Erasmus University Rotterdam

Erasmus School of Economics

Bachelor Thesis [Economie en Bedrijfseconomie]

Job satisfaction and high education, a positive or negative relation?

Author:

Anne Havermans

(474966)

Supervisor:

dr. (Anne) A.L. Boring

Second Assessor:

prof. dr. (Dinand) H.D. Webbink

August 13, 2021

ERASMUS UNIVERSITEIT ROTTERDAM

Abstract

The goal of this research is to determine the effect of a higher education on job satisfaction in the Netherlands. This is done by examining five different dimensions of job satisfaction: pay, promotions and promotions opportunities, coworkers, supervision and the work itself. The data is from the EWCS of 2015 and is cleaned and filtered before the relation is examined. In order to examine the effect of high education on these dimensions, the ordered logit regression is used. Based on these regressions it can be concluded that the effect is not homogeneous. Being highly educated will decrease the odds of having a job that gives the feeling of work well-done, which represents the dimension of the job itself Additionally, having a higher education will increase the odds of having an immediate boss that praises and recognizes the employee when he does a good job. This is used for the dimension of supervision. If a person has a higher education, the odds of getting on well with coworkers increases, which is used for the facet of coworkers. Furthermore, being highly educated significantly increases the odds of having a job that offers good prospects for career advancement. This focuses on the dimension of promotions and promotions opportunities. Lastly, being highly educated significantly increases the odds of an employee having the feeling that he gets paid appropriately, based on his efforts and achievements. All these results hold under the assumption that none of the other variables change. However, the proportional odds assumption does not hold for the relationship between the dimension of coworkers and high education, making these results not reliable. Further research should therefore use the generalized ordered logit regression, or the multinomial logit regression as both of these regression relax the proportional odds assumption.

Contents

Introduction

The costs of a higher education have been increasing over time. This also holds for the average student debt in the United States (Burdman, 2005). With the rising student debt, the non-monetary costs of a higher education are increasing as well. For example, the mental health of students that take out student loans has been affected (Cooke, Barkham, Audin, Bradley, & Davy, 2004). These students are more tense, anxious or nervous. The question remains whether the positive effects of a higher education still outweigh the costs of it, as the these have been increasing. A positive consequence of a higher education is a higher income, but other effects might be just as important. One of these effects might be a higher job satisfaction due to a higher education. This has led to the following research question:

To what extent does a higher education leads to a higher job satisfaction in the Netherlands?

This question is both scientifically and socially relevant. There has been a lot of research regarding the effect of a higher education on the job satisfaction, however the literature does not have one clear conclusion. In order to draw a conclusion about the Netherlands, research needs to be conducted for this specific country. Therefore, this research contributes scientifically to the already existing studies. Furthermore, mental health has become a more important subject over the years, and is only made more important by the current pandemic. By determining which factors influence the job satisfaction of an employee (positive or negative), an employer can implement policies to increase the job satisfaction, which will affect the mental health of the employee (Nadinloyi, Sadeghi, & Hajloo, 2013). For example, if higher educated employees tend to have a lower job satisfaction, employers could monitor those employees better and support them more. Moreover, it is important to examine the relationship between higher education and job satisfaction, as there are a number of economic trade-offs involved. If higher education increases job satisfaction, it becomes more attractive to pursue higher education. This will lead to a higher educated workforce. However, if every students pursues a higher education, this will cause a shortage of low-skilled labor, which is just as important for a society as high-skilled labor. On the other side, if job satisfaction decreases after pursuing higher education, fewer students will be interested in pursuing higher education. This could lead to a less educated labour

force, which could have serious consequences. If, for example, the job satisfaction of doctors significantly decreases, fewer students would want to study medicine. This will result in a shortage of doctors. It is thus important that a policy is implemented to keep the balance within a society, as both high-skilled and low-skilled labor are equally important. By knowing to what extend high education increases job satisfaction, appropriate policies can be applied to maintain this balance.

Based on the results, it can be concluded that high education decreases the odds of having a job that gives the feeling of work well-done. However, having a high education will increase the odds of having an immediate boss that praises the employee when he has done a good job. Furthermore, a high education will increase the odds of getting on well with coworkers, it will also increase the odds of having a job that offers good prospects for career advancements. Lastly, having a high education will increase the odds of having the feeling that one gets paid appropriately. All of these results assume that all other variables remain constant.

The first section will discuss the literature regarding the research question. The literature review will focus on different aspects of higher education, starting with the positive effects of a higher education, followed by a description of the relationship between higher education and job satisfaction. Hereafter, other factors that affect job satisfaction will be discussed, followed by the costs of a higher education and lastly, a variety of measurement methods of job satisfaction will be discussed. After the literature review, the data set will be explained, together with a description of the variables that will be used. Hereafter, the research method will be discussed. This is then followed by the results of the research. Lastly, the findings will be summarized and used to answer the research question, followed by a discussion of the shortcomings of this research and suggestions for further research.

Literature review

The literature review will describe various topics regarding higher education, which will be discussed separately. The literature will first focus on the positive effects of a higher education. It may be that a higher job satisfaction can also be a consequence of higher education, it is therefore important to examine the different positive effects of pursuing a higher education. This will be followed by an examination of existing literature regarding higher education and job satisfaction, which will provide a useful benchmark for the results of this research. This will be followed by a paragraph examining other factors that might influence the job satisfaction. Job satisfaction is namely a multidimensional subject and there are many factors, beside higher education, which can influence this. By knowing which factors play an important role, these can be used to filter out any other effects that influence the job satisfaction. By doing this, the effect between job satisfaction and higher education will be less biased. Hereafter, the different measurements job satisfaction are examined. These are discussed, so that a useful method can be applied to examine the effect of higher education on job satisfaction. Lastly, the different dimensions of job satisfaction will be discussed. By doing this, hypotheses can be formulated based on the already existing literature.

Positive effects of a higher education

Benefits of higher education are often described with the Human Capital Theory (Becker, 2009; Schultz, 1961). This theory suggests that individuals and society derive economic benefits from investments in people. There are many other factors that contribute towards the human capital of a person, however education is emerging as the most important type of investment in human capital for research (Sweetland, 1996). There are two reasons for this, the first being that education contributes towards health and nutritional improvements (Schultz, 1963) and the second being that education can be measured in terms of quantitative dollar costs and years of tenure (Johnes, 1993).

A generally accepted conclusion is that education increases the economic capabilities of a person (Schultz, 1971). This is also found by Blundell, Dearden, Goodman, and Reed (2000), who focused on a British sample born in March 1958. The researchers found that, through a method of matching while controlling for some vari-

ables, men had an estimated return on higher education of around 17%, while women had an estimated return of roughly 37%. According to Becker (2009), education and training are the most important types of investments, within the category of education, in human capital. Another conclusion made by Becker (2009) is that a negative relation on aggregate level exists between investments in human capital and population growth. He also found that children from small families tend to rise faster and further than children from bigger families, in the United States (US). Becker (2009) also draws a parallel between ethnic groups who usually have bigger families such as Mexican, Puerto Rican and Afro-American families and ethnic groups who tend to have smaller families (Japanese, Chinese, Jewish and Cuban families).

Other non-economic benefits of education include the changing of individuals in a desirable way, which has a positive effect on the economy and society as a whole. Furthermore, college education significantly increases the level of knowledge, intellectual disposition and cognitive powers of students (Bowen, 2018). Chan (2016) states that colleges and universities in the US enhance the core competencies and dispositions of individuals. Examples of this are the ability to think logically, the capacity to challenge the status quo and the desire to develop sophisticated values to find a job in the highly competitive global labor market. Furthermore, Brennan, Durazzi, and Séné (2013) discussed many non-economic benefits of pursuing a higher education. An example of these benefits is the positive correlation between the amount of higher education and the propensity to vote, which they refer to as citizenship. According to the researchers, the topic of citizenship is often analysed together with civic engagement. This is described as an all-encompassing concept that includes some morals and values such as the tendency to volunteer, participation in public debates, mutual trust and tolerance towards "the other". Brennan et al. (2013) also suggest that higher education has a positive impact on the civic engagement of a person. Another effect that is discussed by the researchers is the positive correlation between the education level and lower crime rates. Furthermore, the research state that, based on the research of Miyamoto, Chevalier, et al. (2010), a general positive correlation exists between education and health across the Organization of Economic Cooperation and Development (OECD) countries. However, Brennan et al. (2013) note that the evidence on why these relations exists, is quite limited.

From the literature above, it can be concluded that a higher education is advantageous for the person himself, because it increases the income, changes them in a

desirable way, increase the level of knowledge, intellectual disposition, cognitive powers and contributes towards the health of the person. For society, higher education is beneficial because it has a positive effect on citizenship and civic engagement and decreases crime rates.

Higher education and job satisfaction

Besides the benefits of higher education, discussed in the previous paragraph, a higher education can also have affect the job satisfaction of a person. The literature on this subject will be discussed here. Before this can be done, a clear definition of job satisfaction should be given. Job satisfaction can be defined as a pleasant or positive emotional state caused by the appreciation of one's work or work experiences (Locke, 1976). This definition is often referred to as the affective definition of job satisfaction, and will be used in this research. Besides the affective definition, there is also a cognitive definition of job satisfaction. In that case, job satisfaction is defined as an evaluation of working conditions, output and opportunities (Zhu, 2013). According to Mora, García-Aracil, and Vila (2007), job satisfaction can be interpreted as an indication on how people value the whole package of both monetary and non-monetary returns to their jobs, depending on their own preferences, expectations and personal tastes. Mora et al. (2007) found that the job satisfaction of recent graduated student highly depends on education-related variables. Moreover, Mora et al. (2007) explain that standard economic theory describes job satisfaction as a proxy measure of utility from working, that depends positively on income and negatively on hours of work and that depends on a set of other worker-specific and job-specific characteristics.

Research has shown that a higher education decreases the job satisfaction. For example, Johnson and Johnson (2000) explain this with the principle of over-qualification, which they find to be an increasing problem ever since the American economy shifted from a goods producing economy towards a service oriented economy. The problem of increasing over-qualification is often explained on the basis of Mottaz (1984), who concluded that the educational levels have increased faster than the demand for an educated workforce. Furthermore, education is likely to have an indirect positive effect on job satisfaction, but a direct negative effect on job satisfaction. The indirect positive effect of education on job satisfaction is caused by work rewards. The negative effect is caused by the higher aspirations or work values which are associated with a higher education. The finding that higher educated employees have a lower

job satisfaction is also supported by Hartog (2000). Another reason for this finding is explained by looking at the aspirations of an employee. Those that pursued a higher education, might have higher aspirations and are therefore sooner disappointed when they do not reach these aspirations (Clark & Oswald, 1996).

Concluding, the literature suggest that the effect of a higher education on job satisfaction is likely to be ambiguous. The direct effect will most likely be negative, and the indirect effect will likely be positive.

Job satisfaction and other factors

Saner and Eyüpoğlu (2012) state that age plays an important role in job satisfaction as well. In their research, they have focused on academics in North Cyprus. They have found that the job satisfaction for older academics is higher compared to younger academics. Moreover, the job satisfaction among women seems to be higher compared to the job satisfaction of men. The effect of age on job satisfaction is also examined by O'brien and Dowling (1981), who have found a positive correlation between age and job satisfaction. A possible explanation that is offered by the authors, is that important aspects of job satisfaction change the older a person gets. Examples are a higher income and more responsible jobs.

Besides age, other factors that can influence the job satisfaction of a person. Long (2005) argues that the difference in job satisfaction between men and women in Australia is largely caused by women having different job expectations than men. These differences tend to be larger for lower skilled jobs; the women in these jobs are more satisfied compared to their male colleagues. Women with higher levels of education seem to have expectations that are more in line with their male colleagues, therefore decreasing the difference between the job satisfaction of men and women. This conclusion is supported by Clark (1997), who showed that the gender effect decreased, when controlling for a higher education, younger people and whether women are working in a highly male-dominated workplace.

Logan, O'Reilly III, and Roberts (1973) have examined the effect of working full-time, versus working part-time, on the job satisfaction. They have concluded that part-time workers are slightly more satisfied with their job, compared to full-time workers. Their research is based on a sample of 151 hospital workers. Eberhardt and Shani (1984) have found something similar. Based on an ANOVA F test, they found that part-time employees reported a higher overall job satisfaction, compared

to their full-time counterparts. The difference is explained based on the reference frame for each employee. An employee that works part-time, might be less involved in the company, which causes them to not possess enough information regarding the politics and organizational problems.

The effect of nationality on the job satisfaction has been examined by Elamin (2011), who focused on the United Arabic Emirates (UAE). This research concluded that domestic bank managers had a higher job satisfaction, compared to expatriate managers. Froese and Peltokorpi (2011) have examined what might cause these differences. They have surveyed 148 expatriates in Japan and found that cultural distance and the nationality of the supervisor both have a significant impact on the job satisfaction of an expatriate.

Schneider and Vaught (1993) have examined the relationship between the job satisfaction and the public and private sector. They have found that the job satisfaction does not differ greatly, however the factors that contribute towards the job satisfaction is different for both sectors. However, Rainey (1979) found that managers in the public sector often have a lower job satisfaction, compared to managers in the private sector.

By analysing these other factors, it is known which of these affect the job satisfaction and should therefore be included in the research. The factors that will be included based on this research are therefore age, gender, whether the person works full-time, whether the person is Dutch and if the person works in the private sector.

Measurements of job satisfaction

Over the years, many scholars have tried to find the best way to measure the job satisfaction of an employee. The first measurement of job satisfaction was constructed by Hoppock (1935), who constructed a 4-item measure of general job satisfaction. This measurement mostly focused on the job satisfaction that is affected by the nature of the job and the relation with colleagues and supervisors. There are roughly two ways of measuring job satisfaction: the overall satisfaction and the facet-based measures. The overall satisfaction is often determined by asking for overall evaluations of one's job directly. Facet measures evaluations focus on different dimensions of the job. In the case of facet measurement of job satisfaction, the overall job satisfaction is derived as the sum of the separate scores for each dimension. Furthermore, job satisfaction is mostly measured through self-reports in questionnaire formats (Weiss

& Merlo, 2015).

There are two well known indexes that are often used to measure the job satisfaction, both of which are examples of the facet measurement. The first index is referred to as the Job Descriptive Index (JDI) (Smith, Kendall, & Hullin, 1969). The JDI is a 72-item instrument that measures job satisfaction of an employee in five facets: pay, promotions and promotion opportunities, coworkers, supervision and the work itself. The employees are given a list of descriptively worded items and are asked to write 'no', '?' or 'yes' after every word. These are given the values 0, 1 and 3 respectively. Smith et al. (1969) further conclude that to measure the job satisfaction of an employee, the answers to the questions should be compared to a benchmark. To create this benchmark, the employee is asked to fill out the survey for best and worst job as well. These answers are then used to compare the answers regarding the current job, to draw a conclusion about the job satisfaction. This is done to find scoring directions of individuals, as job satisfaction is very subjective. For example, employee A would love to work a routine job, while employee B would hate it. If both of them are working a routine job, employee A will most likely have a higher job satisfaction compared to employee B. This method assumes that the job satisfaction is mainly determined by the psychological distance between the best and the worst job of the employee. Furthermore, it assumes that the distance can be interfered from a knowledge of the differences in the description of these jobs. This method is referred to as the comparative scoring procedure. Additionally, the direct scoring keys were developed. In this case, an item was classified as positive when more employees found it important for their best job. An item was scored negatively, if more employees listed it at their worst job. Smith et al. (1969) also state that in order to study potential differential relationships between each dimension of job satisfaction, these dimensions should be measured. Their index differentiates between the different aspects of the job satisfaction. There are benefits to using the JDI. Firstly, it is directed towards specific areas of satisfaction and does not focus on a general idea of satisfaction. Furthermore, the required level of a language is very low. Due to the fact that the questions consist of only one word, anyone can answer the questions. This makes it useful and applicable in any company. The original version of the JDI is included in Appendix A. After a revision of the JDI scale in the 1980's, the Job in General (JIG) was constructed by Ironson, Smith, Brannick, Gibson, and Paul (1989). The JIG is a measure of global satisfaction, designed to be incorporated in the JDI.

Another index that is often used to measure job satisfaction is the Brief Index of Affective Job Satisfaction (BIAJS) (Thompson & Phua, 2012). The goal of the authors was to develop a specifically affective, instead of cognitive, measurement for job satisfaction. By doing this, it facilitates more clearly conceptualized and more rigorously operationalized research. In order to develop the BIAJS, Thompson and Phua (2012) first undertook a qualitative research, which was followed by a quantitative examination. Furthermore, the researchers focus on developing a method that is rigorously validated and can be used to compare between countries and between sectors. The BIAJS offers a brief, systematically validated and maximally affective job satisfaction measure. The BIAJS consists of four questions, which can be answered with strongly disagree, disagree, neutral, agree and strongly agree. The questions are listed in Appendix B.

An example of the a measurement of the overall satisfaction is the Face Scale. In order to develop this scale, Kunin (1955) has developed two series of faces which display a very negative feeling or a very positive feeling. The respondent is asked to choose the face that matches his feelings as best as possible. By using these faces, the feelings of the employee do not need to be translated into words, which can cause errors. An example of these faces is given in Appendix C.

To summarize, job satisfaction can be measured in two ways; the overall satisfaction and the facet satisfaction. To answer the research question, the focus will be on the facet satisfaction here. These facets are often measured by using an index which focuses on the important dimensions. For the JDI, these dimensions are pay, promotions and promotions opportunities, coworkers, supervision and the work itself. The BIAJS focus on the affective aspect of job satisfaction by listing four statements on which the respondent needs to answer. The method used for this research will be a combination of these two indexes. In the case of the overall job satisfaction, the Face Scale could have been used. However, this method is not preferable because it focuses on the total effect and does not take into account the heterogeneous effects of the different determinants of job satisfaction.

Effect of the different facets

The different dimensions of the JDI are expected to have different effects on the job satisfaction of a high educated person. Based on these different dimensions and previous research, hypotheses will be formulated. Starting with the dimension of pay,

which will be followed by the dimension of promotions and promotions opportunities. Hereafter, the dimension of coworkers will be discussed.

A higher education will most likely increase the income of the person. However, it is not necessarily the case that the person is also more satisfied with his income. Miething (2013) found that the satisfaction of income depends on the comparison wage rates, which is found to be inversely related to the satisfaction levels of the person. Additionally, the level of education and the reported satisfaction are found to be negative correlated. If a person is higher educated, his reported satisfaction will be lower. This leads to the following hypothesis:

Hypothesis 1: the dimension of income will have a negative effect on the job satisfaction of a person that is highly educated, compared to a person that is not high educated.

Buhr (2010) concludes that a higher education increases the probability of being promoted to a supervisor position. Based on his research, Buhr (2010) concluded that for both male and female, having a bachelor of nursing certification increased the probability of promotion to a supervisory position with 4%, compared to other educational diplomas. This research forms the basis for the following hypothesis:

Hypothesis 2: a person who has a higher education is more likely to have a job that offers good prospect for career advancement, compared to those who do not have a higher education.

Lin and Lin (2011) have found that a positive relationship exists between the bond that coworkers have and the levels of job satisfaction. This finding is supported by Repetti and Cosmas (1991), who concluded that a moderate relation between the quality of the relationship with coworkers and the individual job satisfaction exists. This conclusion is based on an analysis of questionnaire data from 299 bank workers. These articles are the foundation for the following hypothesis:

Hypothesis 3: the facet of coworkers will have a positive effect on the job satisfaction of a high educated person, compared to a person that is not highly educated.

Furthermore, Schroffel (1999) examined the relationship between job satisfaction and the supervision. The research focused on 84 professionally trained workers, who serve seriously mental ill persons. Based on the results, it can be concluded that workers who are satisfied with the quality of supervision have a greater overall job satisfaction. This relationship is also found by Suchyadi et al. (2018), who focused on the job satisfaction of teachers. The results suggest that there is a positive relationship

between supervision and the job satisfaction of teachers. Based on these articles, the fourth hypothesis is formulated:

Hypothesis 4: the dimension of supervision is likely to have a positive effect on the job satisfaction of a highly educated person, compared to a person that is not high educated.

Method and Data

Data

In order to examine the research question, data from the European Working Condition Survey (EWCS) will be used. The EWCS is an initiative of Eurofound, which is an organization founded by the European Union. Eurofound advises social policymakers, reports on developments and trends, studies living and working conditions and contributes to improving quality of life. The EWCS has focused on working conditions in Europe since 1990. This survey has been used to assess and quantify the working conditions of employees and the self-employed throughout Europe. Moreover, the links between the different aspects of working conditions are analysed. Risk groups and concerns are also identified. Furthermore, the survey follows trends by providing homogeneous indicators. Lastly, the survey contributes to the European policy development on the quality of work and employment issues (Eurowork, 2020). The data is collected in the year 2015 and published in the year 2017. The EWCS has a total of 43,850 observations of which $1,028$ observations relate to the Netherlands (European Foundation for the Improvement of Living and Working Conditions, 2017).

Description of the variables and data cleaning

The variables that will be used to examine the research question focus on the gender and age of the person, if the person and/or his parents are Dutch, if the person is an employee at a company, if a person works in the private sector, if the job offers good prospects and career advancement, if the person gets on well with his colleagues and if his supervisor gives praise and recognition. Other variables that will be used are: if the job gives the person the feeling of job well done, the highest level of education, if the person feels that his income is in line with his efforts and achievements and whether the person works full-time or part-time.

The independent variable is *high education*, which is based on the categorical variable *ISCED*. This variable describes the highest level of education pursued by the person. This variable can take on a value of 1, 2, 3, 4, 5, 6, 7, 8, or 9. In this case, 1 stands for early childhood education, 2 stands for primary education, 3 stands for lower secondary education, 4 stands for upper secondary education, 5 stands for post-secondary non-tertiary education, 6 stands for short-cycle tertiary education, 7 stands for bachelor or equivalent, 8 stands for master or equivalent and 9 stands for doctorate or equivalent. Before the variable *high education* is created, the underlying variable is cleaned by erasing missing observations. These observations are given a value of 88 or 99, which are dropped from the sample. *High education* is a dummy variable that is equal to one if the person has a higher education and zero otherwise. A person has a higher education if *ISCED* is equal to 7, 8 or 9. The variable *high education* has a mean of 0.43, which means that 43% of the sample has a high education.
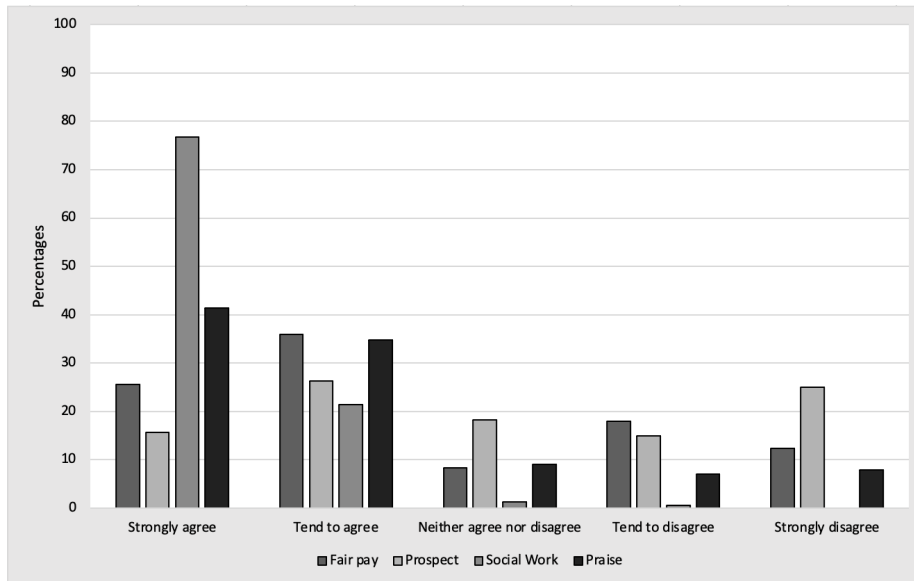
The variables *prospect, social work, praise* and *fair pay* are all constructed in the same way. They can take on a value of of 1, 2, 3, 4 or 5. Where 1 stands for strongly agree, 2 stands for tend to agree, 3 stands for neither agree nor disagree, 4 stands for tent do disagree and 5 stands for strongly disagree. Because of this construction, they are all ordered categorical variables. Furthermore, all these variables are given the value 7, 8 or 9 for missing observations. All these variables are cleaned by dropping observations with these values.

The variable *prospect* describes whether the job offers good prospects for career advancement. The variable *social work* describes if the respondent gets on well with his colleagues. Furthermore *praise* describes if one's boss gives praise and recognition when the employee does a good job. Lastly, the variable *fair pay*. This variable shows the answer to the question: "Considering all my efforts and achievements in my job, I feel I get paid appropriately". The percent frequencies of these variables are shown in Figure 1

The variable *well-done* describes if the job gives the person the feeling of work well done. The value of this variable can range from 1, 2, 3, 4 to 5. Here, 1 stands for always, 2 stands for most of the time, 3 stands for sometimes, 4 stands for rarely and 5 stands for never. This variable is an ordered categorical variable. The percent frequencies of this variable are shown in Figure 2. Furthermore, the missing observations are given a value of 7, 8 or 9. Observations with these values are dropped from the sample, in order to clean the variable.

Figure 1

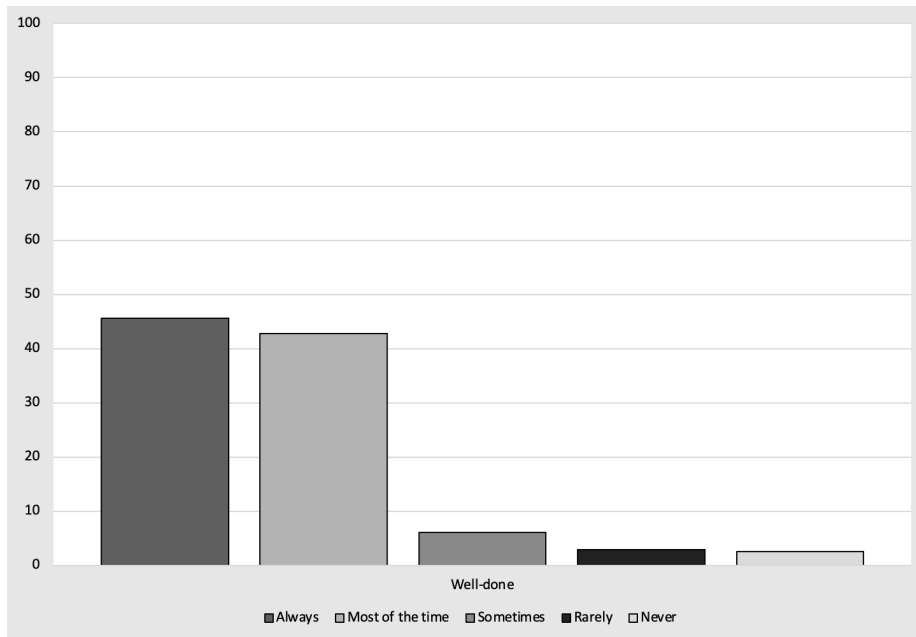*Bar graph that shows the percent frequencies of the variables prospect, social work, praise and fair pay*

Note. The bar graph shows the percent frequencies per category for the variables *prospect, social work, praise* and *fair pay.*

The variable *gender* is a binary variable that takes on the value of one if the respondent is male and the value zero if the respondent is female. Observations have a value of 9 if the respondent did not want to answer. The variable is cleaned by dropping observations with this value. After cleaning *gender* it has a mean of 0.49, which means that 49% of the sample is a male, and the other 51% is female. The variable *age* is a numeric variable that describes the age of the respondent and has a value of 888 or 999 when an observation is missing or if the respondent refused to answer the question. These observations are deleted from the sample. The variable has a mean of 43.03, a standard deviation of 13.01, a minimum of 15 and a maximum of 81.

Next, the variables that will be used to generate the variable *Dutch* will be discussed. These are the variables *Q4a* and *Q4b*. An important note in the process of creating the variable *Dutch* is that missing variables from both *Q4a* and *Q4b* are not erased from the sample. If the respondent did not knew if he and his parents were born in the Netherlands or refused to answer, the respondent was asked if he

Figure 2

Bar graph that shows the percent frequencies of the variable well-done

Note. The bar graph shows the percent frequencies per category for the variable *well-done.*

was born in the Netherlands. Because of this construction, missing observations in the variable *Q4a* do have an observation for the variable *Q4b*, therefore erasing the missing values for both these variables would lead to dropping the entire sample. The variable *Dutch* is created in such a way that it is equal to one, if the respondent is born in the Netherlands, or if his parents are born in the Netherlands. The variable is equal to zero otherwise. The variable *Dutch* has a mean of 0.90, which means that 90% of the sample is Dutch and 10% has another nationality.

The variable *full-time* shows whether the respondent works full-time or part-time. This variable takes on the value zero if the person works part-time and the value one if the person works full-time. This variable has been assigned a value of 8 or 9 if the respondent refused to answer. Observations with these values are therefore dropped from the sample. This variable has a mean of 0.60, therefore 60% of the sample works full-time and 40% works part-time.

The next variable is *Q7*, which describes whether the respondent is considered to be an employee or self-employed. The respondent is also given the option to answer "Don't know". In that case, they are asked if they are paid salary or wage by an

employer. The answer to this question is summarized in the variable *Q8a*. A respondent is considered an employee if he or she responds to one of these question with "Yes". These two variables are combined into the binary variable *employee*. *Employee* is equal to one if the respondent answered one of the questions with "Yes", and zero otherwise. The variable has a mean of 0.93, which means that 93% of the sample is an employee and 7% is not an employee. The descriptive statistics of the these control variables are given in Table 1.

Table 1

Descriptive statistics of the variables gender, age, full-time, Dutch, employee

Variable	Mean	Standard Deviation	Minimum	Maximum
Gender	0.49	0.50	0	1
Age	43.04	13.01	15	81
Full-time	0.60	0.49	0	1
Dutch	0.90	0.30	0	1
Employee	0.93	0.26	0	1

Note. The descriptive statistics of the variables *gender, age, full-time, Dutch* and *employee*. The mean of the variable *gender, full-time* and *Dutch* must be interpreted as the percentage of the sample for which the dummy variable is equal to 1.

Another variable that will be used is the variable *sector*. This is a categorical variable that describes in which kind of sector the person is working. The values that this variable can take are 1, 2, 3, 4 or 5 which stand for the public sector, private sector, joint private-public organisation or company, not-for-profit sector or an NGO or other sectors respectively. This variable is given a value of 8 or 9 when an observation is missing/respondent did not want to answers. This variable is then cleaned by dropping observations with these values. This variable is used to create dummy variables that indicate in which sector the respondent is working. The dummy variable *private sector* will be equal to one if the respondent is working in the private sector and is equal to zero otherwise. This variable has a mean of 0.55, therefore 55% of the sample works in the private sector. The variable *public sector* is generated in such a way that it is equal to one if the respondent is working in the public sector, and is equal to zero otherwise. *Public sector* has a mean of 0.22, so 22% of the sample works in the public sector. Next, the dummy variable *joint public-private*

sector is created. This variable generated in such a way that it is equal to one if the respondent is working in the joint public private sector and zero otherwise, and has a mean of 0.15. This means that 15% of the sample works in the joint public private sector. Furthermore, the dummy variable *NGO/Not-for-profit sector* is generated. This variable is equal to one if the person is working in the NGO/Not-for-profit sector and is equal to zero otherwise. This variable has a mean of 0.04, which means that 4% of the sample works in the NGO/Not-for-profit sector. Lastly, the variable *other* is generated. This variable is equal to one if the respondent is working in an other sector than listed and is equal to zero otherwise. This variable has a mean of 0.03, therefore 3% of the sample is working in another sector. The descriptive statistics of these variables are summarized in Table 2.

Table 2

Descriptive statistics of the variables private sector, public sector, joint private public sector, NGO/Not-for-profit sector and other sector, given in percent frequencies per sector included in the sample

Type of sector	Percent frequencies
The private sector	55.16
The public sector	21.70
A joint public-private organisation or company	15.42
The not-for-profit sector or an NGO	4.44
Other	3.27

Note. Percent frequencies of the different sectors included in the samples, all the values are given in percentages of the total sample

Research method

In order to answer the research question, the different facets of job satisfaction will be examined separately. These facets are based on the JDI, which is explained in the literature review. In addition, only five variables will be used for brevity. This is based on the BIAJS, which aims to be as short as possible. The facet pay is displayed by the variable *fair pay*, which is chosen over the net monthly income, since *fair pay* implies a subjective value judgment. The variable *prospect* will be used to display the facet of promotions and promotions opportunities and the facet

coworkers is displayed with the variable *social work*. The variable *praise* will be used for the dimension of supervision. The last dimension of job satisfaction is that of the work itself, which will be represented by the variable *well-done*. All these variables are ordered categorical variables and will be used as dependent variables to examine the effect of high education. In each regression, *high education* will be used as independent variable and the variables *age, gender, full-time, Dutch, employee* and *private sector* are added as control variable. Lastly, as all of the dependent variables are categorical ordered variables, the ordered logit regression will be used for each of the five dimensions.

Results

The different variables will be interpreted for each regression. The results are shown in Table 3. Each column shows the results of a separate regression, with the corresponding dependent variable given in the first row of the table. Additionally, the χ^2 and pseudo R^2 are given. These provide information on how reliable the model is. Furthermore, if the coefficient in the regression is positive, this means that the odds of disagreeing with the statement related to the dependent variable increase. For example, the variable *praise* shows to what extend a person agrees with the statement "Your immediate boss gives you praise and recognition when you do a good job". If the coefficient of for example, *age* is positive, an increase of one unit will increase the odds of being a higher category regarding *praise*. This translates into a decrease in the odds of agreeing with statement related to *praise*, which is due to the fact that the highest category is "Strongly disagree". If the coefficient would be negative, this means that the odds of agreeing with the statement increase. This will have a positive effect on the job satisfaction.

Well-done and high education

The first regression focuses on the relationship between *well-done* and *high education*, where *well-done* displays the dimension of the job itself. The control variables *employee* and *age* are significant. *Employee* has a coefficient that is equal to 1.41 and is significant for $\alpha = 0.01$. Therefore, being an employee significantly decreases the odds having a job that gives the respondent the feeling of job well done with 1.41, keeping all other variables equal. The relationship between being an employee and the dimension of the job itself will therefore most likely be negative. *Age* has a

Table 3

Results of the separate ordered logit regressions

Variables	Well-done	Praise	Social Work	Prospect	Fair pay
High education	0.02	−0.23	−0.28	−0.59***	−0.42***
	[0.14]	[0.14]	[0.18]	[0.13]	[0.13]
Age	−0.03***	0.00	−0.01	0.03***	−0.01**
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Gender	−0.13	−0.36**	−0.13	−0.06	0.32**
	[0.17]	[0.17]	[0.20]	[0.15]	[0.15]
Full-time	−0.15	0.04	−0.11	−0.74***	0.24
	[0.17]	[0.17]	[0.21]	[0.16]	[0.16]
Dutch	−0.28	0.37	−0.91***	−0.27	0.05
	[0.24]	[0.24]	[0.26]	[0.22]	[0.22]
Employee	1.41***	omitted due	0.86*	0.53**	0.03
	[0.34]	to collinearity	[0.45]	[0.25]	[0.26]
Private Sector	−0.01	−0.08	0.19	−0.06	−0.14
	[0.15]	[0.14]	[0.18]	[0.13]	[0.14]
χ^2	0.00	0.06	0.00	0.00	0.01
Pseudo R^2	0.03	0.01	0.03	0.04	0.01

Note. The table shows the results of the ordered logit regression for each of the different regressions. In the top row, the dependent variable for that regression is shown. The first column shows the results of the regression with *well-done* as dependent variable, the second column shows the results of the regression with *praise* as dependent variable. The third column displays the results of the regression with *social work*. Furthermore, the fourth column shows the results of the regression with *prospect* as dependent variable and the last column displays the results of the regression with *fair pay* as dependent variable. The coefficients are given with their respective significance level and the standard errors are given below the coefficient in the square brackets. Furthermore, the p-values are given as followed: $p^* < 0.10$, $p^{**} < 0.05$ and $p^{***} < 0.01$

coefficient that is equal to −0.03 and is significant for $\alpha = 0.01$. If the variable *age* increases with one unit (i.e. one year), the odds of having a job that gives the feeling

of work well done increases significantly with 0.03, while all the other variables remain constant. The relationship between the age and the dimension of the job itself, is therefore likely to be positive. The variable *gender* has a coefficient that is equal to −0.13. If *gender* increases with one unit, the odds of being in a higher category of *well-done* decreases with 0.13. Therefore, being a male increases the odds of having a job that gives the feeling of job well-done with 0.13, while all other variables are kept constant. Therefore, the relationship between being a male and job satisfaction is likely to be positive. Additionally, *full-time* has a coefficient of −0.15. This means that working full-time increases the odds of having a job that gives the feeling of work well done with 0.15, ceteris paribus. The relationship between working full-time and the dimension of the job itself, is therefore likely to be positive. The variable *Dutch* has a coefficient of −0.28. If this variable increases with one unit, the odds of being in a higher category of *well-done* decreases with 0.28, keeping all other variables constant. This means that being Dutch, increases the odds of having a job that gives the feeling of job well-done with 0.28. The relationship between being Dutch and having a job that gives the feeling of work well done is thus likely to be positive. The relationship between working in the private sector and the dimension of the job itself is likely to be positive. The variable *private sector* has a coefficient of −0.01. If *private sector* increases with one unit, the odds of being in a higher category of *well-done* decreases with 0.01, ceteris paribus. This means that working in the private sector increases the odds of having a job that gives one the feeling of work well done with 0.01 and the relationship between working in the private sector and having a job that gives the feeling of work well done, is likely to be positive.

The last variable that will be discussed, is the variable of interest *high education*. This variable has a coefficient of 0.02. If *high education* increases with one unit, the odds of falling into a higher category of *well-done* increases with 0.02. Therefore, having a higher education decreases the odds of having a job that gives the feeling of job well done. The relationship between the job satisfaction dimension of the work itself and being highly educated, is therefore likely to be negative. Furthermore, the χ^2 is below the required α of 0.05, which means that at least one of the coefficients is significantly different from zero. Lastly, the pseudo R^2 is equal to 0.03. This means that the full model explains 3% more of the data, compared to the null model.

Praise and high education

The next results that will be discussed are those in the second column of Table 3, where the variable *praise* is the dependent variable. This variables represents the dimension of supervision regarding job satisfaction. In this regression, the variable *gender* is significant and the variable *employee* is omitted due to collinearity. *Gender* has a coefficient of -0.36 and is significant for $\alpha = 0.05$. Therefore, if *gender* increases with one unit, the odds of being in a higher category of *praise* significantly decreases with 0.36, while all other variables are kept constant. Therefore, being a male significantly increases the odds of having an immediate boss that praises the employee, with 0.36. The relationship between supervision and being a male is thus likely to be positive. Furthermore, the coefficient of *age* is equal to 0.00, if this variable increases with one unit, it will not affect the odds of being in a higher category of *praise*. The variable *full-time* has a coefficient of 0.04. If *full-time* increases with one unit, the odds of being in a higher category of *praise* will increase with 0.04, ceteris paribus. Working full-time will therefore decreases the odds of having an immediate boss that praises an employee, with 0.04. The relationship between working full-time and the facet of supervision is likely to be negative.

The variable *Dutch* has a coefficient of 0.37. This means that a person who is Dutch, has lower odds of having an immediate boss that praises the employee with 0.37, while keeping all other variables equal. Therefore, the relationship between being Dutch and the dimension of supervision is likely to be negative. The variable *private sector* has a coefficient of -0.08. This implies that a person working in the private sector has higher odds of having an immediate boss that gives them praise and recognition when they do a good job. The odds increase with 0.08, while all other variables are kept constant. The relationship between working in the private sector and supervision is therefore likely to be positive.

Lastly, the variable of interest, *high education*, will be discussed. The coefficient of this variable is equal to -0.23. If *high education* increases with one unit, the odds of being in a higher category of *praise* decrease with 0.23, ceteris paribus. Therefore, having a higher education will increase the odds of having an immediate boss that gives praise and recognition when an employee does a good job, ceteris paribus. It is therefore plausible that the relationship between having a high education and the dimension of supervision is positive. Lastly, the χ^2 is equal to 0.06, which is higher

than the required α of 0.05. This means that it cannot be assumed that at least one of the coefficients is significantly different from zero. Additionally the pseudo R^2 is equal to 0.01, which means that the full model explains 1% more, compared to the null model.

Social work and high education

The results of the third are given in the third column of Table 3. In this regression *social work* is the dependent variable and *high education* the independent variable. The variable *social work* displays the dimension of coworkers. In this regression, the variables *Dutch* and *employee* have a significant coefficient. The coefficient of *Dutch* is equal to -0.91 and is significant for an α of 0.01. This means that if the person is Dutch, the odds of getting on well with his coworkers increases significantly with 0.91, ceteris paribus. The relationship between being Dutch and the facet of coworkers is therefore likely to be positive. The coefficient of *employee* is equal to 0.86 and is significant for an α of 0.01. The coefficient of *employee* is equal to 0.86. Therefore, if the person is an employee, the odds of getting on well with his coworkers decreases significantly with 0.86, while all other variables are kept constant. The relationship between being an employee and the facet of coworkers is therefore likely to be negative.

The variable *age* has a coefficient of -0.01. This means that, if one's age increases with one year, the odds of getting on well with coworkers increases with 0.01, while all other variables are kept constant. The relationship between age and the dimension of coworkers is therefore most likely to be positive. The variable *gender* has a coefficient of -0.13. If *gender* increases with one unit, the odds of being in a higher category for the variable *social work* decreases with 0.13, ceteris paribus. Therefore, if the person is a male, the odds of getting on well with his coworkers increase with 0.13. The relationship between gender and the dimension of coworkers is thus likely to be positive.

The variable *full-time* has a coefficient of -0.11. If *full-time* increases with one unit, the odds of being in a higher category of *social work* decrease with 0.11, while all other variables are held constant. This means that, if the person works full-time, the odds of getting on well with his coworkers increases with 0.11. The relationship between *full-time* and *social work* is thus likely to be positive. The variable *private sector* has a coefficient of 0.19. This means that if a person is working in the private

sector, the odds of getting on well with coworkers decreases with 0.19, when all other variables remain constant.

Finally, the variable of interest *high education* will be discussed. This variable has a coefficient of -0.28. If *high education* increases with one unit, the odds of being in a higher category of *social work* decreases with 0.28, ceteris paribus. Therefore, if a person has a higher education, the odds of getting on well with colleagues increases with 0.28. The relationship between a high education and getting on well with coworkers, is likely to be positive. Lastly, the χ^2 of the regression is equal to 0.00, which is below the required significance level of $\alpha = 0.05$. It can therefore be assumed that at least one of the coefficients is significantly different from zero. The pseudo R^2 of the regression is equal to 0.03, which means that the full model explains 3% more, than the null model.

Prospect and high education

For the regression with *prospect* as dependent variable, the variables *high education, age, full-time* and *employee* all have significant coefficients. The variable *prospect* shows to what extend the respondent agrees with the following statement: "My job offers good prospects for career advancement". The coefficient of *age* is equal to 0.03 and is significant at a significance level of $\alpha = 0.01$. If *age* increases with one unit, the odds of being in a higher category of *prospect* increases significantly with 0.03, while all other variables remain constant. Thus, if a person's age increases with one year, the odds of having a job that offers good prospects for career advancement decreases. The relationship between age and having a job with good prospects, is likely to be positive. The variable *full-time* has a coefficient of -0.74 and is significant at a level of $\alpha = 0.01$. This means that if a person is working full-time, the odds of having a job that offers good prospects for career advancement increase significantly with 0.74, while all other variables remain constant. The relationship between working full-time and having a job that offers good prospects for career advancements is thus likely to be positive. The variable *employee* has a coefficient of 0.53 and is significant for $\alpha = 0.05$. If *employee* increases with one unit, the odds of being in a higher category of *prospect* increases significantly with 0.53, ceteris paribus. This means that the odds for an employee to have a job that does not offers good prospects and career advancements increases with 0.53, while all other variables remain the same. The relationship between being an employee and *prospect* is thus likely to be negative.

The variable *private sector* has a coefficient of -0.06. Therefore, if a person works in the private sector, the odds of having a job that offers good prospects for career advancement increases with 0.06, ceteris paribus. The relation between working in the private sector and having a job that offers good prospects on career advancement is therefore likely to be positive. The variable *Dutch* has a coefficient that is equal to -0.27. This can be interpreted as follows: if the person is Dutch, the odds of having a job with good prospects for career advancements will increase with 0.27, ceteris paribus. It can be concluded that the relationship between *Dutch* and *prospect* is most likely positive. Furthermore, the variable *gender* has a coefficient that is equal to -0.06. If the variable *gender* increases with one unit, the odds of being in a higher category decrease with 0.06, while all other variables remain constant. Therefore, being a male increases the odds of having a job that offers good prospects, ceteris paribus. The relation between *gender* and *prospect* is thus likely to positive.

Lastly, the variable of interest *high education*. This variable has a coefficient that is equal to -0.59, and is significant for $\alpha = 0.01$. Therefore, if *high education* increases with one unit, the odds of being in a higher category of *prospect* decrease with 0.59, while all other variables remain constant. This can be interpreted in the following way: if a person is highly educated, the odds of having a job with good career prospects increases significantly with 0.59, while all other variables remain constant. Furthermore, the χ^2 of the regression is equal to 0.00, which is smaller than 0.05. It can therefore be assumed that at least one of the coefficients is significantly different from zero. Additionally the pseudo R^2 is equal to 0.04, which means that the full model explains 4% more, than the null model.

Fair pay and high education

The last regression focuses on the relationship between *fair pay* and *high education*. The variable *fair pay* shows to what extend the respondent agrees with the statement: "Considering all my efforts and achievements in my job, I feel I get paid appropriately". *High education, age* and *gender* have a significant coefficient in this regression. The variable *age* has a coefficient that is equal to -0.01 and is significant for $\alpha = 0.05$. Therefore, if the age of a person increases, the odds of having a job that pays appropriately, considering the efforts and achievements, increases significantly with 0.01, ceteris paribus. The relationship between one's age and the feeling of getting paid appropriately is thus likely to be positive. The variable *gender* has a coefficient of

0.32 and is significant for $\alpha = 0.05$. If *gender* increases with one unit, the odds of being in a higher category of *fair pay* increases significantly with 0.32, while all other variables are kept constant. Being a male therefore decreases the odds of having a job that pays appropriately, considering the effort and achievements, by 0.32, ceteris paribus. Therefore, the relation between *gender* and *fair pay* is likely to be positive.

The variable *full-time* has a coefficient that is equal to 0.24. This can be interpreted as follows: working full-time will decrease the odds of feeling that the respondent gets paid appropriately with 0.24, while all other variables remain constant. The relation between working full-time and the feeling of getting paid appropriately is likely to be negative. The variable *Dutch* has a coefficient of 0.05. Therefore, being Dutch decreases the odds of having the feeling that one's job pays appropriately with 0.05, ceteris paribus. The relation between *Dutch* and *fair pay* is thus likely to be positive. *Employee* has a coefficient that is equal to 0.03. This means that being an employee decreases the odds of having the feeling that one's job pays appropriately with 0.03, keeping all variables constant. The relation between being an employee and feeling that one gets paid fairly is thus likely to be negative. The variable *private sector* has a coefficient that is equal to -0.14. Working in the private sector will therefore increase the odds of having the feeling that a person gets paid appropriately with 0.14, ceteris paribus. Therefore, the relation between working in the private sector and the feeling of getting paid appropriately is likely to be positive.

Lastly, the variable *high education* has a coefficient that is equal to -0.42 and is significant at $\alpha = 0.01$. Therefore, if *high education* increases with one unit, the odds of being in a higher category of *fair pay* decreases significantly with 0.42, ceteris parbius. This means that if someone has a high level of education, the probability of being satisfied with his income increases by 0.42. Furthermore, the χ^2 is equal to 0.01 and is therefore below the required significance level of $\alpha = 0.05$. It can be concluded that at least one of the coefficients is significantly different from zero. Finally, the pseudo R^2 is equal to 0.01, which means that the full model explains 1% more, compared to the null model.

Proportional Odds Assumption

The proportional odds assumption is a crucial assumption and forms the basis of the ordered logit regression. This assumption states that none of the input variables have a disproportional effect on a specific category of the dependent variable. In other

words, the effect of each independent variable is the same for each category of the dependent variable. This assumption can be tested with the likelihood ratio test. The null hypothesis of this test is that there is no difference in coefficients between the models. If the p-value is higher than the required α of 0.05, there is no significant evidence that the null hypothesis should be rejected. In that case, the proportional odds assumption is not violated. The results of this test are shown in Table 4. Based

Table 4

Results of the likelihood ratio test to determine if the proportional odds assumption holds for the five regressions

Variable	Well-done	Praise	Social Work	Prospect	Fair pay
P-value	0.23	0.10	0.01	0.27	0.31

Note. The table shows the results of the likelihood ratio test for all of the five regressions. The results show that the proportional odds assumption is violated for the regression that focuses on the dimension of coworkers.

on the results of the likelihood ratio test, it can be concluded that the proportional odds assumption is violated in the third regression where *social work* is used as the dependent variable. The results of this regression are therefore not as reliable as those of the other regressions.

Conclusion

In order to answer the research question, a summary of the research carried out will be given first. After that, the hypotheses will be rejected or not. This will be followed by the general answer of the research question. The research question that was formulated was:

To what extent does a higher education leads to a higher job satisfaction in the Netherlands?

Lastly, the limitations of this research will be discussed and some suggestions for future research will be provided.

The literature review provides a summary of the research that has been done regarding the relation between higher education and job satisfaction. Additionally, the literature review is used to design a method that can be used to measure the job

satisfaction in the sample. To answer the research question, the data of the EWCS of 2015 is used. The variables in the data set are cleaned and then used in the ordered logit regression to examine the different facets of job satisfaction, based on the JDI. For each dimension one variable is used. For the dimension pay, the variable *fair pay* is used. The facet of promotions and promotions opportunities the variable *prospect* is used. The variable *social work* is used for the dimension of coworkers. *Praise* is used for the facet of supervision and lastly, the variable *well-done* displays the dimension of the work itself. In each of the five ordered logit regressions the variables *age, gender, full-time, dutch, employee* and *private sector* are added as control variables, so that the effect of high education on each of the different facets will be as little biased as possible.

Based on the results of the regressions, the hypotheses will be rejected or not. The first hypothesis states that the dimension of income will have a negative effect on the job satisfaction of a person that is highly educated, compared to a person who is not. Based on the results of the regression in column 4 of Table 3, it can be concluded that if a person has a high education, the odds of an employee thinking that he gets paid appropriately increase significantly with 0.42, ceteris paribus. Therefore, the first hypothesis will be rejected and the relationship between the dimension of income and high education is likely to be positive. The second hypothesis states that a person who has a higher education is more likely to get a job that offers good prospects for career advancement, compared to those who do not have a higher education. If the person is highly educated, the odds of having a job with good prospects of career advancements will increase significantly with 0.59, all other variables kept constant. The relationship between a high education and the dimension of opportunities and promotions opportunities is likely to be positive, therefore the second hypothesis will not be rejected.

Furthermore, the third hypothesis states that the facet of coworkers will have a positive effect on the job satisfaction of a high educated person, compared to a person who is not highly educated. Based on the results in the third column of Table 3, the odds of getting on well with one's coworkers increases with 0.28, if the person is highly educated, given that all other variables remain constant. This suggests that the relationship between high education and the dimension of coworkers will be positive. Therefore, the third hypothesis will not be rejected. The last hypothesis states that the dimension of supervision is likely to have a positive effect on the job satisfaction

of a highly educated person, compared to a person who is not high educated. This relation is likely to be positive. If a person is highly educated, the odds of having an immediate boss that praises and gives recognition if the employee does a good job, will increase with 0.23, ceteris paribus. The fourth hypothesis will therefore not be rejected.

Now that all the hypotheses have been discussed, the answer to the research question can be formulated. Before this can be done, the relationship between dimension of the job itself and higher education will be discussed. Based on the results in the first column of Table 3, it can be concluded that the relationship between a higher education and the dimension of the job itself will most likely be negative. If a person is highly educated, the odds of having a job that gives the feeling of work well done will decrease with 0.02, ceteris paribus. This result, combined with the discussion of the four hypotheses will yield a conclusion regarding the research question. Based on these results, it can be concluded that the effect of a higher education is not homogeneous for all the five dimensions of job satisfaction. However, the effect is positive for four of the five dimensions. Therefore it is likely that the relationship between job satisfaction and higher education is positive. The effect of higher education on job satisfaction is thus likely to be positive.

It should be noted that the answer to the research question and the conclusions regarding the hypotheses require a number of serious comments. Firstly, the proportional odds assumption is violated in the regression that that focuses on the dimension of colleagues. The effect of higher education on how well a person gets on with his coworkers is therefore not reliable. This also holds for the effect of age, gender and working full-time. These effects can be examined by using an generalized ordered logit regression, as this relaxes the proportional odds assumption. It might also be possible to use the multinomial logit regression, however this method will not take into account the order within the dependent variables. Besides the violation of the proportional odds assumption regarding the regression with *well-done*, not all the coefficients are significant. It can therefore not be concluded that these differ significantly from zero. The effects of a variable on the odds on being in a certain category are therefore not reliable.

Furthermore, the χ^2 of the regression that focuses on the dimension of supervision is not significant. It can therefore not be concluded that at least one of the coefficients is significantly different from zero. The relationship between supervision and higher

education is therefore not reliable. For this relationship, it might be wise to use another type of regression. The ordered probit regression, generalized ordered logit regression or the multinomial logit regression should be considered to examine this relation. Moreover, other variables may influence a person's job satisfaction and are not included in the study here. Further research can therefore focus on other variables that need to be added to remove any further bias. It might also be possible that the variables that are chosen to represent the dimensions of job satisfaction contain a form of bias. The variables are chosen by a person, which can lead to a subjective choice of these variables. It might be beneficial to use some form of machine learning to identify the best options for the variables to represent the different facets of job satisfaction. Additionally, the results should tested against reputable methods such as the JDI, the BIAJS or the Face Scale. These results can be used as a benchmark, so that the reliability of the results can be tested.

References

Becker, G. S. (2009). *Human capital: A theoretical and empirical analysis, with special reference to education.* University of Chicago press.

Blundell, R., Dearden, L., Goodman, A., & Reed, H. (2000). The returns to higher education in Britain: evidence from a British cohort. *The Economic Journal*, *110*(461), F82–F99.

Bowen, H. (2018). Investment in learning: The individual and social value of American higher education.

Brennan, J., Durazzi, N., & Séné, T. (2013). Things we know and don't know about the Wider Benefits of Higher Education: A review of the recent literature.

Buhr, K. J. (2010). Does increasing education increase the probability of promotion? the case of registered nurses in canada. *The Journal of Continuing Education in Nursing*, *41*(3), 123–132.

Burdman, P. (2005). The student debt dilemma: Debt aversion as a barrier to college access.

Chan, R. Y. (2016). Understanding the purpose of higher education: An analysis of the economic and social benefits for completing a college degree. *Journal of Education Policy, Planning and Administration*, *6*(5), 1–40.

Clark, A. E. (1997). Job satisfaction and gender: why are women so happy at work? *Labour economics*, *4*(4), 341–372.

Clark, A. E., & Oswald, A. J. (1996). Satisfaction and comparison income. *Journal of public economics*, *61*(3), 359–381.

Cooke, R., Barkham, M., Audin, K., Bradley, M., & Davy, J. (2004). Student debt and its relation to student mental health. *Journal of Further and Higher Education*, *28*(1), 53–66.

Eberhardt, B. J., & Shani, A. B. (1984). The effects of full-time versus part-time employment status on attitudes toward specific organizational characteristics and overall job satisfaction. *Academy of Management Journal*, *27*(4), 893–900.

Elamin, A. M. (2011). Effects of nationality on job satisfaction: Domestic versus expatriate bank employees in the United Arab Emirates. *International Journal of Management*, *28*(1), 20.

European Foundation for the Improvement of Living and Working Conditions. (2017). *European working conditions survey, 2015.* (data retrieved from UK data service, https://beta.ukdataservice.ac.uk/datacatalogue/studies/study?id=8098)

Eurowork. (2020, November 3). *European Working Conditions Surveys (ewcs).*

Froese, F. J., & Peltokorpi, V. (2011). Cultural distance and expatriate job satisfaction.

International Journal of Intercultural Relations, *35*(1), 49–60.

Hartog, J. (2000). Over-education and earnings: where are we, where should we go? *Economics of education review*, *19*(2), 131–147.

Hoppock, R. (1935). Job satisfaction.

Ironson, G. H., Smith, P. C., Brannick, M. T., Gibson, W. M., & Paul, K. B. (1989). Construction of a Job in General scale: A comparison of global, composite, and specific measures. *Journal of Applied psychology*, *74*(2), 193.

Johnes, G. (1993). *The Economics of Education. new york: St.* Martin's Press.

Johnson, G. J., & Johnson, W. R. (2000). Perceived overqualification and dimensions of job satisfaction: A longitudinal analysis. *The journal of psychology*, *134*(5), 537–555.

Kunin, T. (1955). The construction of a new type of attitude measure 1. *Personnel psychology*, *8*(1), 65–77.

Lin, S.-C., & Lin, J. S.-J. (2011). Impacts of coworkers relationships on organizational commitment-and intervening effects of job satisfaction. *African Journal of Business Management*, *5*(8), 3396–3409.

Locke, E. A. (1976). The nature and causes of job satisfaction. *Handbook of industrial and organizational psychology*.

Logan, N., O'Reilly III, C. A., & Roberts, K. H. (1973). Job satisfaction among part-time and full-time employees. *Journal of vocational behavior*, *3*(1), 33–41.

Long, A. (2005). Happily ever after? A study of job satisfaction in Australia. *Economic Record*, *81*(255), 303–321.

Miething, A. (2013). A matter of perception: exploring the role of income satisfaction in the income–mortality relationship in German survey data 1995–2010. *Social Science & Medicine*, *99*, 72–79.

Miyamoto, K., Chevalier, A., et al. (2010). Education and health.

Mora, J.-G., García-Aracil, A., & Vila, L. E. (2007). Job satisfaction among young European higher education graduates. *Higher Education*, *53*(1), 29–59.

Mottaz, C. (1984). Education and work satisfaction. *Human Relations*, *37*(11), 985–1004.

Nadinloyi, K. B., Sadeghi, H., & Hajloo, N. (2013). Relationship between job satisfaction and employees mental health. *Procedia-Social and Behavioral Sciences*, *84*, 293–297.

O'brien, G. E., & Dowling, P. (1981). Age and job satisfaction. *Australian Psychologist*, *16*(1), 49–61.

Rainey, H. G. (1979). Perceptions of incentives in business and government: Implications for civil service reform. *Public administration review*, 440–448.

Repetti, R. L., & Cosmas, K. A. (1991). The quality of the social environment at work and job satisfaction 1. *Journal of Applied Social Psychology*, *21*(10), 840–854.

Saner, T., & Eyüpoğlu, Ş. Z. (2012). The age and job satisfaction relationship in higher education. *Procedia-Social and Behavioral Sciences*, *55*, 1020–1026.

Schneider, D. S., & Vaught, B. C. (1993). A comparison of job satisfaction between public and private sector managers. *Public Administration Quarterly*, 68–83.

Schroffel, A. (1999). How does clinical supervision affect job satisfaction? *The Clinical Supervisor*, *18*(2), 91–105.

Schultz, T. W. (1961). Investment in human capital. *The American economic review*, *51*(1), 1–17.

Schultz, T. W. (1963). *The Economic Value of Education.* Columbia University Press.

Schultz, T. W. (1971). Investment in Human Capital. the Role of Education and of Research.

Smith, P. C., Kendall, L., & Hullin, C. (1969). The measurement of satisfaction in work and retirement: A strategy for the study of attitudes.

Suchyadi, Y., et al. (2018). Relationship between principal supervision in increasing the job satisfaction of private junior high school teachers in east Bogor district. *Jhss (Journal of Humanities and Social Studies)*, *2*(1), 26–29.

Sweetland, S. R. (1996). Human Capital Theory: Foundations of a Field of Inquiry. *Review of Educational Research*, *66*(3), 341–359.

Thompson, E. R., & Phua, F. T. (2012). A brief index of affective job satisfaction. *Group & Organization Management*, *37*(3), 275–307.

Weiss, H. M., & Merlo, K. L. (2015). Job Satisfaction. In J. D. Wright (Ed.), *International Encyclopedia of the Social Behavioral Sciences (Second Edition)* (Second Edition ed., p. 833-838). Oxford: Elsevier. Retrieved from `https://www.sciencedirect.com/science/article/pii/B9780080970868220291` doi: https://doi.org/10.1016/B978-0-08-097086-8.22029-1

Zhu, Y. (2013). A review of job satisfaction. *Asian Social Science*, *9*(1), 293.

Appendices

Appendix A: Original list of question of JDI

TABLE 4.11

Items in Final Version of JDI

Each of the five scales was presented on a separate page.
The instructions for each scale asked the subject to put Y beside an item if the
item described the particular aspect of his job (work, pay, etc.), N if the
item did not describe that aspect, or ? if he could not decide.
The response shown beside each item is the one scored in the "satisfied" direc-
tion for each scale.

WORK

Y	Fascinating
N	Routine
Y	Satisfying
N	Boring
Y	Good
Y	Creative
Y	Respected
N	Hot
Y	Pleasant
Y	Useful
N	Tiresome
Y	Healthful
Y	Challenging
N	On your feet
N	Frustrating
N	Simple
N	Endless
Y	Gives sense of accomplishment

PAY

Y	Income adequate for normal expenses
Y	Satisfactory profit sharing
N	Barely live on income
N	Bad
Y	Income provides luxuries
N	Insecure
N	Less than I deserve
Y	Highly paid
N	Underpaid

PROMOTIONS

Y	Good opportunity for advancement
N	Opportunity somewhat limited
Y	Promotion on ability
N	Dead-end job
Y	Good chance for promotion
N	Unfair promotion policy
N	Infrequent promotions
Y	Regular promotions
Y	Fairly good chance for promotion

SUPERVISION

Y	Asks my advice
N	Hard to please
N	Impolite
Y	Praises good work
Y	Tactful
Y	Influential
Y	Up-to-date
N	Doesn't supervise enough
N	Quick tempered
Y	Tells me where I stand
N	Annoying
N	Stubborn
Y	Knows job well
N	Bad
Y	Intelligent
Y	Leaves me on my own
N	Lazy
Y	Around when needed

CO-WORKERS

Y	Stimulating
N	Boring
N	Slow
Y	Ambitious
N	Stupid
Y	Responsible
Y	Fast
Y	Intelligent
N	Easy to make enemies
N	Talk too much
Y	Smart
N	Lazy
N	Unpleasant
N	No privacy
Y	Active
N	Narrow interests
Y	Loyal
N	Hard to meet

Appendix B: The Brief Index of Affective Job Satisfaction (BIAJS)

The Brief Index of Affective Job Satisfaction (BIAJS)

Thinking specifically about your current job, do you agree with the following?

1. I find real enjoyment in my job

2. I like my job better than the average person

3. Most days I am enthusiastic about my job

4. I feel fairly well satisfied with my job

Interval measure: 1 = *Strongly disagree*, 2 = *Disagree*, 3 = *Neutral*, 4 = *Agree*, 5 = *Strongly agree* Distracter items: These are used to help the attenuate method variance and are removed from analyses: My job is unusual (insert between Items 1 and 2); My job needs me to be fit (insert between Items 2 and 3); My job is time consuming (insert between Items 3 and 4).
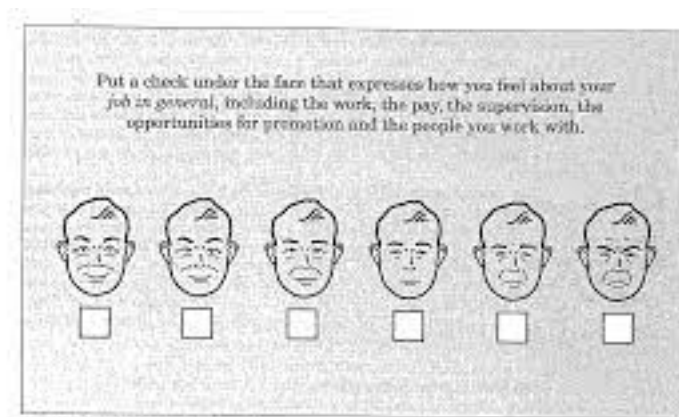
Appendix C: Face Scale

Figure 4.3 *Kunin's faces scale*
Source: Smith, P.C., Kendall, L.M., & Hulin, C.L. (1969). The Measurement of Satisfaction in Work and Retirement. Chicago: Rand McNally. Adapted from T. Kunin. (1955). The construction of a new type of attitude measure. *Personnel Psychology*, 8, 65–77.