health could be a combination of physical and psychosocial mechanisms.

5.7 Methodological limitations

Now I want to discuss the methodological weaknesses in my thesis, something that will inform our ability to conclude the findings and reason out an academic route forward on this issue.

5.7.1 Data

The first subject of this part will be a review of the data set; ESS 7. While the European Social Survey is a reputable data set in general, it might not necessarily be the best data set for all research questions. I chose this data set because of my familiarity with it through my years at the university. I settled on round 7 early on because the round of 2014 has an extended module on health research, though the variables I included in my research did not rely on the extended module.

One weakness of this data set in relation to my theoretical framework is the absence in participation of the countries of Greece and Italy. These countries have participated in the ESS before, but in 2014 they are not included in the data set. It would have been better for my regression analysis by the Welfare State Regime typology to have the data of Greece and Italy available because they should normally be included in the Southern European welfare state regime. Without them, the Southern European WSR is represented only by the respondents in Spain and Portugal. Additionally, because the Work Security Index is used as a theoretical typology in this thesis, it would have been ideal to use a data set which comprised countries from outside of Europe. That was not feasible for this thesis, as I have focused on Europe as a region, but it could be fitting for further research.

5.7.2 Intraclass correlation coefficients

It should be noted that the Intraclass Correlation Coefficients (ICC) showing the variations in self-reported health between Welfare State Regimes and Work Security Index categories are on the low side. When discussing multilevel modeling, it is generally good for the research design when the ICC scores show strong degrees of variations between categories.

5.7.3 Validity and reliability

Here I will discuss concerns about validity and reliability related to my thesis. Statistical validity concerns the degree to which the theoretical concepts and operationalization of the data make up an accurate representation of what they are trying to describe (Ringdal 2013:96). For this thesis, evaluating the validity of my research requires an inspection of the theoretical framework that is used.

In the theory chapter I present two alternative typologies for researching union membership and health; Esping-Andersen's Welfare State Regime typology, and Ellen Rosskam's Work Security index. Using existing literature I argue for why both of these theoretical concepts should be considered when facing my research question. Previous research has successfully used the WSR model in research on health inequalities. However, I would argue that the operationalization of the WSR model, being focused on national welfare policy, provides a low degree of validity in research on union membership and health when we consider the results from the regression models. This should further strengthen the case for utilizing the WSI model in labor-market-oriented research, as the operationalization for the typology is specifically focused on categorizing countries by the properties within their labor markets, as opposed to national welfare policy.

Related to the topic of validity is the concern of potential selection effects in my primary independent variable; union membership. I have not presented theoretical or empirical indications that union membership is a property people can have that is unrelated to their other properties. This is an important point in the discussion of causality in my research. If we have not established that healthier people are not more or less likely to be union members, we cannot be certain that there is an effect from union membership in itself that causes better odds for being in good health; it might be that people who are in better health tend to be union members more often. For example, people with a lower socioeconomic status might hesitate to join a labor union in order to reduce the risk of a conflict between themselves and their superiors.

Reliability is an evaluation the research design has a methodological structure that will yield consistent results after repeated attempts (Ringdal 2013:96). To estimate the reliability of a study, one has to examine the methodological approach to the research question to see how well they are suited for the task, and ideally perform a verification study using the same data and methodology to see if the results remain the same. High quality data is a condition

for attaining high reliability research. Points in favor of the reliability of my ESS data include the biannual rounds of surveys, allowing for researchers in each country to grow in experience as rounds progress. Additionally, the questions in the survey are available in the official language of each participating country, thus reducing the risk of misunderstandings because of language barriers (ESS Round 7). Furthermore, the variables I have included in this thesis are less controversial and hence less susceptible to social desirability bias in my estimation (Ringdal 2013: 203). My variables did not contain a problematic level of missing values.

6. Conclusions – what to take away from this and where to go next

Here I will present a conclusion to my thesis. In my study of the association between union membership and self-reported good health in Europe, union membership was found to have a positive correlation with self-reported good health. I could not find any interactions between union membership and my other variables which included age, income, education level, occupational class, and gender. In other words, the positive association between union membership and good health seems to be similar for many people in the labor market regardless of gender, income, education and occupational class.

This project could be a modest but relevant contribution to the research on the social determinants of health. I want to clarify that I have not determined any causal link between union membership and good self-reported health, but a statistical correlation. This research topic needs further examination.

There are three groups in particular that I hope will find this thesis and its results interesting; academics, legislators, and labor unions themselves. First of all, I believe we need significantly more research on union membership and health. Hopefully this thesis indicates that there is an interesting association to explore further. My findings make it appropriate to include union membership as a possible factor in any research on the social determinants of health, but especially when it comes to labor research. The sociological understanding of the social determinants of health has continually been expanded by new literature, and this thesis might be used as an inspiration for including a look at union membership whenever health and work is researched. I would suggest that further exploration of the topic of union membership and health should employ both quantitative and qualitative research designs.

The next step in the direction of my research design would be a larger-scale quantitative study with a bigger data set more specified for labor-market research and with more participating countries. I see it as particularly appropriate to use logistic regression in each European country separately. A theoretical approach based on the intersectionality of perceptions of race/ethnicity and gender would also be interesting. For example, is the association between union membership and health different between workers who are born in or outside of the country they work in? How does this differ between genders and in different occupations? I would also like to see this subject explored qualitatively. How does health manifest itself as a priority for labor unions? How have their views shifted over time, and what have they accomplished? I see this direction as fruitful as well.

Secondly, my findings should be of interest for politicians who wish to design health-, labor-, and economic policy based in scientific research. In addition to the more intuitive services labor unions can provide for their members, my findings point to there being some health benefit as well, thereby making policies that are intended for increasing union membership a health policy in part. One example of such a policy is the tax deduction on union fees in several European countries. In Norway, a person can deduct up to NOK 3.850 (approximately $495) of their union dues from their tax payment (3.2.11 Trade Union Fees). Policies directed at facilitating union membership would possibly have a positive impact on the overall health of the workforce, and thereby produce healthier and more efficient workers, leading to an increase in the outputs of individual organizations or even the country's GDP.

The third group who should take note of my findings is labor unions. The health of the members is already specified as an important priority of the Norwegian Confederation of Trade Unions (LO) (LOs handlingsprogram 2017-2021). Nevertheless, the association between union membership and health might not be actively used as a reason for joining a union by recruiters. As there is little research on this association from before, many workers might be unaware of the association. Working conditions and policies have been changed before in the face of social scientific research. In San Francisco researchers and union organizers worked together to improve the working conditions among hotel cleaners (Casey and Rosskam 2009). Because health is such an important factor in everyone's lives and for a nation's GDP, it can be used as a legitimate reason for reorganizing working conditions.

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