Sick of Work?  
Questions of Class, Gender and Self-Rated Health

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Abstract
This thesis examines two aspects of social inequalities in health with three empirical studies that are based on the Swedish Level of Living survey (LNU): The relationship between accumulated occupational class positions during adulthood and health and the class-specific nature of gender differences in health. Previous research continuously finds that there are health differences by class and gender, but less is known about the extent to which accumulated class experiences in adulthood are related to health or how gender differences vary by class. The overall conclusion in this thesis is that occupational class experiences matters for health, both as historical and current experiences. Furthermore, the results highlight the importance of taking class into consideration when examining health differences between men and women, as the mechanisms that underlie the gender gaps in health are not necessarily the same for all classes. The studies can be outlined as:

Study I: Class differences in working conditions is a mechanism that underlies class inequalities in health. The working class is generally more exposed to adverse working environments than non-manual employees, and when the wear and tear of these conditions accumulate over time, the length of this exposure may contribute to class inequalities in health. Thereby, accumulated time in the working class is studied as a partial explanation for class differences in health. The results suggest that the duration of time in the working class is related to a higher probability of less than good self-rated general health (SRH), given current class position. This association was also found among individuals who were no longer in working class positions and thus show that duration of experience matters, both as current and past experience.

Study II: The study addresses the research gap of class-specificity in gender health inequality and seeks to further disentangle class and gender by studying gender gaps separately by class. The results show that there are class-specific gender gaps for both SRH and musculoskeletal pain, while the gender gap in psychiatric distress appears to be more general across class. Working conditions do not explain the between-class differences in gender gaps but contribute to specific gender differences in health within classes.

Study III: The labour market has changed over time and has “upgraded” the class structure while at the same time the share of women in paid employment has increased. Therefore, female health may be increasingly influenced by occupational factors, such as working conditions. This study explores the class-specific nature of gender differences and investigates musculoskeletal pain and working conditions among employed men and women within classes during a time-period that spanned more than 30 years. There were class-specific gender gaps in health throughout the period. The gender gap has increased more, and is wider, among non-manual employees compared to the working classes. This development could not be explained by changes in working conditions.

Keywords: Class, Gender, Health inequality, Self-rated health, Musculoskeletal pain, Psychiatric distress, Working conditions, Accumulation, Sweden.

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Sara Kjellsson
Till Matilda och Adriaan.
Gör det ni mår bra av i livet.
Mår ni inte bra av det så gör nåt annat.
Man får lov att ändra sig!
List of studies

**Study I:** Accumulated occupational class and self-rated health. Can information on previous experience of class further our understanding of the social gradient in health?
*Originally published in Social Science & Medicine 2013, volume 81, pages 26-33.*

**Study II:** Class-specific gender gaps in health. The role of gender and working conditions within classes.
*Manuscript.*

**Study III:** Class-specific gender gaps in musculoskeletal pain: Sweden 1974-2010. Have gender differences in pain changed over time and equally in all social classes?
*Manuscript.*
Tack

Att skriva en avhandling är ett kumulativt arbete. Under min tid som doktorand har jag ackumulerat såväl kunskap och skrivna alster som djup tacksamhet, både på ett professionellt och ett personligt plan. I detta lilla avsnitt vill jag försöka mig på att uttrycka dessa tack.

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Sara Kjellsson
Stockholm, 2017
Abstract

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explores the class-specific nature of gender differences and investigates musculoskeletal pain and working conditions among employed men and women within classes during a time-period that spanned more than 30 years. There were class-specific gender gaps in health throughout the period. The gender gap has increased more, and is wider, among non-manual employees compared to the working classes. This development could not be explained by changes in working conditions.
Sammanfattning

Avhandlingen berör två aspekter av social ojämlikhet i hälsa vilka studeras i tre separata studier baserade på material från Levnadsnivåundersökningen (LNU): sambandet mellan den ackumulerade klasserfarenheten under vuxen ålder och hälsa, samt klassspecifika könsskillnader i hälsa. Tidigare forskning visar samstämmigt att det finns hälsoskillnader både mellan klasser och mellan män och kvinnor. Vi vet däremot mindre om i vilken utsträckning den sammanlagda erfarenheten inom olika klasser under vuxen ålder är relaterad till hälsa och hur könsskillnader i hälsa varierar mellan klasser. Den övergripande slutsatsen är att klasserfarenhet spelar roll för hälsan, både som tidigare erfarenhet och som nuvarande erfarenhet. Vidare visar avhandlingen att yrkeslivserfarenheter och dess samband med hälsa varierar inte bara mellan sociala kategorier som klass eller kön utan i kontexten av både klass och kön.

Resultaten från studierna i avhandlingen kan sammanfattas enligt nedan:

**Studie I:** Om klass förväntas påverka hälsa bland annat via slitsamma och stressande arbetsvillkor så är det möjligt att skillnader i den ackumulerade utsattheten för sådana villkor bidrar till ökad ojämlikhet i hälsa. Den sammanlagda tiden i arbetarklass undersöks därför som en tänkbar delförklaring bakom klassskillnader i hälsa. Resultaten från Studie I visar ett samband mellan längden på den samlade erfarenheten inom arbetarklassyrken och en högre sannolikhet att rapportera sin hälsa som någonting annat än god, kontrollerat för nuvarande klassposition. Detta samband återfanns även i separata studier av individer som inte längre befann sig i arbetarklassen vid undersökningsstiftallet, vilket visar att den samlade längden på klasserfarenhet är av betydelse, både vad gäller aktuella och tidigare erfarenheter.

**Studie II:** Förhållandet mellan klass, kön och hälsa studeras här ur ett mindre beforskat perspektiv för att undersöka möjliga klassspecifika könsskillnader vad gäller ojämlik hälsa. Resultaten visar att det finns klassspecifika könsskillnader både vad gäller generell självsattad hälsa (SRH) och muskuloskeletal värk. Däremot visar sig könsskillnaden i psykiska besvär vara mer generell över samtliga klasser. Fysiskt eller psykiskt belastande arbetsvillkor kan inte förklara denna skillnad mellan klasserna men däremot bidrar de till de specifika könsskillnaderna i hälsa inom de separata klasserna.

**Studie III:** Arbetsmarknaden förändras över tid och det har bland annat inneburit en "uppgradering" av klasstrukturen, samtidigt har andelen kvinnor som lönerarbets ökat. Det är således möjligt att hälsan bland kvinnor som grupp med tiden blir mer påverkad av faktorer i yrkeslivet, som till exempel...
arbetsvillkor. I Studie III fortsätter undersökningen av de klassspecifika könsskillnaderna i hälsa; förekomsten av musculoskeletal värk och betungande arbetsvillkor bland män och kvinnor i olika klasser studeras under en tidsperiod som sträcker sig över 30 år. Under hela tidsperioden hittas klassspecifika könsskillnader i hälsa och dessa är större bland tjänstemän än bland arbetare. Samtidigt ökar könsskillnaderna bland tjänstemän medan de är mer konstanta inom arbetarklassen. Dessa förändringar visar sig dock inte kunna förklaras av förändringar i arbetsvillkor.
Introduction

Health differences between population groups in society have long been established and socioeconomic differences in health is a large research area that has gained world-wide attention from scholars as well as politicians and policy makers. This dissertation concerns two social categories that have separately, and in combination, been connected to social differences in health: class and gender. Previous findings indicate that there are large health differences by class and gender (Bartley, 2004; Case & Paxson, 2005; Lahelma, 2009; Read & Gorman, 2010) but less is known about how gender differences vary by class, as earlier research has mainly investigated them as general over classes. For class, the focus has often been on the associations between current position and health or childhood position and health, but less research has examined the accumulative impact of positions between these two points in time. Studies on accumulated social position often draw from a few time-points during adult life (e.g., Sing-Manoux et al., 2004; Heslop et al., 2001), rather than accumulated time in a specific position (see however Ljung & Hallqvist, 2006). In the included studies, I aim to contribute to existing knowledge by investigating these less commonly studied aspects of the relationships between class, gender and health. An overarching theme is how experiences within occupations and class positions influence morbidity (i.e., ill health, rates of illness). This theme is seen in the first study in terms of the impact of accumulation of class experience on health, and in the second and third study as the importance of work conditions for class and gender patterns of ill health, currently and over time. In short, the findings indicate that working class experience is a determinant of ill health; the more the worse, but at the same time physically or mentally demanding working conditions do not account for much of the gender and class patterns in ill health. Furthermore, the results highlight the value of not viewing health differences between men and women as general, but, rather, as something that is dependent on social class affiliation.

From a sociological stratification perspective, society is a structure that consists of social positions that people inhabit. The structures of most societies include a certain aspect of hierarchy in the sense that social positions differ in their access to resources and opportunities and involve diverse amounts or

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1 There are also studies of the impact of social mobility on health that measure origin and destination positions (e.g. Tikkaja & Hemström, 2008; Tikkaja et al., 2013), which does not account for the accumulated duration of the positions.
types of constraints on action. Positions are also characterized by different conditions, i.e., living, working, and environmental conditions, etc., which, in turn, affects health. However, the agents themselves are also involved in reproducing this structure. People’s actions are influenced by their social positions and most people act in accord with the expectations and/or limitations of their position. This reproduces the structure and maintains its hierarchy, and, hence, sustains an inherent inequality (Graham, 2007). It is common to distinguish between health inequality and health inequity. As such, health inequality refers to differences in health status between social groups, while inequity refers to health inequalities that are unjust (Kawachi, Subramanian & Almada-Filho, 2002). Since the unjust nature is a normative aspect of differences that cannot be evaluated with quantitative scientific inquiry, health inequality is the preferred term in this thesis.² The popular interest in health inequality is often considered to have been initiated by the so-called “Black Report” in Britain in the 1980’s (Townsend & Davidson, 1982), but the potential impact of living conditions on health has long been acknowledged (for a brief overview see Lahelma, 2009). A general finding in the Black Report was the persistent mortality difference between occupational positions with longer life expectancies for non-manual compared to manual occupations. Results along these lines of social inequality have been reported also for several types of disease or ill health (morbidity) and social differentiation has been documented for occupational, educational, income and status groups (Bartley, 2004; Elo, 2009; Laaksonen et al., 2005; Marmot, 2005; 2007; Marmot & Wilkinson, 2006).

The social gradient, social determinants and fundamental causes

The relationship between social position and health is frequently referred to as the social gradient in health. There are differences in health not only between the top and the bottom of any hierarchy but they also take on a graded pattern, with increasing levels of ill health with decreasing social position. A famous example is the Whitehall II study from the UK in the late 1980s, in which there were graded differences in ill health among civil servant employees, a socially advantaged group, which corresponded to their employment grade (Marmot et al., 1991). Differences between social positions in access to health promoting conditions and resources have been understood as social determinants of health; meaning that they are the “causes

² In recent years, the term health disparities is increasingly used and is often viewed as a less normative imbued term. However, this term is more prominent in other scientific fields, such as medicine or clinical epidemiology, while health inequality is more common in sociology and social epidemiology (Bouchard et al., 2015).
of the causes” of ill health (Marmot, 2005). The theoretical framework of fundamental causes further adds the concept of social conditions as constant underlying causes, regardless of which differences in resources that mediate their influence on health (Link & Phelan, 1995; Phelan, Link & Tehranifar, 2010). In the early accounts of fundamental cause theory, the social conditions that were included were diverse and covered social positions as well as “stressful life events of a social nature” (Link & Phelan, 1995, p. 81). In later tests of this theory, fundamental causes are more exclusively discussed as social position variables, such as class or education (Masters, Link & Phelan, 2015; Phelan et al. 2004; Phelan et al., 2010). Throughout history, there is a pattern of the higher strata in society having the ability to obtain faster, better and/or more access to resources that are of consequence for health, regardless of the resource or the health issue. This implies that social positions shape the possibility to avoid ill health and that health inequality cannot fully be approached via more proximate (mediating) causes. If the fundamental causes prevail, then there will be new health inequalities. According to fundamental cause theory, research should focus on investigating the distal (fundamental) social causes of health, as proximate causes can change while the social differences remain. It also stresses the importance of not losing sight of the underlying social differences when studying mechanisms between social positions and health to prevent focusing on individualistic causation and, thus, obscuring structural differences and inequalities.

Although the fundamental cause framework does not negate the value of establishing relations between different mechanisms and health, it emphasizes the difference between examining social conditions as fundamental causes that operate through various mechanisms, and social conditions as proxies for the causes/mechanisms (Link & Phelan, 1995). There are many suggested mechanisms and pathways for the associations between social position and health, and there have been debates about the causal impact and its direction. From a sociological perspective, theories of social causation are not controversial; a basic tenet of social stratification research is that social positions generate differences in resources. However, health can in itself also be viewed as a resource, thus, it is possible that differences in health influence sorting into social positions, i.e., social selection (Case, Fertig & Paxson, 2005; Haas & Fosse, 2008; Lê, Roux. & Morgenstern, 2013). Both directions of causality have received support and scholars have discussed a mutually reinforcing relationship between social conditions and health (Smith, 1999; Vägerö & Illsley, 1995). Different directions of causality may also be stronger at specific stages in the life-cycle or under certain conditions.

If social positioning is assumed to underlie health inequality, then one would expect to find the same patterns regardless of the measure of social position. However, the different indicators of social position are not only associated with health inequality due to a general underlying stratification of society, they also work via specific mechanisms connected to the specific
For example, education affects health as both an entry point into adult life that shapes subsequent possibilities for both occupation and income (Kerckhoff, 1995) as well as by fostering e.g., advantageous coping behaviours or better medical compliance (Bartley, 2004; Elo, 2009). This thesis examines health inequality within the world of paid employment. How do different groups in the Swedish labour market fare on ill health? How does the experience of working in different positions in the labour market affect probabilities of ill health? Thus, the focus is on whether and how social positions affect health via working conditions and when differentiating between class, education and income as dimensions of social positions, working conditions are distinctively a feature of the class-health relationship (cf. Torssander, 2013).

Class inequalities in health

Research on class inequality in health employs different ways of examining class and uses different stages in the lifecycle for measuring class. This also reflects different ways of assuming how class influences the potential for good health or the risk of ill health. Class can be measured as class background, i.e., the position of the family during ones’ upbringing, and as the current class position in adulthood (Galobardes et al., 2006). Furthermore, the class position of one’s partner and offspring may have a potential impact on health (Torssander, 2013). In addition, it may be useful to measure class at multiple time points as an accumulation of experience, which entails cumulative exposures to risks as well as the potential for accumulating resources.

Class background

Being born into and, subsequently, growing up in different socioeconomic backgrounds leads to different life conditions and life chances, which are correlated with different opportunities and outcomes. Health is affected by these different opportunities and outcomes and can be viewed a resource as well as an outcome. In epidemiology, the theory of biological programming has been influential in regard to the effects of early life on later health. This theory states that conditions during foetal life can have health implications

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3 However, this reasoning takes us somewhat full circle – whether the focus should be on the fundamental causes or their intermediaries. It also fits into the critique of fundamental cause theory as being too focused on establishing a linear chain of causality from social position to health (cf. Krieger, 2008).

4 Social positions during childhood can also affect health during childhood and, thereby, social differences among children (Bremberg, 2002). This aspect of social inequality in health will not be reviewed in this thesis.
later in life (Wadsworth & Butterworth, 2006). There are also periods in prenatal life that are especially sensitive to adverse conditions, such as malnutrition, dietary habits and other health behaviours of the expectant mother. However, biological programming does not have to be a deterministic process. It may also reflect a component of the accumulation of disadvantage. If the accumulation of adverse circumstances does not continue, the risk for illness might not materialize into actual disease (Kuh et al., 2003; Wadsworth & Butterworth, 2006).

Growing up in a family that has a low socioeconomic status also affects the potential for one’s socioeconomic achievements in adulthood. Thus, the health adversity of poor childhood conditions also operates via the process of social reproduction (or a lack of social mobility); it is common to end up in the same class position as one’s parents. Because there is higher risk for ill health in lower class positions, poor parental circumstances is a risk factor for health due to the health impact of poor circumstances during childhood as well as the risk for remaining in this social position in adulthood (Fritzell, 2007). These may also interact, reinforce each other and accumulate. In the process of social accumulation, parental social class influences adult social class and accumulating several minor disadvantages may result in a chain of disadvantage (Blane, 2006, p.56f). Although these experiences may not independently have a large impact on health, combined, they can build up a substantial disadvantage.

Current class position

The relationship between class position in adulthood and health may operate via different mechanisms. Similar to chains of disadvantage from childhood to adulthood, (dis)advantage and conditions can continue to interact and accumulate during adult life. In addition, several types of disadvantage have been noted to cluster (Evans & Kantrowitz, 2002; Korpi, Nelson & Stenberg, 2007). Mechanisms between social position and health have been categorized into different typologies or explanatory models. In the Black Report, the authors proposed a typology of artefactual explanations (i.e., social inequalities in health as a by-product of errors in measurement or definitions), natural or social selection, materialist or structural explanations and cultural/behavioural explanations (Townsend & Davidson, 1982). The consensus in the research community is that the artefactual explanation does not hold, since there is a clear social pattern for health and illness, but the other three explanations can be seen in one way or another in most studies on social health inequality, even though the typologies have been criticized for lack of distinction (cf. Vågerö & Íllsley, 1995). Mel Bartley (2004) summarized explanatory models that are commonly used in health inequality research into the materialist models, behavioural and cultural explanations, the psychosocial model and the life-course approach (this last approach is described
below under **Cumulative class position and the accumulation of (dis)advantage**.

When it comes to class and the **materialist model**, the working class is characterized by being situated at the lower span of the income hierarchy and there are also differences in resources between the non-manual class categories. Different income levels afford different commodities and differences in income and commodities leads to variation in opportunities for accumulating economic resources, which translates into differences in wealth (cf. O’Rand, 1996). Monetary means influences factors, such as housing and neighbourhood quality, diet and nutrition, and physical activity, which, in turn, contribute to health. This is consistent with Townsend and Davidson’s materialist explanations for the health effects of lacking economic resources. However, similar to Vågerö and Illsley (1995), Bartley (2004) questions what should be included in a materialist explanation. Is it merely economic differences, such as income and wealth, or is it something more? This is in line with discussions on absolute vs. relative poverty, where the former refers to a lack of economic resources for affording the basic costs of living, while the latter relates the individual’s economic resources to the economic standard in the surrounding society (Jonsson, Bihagen & Mood, 2010). It also reflects theories of relative deprivation (Fritzell & Lundberg, 2007b; Åberg-Yngwe et al., 2003), which includes the stressful nature of social comparisons. This is related to the questions that are prompted by the social gradient that ask why there are differences in health among advantaged social groups, groups with high incomes, and within countries that have comparatively high levels of material wealth. One proposed solution is to view the materialist explanation as encompassing more than just mere survival and also take the cost of social participation and comparison into consideration.

The core argument in the **behavioural/cultural explanation** is that differences in health between social groups are due to differences in behaviours. In a strict (or direct) behavioural approach, differences in personality or innate competence is a common cause of health related behaviours and social position and, thus, is an argument of selection. In the culture part of the approach, the assumption is that it is the shared cultures, i.e., norms and values, in social groups that influence behaviour. This would include learned behaviour from childhood, and has similar connotations as Bourdieu’s (1984) notion of habitus and distinction. Although smoking or poor diet are more common in less advantaged classes, the role of class differences in attitudes and knowledge of healthy or harmful behaviours has been described as marginal (Bartley, 2004). Behaviour/culture may also be more important as a mechanism between education and health, rather than between class and health, as learned competences gained by higher education can be beneficial for forming health behaviours and coping strategies. However, it has also been suggested that social selection based on personal characteristics, such as cognitive ability, may become a larger issue for health
inequalities in welfare states where there are small inequalities in social backgrounds (Mackenbach, 2012).

Finally, when it comes to commonly used explanatory models, the psycho-social model concerns health damaging physiological responses that are triggered by the social environment. It is based on how the human body responds to perceived threats and how these reflexes are sparked by stressful situations, even when there is not an immediate danger. In short, in stressful situations adrenaline and cortisol is released into the body with the expectation of a “fight-or-flight” reaction. However, if there is no fight or flight, the adrenaline and cortisol remain in the body and recurring (or chronic) stress can cause a build-up, so-called allostatic load, that can be harmful for the metabolic and immune systems and lead to various types of ill health (McEwen, 1998; McEwen & Wingfield, 2003). The psycho-social explanations further suggest that in a perceived unjust or uncontrollable social environment, injustice becomes a stressor, and, thereby, contributes to the allostatic load. Stressful situations are present in different arenas in life and are often more common in the social environments of less advantaged social groups (Baum, Garofalo & Yali, 1999). For the working environment, one influential theory among the psycho-social explanations is the Demand-Control model (Karasek & Theorell, 1990) (for description, see below).

Although the psychosocial work environment is included in the psycho-social model, working conditions are not an explicit component in the above typologies, but they are common factors in research on class inequality in health. Working class and service class occupations entail different types of jobs that have different tasks and conditions. One “basic” distinction is that working class occupations typically involve manual labour, while service class occupations do not. This generates differences in physical conditions; working class employees engage their bodies in their work tasks, while service class employees often have seated desk jobs. Physical work that is heavy, strenuous, static, involves bending, and/or is repetitive has been related to risks for ill health in several studies, often in the back- and neck areas or the joints and extremities (Bernard, 1997; Marras, 2008). Another class distinction is that service class occupations have more autonomy than working class occupations (see the section below on the EGP-class schema); thus, service class employees have more control over their work both in respect to how, when and where to work. In the context of working conditions and their relationship to health, the above mentioned Demand-Control model reflects the combination of the psychosocial demands that are faced in the workplace and the potential for controlling one’s work (Karasek & Theorell, 1990). Four ideal-typical work types are identified based on combining high/low demand and high/low control, and the most detrimental work type consists of high demands with a low possibility of control, so-called high strain jobs. High strain jobs have been examined in many studies and have consistently been related to higher levels of ill health both for psychiatric or psychological
symptoms as well as physical symptoms (Sverke et al., 2016). The potential for receiving social support in the workplace has also been used as an additional component of the model, and the combination of high demand/low control/low support is expected as the most stressful (Johnson & Hall, 1988). Furthermore, having a job that requires emotional investments or where the employee must draw on his/her emotions (such as different types of social- or care-work) is psychosocially stressful and has been suggested to be included as a component on the demand side of the model (Bakker & Demerouti, 2007).

There is also a debate on whether the interaction between demand and control is the most important, as in the model, or if the effects of these two dimensions should be studied separately. Psychosocially demanding work may be harmful in its own right and control may be beneficial rather than merely buffering the effects of demand (Grönlund, 2007). Likewise, research has suggested that the substantial meaning of the indicators of control have changed over time. Increasingly flexible workplaces provide a possibility of control over the when and where of work, but can also entail increasing expectations of availability that blur the boundaries between work and non-work in a way that may not benefit health (Grönlund, 2007; Hvid et al., 2010).

In arguments for the social causation of health inequalities, working conditions are also intimately connected to employment. Working conditions are only possible for those who work, and, thus, cannot be used to explain social inequality in health for groups that are outside of the labour market. However, individuals who are not currently working may have previous experiences of employment that affect their current health, although this is seldom studied since data on working conditions often refer to the current state of affairs. For example, there is evidence that suggests that exposure to both physically (Marras, 2008) and psychosocially (Lundberg, 2015) demanding working conditions can cause chronic pain. This chronic pain could then lead to exit out of employment and may become a persistent health problem even after this exit. Furthermore, individuals in ill health are less likely to become employed, and there is a reciprocal relationship between employment and health (see below, under Selection). From a class perspective, different risks for unemployment between the working and service classes could suggest employment as a mediating mechanism between class and health (Mathers & Schofield, 1998; Whelan, 1994). However, in this thesis, class should perhaps more accurately be referred to as occupational class, which is even more intimately linked to employment, as it is a requisite for inclusion in the studies.

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5 In Study I in this thesis, I utilize the economic activity biographies from the Level of Living Surveys of 1991 and 2000 to demonstrate a relationship between the length of previous experience in working class positions and current health. However, although there are questions that provide detail on the employment positions of the respondents and it is possible to measure the length of the different occupational experiences, the content of these (such as working conditions) is only asked for the respondent’s current position at the time of the interview.
Working conditions are also mechanisms between social position and health that are connected to (occupational) class as measure of social position (Elo, 2009; Torssander & Eriksson, 2010). Furthermore, if jobs, with their different conditions, are considered as positional goods that are the objects which we compete for on the labour market, then working conditions may also belong to a more encompassing materialist explanatory model of social inequality in health, or, as Bartley (2004) states:

The person with a humble background, no influential contacts, and few qualifications or credentials is less able to claim a safer, cleaner, better-paid job. In this model, ‘good’ jobs are things that people compete for, and the ability to win one of them is related to qualities of the individual which have been acquired over their lifetime. (Bartley, 2004, p.96)

Cumulative class position and the accumulation of (dis)advantage

Class does not merely reflect childhood or adult class position. It can also be viewed as an accumulated experience that emanates from both childhood and adulthood. The life course perspective describes a holistic view of human development and would as such entail all dimensions of social inequality (Elder, Kirkpatrick & Crosnoe, 2003), whether defined as material, behavioural, cultural or otherwise. Studies on social inequalities in health that use the life-course framework often examine the association between earlier exposure (e.g., childhood) and later health outcomes (e.g., adulthood) (Wadsworth & Buttersworth, 2006), or the health effect of accumulated exposure during the life span (Blane, 2006; Kerkhoff, 1995; O’Rand, 1996). Biological programming and chains of disadvantage (as referred to in the Class background section) also form parts of the life-course framework as an individual’s biology becomes the bearer of his or her past social position(s) which carry health implications that accumulate over time. At each point in time, the opportunities and constraints that an individual faces depend on that individual’s history. According to the theory of accumulative exposure, previous adverse experiences can make the individual more susceptible to further adversities (Kuh et al., 2003). Furthermore, social stratification due to the differential allocation of valuable resources can also amount to differential accumulation over time (O’Rand, 1996). For occupational class positions, the resources or exposures that accumulate can be manifold, as described above. Societal exposures in everyday life that are frequently related to class (Baum et al., 1999; McGwen & Wingfield, 2003) as well as the health effects of demanding working conditions (Lundberg, 2015; Marras, 2008) can accumulate with prolonged exposure and may lead to chronic health problems. However, it can also be envisaged that it is the advantage rather than the disadvantage that accumulates, as increases in returns to social position or as decreases in health decline (Willson, Shuey & Elder, 2007).
Gender inequality in health

Research on gender differences in health is disparate and the nature of these differences depends on the measured health outcome. Men tend to have higher levels of acute and life-threatening disease and are more prone to injuries due to accidents and violence, while women more frequently experience chronic and disabling ill health as well as psychiatric symptoms (Annandale & Hunt, 2000; Case & Paxson, 2005; Read & Gorman, 2011). Differences in health between men and women also do not reflect biological or social processes but, as many scholars argue, are the integration of biological and social causes (Bird & Rieker, 1999). Furthermore, male-female differences in health vary depending on the context in which it is measured; the health issues that are more pressing differ e.g., depending on a country’s economic development (Marmot, 2005). There are also varying levels of and attitudes towards gender roles and gender equality in the home-sphere and on the labour market. Cross-country comparative research on gender health inequalities show variation by state welfare regime (Evertsson et al., 2009) even though high societal-level gender equality does not necessarily correlate with a narrower gender gap in health (Dahlin & Härkönen, 2013).

A sociological explanation of gender differences in health is the socialization of men and women; the different societal expectations for masculinity and femininity. This has consequences for individual choice and behaviour and, subsequently, on the sorting of men and women into different spheres, positions and activities. Thus, this sorting is upheld via the process of social reproduction. In the typical masculine/feminine dichotomy, masculinity is connected to agency, bravery and power; while femininity is associated with nurturing, caring and subordination. The male stereotype is related to health damaging behaviours, such as aggression, risk taking, and a reluctance to admit weakness or illness, while feminine behaviour is often connected to health benefits, such as healthy diets, timely health care visits, and close social relationships (Connell, 1995; Courtenay, 2000a; 2000b). The view of a distinction between male and female types of health and illness can also result in gender differences in treatment of disease as well as differences in the reporting and researching of health among men and women (Arber, 2001; Ruiz & Verbrugge, 1997). For example, cardiovascular disease has been seen as a predominantly male health problem and there is a large body of research that was conducted on all-male populations, where results are then extrapolated to women (Healy, 1991; Merz, 2011). However, cardiovascular disease is a major cause of death for both men and women, but the male bias in the perception of heart disease has prevented, or at least stalled, female

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6 In developing countries, problems, such as child mortality, infectious disease or health care availability are larger breeding grounds for differences and inequalities. In other countries, health problems, such as cardiovascular disease, diabetes, chronic aches and pains or psychiatric distress are the pressing issues.
specific treatments, such as oestrogen (Healy, 1991), and also obscures that women’s manifestations of these illnesses are not always the same as among men (Merz, 2011). The view of psychiatric distress as a “female” condition can likewise be seen as a result of what we assume as indicators of such distress (Üstun, 2000). Women have a higher prevalence of depression or anxiety, while men more often have alcohol or substance abuse problems (Rosenfield, 1999; Horowitz & Davies, 1994) and if these are all interpreted as expressions of psychiatric distress, there is not necessarily a female excess (Kessler & Zhao, 1999). Essay questions for physicians in training also demonstrated that when assessing neck-pain, there were differences depending on the gender of the hypothetical patient, where psychosocial questions and evaluations by physiotherapists were more frequently suggested for women and laboratory tests were more likely to be suggested for men (Hamberg et al., 2002).

Perceptions of male and female characteristics also influence practices in the labour market. The social perception of femininity is connected to reproduction and women as (potential) mothers; women are interpreted in their capacity of becoming mothers, regardless of whether a woman is (or ever will be) a mother (Annandale & Clark, 1996). Women as mothers can be a reason for the statistic discrimination of women; employers expect women to be/become mothers and, therefore, to be less invested in paid employment, which can lead to a preference for hiring and promoting men (Bielby & Baron, 1986; Phelps, 1972). However, the evidence on this type of discrimination is not conclusive and may differ depending on e.g. social context. Recent research furthermore indicate that it may be a comparatively small factor in hiring processes on the contemporary Swedish labour market (Bygren, Erlandsson & Gähler, 2017). The larger amount of housework that is performed by employed women compared to employed men may also reflect the norms of femininity that emphasize home and children, and, in a health context, can be viewed as an added stress-factor for women (Boye, 2010; Boye & Evertsson, 2014).

Furthermore, gendered stereotypes impacts the occupations and tasks that are perceived as suitable for women and men and, thus, create segregated labour markets (Bielby & Baron, 1986; Reskin, 1993). This gender segregation can be both vertical and horizontal. Vertical segregation refers to a hierarchical dimension in which highly ranked (and rewarded) occupations are placed at the top of a vertical line, while less highly ranked positions are towards the bottom. Thus, vertical gender segregation is closely related to class and other aspects of socioeconomic position. Horizontal segregation is often the segregation between occupational groups. It is not always easy to avoid a hierarchical element, but horizontal segregation refers to the content of occupations rather than their vertical ordering. As such, for gender segregation, job tasks are socially coded on a scale from masculine to feminine (Melkas and Anker, 1997; Nermo, 1999). Men and women are, typically,
differentially sorted into occupational positions both along vertical and horizontal lines; women are less likely to be in highly ranked positions and are more likely to be in feminine occupations. This indicates that men and women are allocated different social positions that generate gender differences in resources, opportunities and constraints that, in turn, can be related to health. Despite internationally high levels of female labour force participation, gender segregation has been noted to be quite large in Sweden (Charles, 2011; Nermo, 2000). Although vertical segregation in Sweden is diminishing as more women obtain highly ranked positions, men and women are still sorted into different types of tasks, and the horizontal dimension of gender segregation is stronger at the lower end of the (vertical) socioeconomic hierarchy (Magnusson, 2009). Given the factors that reflect the underlying class differences in health, as reviewed above, it is possible that the extent to which these differences affect gender gaps in health varies between classes and depends on the gendered distribution of these conditions in each class. This is explored in two of the included studies, in which physical demand in the workplace is found to be common among both working class men and women, while being primarily a female working condition among non-manual employees (Study II, Study III). Furthermore, if gender norms depend on social context, or if the means to adhere to a more overarching gender norm vary (Connell, 1995; Connell & Messerschmidt, 2005), then the health implications of gender norms may not be consistent across social settings. As such, the social mechanisms that are connected to gender differences in health may be class-specific.

Class-specific gender differences in health

Differences in health by social position vary by gender (Macintyre & Hunt, 1997) and class differences in health among women are often referred to as smaller, or forming a flatter gradient, than these social differences among men (Mackenbach et al., 1999; Stronks et al., 1995). One potential explanation for this difference is that class is a more accurate reflection of men’s than women’s social positions and, therefore, does not discriminate enough between conditions among women to account for differences in health (Matthews, Manor & Power, 1999). The appropriate level of class ascription for women, whether on an individual or a household basis, has previously been the topic of debate in the field of stratification (see, e.g., Acker 1973; Goldthorpe 1983; Erikson 1984; Erikson & Goldthorpe, 1992b; Heath and Britten, 1984). Although it is currently common practice to ascribe class by individual occupational position for both men and women, it may still have consequences for how we understand social inequality in health among women (Erikson, 2005).
The mediating factors of the relation between social position and health operate somewhat differently for men and women (e.g., Ahnquist, Fredlund & Wamala, 2007; Aittomäki et al., 2005; Hämmig, Gutzwiller & Kawachi, 2014) but there are also similarities between men and women in the pathways from social position to health (e.g., Emslie, Hunt & Macintyre, 1999; Emslie et al., 2007; Molarius et al., 2006). Similar to class, gender is a dimension in which factors of (dis)advantage as well as health relevant mechanisms tend to cluster (Macintyre & Hunt, 1997). Gender was suggested as a possible social determinant in Link and Phelan’s initial article (Link & Phelan, 1995) and although socioeconomic variables are the more researched conditions in the framework of fundamental causes, the role of gender in the social ordering of people to positions and in the allocation of opportunities and resources is acknowledged (Phelan et al., 2010). When envisaging social reproduction, it is also difficult to claim that either category, social position or gender, comes first in a causal, or at least temporal, sense. We are born into physical bodies that underlie the sorting into male and female, but we are also born into a social position and these two dimensions, both separately and together, impact our possible movements in the social space that we inhabit. This has some similarities with the intersectionality framework, which focuses the importance of acknowledging the intersections of different axes of social positions, such as class and gender, as well as race/ethnicity, disability, sexuality, etc. (Hammarström et al., 2014; Hankivsky, 2012). In addition to highlighting the potential multiple disadvantages of social positions (e.g., female working class), intersectionality also indicates that a group that is advantaged in one sphere (e.g., men in the gender-sphere) can cumulatively be disadvantaged when accounting for more than one sphere (e.g., male workers compared to female non-manual employees). Another key component is the understanding that different dimensions of inequality are not simply additive (i.e., woman + working class), but that the implications of one dimension depends on the other dimensions (e.g., being a woman in working class compared to a woman in non-manual employment). In a theoretical account of intersectionality in the area of health inequality, Hammarström et al., (2014) suggests that intersectional analyses involves the underlying assumption that “one category (…) takes its meaning from another” (p.188). However, there are few empirical studies on whether gender differences in health vary by class. The need for analyses on how class structures gender differences has been previously noted (e.g., Denton & Walters, 1999; Macintyre & Hunt, 1997), but to the best of my knowledge, there are few studies on this intersection between class and gender (see however Artazcoz et al., 2007; Malmusi et al., 2014). How different mechanisms between gender and health operate in within-class social settings, and potential

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7 Both studies are also conducted on data from Catalonia and, thus, refer to the same national context.
between-class variation in the same, is thereby poorly understood. **Study II** and **Study III** in this thesis attempt to highlight the class-specific differences between men and women vis-à-vis working conditions as mechanisms in the social patterning of ill health.

**Men and women in the Swedish labour market**

The empirical material in this thesis consists of employed men and women who participated in the Swedish Level of Living Surveys between 1974 and 2010. **Study II** and **Study III** use individual cross-sections, as **Study II** is restricted to employees in 2010, and **Study III** investigates employed men and women during each wave in 1974, 1981, 1991, 2000 and 2010. **Study I** uses the full length of working life for respondents from the 1991 and 2000 waves and with an upper age-restriction at 65 year of age for inclusion in the analyses the historical period that this study refers to is from the 1940s to 2010.8

When writing about men, women and work in Sweden during the latter part of the 20th and the beginning of the 21st Century, there are two main historical trends. First is the industrial to post-industrial movement. On the labour market, jobs in industrial production were replaced with jobs in service and information technology, which, in class-terms, also reshaped the class structure with a decreasing working class and an increasing service class. Second is women’s entry into and, subsequent, increasing participation in the paid labour market. During the beginning of the 20th Century, industrialisation was more widespread in Sweden and changed the employment opportunities and patterns for both men and women (Nermo, 1999). The agricultural sector that had previously been a large part of the Swedish labour market was overtaken by the industrial sector, which later decreased with the increase in the information technology and service sectors. These changes in the Swedish (as well as international) labour market and class-structure are well-known and have been described elsewhere (e.g., Ahme, Roman & Frantzen, 2003; Hansen, 2001; le Grand, Szulkin & Tåhlin, 2001). In the first half of the 20th Century, there was also an influx of women with the decrease in the agricultural sector, which was met with some resistance as a threat to male jobs and the male breadwinner model (Nermo, 1999). However, describing women’s “entry” into the labour market can give quite the wrong impression. Women have always worked, but have not always been considered part of work. The accuracy of statistics from periods before 1960 have also been questioned, as neither the work of farmwives nor married women’s part-time employment was registered in censuses during that time (Stanfors, 2003, p. 80). Low female labour market participation has also been

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8 One can assume that the oldest respondents in Study I (age 65 in 1991) had started their working life no earlier than the 1940’s.
shown to specifically refer to the 1950s and 1960s rather than reflecting a long historical tradition (Nermo, 1999). However, the growing industrial sector needed more labour, and women were increasingly becoming seen as an unused labour force. The end of joint taxation of married couples, which provided both economic and normative incentives for dual-earner couples, and the expansion of communal day-care that provided a practical solution to the “problem” of child care were two important requisites that allowed for women’s labour market participation (Axelsson, 1992; Nermo, 1999; Stanfors, 2003). The growing child-care sector also provided job-opportunities for women, and employs a large part of the women in the Swedish labour market. In the 1970s and 1980s, the share of employed women continued to increase; however, this was predominantly in part-time work. The shift from a part-time to a full-time norm for women can be seen as the next step in including women in the labour market.

Women’s part-time employment is closely connected to the view of children and household as a female sphere. Since introducing parental leave insurance in Sweden in 1974, there have been several additions and changes to encourage more equal sharing of child-care between mothers and fathers (SCB, 2016). Although women use the largest part of parental leave, the share that is used by fathers has increased over time. In 2010, the last year included in the studies, fathers used approximately 23 percent of parental leave (Försäkringskassan, 2011). It is not clear whether the changes in parental insurance led to changes in mothers’ and fathers’ actual days worked (Karimi, Lindahl & Thoursie, 2012), but during the 1990s and the start of the 21st Century, women’s part-time work decreased even though they continued to work in more part-time positions than men (Lanninger & Sundström, 2013; Tåhlin, 2013).

As discussed above, even though gender segregation has decreased, men and women often work in different occupations. This was more prominent during the time of the earlier waves of the LNU that were used in this thesis. The post-industrial transition as well as women’s increasing labour market participation may also reflect changes in the occupations that were available to and chosen by men and women. Table 1 shows the 5 most common occupational categories for men and women in each class, for five cross-sections during the time period of 1974-2010. The data are from the Swedish Level of Living surveys (see Data, definition and methods) and include all respondents that were employed (full- or part time) at the time of the survey. Occupations are categorized based on the international ISCO88 nomenclature (www.ilo.org) using a 3-digit level of specification. To classify according to

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9 Study II of this thesis has a similar table for the year 2010. In that study, I used the more detailed 4-digit level of ISCO88. Therefore, there are some discrepancies between the top-5 in Study II and the top-5 for 2010, which are solely due to the difference in digit-levels. Using a
the ISCO88, respondents’ occupations were translated from a Nordic occupational code, NYK85 (Nordisk Yrkesklassificering) (SCB, 1990), and further clarification or details for the included occupations relies on the codes from NYK85.\textsuperscript{10} It should be noted that ISCO88 does not define skill level in exactly the same way as the SEI class-schema (see the section on \textit{Class}) and some ISCO-groups are present in more than one class. For example, “Personal care and related workers” can be found in both the unskilled and the skilled working class but actually refer to different occupations, where unskilled workers are assistant care-givers (\textit{vårdbitråde}) and skilled workers are assistant nurses (\textit{undersköterska}). In addition to skill levels, the specialization of skills is also an important part of the organization of occupations in the ISCO. This includes the type of knowledge, materials or equipment that are used as well as the nature of the goods or services produced. Thus, the occupational categories in Table 1 for each class thus reflect groups of occupations that are based on the skill-specialization aspect of the ISCO88. To illustrate the changes in class structure, table 1 also includes information on the percentage share of all employed men and women that each class constitute at each cross section. The below description (Table 1) will focus on the more general picture of change and stability within class/gender groups as well as the differences between genders within classes.

In general, in the \textbf{unskilled working class}, men drive vehicles\textsuperscript{11} and women take care of other people. There is not much change in the occupations

\textsuperscript{10} The codes in the NYK85 are not as easy to aggregate into larger groups as the ISCO88, which is why ISCO88 is preferred for this description. However, in a survey that spanned more than 40 years, the occupational categorizations for each wave were not always the same, as occupational categorizations develop and change over time. To facilitate a comparative description of the occupations of men and women by class and over time, I had great help from previous work in the LNU-research group; in translating the nomenclature between different versions of Swedish categorizations and then to the ISCO88. I have especially benefitted from the advice, data sharing and translation keys from Erik Bihagen and Magnus Nermo. However, in some instances, the ISCO88 does not correspond as well to nation-specific skill levels as a national occupational classification, such as the NYK85. Therefore, in some cases, I made some adjustments to the grouping of ISCO88-codes compared to the initial translations (see the notes in table 1 below). Furthermore, for the year 1974, there are some difficulties in coding occupations into NYK85 categories, which results in that the number of respondents without a NYK85-code in some classes would be sufficiently large to be included as a top-5 category; unskilled working class (men and women), skilled working class (men and women), intermediate non-manual employees (men only).

\textsuperscript{11} The most common occupational category among men in the unskilled working class is “Motor-vehicle drivers” in all survey years except for 1974, when the most common was “Agricultural and other mobile-plant operators”. However, in 1974, the latter category predominantly consisted of driving vehicles in the mining industry. In the subsequent years, the share of respondents who worked in mining decreased and the “Agricultural…” category primarily consisted of drivers and operators of farm machinery (trucks and tractors etc.).
of unskilled working-class women; the top three are the same during all years and include a substantial share of the women in this class (>=58% in all years). “Personal care and related workers” is the most common category in all survey years and refers to assistant care-givers in hospitals, childminders and other care-givers (such as home care services, family day care, homes for the elderly). There is more diversity among men, both cross-sectionally and over time, and there is also a shift in which there is a decrease in the categories that were previously large. The share of “Agricultural and other mobile-plant operators”, that was the top category for men in 1974 has decreased by more than one-half in 2010 and other common male occupational groups were replaced in the top-5 in the later years of the survey. Furthermore, they are replaced with more “female” occupational groups, such as “Personal care and related workers”.

The skilled working class is highly gender segregated. There is virtually no diversity in the occupations for women, as the two most common occupational categories, “Personal care and related workers” (here referring to assistant nurses) and “Housekeeping and restaurant service workers”, include more than 70 percent in all survey years except for 1974. Men in the skilled working class are builders, metal workers and mechanics. Overall, the most common male occupational group is “Building frame and related trade workers” and the remaining top-5 among men are occupations that include machinery, metal, building and electronics. Regarding the gender segregated nature of skilled workers we can observe that not until the year 2010 is there any gender overlap whatsoever between the male and female occupations. In 2010, however, there is a slight gender overlap when “Housekeeping and restaurant…” enters the top-5 among men and “Building frame and related trade workers” as well as “Metal- and mineral-products machine operators” is represented among the female skilled workers.
Table 1. Five most common occupational categories among men and women, by class and survey year (cont.)

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<td>Forestry and related workers</td>
<td>Hourglass and restaurant services workers</td>
<td>Domestic and related helpers, cleaners and launderers</td>
<td>Textile, fur- and leather-products machine operators</td>
<td>Domestic and related helpers, cleaners and launderers</td>
<td>Textile, fur- and leather-products machine operators</td>
<td>Domestic and related helpers, cleaners and launderers</td>
<td>Textile, fur- and leather-products machine operators</td>
<td>Domestic and related helpers, cleaners and launderers</td>
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<td>82.0</td>
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<td>22.9</td>
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<td>20.7</td>
<td>17.6</td>
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### Table 1 (cont.). Five most common occupational categories among men and women, by class and survey year

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<td>Metal moulders, welders, sheet-metal workers, structural-metal preparers etc.</td>
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<td>Housekeeping and restaurant services workers</td>
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<td>Building finishers and related trades workers</td>
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### Table 1 (cont.). Five most common occupational categories among men and women, by class and survey year

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<tr>
<td><strong>Other office clerks</strong></td>
<td>16.4 Other office clerks</td>
<td>42.1 Material-recording and</td>
<td>13.3 Other office clerks</td>
<td>32.1 Finance and sales associate</td>
<td>14.9 Other office clerks</td>
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<td>13.9 Finance and sales associate</td>
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<td>operating clerks</td>
<td>transport clerks</td>
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<td>5.0 Messengers, porters,</td>
<td>8.6 Numerical clerks</td>
<td>12.8 Managers of small enterprises</td>
<td>8.5 Client information clerks</td>
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<td></td>
<td>doorknappers and related</td>
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<tr>
<td></td>
<td></td>
<td>workers</td>
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</tr>
<tr>
<td><strong>Material-recording and</strong></td>
<td>6.6 Health associate professionals</td>
<td>4.8 Other office clerks</td>
<td>8.6 Client information clerks</td>
<td>6.2 Other office clerks</td>
<td>6.0 Numerical clerks</td>
</tr>
<tr>
<td>transport clerks</td>
<td>(except nursing)</td>
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<td>4.5 Physical and engineering</td>
<td>7.2 Health associate professionals</td>
<td>5.5 Messengers, porters,</td>
<td>7.4 Finance and sales associate</td>
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<td>workers</td>
<td>science technicians</td>
<td>(except nursing)</td>
<td>doorknappers and related</td>
<td>professionals</td>
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<td></td>
<td></td>
<td></td>
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<td>The class's share of all</td>
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<td></td>
<td>10.9% employed women</td>
<td>26.1% employed women</td>
<td>12.6% employed women</td>
<td>27.4% employed women</td>
<td>25.2% employed women</td>
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<td><strong>Material-recording and</strong></td>
<td>8.2 Secretaries and keyboard-</td>
<td>15.7 Other office clerks</td>
<td>67 Finance and sales associate</td>
<td>11.3 Administrative associate</td>
<td>10.5 Administrative associate</td>
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<td>professionals</td>
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<td>workers</td>
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<td>7.3 Material-recording and</td>
<td>55 Numerical clerks</td>
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<td>6.7 Shop, stall and market</td>
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<td>5.4 Managers of small enterprises</td>
<td>49 Shop, stall and market</td>
<td>6.7 Shop, stall and market</td>
<td>6.7 Shop, stall and market</td>
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<td>and related cleaners</td>
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<td>The class's share of all</td>
<td>The class's share of all</td>
<td>The class's share of all</td>
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<td>11.3% employed women</td>
<td>21.4% employed women</td>
<td>20.7% employed women</td>
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</table>
Table 1 (cont.). Five most common occupational categories among men and women, by class and survey year

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</thead>
<tbody>
<tr>
<td>Architects, engineers and related professionals 24.1</td>
<td>Nurses, midwives and associate professionals 22.0</td>
<td>Physical and engineering science technicians 20.1</td>
<td>Nurses, midwives and associate professionals 19.4</td>
<td>21.4 Physical and engineering science technicians 20.0</td>
<td>17.9</td>
<td>21.2 Physical education teaching professionals 20.1</td>
<td>17.7 Primary education teaching professionals 17.4</td>
<td>16.7 Finance and sales associate professionals 17.4</td>
<td>16.8 Pre-primary education teaching professionals 17.4</td>
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<td>Physical and engineering science technicians 21.2</td>
<td>Primary education teaching professionals 18.6</td>
<td>Finance and sales associate professionals 17.7</td>
<td>Primary education teaching professionals 17.4</td>
<td>16.7 Finance and sales associate professionals 17.4</td>
<td>16.8 Pre-primary education teaching professionals 17.4</td>
<td>12.7 Business professionals 12.2</td>
<td>4.5 Finance and sales associate professionals 12.4</td>
<td>11.0 Pre-primary education teaching professionals 12.4</td>
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<td>4.5 Finance and sales associate professionals 6.4</td>
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<td>Business professionals 6.4</td>
<td>4.2 Primary education teaching professionals 6.4</td>
<td>10.4 Pre-primary education teaching professionals 6.4</td>
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<td>Other office clerks 4.5</td>
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<td>Physical and engineering science technicians 5.0</td>
<td>4.2 Building frame and related trades workers 5.2</td>
<td>4.2 Pre-primary education teaching professionals 5.2</td>
<td>Business professionals 5.2</td>
<td>3.8 Physical and engineering science technicians 5.3</td>
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<tr>
<td>Production and operations managers 4.5</td>
<td>Secondary education teaching professionals 4.5</td>
<td>Building frame and related trades workers 4.5</td>
<td>Business professionals 4.5</td>
<td>4.2 Building frame and related trades workers 4.5</td>
<td>4.5 Pre-primary education teaching professionals 4.5</td>
<td>Business professionals 4.5</td>
<td>3.8 Physical and engineering science technicians 4.6</td>
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<td>Top-5 total percentage share 63.0</td>
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<td>Top-5 total percentage share 62.3</td>
<td>Top-5 total percentage share 54.2</td>
<td>Top-5 total percentage share 62.4</td>
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<tr>
<td>The class' share of all employed men 18.7</td>
<td>The class' share of all employed women 13.7</td>
<td>The class' share of all employed men 19.0</td>
<td>The class' share of all employed women 18.3</td>
<td>The class' share of all employed men 21.8</td>
<td>The class' share of all employed women 21.5</td>
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</tr>
</tbody>
</table>

1 In ISCO88 there is large cross-country variation in the skill levels of professions within nursing and midwifery (see www.ilo.org). I have chosen to group all Intermed. non-manual occupations within nursing and midwifery together, even though they correspond to separate ISCO88 codes (233 and 323).

2 In ISCO88 primary and pre-primary school teachers are “professionals” (233) or “associate professionals” (332). Teachers in Intermed. non-manual employment are all “professionals” but in the translation from NYK85 they are separated. I have chosen to keep them so in order to illustrate the expansion of the Swedish pre-primary education.
Table 1 (cont.). Five most common occupational categories among men and women, by class and survey year

<table>
<thead>
<tr>
<th>Higher non-manuals, Men</th>
<th>Higher non-manuals, Women</th>
<th>Higher non-manuals, Men</th>
<th>Higher non-manuals, Women</th>
<th>Higher non-manuals, Men</th>
<th>Higher non-manuals, Women</th>
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</thead>
<tbody>
<tr>
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<td>Secondary education teaching professionals</td>
<td>16.7</td>
<td>Secondary education teaching professionals</td>
<td>13.8</td>
</tr>
<tr>
<td>Architects, engineers and related professionals</td>
<td>9.3</td>
<td>Social science and related professionals</td>
<td>16.7</td>
<td>Other specialist managers</td>
<td>12.3</td>
</tr>
<tr>
<td>Business professionals</td>
<td>9.3</td>
<td>Primary education teaching professionals</td>
<td>10.6</td>
<td>Production and operations managers</td>
<td>8.9</td>
</tr>
<tr>
<td>Physical and engineering science technicians</td>
<td>8.3</td>
<td>Health associate professionals (except nursing)</td>
<td>6.1</td>
<td>Physical and engineering science technicians</td>
<td>8.6</td>
</tr>
<tr>
<td>Production and operations managers</td>
<td>8.3</td>
<td>Special education teaching professionals</td>
<td>6.1</td>
<td>Business professionals</td>
<td>7.8</td>
</tr>
<tr>
<td>Top-5 total percentage share</td>
<td>44.9</td>
<td>Top-5 total percentage share</td>
<td>56.1</td>
<td>Top-5 total percentage share</td>
<td>51.3</td>
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<tr>
<td>The class' share of all employed men</td>
<td>13.7</td>
<td>The class' share of all employed men</td>
<td>17.0</td>
<td>The class' share of all employed men</td>
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<tr>
<td>Higher non-manuals, Men 2000</td>
<td>Higher non-manuals, Women</td>
<td>Higher non-manuals, Men 2010</td>
<td>Higher non-manuals, Women</td>
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<tr>
<td>Computing professionals</td>
<td>15.8</td>
<td>Business professionals</td>
<td>17.5</td>
<td>Computing professionals</td>
<td>17.3</td>
</tr>
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<td>10.0</td>
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<tr>
<td>Physical and engineering science technicians</td>
<td>10.7</td>
<td>Secondary education teaching professionals</td>
<td>9.5</td>
<td>Business professionals</td>
<td>10.0</td>
</tr>
<tr>
<td>Production and operations managers</td>
<td>9.3</td>
<td>Social science and related professionals</td>
<td>8.5</td>
<td>Directors and chief executives</td>
<td>9.0</td>
</tr>
<tr>
<td>Other specialist managers</td>
<td>8.0</td>
<td>Computing professionals</td>
<td>7.0</td>
<td>Health professionals (except nursing)</td>
<td>8.0</td>
</tr>
<tr>
<td>Top-5 total percentage share</td>
<td>55.4</td>
<td>Top-5 total percentage share</td>
<td>52.5</td>
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<td>The class' share of all employed men</td>
<td>23.1</td>
<td>The class' share of all employed men</td>
<td>14.2</td>
<td>The class' share of all employed men</td>
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</tbody>
</table>
**Assistant non-manual employees** is a diverse class and more so for men than for women, which may be due to the small number of men in this class. Throughout the surveys, female assistant non-manuals are primarily working as office clerks or secretaries. The only observable change is that clerks dealing with billing and typing have become less common,\(^{12}\) which is probably an effect of computerization. Men’s occupations are more disparate but are also more specialized; “Finance and sales associate professionals” is common among men and, similar to office clerks, it is a broad category. But it consists of assistant levels of more defined occupations in sales and finance. Furthermore, male assistant non-manuals have jobs such as “Police inspectors and detectives” or “Architects, engineers and related professionals.”

The occupations among **intermediate non-manual employees** are also segregated by gender and one basic description is that women work as nurses and teachers and men are businessmen and engineers. The most common occupations for women are in nursing and midwifery, but it is also noticeable that pre-primary school teachers become a larger proportion of the female intermediate non-manuals over time, which corresponds to the expansion of this sector during the last decades. For men, the largest group is occupations in “Physical engineering...,” while “Business professionals” (e.g., accounting and personnel) and “Finance and sales associate professionals” (import/export and banking) are also common among men in this class throughout the surveys. Despite the gender segregated tendency in this class, there are some gender overlaps, as women work in both business and engineering. However, neither teaching nor nursing is common among men until 2010, when primary school teachers are also found among intermediate non-manual men.

Working in education was a large proportion of occupations among **high level non-manuals** at the beginning of the time period; “Secondary education teaching professional” was the most common group for both men and women. Occupations within the education sector then gradually decreased, and in 2010 secondary school teachers were only represented in the top-5 occupations for women. The size of the higher non-manual class also increased and the occupational categories in this class have become more diverse, which is connected to new professions and occupations. For example, “Computing professionals” enters the top-5 among men in 1991 and then becomes the most common occupational group for men in the following surveys. There is also a similar pattern of gender segregation in this class as in the other classes; women work with people (caring, educating) and men work with production and in management. Over time, a larger proportion of women are employed in the predominantly male sphere of production and management, while there is a decrease in the share of men in this class who work in the female sphere of education and care. However, this could also be reflective of the expansion of this class via the influx of new professions, as noted above.

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\(^{12}\) Not shown in Table 1 but are noted in the underlying NYK85-codes for “Other office clerks.”
In sum, there is both similarity and diversity between the classes. The most striking similarity is that women in all classes, except for assistant non-manual employees, primarily work with care and education, while men work with production and non-care services and information.

Data material

The empirical material for all three studies is from the Swedish Level of Living survey (LNU), using one or more waves from the period 1974-2010. LNU is a nationally representative survey in which respondents are asked about several dimensions of their lives and living conditions. Many of these questions are kept intact and unaltered between the waves of the survey to facilitate comparisons over time, which is utilized in Study III to describe working conditions and health in Sweden over a long period of time. In 1991, the economic activity biography section was added to the survey. This is a retrospective section that maps the respondents’ primary economic activity, from their first employment of at least 6 months duration, and includes all primary activities on and off the labour market (e.g., work, studies, temporary leaves, retirement, etc.) that lasted for at least one month. This makes it possible to construct a comprehensive and unique account of the respondents’ time in different class positions during adulthood, which is used in Study I as measure of accumulated class experience. There are continuous additions to the LNU, and Study II includes new questions from 2010 on emotional work in the analyses. The primary variables that are used in the analyses constitute measures of health, class, gender and working conditions.

Self-rated health measures

Health is multifaceted and there is not one all-encompassing or all-agreed-upon definition of what constitutes health. For measuring health, one can distinguish between objective and subjective measures of health, where objective measures include, e.g., medical tests or diagnoses or those pertaining to death, such as mortality, while subjective measures often refer to the personal evaluation of one’s own health, so called self-rated health measures. In this thesis, three self-rated health measures are the outcome variables in the studies; general self-rated health (SRH; an assessment of one’s over-all general health) (Study I and Study II), the experience of musculoskeletal pain (Study II and Study III) and the experience of psychiatric distress (Study II).

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13 However, the subjective feature of many objective health measures can be discussed; that measurement cut-off points between healthy and sick are constructs that can be differentially defined, that measurements of health in the medical professions often infer a subjective evaluation of the patient, and how diseases have been socially defined throughout history (see e.g., Hunt & McEwen, 1980; Johannisson, 2013).
These measures are constructed from survey questions and represent the respondent’s subjective evaluations of his/her health in reference to the question. It is difficult to argue for an expectation of equality in subjective experience; we have different priorities and points of reference in our lives (cf. Johansson, 1979). However, subjective experiences are of interest in the context of social inequality. Many pathways between social position and health are assumed to work through mechanisms that are subjectively experienced (e.g., working conditions or relative deprivation), and it is difficult to ignore that health is subjectively experienced even when it is objectively measured. The experience of good or ill health can also have consequences for the ability to participate in society and, thus, further affects other social inequalities. This corresponds to the perspective of the World Health Organization (WHO), which defines health as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (www.who.int). In this respect, SRH has an advantage of providing a comprehensive picture of individual’s health and health experience (cf. Jylhä, 2009). There is also a correlation between subjective and objective health measures as the SRH has a strong predictive ability for subsequent mortality (Burström & Fredlund, 2001; Idler & Benyamini, 1997). Nevertheless, the potential for different interpretations of self-rated health questions has raised questions of whether they are suitable for comparisons between different subgroups in a population. However, previous research has found that men and women (Undén & Elofsson, 2006) as well as individuals from different classes (Burström & Fredlund, 2001) evaluate their health in similar ways, but there are also studies highlighting cross-country variation (Jürges, 2007) as well as age differences (Finnäs, Nyqvist & Saarela, 2008) in this respect.14

Class – SEI (Socioekonomisk Indelning)

There are a few different theoretical and operational definitions of class, but a common feature is its occupational base. In this thesis, class is measured with a class schema, the SEI, which was constructed by Statistics Sweden (SCB, 1982) and is frequently used in Swedish research. The SEI is similar to the EGP class schema that was constructed by Erikson and Goldthorpe (1992a), which is a well-known and internationally established class measure. The EGP first makes a division between employees and employers (including self-employed and farmers) and then creates subgroups among employees based on two stylized types of employment contracts (working and service contracts). The SEI divides into employee subgroups based on the skill requirements (level of education) that are needed for the occupational position/grade. The difference is in the theoretical rationale for why employers

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14 To account for age differences in the class-gender-health complex is important. Thus, age is adjusted in all three included studies.
grant different rewards to different groups of employees. According to the EGP, different employment contracts involve different contractual conditions that are related to e.g., levels of remuneration, resources, authority and autonomy, which are all conditions that could impact health and well-being. In the SEI framework, different skill levels (unskilled vs. skilled workers and different levels of non-manual employees) are connected to remuneration, resources, authority and autonomy.

Even if these two rationales for divisions have important theoretical implications (Tåhlin, 2007), the resulting empirical difference is often negligible and should not influence the results in the studies included in this thesis. As the studies all utilize Swedish data, the SEI-schema was chosen as appropriate due to its frequent use in Swedish research and because the subdivision of employees is based on the level of skill that is normally assumed in Sweden for that position. Furthermore, skill levels are more directly related to working conditions (insofar as working conditions are consequences of tasks that are (presumably) allocated on the basis of skills), which is the primary mechanism for class based inequality in health that is under consideration here.

Methodological considerations

Absolute and relative inequality

From an internationally comparative perspective, it has been noted and discussed that the Nordic countries, which are usually characterized by encompassing welfare states and have generally high levels of equality, tend to have higher levels of health inequality than other, more liberal, western countries, such as the UK (see Fritzell & Lundberg, 2007a). This has later been explained by distinguishing between absolute and relative inequality; the generally low levels of ill health in the Nordic countries creates high relative differences (i.e., the quotient of two small numbers becomes a large number) even with a small absolute difference between the levels of health in two groups (i.e., subtracting a small number from another small number). This raises the question of which inequality one should focus on? This depends on the context and the question. Since there is no international comparison in the thesis, differential levels of general ill health as described above are not an issue. Differences in health are investigated as different probabilities of experiencing an adverse health outcome, using Linear Probability Models (LPM).15 The results from these regression models are interpreted as

15As a robustness test, the analyses in the included studies have also been performed using multivariate logistic regression and the overall associations and trends remained intact. The methodological problems with LPM, on one hand, and stepwise logistic regression, on the other
percentage point increases in the probability of the outcome due to changes in the explanatory and control variables; thus, the results are primarily expressed in absolute terms throughout the thesis – i.e., how the probability of ill health for one group is X percentage points larger than the probability for another group.

Selection

As mentioned above (in the section The social gradient, social determinants and fundamental causes), the relationship between social position and health is not unidirectional and there is an issue of potential health selection when investigating social inequality in health. Health selection can be due to pre-existing health or favourable personal characteristics that are related to health. Both of these imply that individuals with better health and/or better prerequisites for good health will be positively selected into more advantageous social positions, hence, there could be a reverse relationship between social position and health. An awareness of the selection effect suggests that when there are health differences between social groups, one should also pay attention to whether these groups can be expected to have different compositions in regard to health and the prerequisites for good health that are due to selection processes into, and out of, their respective groups. In reference to social positions that are defined by work (e.g., employment, occupational position) this is called the “healthy worker effect” (Dahl, 1993; Goldblatt, Fox & Leon, 1991). The healthy worker effect refers to the positive selection of strong or healthy individuals into the labour market, while individuals who are already unhealthy are negatively selected. Furthermore, it also includes selection out of the labour market, i.e., that individuals leave paid employment due to health issues. These two selection processes create a work force of comparatively healthy workers. Since only employed individuals are included in the present studies, there is no comparison between workers and non-workers. However it is important to note that health is investigated within a comparatively healthy group and that the results for health inequalities in this group cannot be generalized to the total population of Sweden.

However, even in the present data on employed individuals, the healthy worker effect may be noticeable if there are differences in health selection between men and women, and, furthermore, if these processes change over time. Differential health selection based on gender has not been extensively researched, and the results from studies in this area are not consistent. There are studies that show both lesser (Costello et al., 2015; Nishikitani et al., 2012) and greater (Kröger, 2016) health selection among women than among men, as well as finding the process to operate as selection into work for men but out

hand, have been discussed (Hellevik, 2009; Mood, 2010) and the question is further addressed in the methods sections for the included studies.
of work for women (Lea et al., 1999). These inconsistent results could be due to that the studies refer to specific occupations and different national contexts and, thus, reflect the context specificity of gender differences. Health selection may also affect the accumulated time in work and in working class occupations. If exposure to the conditions in specific class positions lead to health-related exits out of the workforce, this may be more pertinent with long such exposure. This would imply a possible overestimation of the correlation between total time in work and health; i.e., the negative association between length of work-life experience and less than good health becomes inflated because individuals who have (long) experiences in occupations that are connected to ill health are less likely to be in the data material. However, for the same reason, this would also imply an underestimation of the positive correlation between the length of working class experience and less than good health. Thus, the estimates in Study I should be interpreted as a moderate representation of the relationship between accumulated working class experience and the probability of less than good health.

Overview of the studies

The results from Study I showed two relationships between accumulated working life and health. First, the length of total work experience is associated with a lower probability of suboptimal SRH, and, second, the same probability was higher depending on the duration of experience in the working class. Thus, each additional year of working class experience was associated with a higher probability of suboptimal health, adjusted for the total time in work. This implies an accumulative component for adult class experience vis-à-vis health. Furthermore, the association was found also for a restricted sample of individuals who were currently in intermediate or high level non-manual positions, which indicates that previous class experiences during adult life can influence current health even after the exposure has seized. The results from Study I also indicate gender differences in these relationships. For men, the probability for suboptimal SRH increases with each year of previous working class experience, but, at the same time, this probability decreases with each year in work (in any class). However, for women, these two associations are equal in size (but opposite in direction). This raises questions of what class experience entails for men and women in regard to conditions that are consequential for health.

Study II and Study III investigated the potential class-specificity in gender health inequalities, with the intent to further disentangle class and gender. Based on data from the Level of Living survey (LNU) in 2010, there were class-specific gender gaps in SRH and musculoskeletal pain, while the gender gap in psychiatric distress show a more general character (study II). The between-class aspect of these varying gender gaps in health cannot be
explained by working conditions. However, this can be understood from the fact that the distribution of demanding working conditions are differently gendered within classes, and working conditions can, thus, contribute to the understanding of the class-specific gender gaps in health. For example, physically demanding working conditions are more common among men than among women in the working class, while it is more common in female than male non-manual employees. Women in the working classes also reported a larger share of psychosocial demands than men, which contributed to these class-specific gender gaps in SRH and musculoskeletal pain.

Using repeated cross-sections of the LNU from 1974-2010, Study III aimed to make a class-specific description of working conditions and health, and their relationship, among employed men and women in Sweden during a time-period that spanned more than 30 years. The health outcome in this study was musculoskeletal pain, an outcome that is available as identical survey questions for the entire time period under study. Overall, the gender gap in musculoskeletal pain was larger among non-manual employees than the working class, especially during the later survey years. This gender gap increased over time for assistant as well as high level non-manual employees but was more stable for both skilled and unskilled workers. Although there are class differences in the relationship between working conditions and musculoskeletal pain, the trend of within-class gender gaps in pain were not explained by working conditions.

Concluding discussion

There is a vast array of mechanisms between social positions and health and for many of them there is a potential for change as well as for the accumulation or dissipation of consequences over time. These changes can be individual, such as changing circumstances or a build-up of experiences over time. They can also be societal, such as changes in labour market structures, in developing safer work practices, or in the norms and values that influence behaviours. The overarching theme in this thesis has been the relationship between occupational class experience and morbidity, with Sweden as the social context for the empirical investigation. Experience can be interpreted as both historical, i.e., past experiences of class position, and as current, i.e., the experiences that the current class position contains.

Parents’ class position during childhood is extensively used in research as a measure of class background, but the accumulative aspect of class experience from adult life is less often studied. If the wear and tear of adverse conditions is one of the mechanisms through which class affects health, then the continuous exposure to this could further class inequality in an accumulative fashion. Study I supports this assumption as the duration of previous working class experience displayed a positive relationship with the
probability of less than good health. The results describe the general patterns and do not include investigation into more proximate mechanisms between class experience and health. However, it shows that the duration of experience matters and not only while the exposure is current but also as past experience. Furthermore, previous research has shown that upwardly mobile individuals exhibit higher levels of good health compared to their class of origin while at the same time reporting lower levels of good health than average in their destination class. In this context, the contribution of previous class experience adds to the potential importance of timing on social mobility; an upwardly mobile individual will potentially gain more (in health terms) if the mobility occurs in the earlier part of working life.

In general, class theory is based on the assumption that there are shared conditions within classes and differences in conditions between classes. For health differences between men and women, the conditions are instead often assumed to be, or at least researched as, similar across classes. In Sweden, class inequality in health has been reported as quite consistent during the last decades of the 20th century, while gender separate analyses have indicated gender difference in the class-health relationship over time. However, there does not appear to be conclusive evidence of diverging or converging trends in social inequality when stratified by gender. The labour market has also changed and has “upgraded” the class structure. At the same time, the share of women in the paid labour market has increased, which has altered the gender composition in classes. The results from the current thesis indicate that the gender gaps in health operate somewhat differently within classes, thus, they have a certain class-specific aspect (Study II, Study III).

To understand gender differences in health it is not satisfactory to assume that there is a general health difference between men and women, or general mechanisms. However, mechanisms could further be understood with reference to the framework of fundamental causes; a social determinant of health can operate through varying mechanisms that depend on the context. For example, the societal expectations or norms for men and women can be general across classes but may manifest differently within them. For working conditions as a mechanism for gender health inequalities the included studies showed that they contribute to within-class gender differences in health but that they should not be expected to operate the same way in all classes. This highlights the importance of context-specific investigations of mechanisms rather than discussing general gender differences. To describe gender differences in health as an average, even after controlling for class position, across all men and women in a given society will be less informative about why these gender differences arise if the distribution into social positions, and their meanings, is gendered. In this sense, the current thesis fits into the logic of social positions as fundamental causes; social position (e.g., class) is a context that shapes the effect of gender on health. Likewise, gender can be a fundamental cause that underlies opportunities and constraints and may
impact occupational choice and, thus, social class. Therefore, class and gender are two dimensions that both separately and together impact our possible movements in social space as well as their consequences. Furthermore, this fits into the intersectionality framework as it emphasizes the interactions between different social categories and how their respective meanings (or consequences) can be understood only in the context of their mutual interdependence.

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