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The association between the gender of the supervisor and the work-related wellbeing of the supervisee.

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The views stated in this thesis are those of the author and not necessarily those of the supervisor, second assessor, Erasmus School of Economics or Erasmus University Rotterdam.

Abstract

This paper is about the association between the gender of the supervisor on the work-related wellbeing of the supervisee. This could add to the existing literature about leadership. After running several OLS regressions with a dataset of 1200+ respondents, this paper concludes that there is no significant association between the gender of the supervisor and the work-related wellbeing of the supervisee. In general the perception is that there are large differences in how well men and women function in leadership positions. However, this paper and other papers show that those large differences are in reality small or non-existent across the multiple ways to measure good leadership. This supports the notion that the general perception about leadership fitting men better than women is obsolete.

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1. Introduction

As of 1 January, 2022, Dutch listed companies need to commit to a gender quota for their supervisory boards. This is the result of years of heated debate in the Netherlands about gender quotas for the top of companies. However, the gender quota was not only a hot topic for political debate but also for the academic literature. Many academics have written about the gender quota for the top of companies and the effects of such quota on, for example, revenue and the female labor force (Ahern and Dittmar, 2012; Bertrand, Black, Jensen and Lleras-Muney, 2018). Meanwhile all gender quotas account for an exceedingly small portion of women in the labor market. For example, the gender quota in the Netherlands applies to solely 150 jobs in the labor market (TIAS school for business and society and Lückerrath-Rovers, 2020). This number is negligible considering the total Dutch labor force consists of 9.5 million people (CBS, 2022).

Available literature tends to focus primarily on the small part of the labor market that is subject to the gender quota. However, it would be interesting to examine to what extent gender differences have an effect for all levels of supervision. This will give a broad overview of gender differences in supervision. Some existing studies focus on the effects of gender differences on effective leadership. For example, academists found that women tend to score better on effective leadership styles (Eagly, Johannesen-Schmidt and Van Engen, 2003). This strand of literature focuses on the relationship between the leader and the performance of the team.

This paper specifically looks at gender differences in supervision in relation to the wellbeing of the supervisee. When focusing on some aspects of employee wellbeing namely, work engagement and job satisfaction, literature tends to show no gender difference or women scoring slightly better than men (Bakker, Demerouti and ten Brummelhuis, 2012; Campione, 2014; Gutermann, Lehmann-Willenbrock, Boer, Born and Voelpel, 2017). The aspects of work-related wellbeing comprise of work-engagement, job satisfaction and work-related affect. This paper combines all these aspects of work-related wellbeing to investigate if there is an association between wellbeing as a whole and the gender of the supervisor, in order to contribute to the existing literature.

Employers often wonder who the best supervisor would be and who possesses the best leadership qualities. To illustrate the above: employers could divide good leadership in two types. The first type of leader is a leader who is highly effective and who works with a productive team. The second type of leader is a leader who takes best care of their supervisees

and generates a pleasant work environment. The last type has emerged in recent years. It is often thought that both types of leadership contradict each other, however recent research shows that both types have a lot in common. For example, employees with a high wellbeing also increase their performance (Krekel, Ward and De Neve, 2019). This consequently leads to more intrinsically motivated and engaged employees. More engaged employees are known to be more productive and to have a higher job performance (Anitha, 2014; Bakker and Bal, 2010). Above also applies to another aspect of work-related wellbeing, namely job satisfaction. Existing literature shows that job satisfaction has a positive correlation with job-performance of 0.30 percent point (Judge, Thoreson, Bono and Patton, 2001). Lastly, positive and negative emotions on the work floor experienced by employees seem to be correlated with the productivity of the employee (Oswald, Proto and SgROI, 2015). From the above follows that there is a good reason the wellbeing of employees has become a more prominent topic for employers.

Female leadership and the effects thereof are a relatively new topic. For centuries it has been the norm that women, with rare exceptions, did not have a leadership position. Until far into the twentieth century, most western countries imposed laws aiming to discourage or block women from making a career. In the US, for example, most of these laws were still in force until the 1940s while the marriage bars¹ were legal until 1957 in the Netherlands (Golding, 2021; Managmentboek.nl, 2022). After the banning of these laws and practices, they were still applied by companies in the years that followed. Therefore, in comparison to the literature about male leadership, the literature about female leadership has just started to expand.

Because of the social history of leadership, society has developed a gender bias about leadership. Men and masculine traits have become the stereotype for ‘good’ leadership. Next to this, the wellbeing of the employee has taken a more prominent role in the meaning of good leadership in recent years. How will the old gender stereotype withstand, when looking at good leadership, taking into account the wellbeing of the supervisee? This paper aims to answer that with the following defined research question:

Is the gender of the supervisor associated with the work-related wellbeing of the supervisee?

¹ A marriage bar was a practice of employers that restricted the employment of women after they got married.

This research question will be answered by using an OLS method. Cross-sectional data from a survey that was conducted through Profilic, about virtuous leadership, trust in a leader and work-related wellbeing, will be used. The data is a self-selected sample of 1,237 employees.

In the next section the already existing literature on the topic of female leadership and employee wellbeing will be discussed. The third section elaborates the data and methodology that has been used to answer the research question. Subsequently, the results of the data analysis will be presented and interpreted. Lastly, the main findings and constraints of this paper will be discussed. This paper concludes with providing the answer to the research question.

2. Theoretical framework

A note of caution is needed for this chapter, since a lot of literature about gender differences have a reputation to get taken out of context. Besides, this note of caution can provide some clarity on the literature mentioned below. First, the literature takes into account average differences between men and women. This implies that these differences or the lack thereof, may differ on the individual level. Second, the golden rule of gender differences in research is also applicable: *the differences within the gender are always larger than the differences between the genders*. Lastly, the research done on the above does not always mention if the cause is nature or nurture. And, for the differences for which research on nature vs. nurture has been done, nurture seems to be the cause with only few exceptions. This implies that the differences, if they are there, are the result of the culture in a society and are thus subject to change. Therefore, the literature mentioned above as well as this paper can also be subject to changes.

At this moment in all the countries in the world, there are more men than women having a leadership role. This is also the case in the western countries. For example, in the Netherlands the number of female managers is 30%, which is a low percentage compared to other European countries. The European average for female managers is 37,1% (Brakel, Portegijs, and Hermans, 2020). Furthermore, the number of female managers in the US is estimated at 42%. The female full-time working managers in the US earn, on average, seventy-two cents for every dollar that a full-time male manager earns. However, the female managers are on average more educated than their male counterparts (U.S. GAO, 2022). If you consider the statistics mentioned above, good changes are that when you picture a leader in your mind you think of a man.

2.1 The image of the ideal leader

As mentioned in the introduction the stereotype of a good leader is a man. The most rudimentary reason for some people to see men as better leaders than women, is because they believe nature has established men as better leaders than women. Besides the fact that human society is not comparable with 'nature' in many ways, extensive research shows that there is no difference in leadership quality between male and female primates. Size and strength do establish dominance for some male primates, however those qualities do not make them better leaders (De Waal, 2022). It does, by contrast, seem to influence the gender bias of society, overlooking that physical strength, and strength in leadership are not the same. For example, when a male is tall,

people tend to think that this male will be a good leader. Even though height does not say anything about leadership qualities (Blaker, Dessing, Herschberg, Vriend, Rompa and Van Vugt, 2013). The only gender difference known, in the existing literature, where nature seems to be the cause instead of nurture, and that could affect leadership potential, is the case that men, on average, prefer to work with things while women prefer to work with people (Su, Rounds and Armstrong, 2009). Leadership is about working with people.

The gender bias, however, affects the entire society, even the people who do not believe that leadership is established by nature. People are often affected by their unconscious bias. To illustrate the above: men are considered to be a better leader if they have an attractive partner and women are seen as worse leaders if they have an attractive partner (Kocoglu and Mithani, 2020). Likely, most of the subjects in this research did not believe that men are inherently better in leadership than women, however unconsciously they could judge the leadership qualities of both genders different. Media also tend to reinforce the unconscious gender bias, for example by asking female political leaders about family and male political leaders about their leadership qualities. At the same time, coverage of leadership qualities makes a positive electoral difference (Aaldering and Van Der Pas, 2018). Additionally, in a meta-analysis, it was noted that men also see themselves as better leaders than women (Eagly et al., 2003). Furthermore, international research about leadership shows that people think that a good supervisor shows masculine traits (Powell, Butterfiel and Parent, 2002). Also, in the Netherlands the ideal picture of a leader is a man (Lammers, Rink, Stapel and Stoker, 2011). For all these results it is plausible they come from unconscious gender biases in society, which have been developing for centuries resulting from men having the most prominent role in the history of leadership.

2.1.1 The role of confidence and charisma

Following, when people are perceived as confident, they are also more quickly perceived as good leaders. Which is a bias itself since confidence does not have a strong positive relation with competence. Women and men tend to have the same confidence level, both genders even overestimate themselves, men more than women though. However, when women are confident, this confidence is often not recognized (Guillén, Mayo and Karellaia, 2017). When men appear confident, this has a positive relation with getting a role in leadership. Yet, when women appear confident this does not have the same effect. Women need to be seen as confident, competent, and caring before having a better chance at getting a getting the role of a leader. Aside from that, if women are perceived as confident this can have a negative effect on their reputation because confidence is not seen as a desirable trait for a woman (Lyness and Grotto, 2018).

The superlative of confident people are narcissistic people. They are also perceived as good leaders. If someone has a self-centered, entitled, and narcissistic character, it is more likely that this person becomes a leader and takes control of the resources and command in a group. The traits mentioned are more common in men than in women (Brunell, Gentry, Campbell, Hoffman, Kuhnert and Demarree, 2008). However, traits like narcissism create a toxic culture that makes colleagues more susceptible to engage in unethical behavior and bullying (Zeigler-Hill, Morag and Campbell, 2016). A study from 2015 showed that clinical narcissism was almost 40% more often found in men than in women. This difference is slowly declining over the years because more women are becoming more narcissistic (Grijalva, Newman, Tay, Donnellan, Harms, Robins and Yan, 2015).

Furthermore, men are more quickly perceived as charismatic (Kaiser and Wallace, 2016). However, when testing for charisma indicators of supervisors, without mentioning charisma to the supervisees who fill in the test and looking at the long term-reputation of leaders a study found that female supervisors scored better than male supervisors on almost all the charismatic characters traits that the study had selected. Some of these were: *1. Inspires employees, communicates and implements the vision well, 2. Acts as a role model and walks the talk, 3. Is sensitive to the cultural norms of the organizations, 4. Is good at identifying and nurturing the employee's potential* (Groves, 2005).

If a leader has a charismatic image this has a positive relation with the work engagement and job satisfaction of employees (Babcock-Roberson and Strickland, 2010; Vlachos, Panagopoulos and Rapp, 2013). This is not because charisma has a positive relation with the performance of the leader themselves, but a subordinate wants to work harder for a charismatic person because they like them (Hogan, Gordon, Curphy and Hogan, 1994). So, the image of the leader does partly have an effect the wellbeing of the employee.

2.1.2 The image of a leader a leader and the performance firm

The gender bias that women are less competent leaders also affects the stock market. Research shows that when companies add more females to the board, the stock valuation of the firm decreases even though the performance of the firm did not change. The appointment of the female board members is activating the gender bias of the institutional investors (Dobbin and Jung, 2011). Another research looking at the effect of diversity in the boardroom concluded that a higher number of female directors also decreases firm stock values because investors have a negative gender bias towards women. Meanwhile the same research showed that women have a better attendance rate for board meetings and having more women in the board

stimulated the men to attend the board meetings more often, increasing the effectiveness of the firm's board (Adams and Ferreira, 2009).

Next to this, men have an easier time getting funding for their companies because people consciously or unconsciously believe that men are more competent, regardless of their performance. In the Netherlands the last decade 0.8% of the investments of all venture capital went to all women teams. 94.3% Of the investments went to all male teams (Techleap, 2019). For investors in start-ups, the gender of the CEO is the primary factor to make an investment (Cassion, Qiane, Bossou and Ackerman, 2021). Because of the perception of men being better leaders, this 'makes' them better leaders. As mentioned in the paragraph before, image has such a strong effect it can better the wellbeing of employees. In a way it makes this paper and other papers about this topic less credible. How can you look at good leadership when image can be a stronger factor than actions (Chamorro-Premuzic, 2019)? A way to try to circumvent this could be to look the at the amount of hours or days a leader and the other party work in close proximity. When they are working together for months actions will start to weigh heavier because the image will be influenced more by the actions. With a short-term or a loose relation there could be not enough actions to influence the image.

2.2 The actions of an ideal leader

So, there are differences between the genders in the amount that they account for leadership positions in the western world. Added to that there are also differences in how society looks at male and female leaders. Following, this paragraph discusses how women and men act different as leaders.

There are certain leadership styles that make someone function as an effective leader. Also, when a leader is more virtuous this complements the wellbeing of their supervisees (Hendriks, Burger, Rijsenbilt, Pleeging and Commandeur, 2020). Furthermore, the literature shows that women on average act more with leadership styles that improve the performance of the supervisees. Women more often have a transformational style of leadership, which often presents as an effective leadership style. Men more often have a laissez-faire leadership style, which is shown to be a less effective leadership style (Eagly et al., 2003). Further research at INSEAD showed that with 360 feedback² assessments within organizations, women on average scored better than men at almost all the leadership dimensions. Though, men scored better for

² Form of assessment in which feedback is asked of the supervisors, supervisees and the peers of the employees.

'envisioning,' however, this was only from the feedback of the male peers, not from their female peers, supervisors or their subordinates (Ibarra and Obodaru, 2009).

2.2.1 Work engagement

A part of employee wellbeing is determined by the work-engagement of the supervisees. A study found that when controlling for the gender of the supervisor the relation with work-engagement of the supervisee did not change (Bakker et al., 2012). Also, a data analysis in the US shows that women (41%) in management are more engaged than men (35%) (Gallup, 2015). This engagement makes them a more effective supervisor since more engaged employees deliver better work (Anitha, 2014). Another study found that female supervisees had a higher work engagement than their male counterparts. The same study found that the engagement of the supervisor positively affected the relationship with the supervisee and with that the engagement of the supervisee improved and the turnover declined (Gutermann et al., 2017). This trickledown effect also appears in the Gallup report showing that the supervisees with a female supervisor are on average more engaged than the supervisees with a male supervisor. With females working for females having the highest engagement rate (Gallup, 2015).

2.2.2 Job satisfaction

Job satisfaction is also part of the work-related wellbeing. In a study on the relation between job satisfaction and gender there was no significant difference found between male and female supervisors for millennial employees (Campione, 2014). Another study in public schools found that male teachers would have a lower job satisfaction and a higher turnover if they had a female supervisor (Grissom, Nicholson-Crotty and Keiser, 2012). Also, a study found that for interns the job satisfaction would increase if they had the same gender as their supervisor (Smayling and Miller, 2012).

Some other study showed that managers with female supervisors have a higher level of social support, lower levels of conflicts with work and family, and lower levels of depression. If the supervisors gender matched with that of the supervisee, female supervisees reported higher levels of job autonomy (Moore, Grunberg and Greenberg, 2005). Furthermore, a study in the hospitality industry shows that there is a stronger trickledown effect for female supervisors than male supervisors about the satisfaction of their supervisor. So, when a female supervisor is satisfied with her supervisor than her supervisee will be more satisfied (Chen, Friedman and Simons, 2014). However, if the female supervisor is not satisfied with her own supervisor that will also trickle down to a lower satisfaction of her supervisee.

2.2.3 Virtuous leadership

Literature also shows that a virtuous leadership style has a positive effect on the wellbeing of the employee. The virtuous leadership style is defined with the following character traits: prudence, temperance, justice, courage, and humanity. All these character traits stimulate the wellbeing of the supervisee (Hendriks et al., 2020). Women could score higher for virtuous leadership since they score higher on some of these character traits than men do. A longitudinal study with adolescents from Spain found that girls scored higher on each of the previous named character traits (Ferragut, Blanca and Ortiz-Tallo, 2014). Furthermore, some research shows that women on average are more empathetic than men (Toussaint and Webb, 2005). Which could help women to score higher on the humanity and justice traits of virtuous leadership. Additionally, there is a consistent positive relation between EQ and organizational citizenship behavior³, making individuals with a higher EQ more effective in leadership roles. On average women tend to have a slightly higher EQ than men do. However, EQ is often overlooked as valuable characteristic for good leadership, regardless of gender (Joseph and Newman, 2010).

2.2.4 Best of both genders

Further research shows that supervisees in the end give the best grades to supervisors who show an androgyn leadership style (Stoker, 2018). Androgyn leadership has both masculine and feminine traits. It is defined as a supervisor who gives a clear direction, is social and empathetic. Also, observational research showed that the number of conflicts in the OR would be twice as high when the gender of the surgeon matched with that of the most OR personnel. Showing that having a mixed-gender team is the key factor of how well an OR team performs, not what the gender is of the person with the highest rank (Jones, Jennings, Higgins and de Waal, 2018).

An explanation for why women on average score higher in literature on leadership can be sampling bias. Since for women the barriers of reaching a leadership position are higher. Women need to have more qualifications to make it to a position of leadership and thus score better on leadership research (Brunell et. al, 2008). Alternatively, there are too many overconfident men who have too few barriers to become a leader. A lot of incompetent men are perceived as good leaders while a lot of competent women are overlooked as such (Chamorro-Premuzic, 2022).

³ Behavior that is positive and constructive, which is outside of the persons formal job description but that does support their colleagues.

2.3 Research hypothesizes

Two main gender differences in leadership are first, that men have a better image of being a good leader and second, that women tend to act slightly better as a leader in available literature. Both, image and action are beneficial for being a successful leader. Following the literature, the image of a leader could have a weaker relation with the wellbeing of the employee than the actions of a leader. So, to answer the research question *Is the gender of the supervisor associated with the work-related wellbeing of the supervisee?* the following hypotheses are formulated and tested:

H1: The association between a female supervisor and the work-related wellbeing of a supervisee is positive.

Continuing, the literature shows that men and women having a matching gender as their supervisor, influences the work environment. In most literature of the theoretical framework the job satisfaction of the supervisee improves when having a supervisor with a same gender. So, in this paper this will be assessed with the following hypothesis:

H2: When the gender of the supervisee matches the gender of the supervisor, this has a positive association with work-related wellbeing of the supervisee.

Next, virtuous leadership has a positive influence on the work-related wellbeing of the employee and women tend to have more character traits related to virtuous leadership. Therefore, virtuous leadership could be an important mechanism between the gender of the supervisor and the wellbeing of the supervisee. This will be evaluated by researching the following hypothesis:

H3: Virtuous leadership mediates the association between supervisor gender and the supervisee work-related wellbeing.

3. Data & Methodology

3.1 Data

The data that will be used in this paper is cross-sectional data from a survey conducted through Proflic. The data consists of multiple observations of 1200+ individuals at one timestamp from various countries. The answers are on an individual level per respondent. The respondents are from different job sectors and consists of both male and female respondents. The respondents answered questions about their direct supervisor in January 2019. Furthermore, the sample consists for the most part of people living in the western world namely, US, UK, continental Europe, Canada and New Zealand. A smaller part of the sample is from people living in in other parts of the world, mostly Latin America.

3.1.1 Variables

To measure the *dependent variable* work-related wellbeing, this paper will use the same definition used by (Hendriks et al., 2020). That research measured work-related wellbeing according to the framework of work-related wellbeing of Bakker and Oerlemans (2011). This measures work-related wellbeing by compiling job satisfaction, work-related effect and work-engagement. Job satisfaction is measured by asking the participants how much they agree with the following statements: ‘All in all, I am satisfied with my job,’ ‘In general, I do not like my job’ and ‘In general I like working here.’ This comes from the Michigan Organizational Assessment Questionnaire (Cammann, Fichman, Jenkins, and Klesh, 1983). Work-related affect is measured with the 12-item measure of Warr (1990). This measurement method asks how often someone experiences positive and negative emotions in their job in the last month. Lastly, work-engagement is measured using the UWES-3 (Schaufeli, Shimazu, Hakanen, Salanova and De Witte, 2019). This method looks at three dimensions of engagement: vigor, dedication, and absorption. The questionnaire measures this with the statements; ‘At my work I feel bursting with energy,’ ‘I am enthusiastic about my job’ and ‘I am immersed in my work’ The variables that work-related wellbeing consists of are displayed in *figure 1*. Work-related wellbeing is calculated by standardizing the separate work-

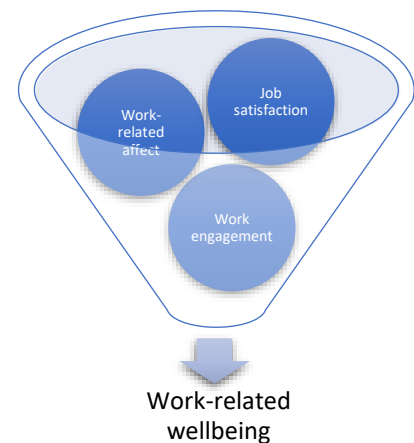


Figure 1. Diagram work-related wellbeing supervisee.

related wellbeing aspects. Then those aspects are added together and divided by three so that each aspect has the same weight in the variable work-related wellbeing.

The main *independent variables* are the gender of the supervisor and the gender of the supervisee. Both of them are measured by questions in the survey that the research subjects filled out.

The *mediating variable* that is used to test the third hypothesis is virtuous leadership. Virtuous leadership is measured the same way as performed in the paper of Hendriks et al. (2020). Namely, with the 18-item Virtuous Leadership Questionnaire (Wang and Hackett, 2016). The questionnaire measures the character of a leader by looking at how high the leader's behavior scores on virtues values in the perception of the supervisee. The virtues are measured by how much the supervisee agrees with several statements. The first virtue that is measured is courage, it is measured with, for example, the statement 'My supervisor acts with sustained initiative, even in the face of incurring personal risk'. The second virtue temperance is reflected with, for example, the statement 'My supervisor prioritizes organizational interest over self-interests'. Then justice is measured by, for example, with the statement 'My supervisor allocates valued resources in a fair manner'. The virtue prudence is measured by, for example, with the statement 'My supervisor exercises sound reasoning in deciding on the optimal courses of action'. The last virtue humanity is measured by how much the supervisee agrees with, for example, the statement 'My supervisor shows concerns for subordinate's needs'.

To test the hypothesizes several *control variables* will be used. The first control variables are 'job liking' and 'organization liking'. To measure these variables, answers from questions in the questionnaire are used. The first one is 'How much do you like the organization you work for regarding aspects that are outside of your immediate supervisor's influence?' (1= dislike a great deal; 7 = like a great deal). And 'How much do you like your job regarding aspects that are outside of your immediate supervisor's influence?' (1= dislike a great deal; 7 = like a great deal). The answers to these questions allow to control for some external factors that potentially influence the work-related wellbeing of the employee.

Furthermore, to prevent omitted variable bias controls are in place using several other variables. For example, most data is from western countries and the results could be different in non-western countries. For this variable the data from the place of residence will be retrieved from the questionnaire.

Also added to the data are two scores that are an indication of gender equality in a country. The first score is the Women Business and the Law Index (WBLI) of October 2021 from the World Bank. The score looks at thirty five aspects of the law that get a score across eight indicators of binary questions. Each indicator represents a different point in a woman's career. The results are scaled 0 to 100 and taken by calculating the underweighted average of the answers to the questions. The overall score is than again the average of all the indicators together (WORLD BANK GROUP & World Bank, 2022). The second score that was added to the data is the Global Gender Gap Index (GGI) from the World Economic Forum. The GGI is compiled of scores across four subindexes. These subindexes are representing the gender gap in different areas 'Economic Participation and Opportunity', 'Educational Attainment', 'Health and Survival' and 'Political Empowerment'. The measurement of the subindexes happen in the form of the gender gap in percentages of the country. For example, not the level of education of the country for women is measured but the relative difference in the level of education between men and women in that country is measured instead (World Economic Forum, 2021). Both of these control variables could be used because countries with more gender equality can influence how both genders behave and look towards each other.

The variable 'sector' is also collected because controlling may also be needed for this variable since the gender of the supervisor can be influenced by the sector. For example, in the public sector there are relatively more female supervisors (OPM, 2014).

Furthermore, a possible control variable would be gender dominated industry, because this can influence the gender of the supervisor and also the wellbeing of the supervisee. The industry qualifications are based on the top-level classification of the International Standard Industrial Classification of All Economic Activities (United Nations, 2008). The industries are divided by gender dominated and gender mixed industries in a dummy variable. The variable will be 1 when the industry is gender dominated and 0 when the industry is gender mixed. An industry is qualified as gender dominated when more than 70% of the labor force of the industry consists out of one gender. When one gender has more than a 70% share in a department, company or industry the lack of diversity creates a monoculture which changes the behavior of the employees (Scott, 2022). The gender ratio of the industries comes from data of the United Kingdom and the United States (Women in the Labor Force: A Databook: BLS Reports: U.S. Bureau of Labor Statistics, 2021; EMP13: Employment by Industry - Office for National Statistics, 2022).

Continuing, the data of the size of the company is retrieved from the questionnaire to see if the data represents companies of multiple sizes. Also the variable could be used as a control variable because it is possible that the size of a company could affect the wellbeing of the employee or the gender of the supervisor. Very large companies, for example, could feel more pressured to create a diverse workforce because of public scrutiny. Besides, when you work in a small company you have less flexibility to move to another department if your wellbeing is affected negatively in your current workplace, so you are more depend on you current supervisor for your wellbeing.

Next, several basic variables about the respondents in the data were collected. This information can control that aspects of different people could create different views about work-related wellbeing and the gender of their supervisor. The variables are: age of the supervisor, age and education level of the supervisee.

The following information was also collected to be able to control for these variables. First the variable hierarchy is collected, this is measured by the question in the survey ‘ Where would you say you stand in the hierarchy of your company or organization?’ The answers can consist out of the top or bottom (...) percent. This variable is used because the higher the job position the more skewed the gender ratio becomes towards men (Mckinsey & Company & Lean In, 2021). This can influence the behavior of both genders (Scott, 2022). Furthermore the variables of the number of years a supervisee has worked with their supervisor and the number of years the supervisee has worked at the organization is retrieved from the questionnaire. These control variables are used to try to dilute reverse causality, so there will be controlled for how long supervisee is working with his/her current supervisor. Because the wellbeing of the supervisee could also influence the supervisor that is appointed, which would create reverse causality.

Also, there will be investigated if controlling is needed for the number of workhours. A small amount of workhours can affect work engagement and thus indirectly work-related wellbeing. Besides, the amount of workhours of the supervisee can affect the chance of having a male or female supervisor. Supervisees that work a small number of hours have an increased probability of having a female supervisor than supervisees that work a lot of hours in a week. The jobs that require more hours are more often higher up in the hierarchy of the organization, where there are more men than women working there.

To prevent that the variables, hierarchy, supervisor tenure, organization tenure and weekly workhours could create collider bias, because they are possibly influenced by the both the

dependent and independent variable of interest, they are only used as a robustness check and not for the original regression.

3.1.2 Descriptive statistics

Table 3.1 Sample profile numerical variables.

| Variable | Obs. | Mean | Std. Dev. | Min. | Max. |
|---|-------------|-------------|------------------|-------------|-------------|
| Age | 1,237 | 35 | 10 | 18 | 67 |
| Supervisor Age | 1,237 | 44 | 10 | 16 | 82 |
| Weekly work hours | 1,237 | 36 | 10 | 2 | 80 |
| Supervisor tenure | 1,237 | 3 | 3 | 0 | 28 |
| Organization tenure | 1,237 | 6 | 6 | 0 | 43 |
| Women Business and the Law Index (WBLI) | 1,237 | 95.5 | 3.7 | 78.8 | 100 |
| Global Gender Gap Index (GGI) | 1,237 | 0.767 | 0.020 | 0.638 | 0.861 |
| % Women in industry | 1,237 | 50 | 17.70 | 12 | 78 |
| Organization liking | 1,237 | 5.26 | 1.51 | 1 | 7 |
| Job liking | 1,237 | 5.33 | 1.46 | 1 | 7 |
| Job satisfaction | 1,237 | 5.14 | 1.43 | 1 | 7 |
| Work engagement | 1,237 | 5.06 | 1.42 | 1 | 7 |
| Work-related affect | 1,237 | 3.44 | 0.73 | 1 | 5 |
| Work-related wellbeing | 1,237 | 0.00 | 0.90 | -3.03 | 1.60 |
| Virtuous leadership | 1,237 | 3.35 | 0.89 | 1 | 5 |

In *table 3.1* the sample profile of the numerical variables is displayed. Except for % women in the industry, all the numerical variables will be used as such in the models of the paper. The variable % women in the industry will be turned in to the dummy variable gender dominated industry for the models in this paper. *Table 3.1* shows that age of the survey subjects has a mean of 35 which is a little bit on the low side for people in the labor market. Furthermore, the age range of 18 to 67 covers the ages of people assumed to be working in the labor market. The same is the case for the supervisor age with a range from 16 to 84. The age of the supervisors is on average higher than the age of the supervisee with 44 years. This is expected since most of the time it takes some years to become a supervisor. The weekly workhours range from 2 to 80 hours in the week, this is very broad and displays large workhours differences in the data. The number of years working with the current supervisor displays a wide range of data from subjects that have not worked even a year with their current supervisor up to data from people that already work 28 years with their current supervisor. The average number of years people have worked with their supervisor is 3 years. The average amount of years that the supervisee works at the organization is the double of that with 6 years on average and ranges to 43 years of work at the organization. Next, the average of how much people like the organization outside of the influence of their supervisor is 5.26 on a scale from 1-7 and the average of how much

people like their job outside the influence of their supervisor is 5.33. Which is close to the averages of job satisfaction and work engagement which are respectively 5.14 and 5.06. Work-related affect has a smaller scale from 1-5 and has an average of 3.44. Work related wellbeing has an average near zero which is because it is a standardization of the variables job satisfaction, work engagement, and work related affect together. The variable virtuous leadership has a mean of 3.35 on a scale from 1-5.

The Women Business and the Law Index (WBLI) has a mean of 95.5 which is quite high, suggesting that most of the people from the data reside in a country where there are regulations and laws that take women's economic opportunities into account. Looking at the range it is also visible that the lowest score 78.8 still is a relatively high WBLI score. Also, for the GGI index the mean score is quite high, so most data is from respondents residing in a country with a lower gender equality gap. Lastly the % of women the different industries is the variable that later is compounded to generate the gender dominated industry variable. The mean of the variable is 50% which means that on average 50% women work across all industries and the maximum percentage of women working in an industry is 78%.

Table 3.2 Sample profile categorical variables.

| Characteristic | Category | Frequency | (%) |
|---------------------------|---|-----------|-----|
| Age | <30 | 433 | 36 |
| | 30-50 | 670 | 54 |
| | >50 | 124 | 10 |
| Supervisor age | <30 | 86 | 7 |
| | 30-50 | 822 | 66 |
| | >50 | 329 | 27 |
| Gender | Men | 596 | 48 |
| | Women | 641 | 52 |
| Supervisor gender | Men | 640 | 52 |
| | Women | 597 | 48 |
| Education level | Secondary education or less | 136 | 11 |
| | Some tertiary education | 305 | 25 |
| | Bachelor's degree or higher | 796 | 64 |
| Place of residence | US | 292 | 24 |
| | UK | 631 | 52 |
| | Canada, New Zealand | 38 | 3 |
| | Continental Europe | 198 | 16 |
| | Latin America | 70 | 6 |
| | Other | 8 | 1 |
| | | | |
| WBLI country of residence | <85.0 | 15 | 1 |
| | 85.0-89.9 | 64 | 5 |
| | 90.0-95.0 | 337 | 27 |
| | >95.0 | 821 | 66 |
| GGI country of residence | <0.700 | 23 | 2 |
| | 0.700-0.749 | 69 | 6 |
| | 0.750-0.800 | 1,137 | 92 |
| | >0.800 | 8 | 1 |
| Hierarchy | Bottom 25% | 533 | 43 |
| | Middle (between bottom 25% and top 25%) | 548 | 44 |

| | | | |
|---------------------|------------------|-----|----|
| | Top 25% | 156 | 13 |
| Weekly work hours | ≤32 | 301 | 24 |
| | >32 | 936 | 76 |
| Supervisor tenure | ≤1 | 388 | 31 |
| | 1-5 | 667 | 54 |
| Organization tenure | >5 | 182 | 15 |
| | ≤1 | 191 | 15 |
| Organization size | 1-5 | 578 | 47 |
| | >5 | 468 | 38 |
| Sector | <25 employees | 272 | 22 |
| | 25-499 employees | 575 | 46 |
| | ≥500 employees | 390 | 32 |
| Sector | Private | 766 | 62 |
| | Public | 423 | 34 |
| | Other | 48 | 4 |

In *table 3.2* all the categorical variables are displayed except for the variable in which industry people work in. Some numerical variables are also transformed into categorical variables to get more information. One of them is the variable age, the age is divided equally throughout the respondents, with the respondents being quite young overall. In contrast to the age of the supervisors who are older overall. Also, there are about as much men as women in the data. There is almost an equal number of women and men, for the supervisees and for the supervisors. For the supervisors this is not a reflection of the real divide of genders in the workforce. There men are most of the supervisors. The education level in the data is relatively high with 64% of the respondents having a bachelor's degree or higher. In this paper the variable education will be a continue variable ranging from 1-4. With four being the highest form of education. Most data is from the UK, followed by the US and Continental Europe. The WBLI scores are high with 66% of the data having a score higher than 95%. The GGI scores is also concentrated, at a score between 0.750-0.800. The variable hierarchy has most people working at the bottom or in the middle hierarchy at their organization. This variable will be a continued variable in the rest of the paper, ranging from 1-6. Six being the top of the hierarchy of the organization. Furthermore, most people in the sample work more than four/eight-hour workdays in the week. The data provides information about people working with their supervisor for a brief time and a longer time, with a lot of data from people working with their supervisor 1-5 years. Organization tenure shows that the data consists mostly of people working a year or longer at their organization. The data of organization size has no underrepresented category with the category of a company size between 25-499 employees being the largest category. In this paper this variable will be a continue variable ranging from 1-5, with 5 being the largest size of an organization. Lastly, most people in the data work in the private sector and a small portion of 4 % work in another sector, which is likely the non-profit sector.

Table 3.3 Sample profile Industry variable.

| Characteristic | Category | Frequency | (%) |
|-----------------------|--|---------------------------|-----|
| Industry | Agriculture, forestry, and fishing* | 11 | 1 |
| | Administrative and support service activities | 82 | 7 |
| | Construction* | 24 | 2 |
| | Electricity, gas, steam and air conditioning supply* | 13 | 1 |
| | Manufacturing * | 70 | 6 |
| | Accommodation and food service activities | 58 | 5 |
| | Information and communication | 112 | 9 |
| | Financial and insurance activities | 82 | 7 |
| | Mining and quarrying* | 2 | 0 |
| | Education * | 198 | 16 |
| | Human health and social work activities* | 165 | 13 |
| | Arts, entertainment and recreation | 45 | 4 |
| | Professional, scientific and technical activities | 118 | 10 |
| | Public administration and defense | 55 | 4 |
| | Transportation and storage* | 47 | 4 |
| | Real estate activities | 14 | 1 |
| | Water supply * | 2 | 0 |
| | Wholesale and retail trade | 136 | 11 |
| | Other** | 6 | 0 |
| | Industry gender ratio | Gender dominated industry | 529 |
| Gender mixed industry | | 702 | 57 |
| Unknown | | 6 | 0 |

*Gender dominated industry **Gender ratio industry unknown

Table 3.3 shows the different industries that are represented in the data. Most common industries are represented in the data. Most of the people in the data are working in Education, Human health and social work activities, Professional, scientific and technical activities, and Wholesale and retail trade. Also, the percentage of people working in a gender dominated industry is 43% versus 57% of the people working in a gender mixed industry.

3.2 Methodology

The formulas used in this paper are for OLS regressions. The formulas that will be used to analyze and test the hypotheses with regressions are:

$$1. Y = \beta_0 + \beta_1 \text{gender supervisor} + \beta_2 \text{gender supervisee} + \gamma (\text{other supervisor characteristics}) + \omega (\text{supervisee characteristics}) + \varphi (\text{job/organizational characteristics}) + u$$

$$2. Y = \beta_0 + \beta_1 \text{gender supervisor} + \beta_2 \text{gender supervisee} + \beta_3 \text{matching gender} + \gamma (\text{other supervisor characteristics}) + \omega (\text{other supervisee characteristics}) + \varphi (\text{job/organizational characteristics}) + u$$

$$3. Y = \beta_0 + \beta_1 \text{gender supervisor} + \beta_2 \text{gender supervisee} + \beta_3 \text{virtuous leadership} + \gamma (\text{other supervisor characteristics}) + \omega (\text{other supervisee characteristics}) + \varphi (\text{job/organizational characteristics}) + u$$

In formula 1 the wellbeing of the supervisee will be the dependent variable (Y). The gender of the supervisor will be used as a dummy variable (β_1), which will be 1 if the supervisor is male and 0 if the supervisor is a female. The same is the case for the gender of the supervisee (β_2). Next, more control variables are added for, other supervisor characteristics (γ), supervisee characteristics (ω) and job/organizational characteristics (φ). Furthermore, the error term (u) is added to the formula. Formula 1 will be used to test the first hypothesis.

For the second hypothesis, formula 2 will be used. It is the same formula as formula 1, however a dummy variable, matching gender (β_3), is added. This variable has the value of 1 if the genders of the supervisor and supervisee match and the value of 0 if the genders of the supervisor and supervisee do not match.

The third hypothesis is tested by using formula 1 and 3 and comparing the coefficients. The third formula is the same as formula 1 with an added variable. The variable that will be added is virtuous leadership (β_3).

3.2.1 OLS assumptions

For optimal estimates, the data must confirm to the assumptions of OLS. The first assumption is *linearity in parameters*. Looking at the formulas that will be used to test the hypotheses, the parameters that are being used should all be linear. Thus, the first assumption holds. The second assumption is that the data should be collected by *random sampling* to prevent selection bias. The data was collected via survey, which people choose to fill in themselves so there is a form of self-selection bias in the data. Nonetheless, looking at the sample profile of the data respondents with differing working conditions and with different profiles have chosen to fill in the survey. However, the data is primarily from the western world. Furthermore, the data from the western world is not randomized so the assumption of a random sampling cannot simply be confirmed. Therefore, a heterogeneity analysis is made to see if the results are the same for different subgroups in the western world.

The third assumption is that there should not be *multicollinearity or perfect collinearity* in the sample. For this assumption none of the independent parameters should be constant. Looking at the descriptive statistics of the independent variables this holds true for the data sample. Furthermore, there should not be exact linear relationships among the independent variables. When having perfect collinearity, the estimation will not work in STATA because STATA will drop one variable. Thus, this way it will be tested if there is perfect collinearity in the sample. Also, multicollinearity will be tested by looking at the VIF-values of the variables in the

regression. When those values are higher than 5 it means that there is multicollinearity in the data.

The fourth assumption is the *zero conditional mean assumption*. This assumption does not hold when the functional form is incorrect or when there is a correlation with other unobserved factors that are part of error term. The F-test for the added powers will be performed, to test if these added powers make the model fit the data better than the fit of the model for the data without the added powers. After that to test if the functional form is correct the Ramsey RESET test will be used. If the Ramsey RESET test fails this means that the *zero conditional mean assumption* is violated.

Whilst the current data does not allow for strong causal inferences, control variables are used to alleviate endogeneity threats and produce estimations that better reflect the true causal effect. To test for correlations of unobserved factors, several robustness checks are performed, by controlling, for example, using the endogenous control variables mentioned in paragraph 3.1.1.

Lastly, to test the hypothesized two more assumptions are needed. The first one is *homoscedasticity*. Which means that the variance of the error term is the same regardless of the value of the independent variables. To assure this assumption is met, the heteroskedastic standard errors will be made robust when running the regressions in STATA. The second assumption is *normality* which means that the standard error is independent of the explanatory variables and follows a normal distribution. Since this paper uses a large data sample β will follow an approximately normal distribution. So this assumption will not be violated.

4. Results

4.1 Correlations

To make an estimation if the available control variables are suitable, a correlation table with all with all the variables of interest has been made and is displayed in *table 4.1*.

As can be seen in *table 4.1* the variables organization liking and job liking are significantly correlated with work-related wellbeing and the separate aspects of work-related wellbeing, with a p-value $p < 0.01$. They do not have a significant correlation with the gender of the supervisor. The variables are therefore suitable to be used to distinct the different aspects of work-related wellbeing. Respectively, being the job itself, the organization, and the supervisor.

The variable gender has a significant correlation with the gender of the supervisor ($p < 0.01$) and with the variable work-related affect (JA) ($p < 0.05$). The variable age has a significant correlation with the variables supervisor of the gender ($p < 0.1$), work engagement (WE) ($p < 0.01$) and work-related affect ($p < 0.05$).

The variable western world is a dummy variable showing that the place of residence is in a western country. The variable western world consist out of the countries US, UK, Canada, New Zealand and the countries of continental Europe. The variable has a significant relation with both the gender of the supervisor and wellbeing, including all the separate aspects of wellbeing. All with an p-value < 0.01 , except with the variable work related-affect, there is the p-value < 0.1 . The variable sector has a significant correlation with gender supervisor ($p < 0.01$), job satisfaction (JS) ($p < 0.01$), work engagement ($p < 0.05$) and wellbeing ($p < 0.05$). The variable sector has a significant correlation with supervisor gender ($p < 0.01$), job satisfaction ($p < 0.01$), work engagement ($p < 0.05$) and wellbeing ($p < 0.05$).

The variables education, organization tenure, supervisor age and organization size all do not have a significant correlation with the variables of wellbeing or the gender of the supervisor.

The variable hierarchy has a significant relation with, the gender of the supervisor ($p < 0.01$) and wellbeing ($p < 0.01$), including all the aspects of wellbeing ($p < 0.01$). The variable years worked with supervisor has a significant correlation with gender supervisor ($p < 0.01$) and work-related affect ($p < 0.1$). The variable workhours have a significant correlation with gender supervisor ($p < 0.01$) and work engagement.

The independent variables WBLI score, GGI score and gender industry only have a significant relationship ($p < 0.01$) with the gender supervisor and not with any of the wellbeing aspect variables. Therefore, they will not be used as control variables.

The variable gender dominated industry has a significant correlation with supervisor gender ($p < 0.01$), job satisfaction ($p < 0.01$), work engagement ($p < 0.05$), work-related affect ($p < 0.05$) and wellbeing ($p < 0.01$). The variable should be suitable as a control variable.

Lastly virtuous leadership does have a significant positive correlation with all the variables of work-related wellbeing. The variable gender supervisor has a negative insignificant correlation of -0.015 with virtuous leadership. Also, the variable gender match is not significantly correlated with the variables of work-related wellbeing. There is a significant correlation with the variable of gender of the supervisor ($p < 0.01$).

Table 4.1 Correlation table variables of interest

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|--------------------------|------------|------------|-----------|---------|-----------|----------|-----------|-----------|-----------|-----------|------------|----------|---------|-----------|---------|-----------|----------|---------|----------|---------|--------|--------|----|
| 1 S. Gender | 1 | | | | | | | | | | | | | | | | | | | | | | |
| 2 JS | 0.056* | 1 | | | | | | | | | | | | | | | | | | | | | |
| 3 WE | 0.027 | 0.69*** | 1 | | | | | | | | | | | | | | | | | | | | |
| 4 JA | 0.063* | 0.78*** | 0.64*** | 1 | | | | | | | | | | | | | | | | | | | |
| 5 Wellbeing | 0.054* | 0.92*** | 0.87*** | 0.90*** | 1 | | | | | | | | | | | | | | | | | | |
| 6 Organization liking | 0.047 | 0.63*** | 0.49*** | 0.56*** | 0.63*** | 1 | | | | | | | | | | | | | | | | | |
| 7 Job liking | 0.044 | 0.70*** | 0.59*** | 0.61*** | 0.71*** | 0.76*** | 1 | | | | | | | | | | | | | | | | |
| 8 Westn. world | -0.10*** | -0.076*** | -0.076*** | -0.050* | -0.075*** | -0.072** | -0.092*** | 1 | | | | | | | | | | | | | | | |
| 9 WBLI score | -0.13*** | 0.0049 | 0.0138 | -0.038 | -0.0072 | -0.0018 | -0.0090 | 0.58*** | 1 | | | | | | | | | | | | | | |
| 10 GGI score | -0.11*** | -0.0076 | 0.032 | -0.015 | 0.0035 | 0.0022 | 0.0049 | 0.31*** | 0.48*** | 1 | | | | | | | | | | | | | |
| 11 Sector | -0.1956*** | -0.0806*** | 0.0605** | 0.0207 | 0.0603** | 0.0535* | 0.0739*** | 0.1334*** | 0.1304*** | 0.0903*** | 1 | | | | | | | | | | | | |
| 12 Gender dominated ind. | -0.1568*** | 0.090*** | 0.072** | 0.058** | 0.082*** | 0.059** | 0.095*** | 0.055* | 0.057** | 0.0047 | 0.2095*** | 1 | | | | | | | | | | | |
| 13 Hierarchy | 0.13*** | 0.24*** | 0.23*** | 0.21*** | 0.26*** | 0.19*** | 0.20*** | -0.048* | -0.030 | -0.062** | 0.0018 | 0.055* | 1 | | | | | | | | | | |
| 14 Supervisor tenure | 0.079*** | 0.031 | 0.031 | 0.047* | 0.041 | 0.012 | 0.035 | 0.012 | -0.048* | 0.049* | -0.0423 | 0.083*** | 0.16*** | 1 | | | | | | | | | |
| 15 Work hours | 0.18*** | 0.014 | 0.086*** | -0.023 | 0.029 | 0.011 | 0.024 | -0.10*** | -0.19*** | -0.091*** | -0.1362*** | -0.18 | 0.27*** | 0.048* | 1 | | | | | | | | |
| 16 Education | 0.037 | -0.033 | -0.024 | -0.039 | -0.036 | -0.023 | -0.012 | -0.075*** | -0.057** | 0.028 | 0.0229 | 0.10*** | 0.18*** | -0.093*** | 0.17*** | 1 | | | | | | | |
| 17 VL | -0.015 | 0.50*** | 0.41*** | 0.48*** | 0.52*** | 0.34*** | 0.30*** | 0.027 | -0.035 | 0.022 | -0.1088*** | 0.037 | 0.15*** | -0.011 | -0.028 | 0.020 | 1 | | | | | | |
| 18 Org. tenure | 0.017 | 0.021 | 0.033 | 0.011 | 0.024 | -0.019 | 0.026 | 0.063** | 0.083*** | 0.071** | 0.0534* | -0.020 | 0.16*** | 0.48*** | 0.014 | -0.090*** | -0.016 | 1 | | | | | |
| 19 Gender | 0.30*** | 0.013 | -0.023 | 0.058** | 0.018 | -0.0023 | -0.022 | -0.11*** | -0.18*** | -0.17*** | -0.160*** | -0.25*** | 0.12*** | -0.017 | 0.23*** | 0.015 | -0.0007 | -0.0089 | 1 | | | | |
| 20 S. Age | 0.0018 | 0.0047 | 0.037 | 0.028 | 0.026 | 0.0015 | 0.031 | 0.045 | -0.045 | 0.053* | 0.0461 | 0.045 | 0.13*** | 0.29*** | 0.068** | 0.048* | -0.067** | 0.20*** | -0.046 | 1 | | | |
| 21 Age | -0.055* | 0.028 | 0.11*** | 0.064** | 0.076*** | 0.011 | 0.080*** | 0.11*** | 0.11*** | 0.14*** | 0.0410 | 0.031 | 0.13*** | 0.27*** | -0.026 | -0.085** | -0.031 | 0.49*** | -0.052* | 0.26*** | 1 | | |
| 22 O. Size | 0.0075 | 0.0033 | 0.040 | 0.0034 | 0.017 | -0.0069 | -0.022 | 0.046 | 0.030 | 0.069* | 0.0478* | -0.0096 | -0.047* | 0.011 | 0.12*** | 0.12*** | 0.17 | 0.12*** | 0.019 | 0.031 | 0.052* | 1 | |
| 23 G. Match | -0.5903*** | -0.0359 | -0.0420 | -0.0047 | -0.0308 | -0.0414 | -0.0558* | -0.0044 | -0.0470* | -0.0506* | 0.0301 | 0.0637** | -0.0029 | -0.081*** | 0.0424 | -0.0191 | 0.0122 | -0.0217 | 0.590*** | -0.0401 | 0.0024 | 0.0094 | 1 |

*p<0.1, **p<0.05, ***p<0.01

4.2 Regressions

First the regression for the relation of work-related wellbeing and the gender of the supervisor is run with the exogenous control variables namely: age supervisor, age, gender, education level, western world, organization size, sector and gender dominated industry. The results are displayed in *table 4.2*.

Table 4.2 Regression results relation work-related wellbeing and the gender of the supervisor.

| Variable | Work engagement | Work-related affect | Job satisfaction | Wellbeing |
|---------------------------|---------------------|---------------------|-----------------------|--------------------|
| Gender supervisor | -0.020 (0.06) | -0.0035 (0.027) | 0.055 (0.046) | 0.033 (0.039) |
| Job liking | 0.17*** (0.037) | 0.030 (0.016) | 0.21*** (0.031) | 0.33*** (0.021) |
| Organization liking | -0.024 (0.033) | 0.041*** (0.014) | 0.091*** (0.026) | 0.13*** (0.020) |
| Age supervisor | 0.00 (0.003) | 0.001 (0.001) | -0.002 (0.002) | 0.00 (0.002) |
| Age | 0.010*** (0.003) | 0.0017 (0.001) | -0.0066*** (0.002) | 0.0024 (0.002) |
| Gender | -0.096* (0.059) | 0.079*** (0.027) | -0.01 (0.045) | 0.051 (0.037) |
| Education | 0.002 (0.040) | -0.011 (0.018) | -0.021 (0.031) | -0.035 (0.024) |
| Western world | -0.185* (0.097) | 0.073 (0.048) | -0.054 (0.081) | -0.051 (0.064) |
| Organization size | 0.043* (0.222) | -0.003 (0.010) | -0.002 (0.017) | 0.020 (0.015) |
| Sector | 0.002 (0.051) | -0.050** (0.024) | 0.097** (0.039) | 0.016 (0.033) |
| Gender dominated industry | -0.022 (0.058) | -0.0128 (0.027) | 0.068 (0.045) | 0.031 (0.037) |
| Constant | 0.38 (0.27) | 1.05*** (0.127) | -0.36 (0.22) | -2.50*** (0.17) |
| Observations | 1.231 | 1.231 | 1.231 | 1.231 |
| R ² | 0.53 | 0.63 | 0.73 | 0.52 |

Standard error between parentheses; *p<0.1,**p<0.05,***p<0.01

The regression of work engagement on the gender of the supervisor and the control variables has an R² of 0.53. The F-test shows that the model fits the data better with the control variables

used. Also, the Ramsey RESET test shows that the model has no omitted nonlinearity. The regression has an -0.020 unit decrease on average when the gender of the supervisor is a man, but this coefficient is not significant. Furthermore, the regression of work-related affect has control variables that are used that make the model fit the data well according to the F-test. The Ramsey RESET test does reject the null hypothesis. So, the model misses nonlinearity and the zero conditional mean assumption is violated. The coefficient for the gender of the supervisor is -0.0035 and is not significant. The R^2 is 0.63. Next is the regression with job satisfaction as the dependent variable. The F-test shows that the used variables fit the data better than if the variables were not used in the model. The Ramsey RESET test shows that we reject the null hypothesis that the model has not missed nonlinearity. So, the zero conditional mean assumption is violated. The coefficient for the gender of the supervisor is 0.055 and is not significant. The R^2 is 0.73. Lastly the regression of wellbeing shows that the model has an R^2 of 0.52. The results of the F-test show that the current model that includes the current control variables fits the data better than a model without the control variables used. After that Ramsey RESET test shows that the null hypothesis of not missing nonlinearities cannot be rejected. The coefficient of wellbeing is 0.033 and is not significant.

To check for multicollinearity in the regression models in *Appendix A* all the VIF-values of the regression can be found. The VIF-values of the variables of the regressions all are lower than 5, so there is no multicollinearity in the regressions.

Next, some heterogeneity analyses were made to see if the conclusion of the regression results hold-up for different sub-groups in the data. To start, the regression results for different world regions can be found in *appendix B*. The results show that for different regions across the western world namely, US, UK, Canada & New Zealand and continental Europe, all the regression results are insignificant. This matches the overall regression results suggesting that the data sample is representative for different regions across the western world. Also, for Latin America the regressions results for the wellbeing of the employee and the gender of the supervisor all are insignificant. Second, the regressions are run for countries with a low and a high GGI-score. It should be noted that the countries with a lower GGI-score start from a score of 0.75 and below. A GGI-score of 0.75 is still seen as a relatively high score compared to the GGI-scores of other countries in the world. The regression results can be found in *appendix C*. In *appendix C* the second table shows that the regression results all are insignificant for countries with a GGI-score above 0.75. So, these results do not deviate from the main findings. However countries with a GGI-score lower than 0.75 show some significant results in the

regressions. The regression of work engagement shows a 0.471 ($p < 0.05$) unit decrease for the supervisee when the supervisor is a man. The regression of job satisfaction shows a 0.421 ($p < 0.01$) unit increase for the supervisee when the supervisor is a man. The other regression of work-related affect and wellbeing show no significant results. Third, the regressions are run for the sub-groups gender dominated industries and gender mixed industries. The results can be found in *appendix D*. They show no significant results for all the various aspects of wellbeing and wellbeing itself in relation to the gender of the supervisor. This matches the main results that there is no significant association between the work-related wellbeing of the supervisee and the gender of the supervisor. Fourth, in *appendix E* the regression results of hierarchy are displayed. The regression for the bottom 25% of the organization show no significant results except for the regression of job satisfaction. The regressions of job satisfaction shows a 0.148 ($p < 0.1$) unit increase for the supervisee when the supervisor is a man. For the top 25% there are no significant results visible for the regressions, matching the main regressions. Lastly, in *appendix F* the regression results of different education levels are displayed. The regression results for supervisee's without a bachelor degree show no significant numbers. Also the results for people with a bachelor degree are not significant. So, across different education levels the conclusion of the results remain the same as the results of the main regressions.

To see what the conservative estimates of the effects are a robustness check is done by running the regression with the endogenous variables, hierarchy, weekly work hours, organization tenure and supervisor tenure. The results are displayed in *table 4.3*.

Table 4.3 Regression results relation work-related wellbeing and the gender of the supervisor with robustness check endogenous variables.

| Variable | Work engagement | Work-related affect | Job satisfaction | Wellbeing |
|---------------------|---------------------|------------------------|---------------------|----------------------|
| Gender supervisor | -0.045 (0.605) | 0.0037 (0.026) | 0.042 (0.464) | 0.017 (0.038) |
| Hierarchy | 0.0499** (0.242) | 0.0103 (0.011) | 0.0460** (0.018) | 0.0857*** (0.015) |
| Weekly work hours | 0.012*** (0.003) | -0.0054*** (0.0013) | -0.0011 (0.002) | -0.0019 (0.002) |
| Organization tenure | -0.0072 (0.005) | -0.0048* (0.003) | 0.0076* (0.004) | -0.0044 (0.003) |
| Supervisor tenure | -0.0081 (0.010) | 0.0052 (0.004) | -0.001 (0.007) | 0.0020 (0.006) |
| Exogenous variables | Yes | Yes | Yes | Yes |

| | | | | |
|----------------|-------------------|--------------------|------------------|---------------------|
| Constant | 0.0458 (0.278) | 1.161*** (0.13) | -0.263 (0.23) | -2.460*** (0.18) |
| Observations | 1.231 | 1.231 | 1.231 | 1.231 |
| R ² | 0.54 | 0.64 | 0.73 | 0.61 |

Standard error between parentheses; *p<0.1,**p<0.05,***p<0.01

The coefficients of all regression results decrease for the gender of the supervisor compared to the coefficients of the regression without the added control variables. Except for the regression result of work-related affect, that one increases from -0.0035 to 0.0037. The coefficients for all regressions remain insignificant. Furthermore, the regressions of work-related affect and of job satisfaction fail the Ramsey RESET test. Thus, the zero conditional mean assumption is violated and the results are less reliable.

Table 4.4 Regression results relation work-related wellbeing and the gender of the supervisor with robustness check non-linear variables.

| Variable | Work engagement | Work-related affect | Job satisfaction | Wellbeing |
|---------------------|----------------------|---------------------|-----------------------|--------------------|
| Gender supervisor | -0.021 (0.060) | -0.0036 (0.027) | 0.055 (0.46) | 0.033 (0.039) |
| LogAge | 0.3902*** (0.105) | 0.0495 (0.046) | -0.2260*** (0.081) | 0.0963 (0.068) |
| LogSupervisorAge | 0.0688 (0.127) | 0.0551 (0.056) | -0.1067 (0.103) | 0.0244 (0.078) |
| Exogenous variables | Yes | Yes | Yes | Yes |
| Constant | -0.837 (0.57) | 0.787*** (0.25) | 0.499 (0.43) | -2.83*** (0.35) |
| Observations | 1.231 | 1.231 | 1.231 | 1.231 |
| R ² | 0.53 | 0.63 | 0.73 | 0.52 |

Standard error between parentheses; *p<0.1,**p<0.05,***p<0.01

Another robustness check is done, to look at possible nonlinear relationships between the dependent and independent variables. To decide which variables have a nonlinear relationship with the dependent variables, scatterplots are made. They show that the independent variable job liking and organization liking do have a linear relationship with the dependent variables, work-engagement, work-related affect, job satisfaction and wellbeing. Looking at the scatterplots of the independent variables age and age supervisor, they do not appear to have a linear relationship with the dependent variables. These nonlinear relationships do not have a clear turning point, so for the variables age and supervisor age logarithmic transformations are

used. The results of the regressions with these transformations are displayed in *table 4.4* All of the results, for the coefficient of the gender supervisor, from the models are not significant. Also the regression results of work-related affect and job satisfaction still fail the Ramsey RESET test. This is not the case for the regression results of work engagement and wellbeing.

So when looking at the first hypothesis *H1: The association between a female supervisor and the work-related wellbeing of a supervisee is positive*, the regression results for job satisfaction, work-related affect, work engagement and wellbeing conclude that for the data used, there is no significant association between the gender of the supervisor and the supervisee wellbeing. Therefore, The first hypothesis is rejected.

To test the second hypothesis regressions are run for work-related wellbeing and each of the wellbeing variables, adding the independent dummy variable of a gender match between the supervisor and supervisee. The results are shown in *table 4.5*.

Table 4.5 Regression results gender match supervisor and supervisee work-related wellbeing.

| | Work engagement | Work-related affect | Job satisfaction | Wellbeing |
|---------------------|------------------------|----------------------------|-------------------------|---------------------|
| Gender match | -0.0326 (0.058) | -0.0140 (0.027) | -0.0034 (0.044) | -0.043 (0.037) |
| Exogenous variables | Yes | Yes | Yes | Yes |
| Constant | 0.404 (0.28) | 1.062*** (0.13) | -0.358 (0.22) | -2.474*** (0.17) |
| Observations | 1.231 | 1.231 | 1.231 | 1.231 |
| R ² | 0.53 | 0.63 | 0.73 | 0.52 |

Standard error between parentheses; *p<0.1,**p<0.05,***p<0.01

All the F-tests of the separate regressions show that the models are better off with the independent variables used than without. Furthermore, the Ramsey RESET test shows that nonlinearity is missed for the regression of work-related affect, and job satisfaction. Nonlinearity is not missed in the regressions of wellbeing and work engagement. As can be seen in *table 4.5* the coefficients of the gender match are all small and negative. None of these correlations are significant. In *Appendix G* the regression results with the endogenous control variables can be found. All the results get lower, but they also show no significant results for all the wellbeing aspects and the gender match of the supervisor. Concluding, the regression results rejects the second hypothesis *H2: When the gender of the supervisee matches the gender of the supervisor this has a positive association with work-related wellbeing of the supervisee*.

Table 4.6 Regression results relation work-related wellbeing and virtuous leadership.

| | Work engagement | Work-related affect | Job satisfaction | Wellbeing |
|---------------------|------------------------|----------------------------|-------------------------|---------------------|
| Gender supervisor | -0.013 (0.060) | 0.0026 (0.027) | 0.065 (0.045) | 0.046 (0.034) |
| Virtuous Leadership | 0.117*** (0.041) | 0.097*** (0.018) | 0.205*** (0.031) | 0.330*** (0.022) |
| Exogenous variables | Yes | Yes | Yes | Yes |
| Constant | 0.238 (0.27) | 0.909*** (0.13) | -0.590 (0.22) | -3.176*** (0.16) |
| Observations | 1.231 | 1.231 | 1.231 | 1.231 |
| R ² | 0.54 | 0.64 | 0.73 | 0.62 |

Standard error between parentheses; *p<0.1,**p<0.05,***p<0.01

In *table 4.6* the regression results are visible when virtuous leadership is added to the regression for work-related wellbeing and the gender of the supervisor. Without virtuous leadership the coefficients for work engagement, work related affect, job satisfaction and wellbeing related to the gender of the supervisor in the regression of formula 1 were, -0.020, -0.0035, 0.055 and 0.033, respectively. All the results were insignificant. When virtuous leadership is added to the regressions the coefficient of supervisor gender becomes -0.013 for work engagement, 0.0026 for work-related affect, 0.065 for job satisfaction and 0.046 for wellbeing, all coefficients are insignificant. The regressions for work-related affect and job satisfaction fail the Ramsey RESET test. Furthermore, the coefficients of the regression have become smaller which could support that virtuous leadership acts as a mediating variable.

Next to see if there is a significant correlation between the supervisor gender and virtuous leadership a regression is run with virtuous leadership as a dependent variable, not including the variables related to work-related wellbeing. Besides that, there is controlled for the same variables as in *table 4.6*. The regression has control variables that are used that make the model fit the data well according to the F-test however the regression does fail the Ramsey RESET test. *Table 4.7* shows that the coefficient of supervisor is -0.039 and is not significant.

Table 4.7 Regression results relation virtuous leadership as dependent variable.

| Virtuous Leadership | |
|---------------------|-------------------|
| Supervisor gender | -0.039 (0.051) |
| Constant | 2.04*** (0.23) |
| Exogenous variables | Yes |
| Observations | 1.231 |
| R ² | 0.14 |

Standard error between parentheses; *p<0.1,**p<0.05,***p<0.01

So, to formally test if virtuous leadership does act as a mediating variable the Sobel test is run, the results are displayed in *table 4.8*. The Sobel tests for wellbeing (-0.014), work-related affect (0.011), work engagement (0.018) and job satisfaction (-0.022) all do not produce significant coefficients. So, for all Sobel tests virtuous leadership does not act as a mediator between the gender of the supervisor and work-related wellbeing. Therefore *H3: Virtuous leadership mediates the association between supervisor gender and the supervisee work-related wellbeing* is rejected.

Table 4.8 Sobel test results mediation virtuous leadership for work-related wellbeing.

| | Indirect effect | Std. Error | 95% confidence interval | |
|---------------------|-----------------|------------|-------------------------|-------|
| Work engagement | -0.018 | 0.033 | -0.083 | 0.048 |
| Job satisfaction | -0.022 | 0.041 | -0.102 | 0.059 |
| Work-related affect | -0.011 | 0.020 | -0.050 | 0.029 |
| Wellbeing | -0.014 | 0.027 | -0.066 | 0.038 |

Standard error between parentheses; *p<0.1,**p<0.05,***p<0.01

5. Discussion & Conclusion

5.1 Discussion

The first part of the results, including almost all the robustness checks, shows that there is no significant association between the gender of the supervisor and the work-related wellbeing. Thus the first hypothesis, *H1: The association between a female supervisor and the work-related wellbeing of a supervisee is positive*, is rejected. This result is similar to some of the existing literature, that shows that there is no significant difference for the work engagement and job satisfaction of the employee regarding the gender of the supervisor (Bakker et al., 2012; Campione, 2014). Deducing, that there are indeed no differences in how the gender of the supervisor affects the wellbeing of the supervisee or that the pros and cons of having a certain gender as a supervisor cancel each other out. Apart from this there is also other literature that shows that the work-engagement of the supervisee is higher with a female supervisor (Gutermann et al, 2017; Gallup, 2015). This is reflected in this paper by the sub-group of countries with a low GGI-score, that showed an significant increase of work-engagement when the supervisor is a female. Besides that, the robustness check for different sub-groups reveal some more significant results. Countries with a low GGI-score showed that having a male supervisor increases job satisfaction a lot. That result does not match the current literature. An explanation could be that most of the literature does not come from countries with a low GGI-score. A possibility is that the more 'traditional' culture of countries with a lower GGI-score maybe enlarges the differences between how men and women are perceived by their supervisees. Another sub-group hierarchy showed that for the bottom 25% of the organization, supervisees with a male supervisor have a significant higher job satisfaction. When having a male supervisor, the job satisfaction of the supervisee increases with 0.148 ($p < 0.05$) unit on average. This also does not match the existing literature. A lot of the literature about leadership focuses on the middle and higher management, so that could explain this outlier. Another explanation could be that men are often seen as more charismatic than women and charisma is known to improve the job satisfaction of supervisees (Kaiser et al, 2016; Vlachos et al., 2013). It could be that charisma plays a larger role in determining the job satisfaction of employees in the bottom of the hierarchy of the company, than in the top hierarchy of the company where there are no significant differences in job satisfaction of the employee regarding the gender of the supervisor. However, this is not sure.

Next the second hypothesis, *H2: When the gender of the supervisee matches the gender of the supervisor this has a positive association with work-related wellbeing of the supervisee*, is rejected following the results of this paper. The existing literature suggests that there could be a higher probability of have a higher scores for job satisfaction and work engagement when the gender of the supervisee and the gender of the supervisor match (Grissom et al., 2012; Smayling et al., 2012; Gallup, 2015). On the other hand there is also literature that shows that more conflicts appear in a team when the supervisor has the same gender as most of the team members (Jones et al, 2018). This could negatively affect the wellbeing of the employees. So it could be that in this paper there is no effect of having a gender match, for the supervisee and supervisor, on the work-related wellbeing of the supervisee. Another explanation could be that the advantages and the disadvantages of having a gender match between the supervisor and supervisee cancel each other out.

The last part of this paper considers if virtuous leadership acts as a mediator between the gender of the supervisor and work-related wellbeing, with the third hypothesis, *H3: Virtuous leadership mediates the association between supervisor gender and the supervisee work-related wellbeing*. This hypothesis is also rejected based on the results. Virtuous leadership does affect the work-related wellbeing of the supervisor but there is no significant association between gender of the supervisor and virtuous leadership. The existing literature suggests that since females score higher on some of the virtuous leadership aspects, they would also score higher for virtuous leadership itself (Ferragut et al., 2014; Toussaint et al, 2005). However, the results of this paper show that this is not the case and that female supervisors do not score significantly higher for virtuous leadership than men.

This paper shows that with the current status quo it does not matter for the work-related wellbeing of the supervisee which gender the supervisor has. Objectively male and female supervisors show the same impact on the wellbeing of employees, however in society the image of a man as a better leader than a woman is very persistent. This persisting mismatch between the objective and subjective view about leadership effects the position of females in the western world. On paper women and men are equal but in reality there is a hierarchy established for the genders. One of the consequences is that there are less women in leadership positions. But is this a drawback if the gender of the supervisor does not associate with the work-related wellbeing of the supervisor? To answer this question it should be taken into account that this paper is just a small part of the equation about female leadership. Looking at the bigger picture it does show drawbacks for having great disparity between the amount of male and female

leaders. First, more women than men graduate with a higher education level than men, so to only have few of those women work in leadership positions is a loss of human capital. Also, there is literature that shows that female supervisors improve the performance of their employees, score better on feedback about leadership dimensions and that their supervisees experience higher level of mastery and social support (Eagly et al., 2003; Ibarra et al., 2009; Moore et al., 2005). In addition, there is a significant percentage of women that is not financially independent and the position of a supervisor often comes with a higher salary. Lastly, you could ask about how ethically justified it is to have a great majority of men in leadership positions making decisions about the whole population, while women comprise of half of that population. Organizations could try to encourage more female leadership by creating an equitable working environment for both women and men. Women often are conflicted between working or taking care of the household, while men often choose to work and leave the household to their partner. Thus, organizations can provide accommodations so that women and men can start to combine their work and household better. For example, by creating more flexibility and reducing the time their employees have to spend on their household.

Limitations of this research are that it is not applicable outside of the western world. Controls were performed for some countries in Latin America but the results are unknown for Africa and Asia, where the majority of the global population lives. Furthermore, the data is from a self-selected survey so the data is not randomized. As well, some of the regression results are less reliable because they failed the Ramsey-RESET test and there is always the risk of having omitted variables.

Following research could be done with data of more countries that are not in the western world since cultural norms could be of great influence on how people look at male and female leadership. In addition to that, more research could be done to see if this paper is generalizable for other data. Next, it would be interesting to know if motherhood of both a supervisor and supervisee improves the wellbeing of the supervisee. Since the supervisor in theory could provide more help in combining work with children. Also further research could be done to see if there is a relation between how people think about male and female leadership and how they perceive the gender of their own supervisor.

5.2 Conclusion

The results of this paper conclude that answer to main question of this paper, *Is the gender of the supervisor associated with the work-related wellbeing of the supervisee?*, is no. There is no significant association with the gender of the supervisor and the work-related wellbeing of the

supervisee. In general the perception is that there are large differences in how well men and women function in leadership positions. However, this paper and other papers show that those large differences are in reality small or non-existent across the multiple ways to measure good leadership. This supports the notion that the general perception about leadership fitting men better than women is obsolete.

References

- Aaldering, L., & Van Der Pas, D. J. (2018, March 5). Political Leadership in the Media: Gender Bias in Leader Stereotypes during Campaign and Routine Times. *British Journal of Political Science*, *50*(3), 911–931. <https://doi.org/10.1017/s0007123417000795>
- Adams, R. B., & Ferreira, D. (2009). Women in the boardroom and their impact on governance and performance☆. *Journal of Financial Economics*, *94*(2), 291–309. <https://doi.org/10.1016/j.jfineco.2008.10.007>
- Ahern, K. R., & Dittmar, A. K. (2012). The Changing of the Boards: The Impact on Firm Valuation of Mandated Female Board Representation *. *The Quarterly Journal of Economics*, *127*(1), 137–197. <https://doi.org/10.1093/qje/qjr049>
- Anitha, J. (2014). Determinants of employee engagement and their impact on employee performance. *International Journal of Productivity and Performance Management*, *63*(3), 308–323. <https://doi.org/10.1108/IJPPM-01-2013-0008>
- Babcock-Roberson, M. E., & Strickland, O. J. (2010, April 8). The Relationship Between Charismatic Leadership, Work Engagement, and Organizational Citizenship Behaviors. *The Journal of Psychology*, *144*(3), 313–326. <https://doi.org/10.1080/00223981003648336>
- Bakker, A. B., & Bal, M. P. (2010, March). Weekly work engagement and performance: A study among starting teachers. *Journal of Occupational and Organizational Psychology*, *83*(1), 189–206. <https://doi.org/10.1348/096317909x402596>
- Bakker, A. B., Demerouti, E., & ten Brummelhuis, L. L. (2012, April). Work engagement, performance, and active learning: The role of conscientiousness. *Journal of Vocational Behavior*, *80*(2), 555–564. <https://doi.org/10.1016/j.jvb.2011.08.008>
- Bakker, A. B., & Oerlemans, W. (2011). Subjective well-being in organizations. *The Oxford Handbook of Positive Organizational Scholarship*, *49*, 178–189.
- Bertrand, M., Black, S. E., Jensen, S., & Lleras-Muney, A. (2018). Breaking the Glass Ceiling? The Effect of Board Quotas on Female Labour Market Outcomes in Norway. *The Review of Economic Studies*. <https://doi.org/10.1093/restud/rdy032>
- Blaker, N. M., Rompa, I., Dessing, I. H., Vriend, A. F., Herschberg, C., & Van Vugt, M. (2013). The height leadership advantage in men and women: Testing evolutionary psychology predictions about the perceptions of tall leaders. *Group Processes & Intergroup Relations*, *16*(1), 17–27. <https://doi.org/10.1177/1368430212437211>

- Brakel, M. van den, Portegijs, W. and Hermans, B. (2020). *Emancipatiemonitor 2020*. Sociaal en Cultureel Planbureau.
- Brunell, A. B., Gentry, W. A., Campbell, W. K., Hoffman, B. J., Kuhnert, K. W., & DeMarree, K. G. (2008, October 2). Leader Emergence: The Case of the Narcissistic Leader. *Personality and Social Psychology Bulletin*, 34(12), 1663–1676. <https://doi.org/10.1177/0146167208324101>
- Campione, W. A. (2014). The influence of supervisor race, gender, age, and cohort on millennials' job satisfaction. *Journal of Business Diversity*, 14(1), 18–34. <https://www.proquest.com/scholarly-journals/influence-supervisor-race-gender-age-cohort-on/docview/1648960477/se-2>.
- Cammann, C., Fichman, M., Jenkins, D. and Klesh, J. (1983). ‘MI Organizational Assessment Questionnaire’, In Seashore, S. E., Lawler, E. E., Mirvis, P. H. and Cammann, C. (Eds.), *Assessing Organizational Change: A Guide to Methods, Measures, and Practices* pp. New York: Wiley-Interscience. NY, 71-138.
- Cassion, C., Qian, Y., Bossou, C., & Ackerman, M. (2021). *Investors Embrace Gender Diversity, Not Female CEOs: The Role of Gender in Startup Fundraising*. SpringerLink. Retrieved September 5, 2022, from https://link.springer.com/chapter/10.1007/978-3-030-76426-5_10?error=cookies_not_supported&code=f702f8c6-19f0-42d3-a4e0-8ebb17e80af8
- Centraal Bureau voor de Statistiek. (2022, August 16). *Werkenden*. Retrieved August 29 2022, from <https://www.cbs.nl/nl-nl/visualisaties/dashboard-arbeidsmarkt/werkenden>
- Chamorro-Premuzic, T. (2019, March 12). *Why Do So Many Incompetent Men Become Leaders?: (And How to Fix It)*, p.176-177 . Harvard Business Review Press.
- Chamorro-Premuzic, T. (2022, February 25). *Why Do So Many Incompetent Men Become Leaders?* Harvard Business Review. Retrieved August 29, 2022, from <https://hbr.org/2013/08/why-do-so-many-incompetent-men>
- Chen, Y., Friedman, R., & Simons, T. (2014). The gendered trickle-down effect. *Career Development International*, 19(7), 836–856. <https://doi.org/10.1108/cdi-02-2014-0031>
- Dobbin, F., & Jung, J. (2011). Corporate board gender diversity and stock performance: the competence gap or institutional investor bias. *North Carolina Law Review*, 89(3), 809–840.
- Dorfman, P. W., Howell, J. P., Hibino, S., Lee, J. K., Tate, U., & Bautista, A. (1997, September). Leadership in Western and Asian countries: Commonalities and

- differences in effective leadership processes across cultures. *The Leadership Quarterly*, 8(3), 233–274. [https://doi.org/10.1016/s1048-9843\(97\)90003-5](https://doi.org/10.1016/s1048-9843(97)90003-5)
- Eagly, A. H., Johannesen-Schmidt, M. C., & Van Engen, M. L. (2003). Transformational, transactional, and laissez-faire leadership styles: A meta-analysis comparing women and men. *Psychological Bulletin*, 129(4), 569–591. <https://doi.org/10.1037/0033-2909.129.4.569>
- EMP13: Employment by industry - Office for National Statistics. (2022, August 16). Retrieved September 27, 2022, from <https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/datasets/employmentbyindustryemp13>
- Ferragut, M., Blanca, M. J., & Ortiz-Tallo, M. (2014, January 9). Psychological virtues during adolescence: A longitudinal study of gender differences. *European Journal of Developmental Psychology*, 11(5), 521–531. <https://doi.org/10.1080/17405629.2013.876403>
- Gallup. (2015). *The State of the American Manager: Analytics and Advice for Leaders report*. <https://www.gallup.com/services/182216/state-american-manager-report.aspx%20/>
- Goldin, C. (2021). *Career and Family*, p. 1-17. Amsterdam University Press.
- Grijalva, E., Newman, D. A., Tay, L., Donnellan, M. B., Harms, P. D., Robins, R. W., & Yan, T. (2015). Gender differences in narcissism: A meta-analytic review. *Psychological Bulletin*, 141(2), 261–310. <https://doi.org/10.1037/a0038231>
- Grissom, J. A., Nicholson-Crotty, J., & Keiser, L. (2012, April 13). Does My Boss's Gender Matter? Explaining Job Satisfaction and Employee Turnover in the Public Sector. *Journal of Public Administration Research and Theory*, 22(4), 649–673. <https://doi.org/10.1093/jopart/mus004>
- Groves, K. S. (2005). Gender Differences in Social and Emotional Skills and Charismatic Leadership. *Journal of Leadership & Organizational Studies*, 11(3), 30–46. <https://doi.org/10.1177/107179190501100303>
- Gutermann, D., Lehmann-Willenbrock, N., Boer, D., Born, M., & Voelpel, S. C. (2017, January 26). How Leaders Affect Followers' Work Engagement and Performance: Integrating Leader–Member Exchange and Crossover Theory. *British Journal of Management*, 28(2), 299–314. <https://doi.org/10.1111/1467-8551.12214>
- Guillén, L., Mayo, M., & Karelaia, N. (2017). Appearing self-confident and getting credit for it: Why it may be easier for men than women to gain influence at work. *Human Resource Management*, 57(4), 839–854. <https://doi.org/10.1002/hrm.21857>

- Hendriks, M., Burger, M., Rijsenbilt, A., Pleeging, E., & Commandeur, H. (2020). Virtuous leadership: a source of employee well-being and trust. *Management Research Review*, 43(8), 951–970. <https://doi.org/10.1108/mrr-07-2019-0326>
- Hogan, R., Curphy, G. J., & Hogan, J. (1994). What we know about leadership: Effectiveness and personality. *American Psychologist*, 49(6), 493–504. <https://doi.org/10.1037/0003-066x.49.6.493>
- Ibarra, I., & Obodaru, O. (2009). Women and the vision thing. *Human Resource Management International Digest*, 17(4). <https://doi.org/10.1108/hrmid.2009.04417dad.001>
- Jones, L. K., Jennings, B. M., Higgins, M. K., & de Waal, F. B. M. (2018, July 2). Ethological observations of social behavior in the operating room. *Proceedings of the National Academy of Sciences*, 115(29), 7575–7580. <https://doi.org/10.1073/pnas.1716883115>
- Joseph, D. L., & Newman, D. A. (2010). Emotional intelligence: An integrative meta-analysis and cascading model. *Journal of Applied Psychology*, 95(1), 54–78. <https://doi.org/10.1037/a0017286>
- Judge, T. A., Thoresen, C. J., Bono, J. E., & Patton, G. K. (2001). The job satisfaction–job performance relationship: A qualitative and quantitative review. *Psychological Bulletin*, 127(3), 376–407. <https://doi.org/10.1037/0033-2909.127.3.376>
- Kaiser, R. B., & Wallace, W. T. (2016, March). Gender bias and substantive differences in ratings of leadership behavior: Toward a new narrative. *Consulting Psychology Journal: Practice and Research*, 68(1), 72–98. <https://doi.org/10.1037/cpb0000059>
- Kocoglu, I., & Mithani, M. A. (2020, April). Does an attractive partner make you a better leader? Only if you are a male! *The Leadership Quarterly*, 31(2), 101339. <https://doi.org/10.1016/j.leaqua.2019.101339>
- Krekel, C., Ward, G., & De Neve, J.-E. (2019). Employee wellbeing, productivity, and firm performance. *Ssrn Electronic Journal*, (2019). <https://doi.org/10.2139/ssrn.3356581>
- Lammers, J., Rink, F. A., Stapel, D. A., & Stoker, J. I. (2011). De hardnekkige behoefte aan een sterke man: Leiderschap na de crisis. *Management & Organisatie*, 64(4), 27–42.
- Lyness, K. S., & Grotto, A. R. (2018). Women and Leadership in the United States: Are We Closing the Gender Gap? *Annual Review of Organizational Psychology and Organizational Behavior*, 5(1), 227–265. <https://doi.org/10.1146/annurev-orgpsych-032117-104739>
- Managementboek.nl. (2022, August 29). *Annegreet van Bergen - Zestig jaar handelingsbekwaam - Boekblog*. Retrieved August 29, 2022, from

- <https://www.managementboek.nl/magazine/column/5631/annegreet-van-bergen-zestig-jaar-handelingsbekwaam>
- Mckinsey & Company & Lean In. (2021). *Women in the Workplace 2021*. McKinsey & Company. Retrieved October 6, 2022, from <https://womenintheworkplace.com/>
- Moore, S., Grunberg, L., & Greenberg, E. (2005, March 1). Are female supervisors good for employee job experiences, health, and wellbeing? *Women in Management Review*, 20(2), 86–95. <https://doi.org/10.1108/09649420510584427>
- OPM. (2014). *Women in Federal Service: A Seat at Every Table*. United States Office of Personnel Management. Retrieved October 6, 2022, from <https://www.opm.gov/search/#women%20in%20federal%20service>
- Oswald, A. J., Proto, E., & Sgroi, D. (2015). Happiness and Productivity. *Journal of Labor Economics*, 33(4), 789–822. <https://doi.org/10.1086/681096>
- Powell, G. N., Butterfield, D. A., & Parent, J. D. (2002). Gender and Managerial Stereotypes: Have the Times Changed? *Journal of Management*, 28(2), 177–193. <https://doi.org/10.1177/014920630202800203>
- Schaufeli, W. B., Shimazu, A., Hakanen, J., Salanova, M., & De Witte, H. (2019, July). An Ultra-Short Measure for Work Engagement. *European Journal of Psychological Assessment*, 35(4), 577–591. <https://doi.org/10.1027/1015-5759/a000430>
- Smayling, M., & Miller, H. (2012). Job Satisfaction and Job Performance at the Internship Level. *Journal of Leadership, Accountability and Ethics*, 9(1), 27–33. <https://www.proquest.com/docview/1019050891?pq-origsite=gscholar&fromopenview=true>
- Scott, L. (2022, March 3). *The Cost of Sexism: How the Economy Is Built for Men and Why We Must Reshape It*, p. 25-27. Faber & Faber, Limited.
- Stoker, J. I., van der Velde, M., & Lammers, J. (2011). Factors Relating to Managerial Stereotypes: The Role of Gender of the Employee and the Manager and Management Gender Ratio. *Journal of Business and Psychology*, 27(1), 31–42. <https://doi.org/10.1007/s10869-011-9210-0>
- Stoker, J.I. (2018). *More feminine leadership in the current time, androgenous leadership*. De androgyne leider. In: Boonstra, J.(red.), *Perspectieven op leiderschap*, 239-267. Amsterdam: Vakmedianet.
- Su, R., Rounds, J., & Armstrong, P. I. (2009). Men and things, women and people: A meta-analysis of sex differences in interests. *Psychological Bulletin*, 135(6), 859–884. <https://doi.org/10.1037/a0017364>

- Techleap. (2019). *Gender Diversity in the Netherlands Report*. <https://www.techleap.nl/reports/launching-the-gender-diversity-in-the-netherlands/>
- TIAS school for business and society, & Lückerath-Rovers, M. (2020). *The Dutch Female Board index 2020*. <https://www.tias.edu/en/knowledge/dossiers/detail/female-board-index>
- Toussaint, L., & Webb, J. R. (2005, December). Gender Differences in the Relationship Between Empathy and Forgiveness. *The Journal of Social Psychology*, 145(6), 673–685. <https://doi.org/10.3200/socp.145.6.673-686>
- United Nations. (2008, 14 November). *International Standard Industrial Classification of All Economic Activities (ISIC) (Statistical Papers (Ser. M))* (4th Revised ed.).
- U.S. GAO. (2022, March 7). *Women in Management: Women Remain Underrepresented in Management Positions and Continue to Earn Less Than Male Managers* (GAO-22-105796). Retrieved August 10, 2022, from <https://www.gao.gov/products/gao-22-105796>
- Vlachos, P. A., Panagopoulos, N. G., & Rapp, A. A. (2013, January 6). Feeling Good by Doing Good: Employee CSR-Induced Attributions, Job Satisfaction, and the Role of Charismatic Leadership. *Journal of Business Ethics*, 118(3), 577–588. <https://doi.org/10.1007/s10551-012-1590-1>
- Wang, G., & Hackett, R. D. (2015). Conceptualization and Measurement of Virtuous Leadership: Doing Well by Doing Good. *Journal of Business Ethics*, 137(2), 321–345. <https://doi.org/10.1007/s10551-015-2560-1>
- Warr, P. (1990, September). The measurement of well-being and other aspects of mental health. *Journal of Occupational Psychology*, 63(3), 193–210. <https://doi.org/10.1111/j.2044-8325.1990.tb00521.x>
- De Waal, F. (2022). *Different: What apes can teach us about gender*, p.198-225. Adfo Books.
- WORLD BANK GROUP. & World Bank. (2022, March 1). *Women, Business and the Law 2022*. World Bank Publications.
- World Economic Forum. (2021, March). *Global Gender Gap Report 2021*.
- EMP13: Employment by industry - Office for National Statistics. (2022, August 16). Retrieved September 27, 2022, from <https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/datasets/employmentbyindustryemp13>

Zeigler-Hill, V., Besser, A., Morag, J., & Keith Campbell, W. (2016). The Dark Triad and sexual harassment proclivity. *Personality and Individual Differences*, 89, 47–54.
<https://doi.org/10.1016/j.paid.2015.09.048>

Appendix A: VIF-values

Table A VIF-values regression results relation work-related wellbeing and the gender of the supervisor.

| Variable | Work engagement | Work-related affect | Job satisfaction | Wellbeing |
|---------------------------|------------------------|----------------------------|-------------------------|------------------|
| Supervisor gender | 1.16 | 1.16 | 1.16 | 1.16 |
| Job liking | 3.03 | 3.09 | 2.92 | 2.44 |
| Organization liking | 2.53 | 2.51 | 2.49 | 2.40 |
| Age supervisor | 1.09 | 1.09 | 1.09 | 1.09 |
| Age | 1.12 | 1.13 | 1.13 | 1.12 |
| Gender | 1.13 | 1.13 | 1.13 | 1.12 |
| Education | 1.04 | 1.04 | 1.04 | 1.04 |
| Western world | 1.06 | 1.06 | 1.06 | 1.06 |
| Organization size | 1.03 | 1.03 | 1.03 | 1.03 |
| Sector | 1.12 | 1.11 | 1.11 | 1.11 |
| Gender dominated industry | 1.09 | 1.09 | 1.09 | 1.09 |

Appendix B: Heterogeneity analysis, World region

Table B.1 Regression results gender supervisor and supervisee work-related wellbeing for US.

| Variable | Work engagement | Work-related affect | Job satisfaction | Wellbeing |
|---------------------|------------------|---------------------|------------------|--------------------|
| Gender supervisor | 0.136 (0.132) | -0.102 (0.057) | 0.030 (0.093) | 0.0959 (0.080) |
| Exogenous variables | Yes | Yes | Yes | Yes |
| Constant | 0.360 (0.55) | 1.28*** (7.58) | -0.347 (0.45) | -2.20*** (0.37) |
| Observations | 292 | 292 | 292 | 292 |
| R ² | 0.60 | 0.65 | 0.77 | 0.60 |

Standard error between parentheses; *p<0.1,**p<0.05,***p<0.01

Table B.2 Regression results gender supervisor and supervisee work-related wellbeing for UK.

| Variable | Work engagement | Work-related affect | Job satisfaction | Wellbeing |
|---------------------|-------------------|---------------------|--------------------|--------------------|
| Gender supervisor | -0.003 (0.079) | 0.0016 (0.389) | -0.0084 (0.067) | -0.0077 (0.055) |
| Exogenous variables | Yes | Yes | Yes | Yes |
| Constant | -0.250 (0.38) | 1.11*** (0.17) | -0.595** (0.30) | -2.98*** (0.22) |
| Observations | 627 | 627 | 627 | 627 |
| R ² | 0.58 | 0.65 | 0.73 | 0.53 |

Standard error between parentheses; *p<0.1,**p<0.05,***p<0.01

Table B.3 Regression results gender supervisor and supervisee work-related wellbeing for Canada and New Zealand.

| Variable | Work engagement | Work-related affect | Job satisfaction | Wellbeing |
|---------------------|--------------------|---------------------|------------------|-------------------|
| Gender supervisor | -0.0071 (0.647) | 0.0223 (0.177) | 0.410 (0.319) | 0.336 (0.249) |
| Exogenous variables | Yes | Yes | Yes | Yes |
| Constant | 4.62** (1.96) | 0.056 (0.58) | -0.156 (1.47) | -1.81** (0.80) |
| Observations | 38 | 38 | 38 | 38 |
| R ² | 0.54 | 0.76 | 0.74 | 0.62 |

Standard error between parentheses; *p<0.1,**p<0.05,***p<0.01

Table B.4 Regression results gender supervisor and supervisee work-related wellbeing for Continental Europe.

| Variable | Work engagement | Work-related affect | Job satisfaction | Wellbeing |
|---------------------|------------------------|----------------------------|-------------------------|--------------------|
| Gender supervisor | -0.232 (0.153) | 0.0273 (0.063) | 0.162 (0.114) | 0.075 (0.084) |
| Exogenous variables | Yes | Yes | Yes | Yes |
| Constant | 0.837 (0.61) | 1.081*** (0.26) | -0.038 (0.45) | -2.02*** (0.33) |
| Observations | 197 | 197 | 197 | 197 |
| R ² | 0.40 | 0.63 | 0.71 | 0.48 |

Standard error between parentheses; *p<0.1,**p<0.05,***p<0.01

Table B.5 Regression results gender supervisor and supervisee work-related wellbeing for Latin America.

| Variable | Work engagement | Work-related affect | Job satisfaction | Wellbeing |
|---------------------|------------------------|----------------------------|-------------------------|-------------------|
| Gender supervisor | 0.0615 (0.244) | -0.128 (0.113) | 0.00 (0.172) | -0.113 (0.133) |
| Exogenous variables | Yes | Yes | Yes | Yes |
| Constant | 0.354 (1.54) | 1.60*** (0.60) | 0.830 (1.13) | -1.25 (0.78) |
| Observations | 69 | 69 | 69 | 69 |
| R ² | 0.55 | 0.60 | 0.65 | 0.51 |

Standard error between parentheses; *p<0.1,**p<0.05,***p<0.01

Appendix C: Heterogeneity analysis, GGI score

Table C.1 Regression results gender supervisor and supervisee work-related wellbeing for GGI score lower than 0.75.

| Variable | Work engagement | Work-related affect | Job satisfaction | Wellbeing |
|---------------------|---------------------|---------------------|---------------------|---------------------|
| Gender supervisor | -0.471** (0.226) | -0.024 (0.109) | 0.421*** (0.158) | 0.166 (0.145) |
| Exogenous variables | Yes | Yes | Yes | Yes |
| Constant | 0.851 (0.91) | 0.933** (0.43) | -0.264 (0.69) | -2.093*** (0.53) |
| Observations | 91 | 91 | 91 | 91 |
| R ² | 0.52 | 0.71 | 0.79 | 0.53 |

Standard error between parentheses; *p<0.1,**p<0.05,***p<0.01

Table C.2 Regression results gender supervisor and supervisee work-related wellbeing for GGI score higher than 0.75.

| Variable | Work engagement | Work-related affect | Job satisfaction | Wellbeing |
|---------------------|-------------------|---------------------|-------------------|---------------------|
| Gender supervisor | 0.0188 (0.063) | -0.0064 (0.283) | 0.0278 (0.047) | 0.0276 (0.040) |
| Exogenous variables | Yes | Yes | Yes | Yes |
| Constant | 0.510* (0.29) | 1.074*** (0.137) | -0.438* (0.23) | -2.488*** (0.18) |
| Observations | 1.140 | 1.140 | 1.140 | 1.140 |
| R ² | 0.54 | 0.63 | 0.73 | 0.53 |

Standard error between parentheses; *p<0.1,**p<0.05,***p<0.01

Appendix D: Heterogeneity analysis, Gender dominated industry

Table D.1 Regression results gender supervisor and supervisee work-related wellbeing for gender dominated industry.

| Variable | Work engagement | Work-related affect | Job satisfaction | Wellbeing |
|---------------------|------------------------|----------------------------|-------------------------|--------------------|
| Gender supervisor | -0.136 (0.090) | 0.0199 (0.044) | 0.0829 (0.074) | 0.0278 (0.0613) |
| Exogenous variables | Yes | Yes | Yes | Yes |
| Constant | 0.520 (0.41) | 0.982 (0.21) | -0.055 (0.358) | -2.25*** (0.27) |
| Observations | 529 | 529 | 529 | 529 |
| R ² | 0.52 | 0.62 | 0.72 | 0.50 |

Standard error between parentheses; *p<0.1,**p<0.05,***p<0.01

Table D.2 Regression results gender supervisor and supervisee work-related wellbeing gender for gender mixed industry.

| Variable | Work engagement | Work-related affect | Job satisfaction | Wellbeing |
|---------------------|------------------------|----------------------------|-------------------------|---------------------|
| Gender supervisor | 0.067 (0.082) | -0.029 (0.035) | 0.033 (0.059) | 0.025 (0.050) |
| Exogenous variables | Yes | Yes | Yes | Yes |
| Constant | 0.221 (0.36) | 1.045*** (0.17) | -0.533* (0.28) | -2.733*** (0.22) |
| Observations | 702 | 702 | 702 | 702 |
| R ² | 0.55 | 0.65 | 0.73 | 0.54 |

Standard error between parentheses; *p<0.1,**p<0.05,***p<0.01

Appendix E: Heterogeneity analysis, Hierarchy

Table E.1 Regression results gender supervisor and supervisee work-related wellbeing for the bottom 25% in the company or organization.

| Variable | Work engagement | Work-related affect | Job satisfaction | Wellbeing |
|---------------------|------------------------|----------------------------|-------------------------|---------------------|
| Gender supervisor | -0.050 (0.100) | -0.066 (0.043) | 0.148* (0.076) | 0.001 (0.061) |
| Exogenous variables | Yes | Yes | Yes | Yes |
| Constant | 0.421 (0.44) | 1.15*** (0.20) | -0.500 (0.34) | -2.38*** (0.244) |
| Observations | 529 | 529 | 529 | 529 |
| R ² | 0.51 | 0.64 | 0.72 | 0.52 |

Standard error between parentheses; *p<0.1,**p<0.05,***p<0.01

Table E.2 Regression results gender supervisor and supervisee work-related wellbeing for top 25% in the company or organization.

| Variable | Work engagement | Work-related affect | Job satisfaction | Wellbeing |
|---------------------|------------------------|----------------------------|-------------------------|--------------------|
| Gender supervisor | -0.024 (0.157) | 0.001 (0.090) | -0.043 (0.120) | -0.056 (0.117) |
| Exogenous variables | Yes | Yes | Yes | Yes |
| Constant | 0.741 (0.88) | 1.12*** (0.39) | 0.591 (0.62) | -1.55*** (0.53) |
| Observations | 156 | 156 | 156 | 156 |
| R ² | 0.44 | 0.57 | 0.71 | 0.43 |

Standard error between parentheses; *p<0.1,**p<0.05,***p<0.01

Appendix F: Heterogeneity analysis, Education

Table F.1 Regression results gender supervisor and supervisee work-related wellbeing for primary, secondary or some tertiary education but no bachelor's degree as highest level of completed education.

| Variable | Work engagement | Work-related affect | Job satisfaction | Wellbeing |
|---------------------|------------------|---------------------|-------------------|--------------------|
| Gender supervisor | 0.032 (0.096) | 0.034 (0.046) | 0.0326 (0.077) | 0.0107 (0.066) |
| Exogenous variables | Yes | Yes | Yes | Yes |
| Constant | 0.564 (0.50) | 1.06*** (0.23) | -0.538 (-0.40) | -2.43*** (0.29) |
| Observations | 440 | 440 | 440 | 440 |
| R ² | 0.56 | 0.65 | 0.72 | 0.50 |

Standard error between parentheses; *p<0.1,**p<0.05,***p<0.01

Table F.2 Regression results gender supervisor and supervisee work-related wellbeing for bachelor's degree or higher as highest level of completed education.

| Variable | Work engagement | Work-related affect | Job satisfaction | Wellbeing |
|---------------------|-------------------|---------------------|------------------|--------------------|
| Gender supervisor | -0.046 (0.077) | -0.026 (0.034) | 0.063 (0.057) | -0.007 (0.047) |
| Exogenous variables | Yes | Yes | Yes | Yes |
| Constant | 0.123 (0.31) | 1.097*** (0.13) | -0.199 (0.23) | -2.52*** (0.19) |
| Observations | 791 | 791 | 791 | 791 |
| R ² | 0.53 | 0.63 | 0.73 | 0.54 |

Standard error between parentheses; *p<0.1,**p<0.05,***p<0.01

Appendix G: Regression analysis gender match with endogenous variables.

Table G Regression results gender match supervisor and supervisee work-related wellbeing with endogenous control variables added.

| | Work engagement | Work-related affect | Job satisfaction | Wellbeing |
|----------------------|------------------------|----------------------------|-------------------------|--------------------|
| Gender match | -0.039 (0.058) | -0.0149 (0.027) | -0.0039 (0.044) | -0.048 (0.037) |
| Exogenous variables | Yes | Yes | Yes | Yes |
| Endogenous variables | Yes | Yes | Yes | Yes |
| Constant | 0.073 (0.28) | 1.172*** (0.13) | -0.260 (0.23) | -2.43*** (0.18) |
| Observations | 1.231 | 1.231 | 1.231 | 1.231 |
| R ² | 0.54 | 0.64 | 0.75 | 0.54 |

Standard error between parentheses; *p<0.1,**p<0.05,***p<0.01