

Master thesis in Work & Health

*Flexible employment and its relations with work  
characteristics, union- and family formation and health*

- From a gender perspective



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## **Preface & Acknowledgment**

Who could ever imagine that an exchange period at the Faculty of Health sciences at Maastricht University in spring 2006 could change a girl's life so much? Even though the studies were much tougher than I had imagined, and that I at times got very homesick I felt that this was a city and university I had to come back to. Not sooner said than done, in August 2007 we returned to complete a master degree in Work and Health at the renamed Faculty of Health, Life and Medicine. Again I was faced with complicated study tasks and many nights in front of my dear Macintosh, but also with many interesting meetings and challenges. Now when I look back on this study year I can see a girl who has grown a lot, academic as well as personal. And if someone would ask me if I could consider doing this again, knowing all the challenges, I would definitely answer yes!

First I would like to thank my first supervisor *prof. Petra Verdonk*, who also was my mentor and tutor during the master program. Petra was always there for me when I had problem, no matter if they were of academic or personal cause. Petra also wrote me a recommendation letter (together with *prof. Annelique de Rijk*) for a PhD position at Karolinska Institutet in Sweden, which I later was offered. I am very happy that Petra has agreed to continue to be my mentor for the PhD program. Again, thank you very much! The second person I would like to acknowledge is my second supervisor, *prof. Inge Houkes*. She has been unbearably when it comes to statistical management and interpretation, and as Petra she has always been there for me whenever I needed help. The third person I would like to acknowledge is my external advisor, *prof. Anne Hammarström*. If it weren't for her approval of using data from her study this thesis would never have been likely. Another very important person to mention here is my boyfriend, *Mattia Salamanca Orrego*, who I met in Maastricht during the exchange period in 2006, and who is still next to my side. I don't know what I could do without his never-ending patient and good advices, especially those related to Mac-management. Ti amo!

Nacka, 23<sup>th</sup> of July 2008, Åsa Samuelsson

## Abstract

**Background:** Rapid advances in telecommunications and computerizing, and the pressure to respond to global markets has led to many changeovers for the world's labour markets. Organizations respond to these changes by invoking the idea of *flexibility*. Two consequences of this increased flexibility is the segmentation of the labor market into two main types of work forces: core and peripheral, and to increased segregation between the genders. This has, among other things, implications for union- and family formation and health status for men and women with different types of employment. **The purpose** of this study was to examine the relationships between types of employment and work characteristics, union- and family formation and health status, and whether differences between genders and types of employments existed. **Method:** For this study a cross-sectional design was chosen, using secondary questionnaire data from the "Luleå-cohort". In total there were 788 (Men = 432, Women = 356) people in the sample. Chi<sup>2</sup>-tests, independent sample t-tests, ANOVAs and General linear models were applied to analyze differences between genders and types of employment. Linear and logistic regressions were used to assess direct relationships and moderation and mediation in a build up theoretical framework. **Results:** A majority of the respondents have a stable employment. Stable- and self-employment is more common among the men, whereas substitutes are more frequent among the women. There are statistical significant differences between the genders for all variables, except for work characteristics. For types of employment differences are found in gender, control and social support. However, when gender and types of employment are combined, there is only difference between the groups in the work characteristic job demands. Gender does significantly moderate the relationships between stable employment versus self-employment and job demands; stable employment versus self-employment and health status: work characteristics (control and social support) and health status. Social support seems to function as a mediator and control as a partially mediator in the relation between stable employment vs. self-employment and health status. **Conclusion:** There are some differences between genders and types of employments for the different variables in the theoretical framework, but in most cases in different directions than expected. On the one hand, the theoretical framework seems to work, because there are: 1) Some direct relationships between types of employment and a) work characteristics and b) outcomes, 2)

Moderation and mediation between independent variables and health status and some work characteristics. On the other hand, the outcomes union- and family formation, as well as the predictor stable employment versus substitute, have not proven to have particular impacts on the relationships between the variables, why future studies need to give those variables further attention.

**Keywords:** Flexible employment, Family formation, Gender, Health status, Work characteristics, Union formation

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## 1. Introduction

Rapid advances in telecommunications and computerizing, and pressures to respond to global markets have led to many changeovers for the world's labour markets. Changes are, amongst other things, found in working patterns (freelancing, home work, call centers etcetera), working hours (projects, temporary work), and in location of work (outsourcing of manpower). Many organizations respond to these changes by invoking the idea of *flexibility* (Taylor, 2002).

Flexibility may be defined as “the ability of employers to rapidly adjust the size or composition of their work forces to changing economic conditions” (Menéndez, Benach, Muntaner, Amable & O’Campo, 2007, pp 776-777).

One consequence of this increased flexibility is the segmentation of the labour market into two main types of work forces: core and peripheral. In the core work force employees with full-time contracts are located. This type of employment is often connected with high job security, personnel development and training possibilities and decent work characteristics, for instance with regard to job demands, control and social support. In contrast, people located in the peripheral work force are more often on temporary basis, with lower job security, and poorer work characteristics (Aronsson, Gustafsson & Dallner, 2002; Benach, Amable, Muntaner, & Benavides, 2002; Robinson, 1986). Furthermore, many workers in temporary jobs share labour market characteristics (lower credentials, low income, female gender, migrants, non white race) with the unemployed, and go themselves through periods of unemployment (Benach et al., 2000). Nevertheless, also within the peripheral work force there is a clear segmentation between different types of employments, such as project, on call, substitutes and self-employment, which all have different quality of work characteristics (EASHW, 2002).

There is an apparent gender segregation in flexible employment in the sense that women are more often than men employed in non-standard precarious forms of employment (Cranford, Vosko & Zukewich, 2003) and are strongly overrepresented in the two forms of flexible employment that receive less benefits, that is on-call and substitute, and are underrepresented in the most favourable one, project (Aronsson, Gustafsson & Dallner, 2002). These differences in work

characteristics may lead to distinct outcomes for women and men, when it comes to union- and family formation and health status.

### **1.1 Relevance of the research topic**

There are two main reasons why research on this topic is relevant. First, the number of flexible “contracts” is growing, and employers and governments advocate flexibility as a good solution to meet the demands of the globalization and new technologies (Bardesi & Francesconi, 2004; Nachreiner, 2003; Felstead & Jewson, 1999), but little is known about this new type of employment. Knowledge about of the possible (negative) consequences of flexible employment is important for decision- and policy makers, actors on the labour market and for health care.

Second, research on the associations between flexible employment and or working hours and health is still scarce, and the few studies published expose mixed results (Artazcoz, Benach, Borrell & Cortés, 2004; Benach, et al., 2000; Benavides, Benach, Diez-Roux & Roman, 2000; Costa et al., 2003; Sverke, Gallagher & Hellgren, 2000; Virtanen, Kivimäki, Elovainio & Vahtera 2002a; Virtanen, Vahtera, Kivimäki, Pentti, & Ferrie, 2002b). More studies, including qualitative as well as longitudinal data, are needed. Furthermore, models and measures need to be developed in order to better understand the mechanisms through which flexible employment may damage, among other things, health of workers (Benach, et al., 2000).

Even less is known about different consequences for women and men in connection with flexible contracts. The numbers of studies that have included gender in their study show mixed results: some of them have not found any differences (McDonough, 2000); others have reported less clear differences for women (Ferrie, 1995 & 1998) and some have just simply adjusted the analysis for gender (Benavides, Benach, Diez-Roux & Roman, 2000; Rodriguez, 2002). Gender differences are important to address because policies may affect both genders differently, and labour market “flexibilization” often relies on workers without caring responsibilities. This implies that more research is needed focusing on gender differences in the impact of flexible employment.



## **1.2 Aim of study**

The purpose of this study is to examine the relationships between type of employment and work characteristics, union- and family formation and health in Sweden, and whether differences between genders and types of employment exist in this regard. The result of this study can be used as recommendations on how to prevent or mitigate the eventual (health) effects of unstable employment for women and men. This aim can be reformulated into a main research question. The main research question is as follows: *What are the relationships between types of employment and work characteristics, union- and family formation and health in Sweden, and do differences between genders and types of employments exist?*

## **1.3 Outline of the thesis**

In order to answer the main research question three steps are taken. First, a literature study is carried out with the purpose of formulating a theoretical framework that describes specific pattern of relationships between types of employment, work characteristics, outcome factors (union- and family formation and health status) and gender. The literature study can be found in the second chapter of the thesis. Second, the theoretical framework is empirically tested. In the third chapter the statistical analyses are described followed by the results of those analyses in the fourth chapter of the thesis. Third, in the fifth chapter the results of the statistical analyses are discussed and conclusions are drawn. The design of the study is a cross-sectional one.

## **2. Theoretical background**

In the theoretical background important definitions and theories are outlined, followed by a description of empirical studies in this field of study and a portrayal of the research setting. Finally, the theoretical framework and the central research question, research questions and hypotheses of the study are revealed.

### **2.1 Definitions & theories**

Under paragraph 2.1 important definitions and theories related to this study: flexible employment, the theory of “gendered division of labour” and “the Job-Demand-Control-Support model” are outlined.

#### **2.1.1 Flexible employment**

Many different terms exist to explain flexible employment. Some examples are precarious work, atypical work and contingent work (Nienhueser, 2005; Quinlan, Mayhew & Bohle, 2001). All of them have in common that they define flexible employment as an employment that differs from stable employment in three dimensions: level of job security/stability, economic insecurity and quality of work characteristics (Rodger & Rodgers, 1989). Davy, Kinicki and Scheck (1997, p. 323) define job security/stability as “an employee’s expectations about continuity in a job situation”. Economic insecurity can be defined as “the perceived inability to meet living expenses if losing the current job” (Greenhalgh & Rosenblatt, 1984, p 445)

According to the Saltsa group (the Swedish programme for problem-oriented research in Europe), a distinction has to be made between irregular (variable) and flexible working time. Irregular, variable, working hours refer to the working hours that are variable from day to day or from week

to week. Flexibility refers to the fact that working hours can be influenced. In general individual flexibility is positive for the employee if they can choose within some boundaries their working hours. Otherwise, flexible working hours can cause different health problems (Costa et al., 2003).

In this study we consider flexible employment as having an unstable employment. In other words it is limited in time and/or has flexible working hours, for instance on-call, substitute, self-employment and project. Part-time job and seasonal employment are not included.

### 2.1.2 The theory of gendered division of labour

In western societies there is clear gendered division of labour, which is supported by the beliefs that women and men are suitable for different types of job and assignments because of different body structure (sex), for instance men are physically stronger than women, and social roles (gender), for instance men as the provider and women as the caregiver (the breadwinner-model) (Kreimer, 2004; WHO, 2006). The *gendered division of labour* refers to horizontal (men work mainly in male-dominated and women work mainly in female-dominated sectors) and vertical (men are overrepresented in the highest levels with regard to status, power and income) segregation of the labour market (Kreimer, 2004). The gender division of labour is found in paid as well as unpaid (domestic work) employment (WHO, 2006).

The horizontal segregation leads to different exposures of health hazards for women and men in paid work. Women are more often employed in service jobs, for instance health and child care, and are therefore more exposed to psychosocial health hazards, such as high job demands, lack of autonomy, and monotonous work (Östlin, 2002). Men are more often employed in industrial and agricultural sectors where they are more exposed to physical hazards, such as noise, vibrations, chemicals and lifting heavy weights (Paoli & Merlié, 2002). Furthermore men are more often, than women, involved in occupational accidents (Laflamme & Lilert-Petersson, 2001) or die at work from violence as well as accidents (Helmkamp, Lundström, & Williams, 2000).

Even though there have been changes over the last decades in how paid and unpaid labour is divided between men and women, women are still mainly responsible for unpaid domestic work (WHO, 2006). In domestic work women's typical tasks (cooking, cleaning, doing laundry and caring for children and sick relatives) differ from men's (car- and household maintenance) (Statistics Canada, 2000), as do their recreational activities (Matthews et al., 2001). These differences in tasks may cause fatigue or non-occupational stress, which in turn may affect reactions to workplace characteristics (Brisson et al., 1999).

The vertical segregation of labour favours men in terms of salary, status and power. For instance, it is more common that women are employed in flexible types of employment, such as short-term contracts, part-time work and self-employment (Cranford Vosko & Zukewich, 2003). These types of employment offer limited possibilities for training and career advancement. Furthermore, there is a lack of social security coverage in terms of pension, sickness insurance and maternity protection. Women are also less likely to be unionized (ILO, 2000). In general, women employed in "female jobs" have a lower salary than men employed in "male jobs" (ILO, 2003). Finally, women suffer more often than men, from discrimination, intimidation and sexual harassment due to their lower status (Miner-Rubino & Cortina, 2004).

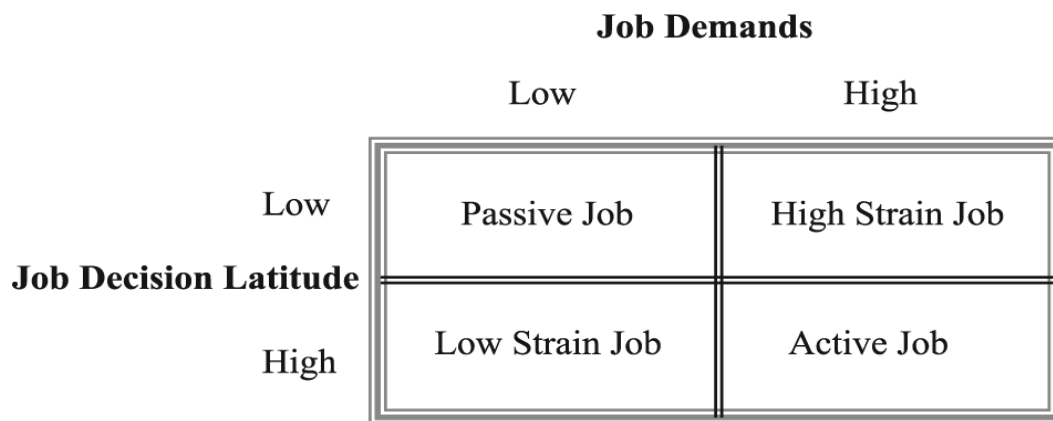
### 2.1.3 The Job-Demand-Control-Support model

The following work characteristics are studied in this study: job demands, control and social support. These three work characteristics belong to the Job-Demand-Control model (Karasek, 1979) and the Job-Demand-Control-Support-model (Karasek & Theorell, 1990). These two models are interesting to employ because, first, they have been developed and tested in Sweden, where also this study departs, and, second, they have been widely used in empirical studies. In the end of this paragraph the evidence of the models are discussed further.

According to Karasek (1979) the primary sources of stress in the workplace lie within two basic characteristics of the job: *job demands* and *control* (see figure 1). Examples of job demands are

high workload and time pressure, whereas control refers to the amount of autonomy in the job. The model predicts that psychological strains are the consequence of a mismatch between the amount of job demands and the range of job control available to the employee. Hence, people who are employed in jobs characterized as high demanding and low in control (high strain jobs), or jobs characterized as low demanding and with little control (passive jobs), will have an increased development of mental health problems.

The model also predicts that when job demands, control (and social support in the later model) increase, work becomes more challenging and provides more opportunities for learning and developing one's abilities. In the extension of the first model the concept *social support* was added. Social support is said to work as a moderator between job demands and job control. Workplace social support can be defined as overall levels of helpful social interaction available in the workplace (Karasek & Theorell, 1990).



**Source:** Adapted from Karasek (1979, p. 288)

*Figure 1: The Job-Demand Control model*

Overall, studies evaluating the two models have provided evidence for the importance of control and social support as predictors, but less support for the whole demand-control-support interaction. The main reasons for this are methodological, for instance a number of studies have been based on secondary analyses of already collected data, in which the variables often were not operationalized adequately. Further, in some studies it is not clear to what extent the variables in

the model are confounded with other variables, such as socio-economic status and gender. Finally, many studies have failed to take into account individual differences, emotional responses and coping strategies (Buunk, De Jonge, De Ybema & De Wolf, 1998; Kompier, 1997, Jones & Fletcher, 1996). It can furthermore be stated that the concept of learning has remained a somewhat abstract concept, for which the empirical basis is still small (Kompier, 1997).

## **2.2 Empirical studies**

In this section recent research related to flexible employment are revealed from a gender perspective. The following topics are discussed: flexible employment and work characteristics, union- and family formation and health status.

### **2.2.1 Flexible employment & Work characteristics**

Some recent research from Europe, and in particular Sweden, showed that work characteristics of persons in non-permanent contracts and self-employment might differ from persons with permanent contracts. Those in flexible employment may face greater demands or enjoy less control over working time, receive less social support from superiors, and have fewer training and development opportunities than workers with stable contracts. Furthermore, temporary employed find it harder to criticize work characteristics and obtain a response to any negative feedback from employer and colleagues than employees with stable employment (EFILWC, 2001; Aronsson, 1999a; Aronsson, 1999b; Aronsson, 2001; Aronsson, Gustafsson & Dallner, 2002; Letourneau, 1998).

However, for some flexible jobs, for instance project work, the work characteristics do not differ much from those of permanent employees. Substitutes occupy an intermediate position, whereas persons working on-call operate under conditions most dissimilar to permanent employees (Aronsson, 1999a; Aronsson, 1999b; Aronsson, Gustafsson & Dallner, 2002).

Janssen and Nachreiner (2004) conclude in their study that high variability and lack of influence

over one's working hours are associated with increased psychological and physical impairments. For instance, employees with highly variable working hours and lack of control over their working hours reported more sleeping problems than employees who were in control over their regular working hours. Therefore, control can be seen as a buffer in this relationship.

Swedish researchers have concluded that a clear gender gradient exists in flexible employment: women are strongly over-represented in the two forms of flexible employment that are most problematic (on-call and substitute), and are under-represented in the most favorable one (project). This would indicate that men benefit more from flexible employment than women, when it comes to work characteristics and hence, more negatively impact on women's health than on men's health (Aronsson, 1999a; Aronsson, 1999b; Aronsson, Gustafsson & Dallner, 2002).

### 2.2.2 Flexible employment & Union- and Family formation

The relation between types of employment and union- and family formation is hardly researched. Golsch (2003) found that holding a stable work is an important predictor for union formation and parenthood and that temporary employment is associated with limitations in union- and family formation. There are many reasons for this situation. People with temporary employment are faced with a lot of insecurity in their lives, both economically and socially. In Sweden, for instance, people with temporary contracts cannot apply for a loan to buy an apartment, since a stable contract is a prerequisite. Therefore, people with temporary contracts rather wait for a more stable life situation to come, than move in with a partner or have children.

Furthermore, gender studies on flexible employments consequences for union- and family formation are also scarce. Artozcoz, Benach, Borrell & Cortés, (2004) found that men suffered more from temporary employment than women when it comes to union- and family formation. Their study, however, did not take into account the possibility to be a parent without a partner (single parents), or being in a relationship without children.

There are a number of potential pathways through which the new types of flexible employment might damage health. The experience of flexible employment itself, and the insecurity and instability associated with it, may be an important source of stress (Virtanen, Vahtera, Kivimäki, Pentti, & Ferrie, 2002b). Artazcoz, Benach, Borrell and Cortés, (2004) concluded in their study that temporary work has an impact on mental health, especially working with non-fixed term contracts and with no contract. This impact was mainly restricted to less privileged workers, mostly women and manual male workers. However, the same and other studies have found that people on non-permanent contracts report better health status than people on permanent ones (Virtanen, Kivimäki, Elovainio, Vahtera, & Cooper, 2001; Virtanen, Vahtera, Kivimäki, Pentti, & Ferrie, 2002b Benavides, Benach, Diez-Roux & Roman, 2000; Benach et al., 2004).

Research has also shown that different forms of flexible employment may have different health implications. For instance people employed in projects have better health status than those employed as “on-call” or “substitutes” (Aronsson, Gustafsson & Dallner, 2002). Moreover, there is the possibility that there exist a reverse causation between flexible employment and health. This means that it is not the case that people, experiencing high job instability, have poorer health status; rather it is people with poorer health that are more likely to work in instable job arrangements (Virtanen, Kivimäki, Elovainio & Vahtera, 2002a). This indicates discrimination and or social exclusion of people with poorer health status. Nevertheless, more research is needed to confirm this finding.

On the one hand, there are number of issues that suggest that flexible employment may damage women’s health more than men’s. Through the gendered division of labour women are forced into a restricted range of female occupations, including flexible employment, with lower status and payment (ILO, 2003). Moreover, the double workload of women is still present, which makes it difficult to balance work and family responsibilities, with potential serious consequences for mental health to themselves and their families, children included (Glass, 2004). Finally, women employed in flexible jobs are less likely than men to be unionized or covered by a collective agreement, which will put them more at risk of losing their jobs (Benach, Amable, Muntaner, & Benavides, 2002).

On the other hand, there is another issue that suggests that flexible employment may



damage men's health more. Traditionally, it is believed that men regard themselves as the "breadwinner" of their families (Bernard, 1981), while women consider financial matters as their secondary responsibility (Conger, Lorenz, Edler, Simons, & Xiaojia, 1993). Male employees may thus suffer more from job insecurity than female employees because male employees are more aware of the possible negative consequences of job loss (De Witte, 1999).

Both views have received empirical support and it is unclear whether men would suffer more from and reacts more strongly to job insecurity than women. Taken together, job insecurity seems to be equally dissatisfying and stressful to both males and females, but for different reasons (Cheng & Chan, 2008).

## **2.3 Research setting**

Under paragraph 2.3 the Swedish context is portrayed followed by a description of the organizations where the research took place.

### **2.3.1 The Swedish labour market**

Between 1995- 2004 Sweden had an average employment grade of 73.1 percent. In 2004 73.5 percent of the Swedish workable population between 15 and 64 years were working. In average more men, than women were employed. However, in the younger age group there were slightly more women employed than men. In the same year 5.5 percent of the Swedish workable population was unemployed – of whom 3 percent men and 2.5 percent women. Unemployment was most prevalent among the youngest age group, 16-24 years (OECD, 2005; SCB, 2005).

In 2005, 3.200.000 Swedish people were employed on permanent contracts, of whom 1.650 000 men and 1.550.000 women. The three biggest employers for Swedish men were in 2007 agriculture/forestry/fishing, trade/commerce and economy/business. Corresponding sectors for Swedish women were health care, trade/commerce and education/research. In 2005, more Swedish women than Swedish men were working part-time; regardless which sector or trade union they belonged to. Part-time was most common among people belonging to the blue-collar

trade organization LO where 48 percent of women and 10 percent of men were working part-time (LO, 2005; SCB, 2007).

In 2004, the Swedish workforce was working on average 30.1 hours a week. Swedish men were working somewhat more – 33.5 hours week- and Swedish women little less- 26.4 hours a week. In 2006, the income of Swedish women was on average 16 percent lower than those of men, when all sectors were taken into account. If differences in age, education, sector and working time between the sexes also were considered then the differences would have been 8 instead of 16 percent (SCB, 2005; SCB, 2006). This picture of the Swedish labour market confirms the gendered division of labour with both vertical and horizontal segregation between the sexes. 2.3.2 Flexible employment in Sweden

There is a trend that shows that stable employment is decreasing and that flexible employment is becoming more common among the Swedish workforce. During the last decade (1990-2000) stable contracts have decreased with almost 450 000 jobs and constituted in year 2005 almost 3.200.000 permanent contracts, while temporary jobs have increased with almost the same amount. In 2005 peripheral groups of temporary employed and on-call hired people comprised about 14 percent of the labour force, or 520,000 people. Within this group about 160 000 work as substitutes, 90 000 in projects, 145 000 on-call, 55 000 are probationally employed and another 20 000 do seasonal work (LO, 2005).

In this regard, Sweden has a mediocre position in Europe. Overall, in 2005, 14.5 % of employees from EU-25 countries had a temporary job. Most temporary employed can be found in Spain (33 %) and in Portugal (19 %), whereas in Ireland (4 %), United Kingdom (6 %) and Luxemburg (5.3 %) this type of employment is not so common (SOECE, 2006).

In 2005, more Swedish women were employed in temporary employment than Swedish men (18 percent to 14 percent) (LO, 2005; SOECE, 2006). Especially younger women from the working class were employed in temporary employment (LO, 2005). Within the peripheral group there is strong gender segregation: women are in majority in the group of on-call hired staff, whereas men dominate project related employment. However, women and men from the Swedish trade

union for Academics (SACO) had the same percent of project employment. Hence, this difference is more evident for lower educated women and men, than for highly educated workers (Aronsson, Gustafsson & Dallner, 2002; LO, 2005; SCB, 1998).

Even though temporary employment contracts have increased in Sweden, they are in general not “desired” by the Swedish workforce. Several studies have shown that Swedish workers prefer a stable contract to a flexible one (Holmlund & Storrie, 2002, SCB, 1999; Ungdomsstyrelsen, 1998).

### 2.3.3 Work characteristics in Sweden

During 2005 in Sweden, on average every fourth woman (23.0 %) and man (24,3 %) had undergone five days of job training. The possibilities for further training vary between different socio-economic groups. White-collar workers, women as well as men, receive more training than blue-collar workers. Within the last group more men, than women, receive job training. This indicates class and gender segregation. Self-employed receive the least training. The reason for this can be the non-existing standard working hours; for self-employed paid work time varies from one person to another (Arbetsmiljön, 2005).

In the same year (2005) a majority of the Swedish workforce - 54,9 % of the women and 52, 5 % of the men - stated that they had too much to do in their work. An even bigger percentage claimed that they didn't have enough control over their own work pace (66 % of the women and 45 % of the men). Furthermore, every eighth woman (13, 3 %) and every fifth man (23, 3 %) claimed that they hardly or never had access to social support from colleagues when the job was too demanding. Finally, 33, 4 % of the women and 42, 4 % of the men- stated that they didn't receive enough support from their supervisor when the workload got over hand (Arbetsmiljön, 2005).

### 2.3.4 Work-life balance in Sweden

Sweden, as the rest of the Nordic countries, belongs to the Social Democratic welfare states. This type of welfare state is characterized by publicly universal social security schemes with fairly generous benefits. The dual-income family is the norm in the Scandinavian countries. On the one hand, female labour force participation is promoted through extensive public day care coverage and generous parental leave schemes. On the other hand, a large part of the workforce, mainly unskilled female workers, is employed in public service jobs. High labour force participation rates for both men and women are also promoted by an active labour market policy where the receipt of social benefits is conditional upon participation in supported job training or education. This means that also single parents are well protected from economical problems in case they are hit by unemployment (Høglund, 2003).

Table 1: Numbers/Percent of Swedish employees (stable and temporary employment) with children under 18 years (LO, 2005)

Variables	Stable employment 1000 –numbers (%)		Temporary employment 1000-numbers (%)	
	Women	Men	Women	Men
Age of child				
Youngest child under seven years old	368 (42)	360 (47)	59 (53)	32 (57)
Youngest child between 7 and 18 years old	502 (58)	403 (53)	53 (47)	24 (43)
<b>Total 1000-numbers (%)</b>	<b>870 (100)</b>	<b>763 (100)</b>	<b>112 (100)</b>	<b>56 (100)</b>

A report from one of the main trade unions in Sweden (LO, 2005) indicates that employees with temporary employment are more likely to have young children than employees with stable employment. This pattern is equal for women and men (table 1). Nevertheless, there is a trend showing that having older children is more common among workers with stable employment, than among employees with temporary employment. Again, this pattern is equal between both genders.

In the age group 25-45, fewer men with temporary employment than women, live together with a partner. The pattern is the same if also children are included in the picture. In general, 20 percent of Swedish women with flexible employment live with a partner (and have children) compared to 10 percent of the Swedish men. In spite of this there are more Swedish single mothers with temporary employment than men (17 to 8 percent) (LO, 2005). A plausible explanation of these patterns may be differences in income. In other words, female workers with flexible contract may live with partners, who can cover up for their lower salaries. As was revealed under paragraph 2.3.1 Swedish men still earn more than Swedish women.

### 2.3.5 Maastricht & Umeå Universities

This thesis is collaboration between the Faculty of Health, Medicine and Life Sciences of Maastricht University in the Netherlands and the Faculty of Public Health and Clinical Medicine of Umeå University in Sweden. The collaboration consists of data sharing from Umeå University and tutoring from Maastricht University. Data is used from the so-called Luleå-cohort, for whom professor Anne Hammarström is the initiator and project leader. The student came in contact with professor Hammarström, when she was looking for a placement in Sweden for her master thesis autumn 2007. The Luleå-cohort study is further described in the method section.

## 2.4 Theoretical framework

Based on our theoretical background we assume that types of employment determine the quality of work characteristics (job demands, control, and social support) and outcomes (union- and family formation and health status) (figure 2). Employees with stable employment, and men, are expected to have lower job demands, more control over work and receive more social support from colleagues and supervisors than employees with unstable employment (self-employment and substitute). Hence, work characteristics functions as mediators between type of employment and outcomes. Moreover, employees with stable employment, and men, are expected to be more likely to unionize and form a family and have better health status, than employees with unstable employment and women. And finally, the relations between types of employment and work characteristics; type of employment and outcomes and work characteristics and outcome variables are moderated by gender. Education functions as a confounder in the relations between the variables.

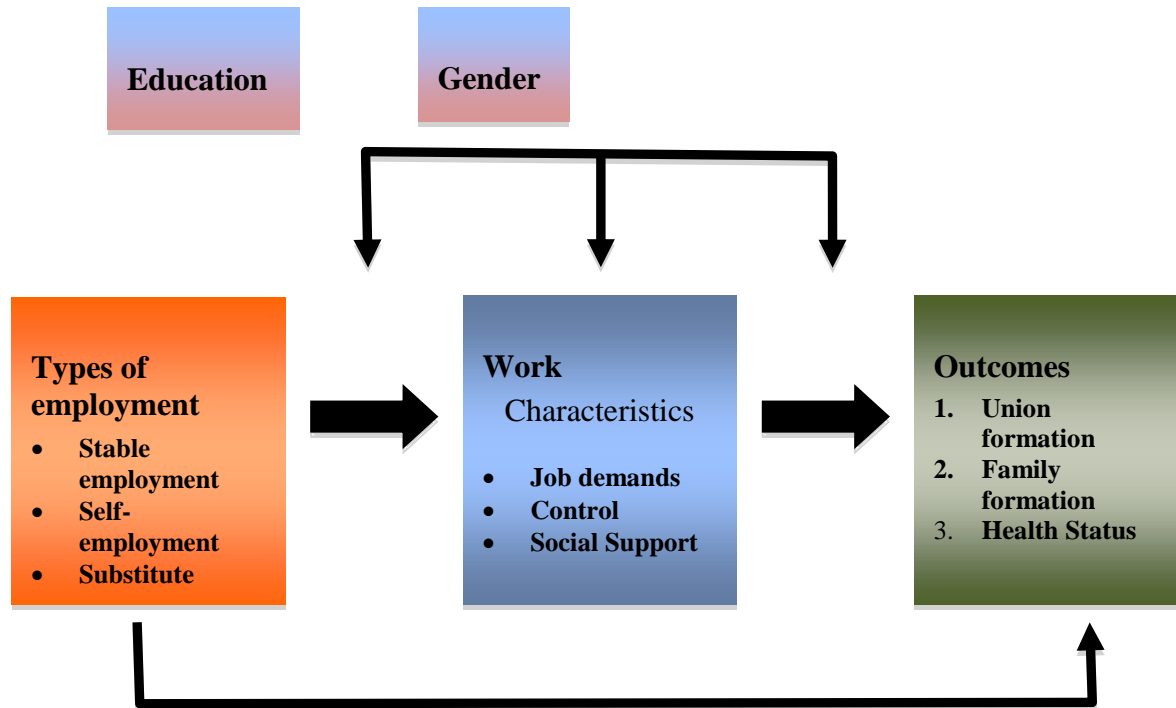


Figure 2: Theoretical framework

## 2.5 The aim of the study

The purpose of this study is to examine the relationships between types of employment and work characteristics, union- and family formation and health in Sweden, and whether differences between genders and types of employments exist in this regard. This aim can be reformulated into a main research question. The main research question is as follows: *What are the relationships between types of employment and work characteristics, union- and family formation and health in Sweden, and do differences between genders and types of employments exist?*

### 2.5.1 Research questions

1. What are the descriptives of the variables among the total sample, and separate for men and women, and what are the relationships between the variables in the theoretical framework?
2. Are there statistical differences between genders, types of employments, and combination of groups (types of employment and gender taken together) for the different variables in the theoretical framework?
3. Do types of employment and gender have direct effects on work characteristics and outcome variables? If not, does gender moderate the relations between types of employment and work characteristics; types of employment and outcomes, and between work characteristics and outcomes?
4. Do work characteristics have direct effects on outcome variables? If not, do work characteristics mediate the relations between types of employment and outcomes?

### 2.5.2 Hypotheses

1. Gender differences are expected to exist in that men have a higher education, more often have a stable employment, perceive their work characteristics to be better; live more often with a partner or have children and have better health status than women, no matter type of employment.
2. Differences between types of employments are expected to exist, in that stable employed score

more favorable on the variables (see first hypothesis) than unstable employment (self-employment and substitutes).

3. Gender is expected to moderate the relations between types of employment and work characteristics; types of employment and outcomes and between work characteristics and outcomes.

4. Work characteristics are expected to (partial) mediate the relations between types of employment and outcomes.



### **3. Method**

In the method section the study design is to be described, followed by a description of study population, sample and procedure, instruments and variables and, finally, statistical analyses.

#### **3.1 Study design**

For this study a cross-sectional study design was chosen. The reasons for choosing this study design were two-fold: first, to give insights into associations between the variables under study (Kessler & Greenberg, 1981), second, to generalize findings from the study to a larger population. The advantages of this design are its cost- and time effectiveness (Babbie, 2001). The main disadvantage of cross-sectional designs is that it is usually impossible to demonstrate the causal order of variables (De Jonge, 1995).

In this study quantitative secondary data was used from the so-called “Luleå-cohort”. The “Luleå-cohort” is a Swedish longitudinal study, focusing on the significance of unemployment and unstable employment for health status. So far four measurements have been made 1981 (baseline), 1983, 1986 and 1995 and at fifth follow-up is executed at the moment of writing this thesis (2008). At all these occasions, including baseline, questionnaires were carried out to all participants. Furthermore, different register files, for instance grades, and body measurements, blood pressure, BMI and cortisol levels have been collected at the different measurements. In year 1986 personal interviews were conducted with everybody in the cohort that had been unemployed more than three months since 1983 (Hammarström, 2006). For this study the questionnaire from the 1995 follow-up was used.

### 3.1.1 Ethical considerations

The Research Ethics Committees at Uppsala and Umeå Universities have approved the study. The project has taken the four ethical demands: openness, self-determination, confidentiality and autonomy, suggested by the Swedish Science council, into consideration (Hammarström, 2006; Vetenskapsrådet, 2002). In the “Luleå-cohort” informing all participants about every research moment has provided for the demand for openness. The demand for self-determination was provided for by informing, orally and written, all participants about the voluntary in participation, and by avoiding any dependence relationship between researchers and participants. The demand for confidentiality was provided for by strict professional secrecy while working with personal data. Moreover all data is kept inside locked spaces. Finally, the demand for autonomy was provided for by only using personal data for this research. In case of publication the respondents cannot be identified. The summary of the result will be handed out to the participants. And, at last, the research group has made an action plan in case of deviant discoveries in connection with the health investigations (Hammarström, 2006).

### **3.2 Study population, sample & procedure**

The population consisted of all junior high school pupils,  $n= 1083$  persons (577 men and 506 women) that attended or should have attended the last year of compulsory school 1981 in a medium-sized industrial town, Luleå, in the north of Sweden. Because all pupils of this year issue have been included in the study and only one sample has been made it is a total single stage sample (Hammarström, 2006).

Extensive work has been carried out to reach every participant, including those who have moved, in order to keep the non-response rate to a minimum. Data were collected during school hours (at the age of 16 years) and during class reunions (at the ages of 21, 30 and at present 42 years). Questionnaires were sent to those who could not attend these reunions, followed by a reminder if necessary. Participants who failed to reply because of reading and writing difficulties were

contacted by telephone and interviewed, if they agreed to participate. In these personal or telephone interviews the interviewer read the questions and response categories exactly as written in the mailed questionnaire (Hammarström & Janlert, 2002; Reine, Novo & Hammarström, 2004). Thanks to the extensive work to involve everybody the response rates have been very high at all follow-ups in relation to the baseline measurement 1981. To be exact in 1983 the response rate was 99,0 percent (Hammarström, Janlert & Theorell, 1988), 1986, 98,0 percent (Hammarström, 1994) and 1995, 98.6 percent (Hammarström & Janlert, 2002; Reine, Novo & Hammarström, 2004).

### **3.3 Measurement instruments**

At the follow-up 1995 the same questionnaire was used, with the complement of age-relevant data concerning civil status and labor market situation (Hammarström, 2006). The questionnaire consists of 99 questions from different validated instruments (Hammarström, 1986; Novo, 2000). The questions concern daily activities (work, studies or unemployment), work characteristics, health, life style and home- and family situation, spare time and the future (Hammarström, 2006).

#### **3.3.1 Education**

Education was measured (question 21) using a categorical scale with five answering categories (junior high school, two year high school, 3-4 year high school, bachelor, other academic exam). These five answer categories became three categories after recoding: junior high school; high school and university.

#### **3.3.2 Type of employment**

Type of employment was measured (question 1) using a categorical scale with seven answering categories (stable employment, self-employment, substitute, government-sponsored job-training

schemes, unemployed, pre-retired, or none of the possible options). As predictors' stable employment, self-employment and substitute were chosen. All the other answer categories were excluded from the dataset.

### 3.3.3 Work characteristics

Work characteristics (questions 18 and 19) were measured using the Swedish Demand-Control-Support Questionnaire (DCSQ) (Sanne, Torp, Mykletun & Dahl, 2005), which is a shorter and modified version of Karasek's Job Content Questionnaire (JCQ) (Karasek, 1985). DCSQ includes in total 17 items, five for job demands, six for control (four on skill discretion and two on decision authority), and another six items for social support. Job demands and control were measured with a likert scale with four answering options, ranging from often to never, whereas social support was measured with a likert scale with four answering options, ranging from totally incorrect to totally correct.

In total there were seven items measuring job demands (18a- 18g) in the questionnaire, but two of them were left out (18a and 18c) since they don't belong to the originally DCSQ. An example of a question is: "Does your job require you to work very hard?" (Cronbach's  $\alpha = 0.75$ ).

Control was measured with seven items (18h- 18n) in the questionnaire, but the last item was left out, since it measures social support. An example of a question is: "Do you have the possibility to decide for yourself how to carry out your work?" (Cronbach's  $\alpha = 0.73$ ).

And, finally, social support was measured with seven statements in the questionnaire (19a- 19g), where the last statement was left out since it doesn't belong to the originally DCSQ. An example of a statement is: "I get along well with my supervisors" (Cronbach's  $\alpha = 0.82$ ).

### 3.3.4 Union- and family formation

Union- and family formations (questions 71 and 69a) were both measured using categorical scales. Union-formation, which measures living with a partner, used five answering categories (husband/wife, co-habite, alone, friends, other, who?). These answering categories became two categories after recoding: partner (husband/wife and cohabite) and single (alone, friends, other,

who?). Family formation, which measures having children, used two answering categories (Yes and No).

### 3.3.5 Health status

Health status (question 38) was measured with the General Health Questionnaire 12 (GHQ 12) battery (Goldberg & Williams, 1988). The GHQ-12 consists of 12 items, each assessing the severity of a mental problem over the past few weeks using a 4-point categorical scale from “Not at all” to “Much more than usually”. Three groups of psychiatric problems/disorders are considered, namely anxiety and depression, social dysfunction and loss of confidence. An example question is: “ In the past few weeks I have been able to concentrate on what ever I am doing” (Cronbach’s  $\alpha= 0.80$ ).

## 3.4 Statistical analyses

Under heading 3.4 a description of the statistical procedures are given, first the preliminary analyses that are done, then descriptive statistics and finally, inferential- and multivariate analyses.

### 3.4.1 Preliminary analyses

Data were analyzed with the statistical program “Statistical Package for Social Sciences” (SPSS), version 15.0 for PC. Before the data analyses started the data were plotted to see if it had a normal distribution. Social support was assessed as negatively skewed ( $<-1,0$ ); therefore the square root of all the answers was taken (Field, 2005).

Second, five items measuring work characteristics (18f, 18h- 18j) and another six items measuring health status (38b, 38e, 38f, 38i-38k) were recoded so that for all items 1 meant bad and 4 meant good. And, for each work characteristics and health status scale a mean score was computed.

Third, one the main assumptions behind bivariate correlation and multivariate analyses is that independent variables need to be continuous or categorical with only two categories. Therefore the two independent variables education and type of employment were recoded into dummy variables. For education answer category “university degree” was treated as reference group, since we were interested in comparing highly educated with less educated (either junior high school or high school). And, for type of employment the answer category “stable employment” was treated as reference group, since we were interested in comparing people with stable employment with unstable employment (either self-employment or substitute).

Fourth, reliability analyses were performed with the continuous variables to calculate Cronbach’s alpha per each items and per each variable.

### 3.4.2 Descriptive statistics

To describe the characteristics of the population (research question number 1) preliminary analyses, frequencies and descriptives, were performed. Furthermore, one-tailored bivariate correlation matrixes were developed to assess the correlation between the variables in the theoretical framework. Pearson and Spearman’s correlation coefficients were used as effect measurements, depending on if the variables were either categorical or continuous. When comparing the coefficients of the correlation matrixes with the beta coefficients in the regression analyses, se below, potential suppressor effects could be identified. The correlation matrixes can be found in the second appendix.

### 3.4.3 Inferential analyses

To investigate statistical differences between genders and employees having and not having a stable employment (research question 2 and hypotheses 1 and 2) chi<sup>2</sup>-tests were performed with categorical variables (gender, type of employment, education, and union- and family formation) and independent-sample t-tests or ANOVA's with continuous variables (work characteristics and health status). Furthermore, general linear models, with post hoc tests, were used to assess the differences between men with stable employment, self-employment or substitute with women with stable employment, self-employment or substitute. Education, work characteristics and outcome variables were treated as dependent variables, whereas type of employment and gender were treated as fixed factors. In all analyses missing values were excluded pair wise.

### 3.4.4 Multivariate analyses

To investigate the impact of the predictors in the theoretical framework on the work characteristics and outcomes, and moderation and mediation (research questions 3 and 4; hypotheses 3 and 4) logistic regressions were performed with categorical outcome variables and linear regressions with continuous outcome variables. Entry was used as an input method. To determine if a variable is a mediating factor Z- scores were calculated and compared to the critical Z-score at a  $\alpha$  level of 0.05: 1.96 (Baron & Kenny, 1986). In all analyses missing values were excluded pair wise.

To investigate whether gender moderates the relationships between types of employment and work characteristics, between types of employment and outcomes and between work characteristics and outcomes three hierarchical multiple regression analyses were carried out. In the first analysis work characteristics, job demands, control and social support, were treated as dependent variables, while education, types of employment and gender were treated as independent variables. The confounder variable education was included into the first block and

type of employment in the second block. In the third block the moderator gender was added. In the fourth block an interaction term between type of employment and gender was added and  $R^2$  change was calculated and tested ( $F$  change).

In the second analysis the outcomes, union- and family formation and health status, were treated as dependent variables, while education, types of employment and gender were treated as independent variables. The confounder variable education was included into the first block and type of employment in the second block. In the third block the moderator gender was added. In the fourth block an interaction term between type of employment and gender was added and  $R^2$  change was calculated and tested ( $F$  change).

In the third analysis the outcomes, union- and family formation and health status, were treated as dependent variables, while education, gender and the three work characteristics (job demands, control and social support) were treated as independent variables. The confounder variable education was included into the first block and the work characteristics in the second block. In the third block the moderator gender was added. In the fourth block the following interaction terms were added: job demands\*gender, control\*gender and social support\*gender and  $R^2$  change was calculated and tested ( $F$  change).

To test the mediating effect of work characteristics in the relations between types of employment and outcome variables two types of relations had to be assessed in separate analyses (Baron & Kenny, 1986). First, the relations between the independent variables (A) and the mediators (B) were tested. Second, the relations between the independent variables (A) + the mediators (B) and outcome variables (C) were assessed. To determine whether the work characteristics function as mediators the relations between A to B, as well as A to C and B to C should be significant, and the Betas in the second analysis should be smaller in the second block compared to the Betas in the first block.

In the first analysis work characteristics were treated as dependent variables, while education and type of employment were treated as independent variables. In the first block the confounder variable education was included and in the second block type of employment was included.



In the second analysis outcomes were treated as dependent variables, whereas education, types of employment and work characteristics (mediators) were treated as independent variables. In the first block the confounder variable education was included and in the second block types of employment was added. In the third block work characteristics were included.

## 4. Results

In the result section the results of the statistical analyses (sample description, inferential and multivariate analyses) are given.

### 4.1 Sample description

In heading 4.1 an answer is given to the first research question and the first part of the second research question:

1. What are the descriptives of the variables among the total sample, and separate for men and women and what are the relationships between the variables in the theoretical framework?
2. Are there statistical differences between genders, types of employment, and combination of groups (types of employment and gender taken together) for the different variables in the theoretical framework?

Furthermore the first hypothesis is tested:

1. Gender differences are expected to exist in that men have a higher education, more often are have a stable employment, perceive their work characteristics to be better; live more often with a partner or have children and have better health status than women, no matter type of employment.

The first part of research question is responded by providing percentages and numbers as well as means and standard deviations, where appropriate, for the total sample and separate for men and women. The second part of research question 1 is answered by the creation of correlation matrixes (see appendix 2). The first part of the second research question and the first hypothesis are answered/tested by applying chi<sup>2</sup>-tests and independent sample t-tests

#### 4.1.1 Descriptive statistics

Table 2: Descriptive statistics of categorical variables for total sample and men and women

<b>Subjects</b>	<b>Total group N = 788</b>	<b>Men N = 432</b>	<b>Women = 356</b>	<b>X<sup>2</sup>-value/ df</b>
<b>Variables</b>	N (Valid %)	N (Valid %)	N (Valid %)	
<b>Types of employment</b>	788 (100)	432 (100)	356 (100)	<b>3,69**</b> 2
Stable employment	652 (82,7)	370 (85,6)	282 (79,8)	
Self-employment	53 (6,72)	40 (9,26)	13 (3,65)	
Substitute	83 (10,5)	22 (5,09)	61 (17,1)	
<b>Education</b>	771 (100)	426 (100)	345 (100)	<b>1,54**</b> 2
Junior high school	62 (8,0)	37 (8,7)	25 (7,2)	
High school	419 (54,3)	255 (59,9)	164 (47,5)	
University	290 (37,6)	134 (31,5)	156 (45,2)	
<b>Union formation (Live with partner)</b>	778 (100)	426 (100)	352 (100)	<b>1,23**</b> 1
Partner	573 (74,0)	295 (69,2)	281 (79,8)	
Single	2002 (26,0)	131 (30,8)	71 (20,2)	
<b>Family formation (Having children)</b>	782 (100)	430 (100)	352 (100)	<b>2,02**</b> 1
Yes	433 (55,4)	207 (48,1)	226 (64,2)	
No	349 (44,6)	223 (51,9)	126 (35,8)	

p < 0.05 \*\* p < 0.01

Significant differences between genders and are printed bold

Table number two shows that the women are in general more educated than the men and that stable employment is more common among men, whereas flexible employment is more common among women. Furthermore, self-employment is more widespread among men, while more women work as substitutes. Finally, it is statistically significant that the women do more often live with a partner or has children, than the men. These findings both verify and falsify parts of the first hypothesis.

Table 3: Descriptive statistics for continuous variables for total sample and men and women

Statistics	N (%)	Mean/ S.D	N (%)		Mean/ S.D		t-value & df
			Men	Women	Men	Women	
<b>Subjects</b>	Total group	Total group					Differences between men and women
<b>Variables</b>							
Job demands	749 (100)	2,37/ 0,585	411 (54,9)	338 (45,1)	2,38/ 0,581	2,36/ 0,591	-0,53/ 747
Control	755 (100)	3,09/ 0,540	414 (54,8)	341 (45,2)	3,12/ 0,541	3,07/ 0,538	-.1,20/ 753
Social support	726 (100)	1,84/ 0,140	401 (55,2)	325 (44,8)	1,85/ 0,139	1,84/ 0,141	-1,12/ 722
Health status	724 (100)	2,88/ 0,336	400 (55,2)	324 (44,8)	2,86/ 0,329	2,91/ 0,343	<b>1,79*/ 722</b>

p< 0.05 \*\* p< 0.01

Significant differences between genders and are printed bold

Table 3 does not demonstrate differences between men and women. The independent t-test demonstrates that the women report a slightly better health status than the men. This finding falsifies parts of the first hypothesis.

#### 4.2 Differences between groups

In heading 4.2 an answer is given to the other two parts of the second research question:

2. Are there statistical differences between genders, types of employment, and combination of groups (types of employment and gender taken together) for the different variables in the theoretical framework?

Furthermore the first and the second hypotheses are tested:

1. Gender differences are expected to exist in that men have a higher education, more often have a stable employment, perceive their work characteristics to be better; live more often with a partner or have children and have better health status than women, no matter type of employment.
2. Differences between types of employments are expected to exist, in that stable employed score more favorable on the variables (see the first hypothesis) than unstable employment (self-employment and substitutes).

The research questions and hypotheses are answered/tested by applying chi<sup>2</sup>-tests, independent sample t-tests, ANOVA's (Analysis of Variance) and general linear models.

#### 4.2.1 Differences between types of employment

Table 4: Differences between types of employment

Variables	N (%) or M (sd)			X <sup>2</sup> -value OR F-ratio/ df
	Stable	Self	Substitute	All groups
<b>Gender (a)</b>	652 (100)	53 (100)	83 (100)	<b>3,70**/ 2</b>
Men	370 (56,7)	40 (75,5)	22 (26,5)	
Women	282 (43,3)	13 (24,5)	61 (73,5)	
<b>Education (a)</b>	638 (100)	52 (100)	81 (100)	8,41/ 4
Junior high school	51 (8,0)	4 (7,7)	7 (8,6)	
High school	347 (54,4)	36 (69,2)	36 (44,4)	
University	240 (37,6)	12 (23,1)	38 (47,0)	
<b>Job demands</b>	2.37/ .058	2.26/ .654	2.40/ .565	1.074/ 746
<b>Control</b>	3.07/ .539	3.46/ .284	3.03/ .589	<b>13.061**/ 752</b>
<b>Social support</b>	1.84/ .143	1.92/ .094	1.84/ .112	<b>6,438**/ 723</b>
<b>Union formation (a) (Live with partner)</b>	643 (100)	53 (100)	82 (100)	<b>7,17*/ 2</b>
Partner	480 (74,7)	44 (83,0)	52 (63,4)	
Single	163 (25,3)	9 (17,0)	30 (36,6)	
<b>Family formation (a) (Having children)</b>	647 (100)	53 (100)	82 (100)	0,342/ 2
Yes	361 (55,7)	29 (54,7)	43 (52,4)	
No	286 (44,2)	24 (45,3)	39 (47,6)	
<b>Health status</b>	2.88/ .339	2.92/ .364	2.91/ .290	.670

p < 0.05 \*\* p < 0.01 a = Chi<sup>2</sup>-test

Significant differences between types of employment are printed bold

The Chi<sup>2</sup>-tests (table 4) show that for two of the categorical variables there are significant differences (< .001) between types of employment. First, the cross tabs for gender shows that more stable- and self-employed are men, whereas substitutes are mostly women. Second, the cross tabs for union formation shows that a bigger percentage of the self-employed compared to stable employment and substitutes live with a partner, and that the biggest group of singles are

found among substitutes. For the other two categorical variables, education and family formation, there are no statistically significant differences between types of employment.

Besides the Chi<sup>2</sup>-test results, ANOVA's (table 4) show that there are significantly differences between the types of employment for two of the continuous variables. According to the ANOVA's self-employed have higher mean scores for control and social support than stable employed and substitutes.

Taking all these results together it seems like the second hypothesis principally cannot be confirmed.

#### 4.2.2 Differences between men and women with different types of employment

Table 5: Differences between men and women with different types of employment

Subjects/ Statistics	Men M/ Sd			Women M/ Sd			F-ratio
	Stable	Self	Substitute	Stable	Self	Substitute	
<b>Sub-groups</b>							Gender * type of employment
<b>Variables</b>							
Education (1 = junior high, 2 = high school, 3 = university)	2,24/ .591	2,13/ .522	2,14/ .727	2,37/ .632	2,23/ .599	2,47/ .596	.791
Job demands	2.40/ .576	2.14/ .577	2.42/ .586	2,34/ .587	2.62/ .759	2.39/ .562	<b>4,00*</b>
Control	3.09/ .551	3.43/ .296	2.92/ .520	3,04/ .523	3.54/ .237	3.07/ .611	1,33
Social support	1.85/ .142	1.92/ .088	1.81/ .116	1,83/ .146	1.94/ .116	1.85/ .110	1,21
Union formation (Live with partner) 1 = Partner, 2 = Single	1.30/ .461	1.20/ .405	1.55/ .510	1.19/ .390	1.08/ .272	1.30/ .462	.628
Family formation (Having children) 1= No, 2 = Yes	1.49/ .500	1.52/ .506	1.32/ .477	1.65/ .477	1.62/ .506	1.60/ .494	.549
Health status	2,86/ .338	2,86/ .275	2,93/ .278	2,90/ .340	3,14/ .520	2,90/ .297	2,73 (a.s)

p< 0.05 \*\* p< 0.01 a.s = almost significant (p = .066)

Significant differences between gender and different types of employment are printed bold

The result of the general linear models (table 5) show that there are only statistically significant differences between group means (gender and types of employment taken together) when job demands is treated as a dependent variable. The difference is especially distinct when one compares stable employment with self-employment, where women with stable-employment have lower mean scores on job demands and health in comparison with women with self-employment, while men with stable employment have higher mean scores on job demands compared to men with self-employment. There is also a tendency that there are health differences between men and women with different employments. These findings confirm the first and second hypotheses for men with stable employment, but not for women with stable employment.

### **4.3 Moderation & Mediation**

In heading 4.3 answers are given to the third and fourth research questions:

3. Do types of employment and gender have direct effects on work characteristics and outcomes? If not, does gender moderate the relations between types of employment and work characteristics; types of employment and outcomes, and between work characteristics and outcomes?
4. Do work characteristics have direct effects on outcome variables? If not, do work characteristics mediate the relations between types of employment and outcomes?

Furthermore the third and fourth hypotheses are tested:

3. Gender is expected to moderate the relations between types of employment and work characteristics; types of employment and outcomes and between work characteristics and outcomes.
4. Work characteristics are expected to (partially) mediate the relations between types of employment and outcomes

The research questions and hypotheses are answered/tested by applying multiple linear/logistic regression analyses.

### 4.3.1 Gender as a moderator

Moderator effect, or interaction effect as it also is called, tests how much the variance in the dependent variable(s), can be explained by the combination of an independent variable and a possible “moderator” (M0404, 2007). In this thesis three analyses are executed to test the interaction effect of gender. In the first analysis it is tested how much the variance in work characteristics can be explained by the combination of gender and types of employment. In the second analysis it is tested how much the variance in union- and family formation and health status can be explained by the combination of gender and types of employment. Finally, in the third analysis it is tested how much the variance in union- and family formation and health status can be explained by the combination of gender and work characteristics.

Table 6: Gender as a moderator in the relations between independent variables and work characteristics

<b>Analysis 1</b>	<b>Job demands</b>		<b>Control</b>		<b>Social support</b>	
Dependent Variables						
Independent Variables	$\beta$	R <sup>2</sup> change	$\beta$	R <sup>2</sup> change	$\beta$	R <sup>2</sup> change
<b>Education</b>						
University vs. Junior high school	.008 n.s		-.245**		-.108**	
University vs. High school	.030 n.s		-.361**		-.075 n.s	
<b>Types of employment</b>						<b>.019**</b>
Stable empl. vs. Self. empl	.361*		.199**		.137**	
Stable empl. vs. Substitute	.052 n.s		-.029 n.s		-.007 n.s	



<b>Gender</b>				<b>.005*</b>		n.s
Gender	.053		.070*		n.s	
<b>Interactions</b>		<b>.011*</b>		n.s		n.s
Stable empl. Vs. Self- empl*gender	-.432 **		n.s		n.s	
Stable empl. Vs. Substitute*ge nder	-.028 n.s		n.s		n.s	
<b>Sub analysis:</b>						
<b>Job demands</b>						
Men	<b>-.138**</b>	<b>.019*</b>				
Stable empl. Vs. self- empl.						
Women	.091 n.s	.001 n.s				
Stable empl. Vs. self- empl.						

p< 0.05 \*\* p< 0.01, n.s = not significant, The most complex models are printed in bold

In the first multiple regression analysis (table 6), which assessed the interaction effect of gender in the relations between independent variables (education and type of employment) and work characteristics, there are observed direct relationships between gender and control, and between types of employment and social support. Moreover, gender does significantly moderate the relationship between the independent variables and job demands, but not for the other two work characteristics: control and social support. However, this interaction effect is only applicable for the subgroup stable employment versus self-employment. Since there is an interaction effect between gender and types of employment in the relation with job demands, a sub analysis was performed. The Result shows that there is a strong negative relationship between stable

employment versus self-employment and job demands for men, but not for women. This relationship means that as a man changes from having a stable employment to being self-employed job demands goes down - gets worse.

Table 7: Gender as a moderator in the relations between independent variables and outcomes

Analysis 2	Union formation		Family formation		Health status	
	Dependent Variables					
Independent Variables	$\beta$	R <sup>2</sup> Change	$\beta$	R <sup>2</sup> Change	$\beta$	R <sup>2</sup> Change
<b>Confounder</b>						
University vs. Junior high school	.001 n.s		-.284 n.s		-.088*	
University vs. High school	-.217 n.s		-.204 n.s		-.051 n.s	
<b>Type of employment</b>						
Stable empl. Vs. Self. empl	.665 n.s		-.064 n.s		.363*	
Stable empl. Vs. Substitute	-.780 n.s		.359 n.s		-.087 n.s	
<b>Moderator</b>						
Gender	<b>-.685**</b>		<b>.739**</b>		-.052 n.s	
<b>Interactions</b>						<b>.008</b>
Stable empl. Vs. Self-empl*gender	n.s		n.s		<b>-.328*</b>	
Stable empl.	n.s		n.s		.108 n.s	

Vs. Substitute*gender						
<b>Sub analysis: Health</b>						
Men Stable empl. Vs. self-empl.					.054 n.s	.003 n.s
Women Stable empl. Vs. self-empl.					<b>.134*</b>	.018 n.s

p < 0.05 \*\* p < 0.01, n.s = not significant, The most complex models are printed in bold

In the second multiple regression analysis (table 7), which assessed the interaction effect of gender in the relations between independent variables (education and type of employment) and outcomes, there are direct effects between gender and union- and formation, but no moderation effects. However, for the outcome health status there is an interaction effect between gender and stable employment versus self-employment. Since an interaction effect was discovered a sub analysis was performed to see where the differences between the two groups were. The result of the sub analysis shows that there is a strong positive relationship between stable employment versus self-employment and health for women, but not for men. This relationship means that as a woman changes from having a stable employment to being self-employed health status goes up - gets better.

Table 8: Gender as a moderator in the relations between work characteristics and outcomes

<b>Analysis 3</b>	<b>Union formation</b>		<b>Family formation</b>		<b>Health status</b>	
Dependent Variables						
Independent Variables	$\beta$	R <sup>2</sup> Change	$\beta$	R <sup>2</sup> Change	$\beta$	R <sup>2</sup> Change
<b>Confounder</b>						
University vs. Junior high school	-.050 n.s (demands) .172 n.s (control) .258 n.s (support)		-.212 n.s (demands) -.255 n.s (control) -.329 n.s (support)		-.086* (demands) -.040 n.s (control) -.047 n.s (support)	
University vs. High school	-.158 n.s (demands) -.072 (control) -.157 (support)		-.259 n.s (demands) -.179 n.s (control) -.258 n.s (support)		-.053 n.s (demands) .020 n.s (control) -.021 n.s (support)	
<b>Work characteristics</b>						<b>.051** (demands)</b>
Job demands	.018 n.s		-.132 n.s		.226**	
Control	-.319 (a.s)		.004 n.s		-.246*	
Social support	-.823 n.s		-.154 n.s		-.092 n.s	
<b>Moderator</b>						n.s (demands)
Gender	<b>-.517 ** (demands)</b>		<b>.710** (demands)</b> <b>.695**</b>		n.s (demands)	

	<b>-.545 **</b> (control)		<b>.643**</b> (support)		<b>-.836**</b> (control)	
	<b>-.578**</b> (support)				<b>-1.657**</b> (support)	
<b>Interactions</b>						n.s (demands) <b>.017** (control)</b> <b>.014** (soc. Support)</b>
Job demands* gender	n.s		n.s		n.s	
Control* gender	a.s		n.s		<b>.891**</b>	
Social support* gender	n.s		n.s		<b>1.646**</b>	
<b>Sub analysis 1: Control</b>						
Men					<b>4.954**</b>	<b>.059**</b>
Women					.831 n.s	.002 n.s
<b>Sub analysis 2: Social support</b>						
Men					<b>.350**</b>	<b>.122**</b>

Women					<b>.197**</b>	<b>.038**</b>
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p < 0.05 \*\* p < 0.01 n.s = not significant a.s = almost significant (p = .056) The most complex models are printed in bold

In the third multiple regression analysis (table 8), which assessed the interaction effect of gender in the relations between work characteristics and outcomes, there are direct effects between gender and union- and formation, but no moderation effects. Nevertheless, there is a tendency that control interacts with gender in the relationship between independent variable and union formation. For the outcome health status gender does significantly moderate the relationship between work characteristics and health status, but not for the relationship between work characteristics and union- and family formation. However, these interaction effects are only applicable for two of the work characteristics: control and social support. Since there are interaction effects between gender and control and social support for health status sub analyses were performed to see where the differences between the two groups were. The result of the sub analyses show that there are strong positive relationships between control and social support and health for men, whereas for women there is only a strong positively relationship between social support and health. These relationships mean that the more control one has over work and the more social support ones receive from co-workers and supervisors at work, the better health status one will have.

In total it seems like the third hypothesis is partially confirmed, partially not.

#### 4.3.2 Work characteristics as mediators

A mediator is a variable that forms a connecting link between and an independent variable and a dependent variable. In this thesis two analyses are executed to test the mediating effect of three work characteristics (job demands, control and social support) in the relations between independent variables and outcome variables. In the first analyses the direct effect of independent variables (A) on work characteristics (B) are tested, and in the second analysis the direct effect of independent variables (A) on outcome variables are tested (C), while taking into account the

mediators (B). To determine whether the work characteristics function as mediators the relations between A to B, as well as A to C and B to C should be significant, and the Betas in the second analysis should be smaller in the second block compared to the Betas in the first block (Baron & Kenny, 1986).

Table 9: Testing the direct effect of independent variables on work characteristics (analysis 1)

<b>Analysis 1</b>	<b>Dependent variables (B)</b>					
<b>A =&gt; B</b>	<b>Job demands</b>		<b>Control</b>		<b>Social support</b>	
Independent variables (A)	$\beta$	R-Square change	$\beta$	R-square change	$\beta$	R-Square change
<b>Confounder &amp; type of employment</b>		.003 n.s		<b>.045**</b>		<b>.019**</b>
University vs. Junior high school	.010 n.s		-.240**		-.108**	
University vs. High school	.034 n.s		-.351**		-.075	
Stable empl. vs. Self. Empl.	-.053 n.s		.205**		.137**	
Stable empl. vs. Substitute	.015 n.s		-.042		-.007 n.s	

\*  $p < 0.05$ ; \*\*  $p < 0.01$  n.s = not significant, The most complex models are printed bold

Table 10: Testing the direct effect of independent variables on outcomes, while controlling for the possible mediators (analysis 2)

<b>Analysis 2</b>	<b>Dependent variables (C)</b>					
<b>A =&gt; C AND A + B =&gt; C</b>	<b>Union formation</b>		<b>Family formation</b>		<b>Health status</b>	
Independent variables	$\beta$	R-Square change	$\beta$	R-square change	$\beta$	R-Square change
<b>Independent variables (A)</b>						n.s
University vs. Junior high school	-.092 n.s		-.179 n.s		-.089*	
University vs. High school	-.302 n.s		-.101 n.s		-.058 n.s	
Stable empl. vs. Self. Empl.	.550 n,s		.058 n.s		.041 n.s	
Stable empl. vs. Substitute	<b>-.565*</b>		.127 n.s		.024 n.s	
<b>Independent variables (A) + mediators (B)</b>						<b>.052** (job demands)</b> <b>.021** (control)</b> <b>.074 ** (soc. support)</b>
University vs. Junior high school	-.152 n.s (demands) -.068 n.s (control) .134 n.s (support)		-.098 n.s (demands) -.157 n.s (control) -.246 n.s (support)		-.091* (demands) -.051 n.s (control) -.059 n.s (support)	
University vs. High school	-.290 n.s (demands) -.311 n.s (control) -.254 n.s (support)		-.140 n.s (demands) -.074 n.s (control) -.143 n.s (support)		-.066 n.s (demands) -.003 n.s (control) -.037 n.s (support)	
Stable empl. vs. Self. empl.	.524 n.s (demands) .507 n.s (control) n.s (support)		n.s		.053 n.s (demands) .009 n.s (control) .003 n.s (support)	
Stable empl. vs. Substitute	<b>-.524* (job demands)</b> <b>-.537* (control)</b> n.s (support)		n.s		.020 n.s (demands) .030 n.s (control) .025 n.s	



					(support)	
Job demands	.n.s		n.s		<b>.228**</b>	
Control	n.s		n.s		<b>.156**</b>	
Social support	n.s		n.s		<b>.276**</b>	

\* p< 0.05; \*\* p< 0.01 n.s = not significant, The most complex models are printed bold

The first criterion to determine whether work characteristics serve as mediators in the theoretical framework is that both relationships, A to B, and A + B to C are significant. In this case there are significantly R-square change of independent variables (A) on work characteristics (B), control and social support (table 9). And, there are significantly direct relationships between all work characteristics (B) and the outcome variable health status (C) (table 9). However, there are no significant direct effects between independent variables (A) outcome variables (C), except for stable employment versus substitute with union formation (table 10).

The second criterion to determine whether work characteristics serve as mediators in the theoretical framework is that Betas in the second analysis should be smaller in the second block compared to the Betas in the first block (table 10). This is the case for all variables when health status is treated as a dependent variable, except for stable employment versus substitute, when control or social support is added to the second block.

Taken all this information together, it seems like two of the work characteristics, control and social support, at least partial mediate the relations between type of employment and health status. Nevertheless, to distinguish whether this remark is significant we applied the formula by Baron & Kenny (1986). The critical Z-scores at a  $\alpha$  level of 0.05 are .84 for control and 72.0 for social support. Since the minimum level is 1.96 only social support is perceived as a full mediator, whereas control is perceived to partially mediate the relationship between types of employment and health. Besides these results the fourth hypothesis can only partially be confirmed, because overall the work characteristics do not work as mediators in the theoretical framework.

## **5. Discussion**

In the last section of the thesis the findings of the results are discussed. First, the research questions and hypotheses are answered, interpreted and compared to other studies. Second, unexpected findings are brought up. Third, strengths and limitations of the study are examined. And fourth, recommendations for future research and policies are given, followed by an overall conclusion whether the theoretical framework worked or not.

### **5.1 Major findings**

Under heading 5.1 the major findings from the result section are presented, and the research questions and hypotheses are answered, interpreted and compared to other studies.

#### **5.1.1 First research question & hypothesis**

A majority of the sample has at least a high school diploma. Women are higher educated than men. A majority of the respondents have a stable employment. Stable employment is more common among the men, whereas unstable employment is more frequent among women. Furthermore, self-employment is more widespread among the men, while more women work as substitutes. As regards job characteristics there are no differences between men and women. However, when it comes to health the women report a slightly better health status than the men. A majority of the respondents live with a partner and have children, which is more the case for women than for men.

These findings can only partly confirm the first hypothesis. More men have a stable employment and are self-employed. However, our finding that women more often live with a partner or have children and that they have better health status contradicts the hypothesis.

The first result, about gender differences in types of employment, is in line with the findings by Cranford Vosko & Zukewich, (2003) and Aronsson, Gustafsson & Dallner, (2002), who also found that stable employment is more common among men whereas unstable

employment is more frequent among women.

The second finding is partly according to the report from the blue-collar organization LO, (2005) who found that in the age group 25-45 fewer men with temporary employment than women live together with a partner and/or have children. As was found, even though not significant, when comparing a combination of types of employment and genders (see table 5), was that female substitutes are slightly more likely to unionize or have children than male substitutes.

The last discovery that men score less favourable on health status than women, is remarkable because most other studies, among others Artazoc, Borrell & Benach, 2001; Macintyre, Hunt & Sweeting, (1999) and Östlin, (2002), have the opposite finding: women have longer life expectancy than men, but also higher rates of morbidity. One explanation here might be the geographical location of the respondents. Since Luleå is a small town in Sweden it provides less job opportunities, which can have negative health implications for especially the male population. As Bernard, (1981); Conger, Lorenz, Edler, Simons, & Xiaojia, (1993) and de Witte, (1999) have reasoned many men still see themselves as the main breadwinner of the family and may thus suffer more from job insecurity than women, who consider financial matters as their secondary responsibility. Another possible explanation could be that the men in general have a lower degree of education than the women. Level of education is, as we all know by now, a well-known determinant for quality of health (Naidoo & Wills, 2000).

### 5.1.2 Second research question & first and second hypotheses

As found in gender differences for types of employment more stable- and self employed are male, whereas more substitutes are female. Moreover, self-employed report that they have more control over work and receive more social support from co-workers and supervisors, than people in stable employment and substitutes. Furthermore, it is statistical significant that a bigger percentage of the self-employed compared to stable employment and substitutes, live with a partner, and that most substitutes are singles.

In total these findings both verify and falsify parts of the second hypothesis. It's according to the hypothesis that more stable employed are male, but it is against the hypothesis that stable employed perceive their work characteristics (control and social support) to be better, and that stable employed more often live with a partner.

Again the results about differences for types of employment in genders are in line with the findings by Cranford Vosko & Zukewich, (2003) and Aronsson, Gustafsson & Dallner, (2002).

The results for work characteristics contradict the results from other studies that those in flexible employment may enjoy less control over working time and receive less social support from superiors and colleagues (EFILWC, 2001; Aronsson, 2001). Nevertheless, when comparing the types of employment with each other there are some observable reasons for differences. To start with, people in stable employment have normally less influence over working hours and work tasks than self-employed. Therefore, level of independency could serve as an important predictor when comparing these two groups of employment. Second, when comparing self-employed with substitutes, level of work motivation must be considered, because to become self-employed is more often a choice one makes in comparison with working as a substitute.

Finally, the last result both contradicts and is in line with the study by Golsch (2003), who found that holding a stable work is an important predictor for union formation and that temporary employment is associated with limitations in union formation.

There are statistically significant differences between group means (gender and type of employment taken together) in the group stable employment versus self-employment, where women with stable-employment score less favourable on job demands in comparison with women with self-employment, whereas men with stable employment score more favourable on job demands than men with self-employment. There is also a tendency that men, who work as substitutes, and women, who are self-employed, have better health status than stable employed, no matter which gender they have.

These findings falsify the first hypothesis: that men should score more favourable on the variables than the women. Furthermore, it mostly falsifies the second hypothesis. It is according to the hypothesis that stable employed experience less job demands than self-employed for men,

but for the rest of the variables stable employed do not score more favourable than the other two types of employment.

Our results for the sub- group men is in line with a study by Aronsson (2001), who found that those in stable employment may experience less job demands than employees with flexible employment, but it contradicts the same study for the sub-group women. Aronson's study, did however not take into account gender differences.

The finding, or better said the tendency, that people with flexible employment have better health status than people with stable employment is in line with a study by Virtanen, Kivimäki, Elovainio, Vahtera & Cooper (2001), who found that people with contingent employment have a better self-related health status than people with stable employment. Their study did not; however, take into consideration the gender differences in health. We believe that there is a link between better health status and the experience of less job demands. As the separate correlation matrixes for men and women show (se appendix 2) there is a positive correlation between job demands and health status.

### 5.1.3 Third research question & hypothesis

In the multiple regression analyses with gender as a moderator (recap: moderation tests how much the variance in a dependent variable, can be explained by the combination of an independent variable and a possible "moderator") direct relationships are observed between stable employment vs. self-employment and control/social support; stable employment vs. substitute and union- and family formation; and between gender and control and social support as well union- and family formation. Gender does significantly moderate the relationships between stable employment versus self-employment and job demands (1); stable employment versus self-employment and health status (2); work characteristics (control (3) and social support (4)) and health status. There is also a tendency that control interacts with gender in the relationship between independent variable and union formation. The first and third interaction effects show only strong negative respectively strong positive relationships for men; the second one shows

only a strong positively relationship for women, while the fourth one shows strong positive relationships for both genders.

These findings both verify and falsify parts of the third hypothesis. It's according to the hypothesis that gender functions as a moderator in the stated relationships above, but it is against the hypothesis that gender moderates the relationships between stable employment versus self-employment and job demands and control (even though there are some tendency for interaction effects) as well as union and family formation. Furthermore, it is against the hypothesis that gender moderates the relationship between stable employment versus substitute and work characteristics and outcomes.

The first two interactions are in line with findings in the General linear models and, hence are not discussed further here. The third and fourth interactions confirm the assumptions of the Job-Demand-Control-Support model by Karasek & Theorell (1990) that the more control one has over work and the more social support ones receive from co-workers and supervisors at work, the better health status one will have.

#### 5.1.4 Fourth research question & hypothesis

In the multiple regression analyses with work characteristics as assumed mediators, (recap: a mediator is variable that is expected to form a connecting link between an independent variable and a dependent variable), direct relationships are observed between all work characteristics and health status. Social support seems to function as a mediator and control as a partially mediator in the relation between stable employment vs. self-employment and health status.

These findings principally falsify the fourth hypothesis. According to the hypothesis, social support mediates the relationship between type of employment and health, which is confirmed. However, work characteristics were expected to mediate the relationship between types of employment and union- and family formation as well, which was not confirmed.

Again the direct relationships between work characteristics and health status confirm the assumptions of the Job-Demand-Control-Support model by Karasek and Theorell (1990) that the

less job demands one experience, the more control one has over work and the more social support ones receive from co-workers and supervisors at work, the better health status one will have.

## **5.2 Unexpected findings**

It was surprisingly that the variables stable employment versus substitute as well union- and family formation didn't have any particular impact in the theoretical framework. Obviously there were not enough differences between stable employed and substitutes in the sample.

The study doesn't give any evidence for the mediating effect of job demands (and control) in the model of Karasek and Theorell (1990). Conversely, the study confirms that social support also can work as a mediator.

## **5.3 Strengths & Limitations**

The main strength of this study, besides its high response rate, is its gender perspective. As stated in the introduction there are lack of studies on flexible employment with a gender perspective. This study confirms that gender differences exist in types of employment, work characteristics, and union- and family formation as well as health status, though not always in the expected direction. Furthermore, by including union- and family formation as outcome variables more focus is given to an understudied research area. Unfortunately, union- and family formations haven't proven to have great impact as outcome variables in the theoretical framework. Other strengths are the balanced groups of men and women and that all respondents are of same age.

Just like other studies also this one has its limitations. First, the cross-sectional design doesn't give any possibilities to demonstrate the causal order of variables, which longitudinal studied can. Second, the data are gathered in 1995 and may not represent current trends. Third, the data is not well balanced. Respondents with a stable employment are in a large majority, while self-employed and substitutes constitute only around 20 % of the sample, which was used. Fourth, single parents are not involved in the study. This group was left out since the theoretical

framework would have been to complex otherwise. Nevertheless, single parents are becoming a bigger and hence, more important group of study, in particularly the Swedish society, which needs more attention. Fifth, in the definition of flexible employment flexible working hours are mentioned as an important dimension. However, in this study it was chosen to leave this aspect out for the same reason as the previous limitation.

#### **5.4 Implications for future research & policies**

As the reader might have noticed we have made use of several definitions of different types of employment in the text, which could have had a confusing effect on the reader. Therefore, the first main implicating for future researchers is to establish standardized definitions of different types of employment. Second, future research must focus on longitudinal studies to establish the causal order of variables. Third, it is desired that future studies apply more balanced data and that more attention is given to single parents with flexible employment and the aspect of flexible working hours. Fourth, more studies should use union- and family formation as outcome variable to determine whether differences between genders with different types of employment exist in this regard. This study discovered that women in general are more inclined to live with a partner and have children, than men, but we don't know whether those differences are depending on different types of employment. Fifth, and finally, it would be useful to distinguish between non-permanent employees, who have freely chosen this type of employment—as a complementary to other tasks they do such as studying or taking care of somebody at home—and those working in an undesirable non-permanent situation. Involuntary and voluntary employees are expected to differ in their work motivation, and hence also in health status in a longer perspective.

As regard policy implications it is desired that more countries in the European union acknowledge the potential problems with flexible work. As it is now most of the research, and hence policy implications, are executed in Spain and Portugal, where flexible employment is most frequent. However, since flexible employment is growing as a phenomenon in Society future policies, at the level of European union and national levels, should be created. The main objective of those polices should be at reducing health inequalities and increasing labour rights equity between different types of employment and genders. With regard to non-permanent



employees, employers and healthcare professionals should especially pay attention to the increased risk of lost productivity related to health and lack of control at work.

## **5.5 Conclusion**

To conclude, there are some differences between genders and types of employments for the different variables in the theoretical framework, but in most cases in different directions than expected. Especially difference between genders is still somewhat blurring in this matter.

On the one hand, the theoretical framework seems to work, because there are: 1) Some direct relationships between types of employment and a) work characteristics and b) outcomes, 2) Moderation and mediation between independent variables and health status and some work characteristics. On the other hand, the outcomes union- and family formation, as well as the predictor stable employment versus substitute, have not proven to have particular impacts on the relationships between the variables. With this said, we hope more researcher will give these variable more attention in future studies.

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## Appendices

### 1. Questionnaire: Health & Welfare in young years- a 14 year follow up

*Question 1) What is your current situation of employment?*

- Stable employment
- Self-employed
- Substitute
- Government-sponsored job-training schemes
- Unemployed
- Pre-retired
- Non of the above stated options

*Question 18) Questions about demands in your activities*

(Activity refers to your mainly employment, for instance, job, domestic work, study, unemployment etcetera.)

	Yes, Often	Yes, Sometimes	No, Seldom	No, Never
(a) Is your activity physically demanding?)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Does your job require you to work very fast?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(c) Is your activity psychologically challenging?)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) Does your job require you to work very hard?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) Does your job require too great a work effort?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f) Do you have sufficient time for all your work tasks?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g) Do conflicting demands often occur in your work?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h) Do you have the opportunity to learn new things in your work?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i) Does your job require skills?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
j) Does your job require creativity?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
k) Does your job require doing the same tasks over and over again?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
l) Do you have the possibility to decide for yourself <b>how</b> to carry out your work?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- m) Do you have the possibility to decide for yourself **what** should be done in your work?
- (n) Do you have the possibility to get advice and help if your tasks are difficult?)

*Question 19: How is the atmosphere on your workplace?*

	Totally Incorrect	Hardly Correct	Almost Correct	Totally Correct
a) There is a quiet and pleasant atmosphere at my place of work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) There is good collegiality at work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) My co-workers (colleagues) are there for me (support me)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) People at work understand that I may have a "bad" day	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) I get along well with my supervisors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f) I get along well with my co-workers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(g) I can easily discuss things open with my colleagues)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*Question 21) What is your level of education?*

- Junior high school
- Two-year high school
- Three-four year high school
- Bachelor
- Other post-high school education

*Question 38) Have you the latest weeks (been)....*

	Not at all,	As usually	A little bit more more than usually	Much more than usually
a) able to concentrate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) lost much sleep	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) playing useful part	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) capable of making decisions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) under stress	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f) could not overcome difficulties	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g) enjoy normal activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- h) face up to problems
- i) feeling unhappy and depressed
- j) losing confidence
- k) thinking of self as worthless
- l) feeling reasonably happy

*Question 69a) Do you have children?*

No

Yes

Born year  Born year  Born year  Born year  Born year

*Question 71) With who do you live with in other hand?*

Husband/wife

Co-habitee

Alone

Friends

Others, who?

## 2. Correlation matrixes

Table 1: Correlations between variables in the theoretical framework for the total sample

	1.	2	3	4	5	6	7	8	9	10	11
1. Gender	1.0	.029	.129	<b>.111</b> **	<b>-.195</b> **	.019	.044	.042	<b>.120</b> **	<b>-.161</b> **	-.066*
2. University vs. Junior high school	.029	1.0	<b>-.311</b> **	-.003	.007	.000	<b>-.132</b> **	<b>-.085*</b>	.051	.018	-.071*
3. University vs. High school	.129	<b>-.311</b> **	1.0	.079*	<b>-.067*</b>	.026	<b>-.258</b> **	-.030	.051	.018	-.029
4. Stable employment vs. Self-employment	<b>.111</b>	-.003	.079*	1.0	<b>-.092*</b>	<b>-.052</b>	<b>.182</b> **	<b>.132</b> **	<b>-.055</b>	.004	.034
5. Stable employment vs. Substitute	<b>-.195*</b>	.007	<b>-.067*</b>	<b>-.092*</b>	1.0	.018	<b>-.039</b>	<b>-.015</b>	<b>.083*</b>	<b>-.020</b>	.023
6. Job demands	.019	.000	.026	<b>-.052</b>	.018	1.0	<b>-.056</b>	<b>.236</b> **	.008	<b>-.038</b>	<b>.224</b> **
7. Control	.044	<b>-.132</b> **	<b>-.258</b> **	<b>.182</b> **	<b>-.039</b>	<b>-.056</b>	1.0	<b>.304</b> **	<b>-.073*</b>	<b>-.022</b>	<b>.164</b> **
8. Social support	.042	<b>-.085*</b>	<b>-.030</b>	<b>.132</b> **	<b>-.015</b>	<b>.236</b> **	<b>.304</b> **	1.0	<b>-.044</b>	<b>-.022</b>	<b>.282</b> **
9. Union formation (Live with partner)	<b>-.120*</b>	.051	.051	<b>-.055</b>	<b>.083*</b>	.008	<b>-.073*</b>	<b>-.044</b>	1.0	<b>-.472</b> **	<b>-.119*</b>
10. Family formation (Having children)	<b>-.161*</b>	.018	.018	.004	<b>-.020</b>	<b>-.038</b>	<b>-.022</b>	<b>-.022</b>	<b>-.472**</b>	1.0	.021
11. Health status	<b>-.066*</b>	<b>-.071*</b>	<b>-.029</b>	.034	<b>.023-</b>	<b>.224</b> **	<b>.164</b> **	<b>.282</b> **	<b>-.119</b> **	.021	1.0

\* <.05 \*\*<.01



Table 2: Correlations between variables in the theoretical framework for men

Variables	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. University vs. Junior high school	1.0	-.367**	-.012	.080*	-.016	-.132**	.002	-.020	.020	-.080
2. University vs. High school	-.367**	1.0	.071	-.064	.027	-.276**	-.051	.030	.031	-.054
3. Stable employment vs. Self-employment	-.012	.071	1.0	-.074	-.141**	.196**	.154**	-.075	-.028	-.005
4. Stable employment vs. Substitute	.080*	-.064	-.074	1.0	.008	-.094	-.098	.120**	-.076	.059
5. Job demands	-.023	.050	-.134**	.016	1.0	-.095*	.221**	-.018	-.023	.219**
6. Control	-.122**	-.277**	.186**	-.083	-.095*	1.0	.343**	-.142**	.002	.260**
7. Social support	-.046	-.037	.139*	-.070	.221**	.343**	1.0	-.033	-.011	.356**
8. Union formation (Live with partner)	-.020	.030	-.075	.120**	-.013	.119**	-.005	1.0	-.471**	-.094*
9. Family formation (Having children)	.020	.031	.028	-.076	-.026	-.017	-.040	-.471**	1.0	-.014
10. Health status	-.073	-.041	-.005	.049	.219**	.260**	.356**	-.082	.024	1.0

\* <.05 \*\*<.01

Table 3: Correlations between variables in the theoretical framework for women

Variables	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. University vs. Junior high school	1.0	-.254**	.005	-.037	.031	-.130**	-.087	-.001	.022	-.061
2. University vs. High school	-.254**	1.0	.060	-.031	-.010	-.295**	-.017	.044	.052	.000
3. Stable employment vs. Self-employment	.005	.060	1.0	-.089*	.074	.190**	.143	-.061	-.011	.105*
4. Stable employment vs. Substitute	-.037	-.031	-.089*	1.0	.014	.017	.010	.111*-	.040	-.044
5. Job demands	.028	-.007	.088	.028	1.0	-.012	.252**	-.039	-.053	.232**
6. Control	-.149**	-.250**	.174**	.004	-.012	1.0	.252**	.013	-.036	.058
7. Social support	-.137**	-.033	.119*	.036	.252**	.252**	1.0	-.077	-.022	.202**
8. Union formation (Live with partner)	-.001	.044	-.061	.111*	.050	.003	-.087	1.0	-.451**	-.167**
9. Family formation (Having children)	.022	.052	-.011	-.040	-.038	-.031	-.010	-.451**	1.0	.063
10. Health status	-.066	.003	.132**	-.015	.232**	.058	.202**	-.154**	.051**	1.0

\* <.05 \*\*<.01