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The effect of information treatment on the support for reducing gender inequality in executive business positions in the Netherlands

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Abstract

This paper investigates how information treatment affects biased beliefs and support for reducing gender inequality in executive business positions. This research distinguishes itself from previous literature, by not looking at the causes of gender inequality, but by researching the biased beliefs people may have about this societal issue. Therefore, this research helps to understand if there are biased beliefs on this topic and how they can be possibly corrected. This research utilizes an experimental approach. The data was collected through an online survey, targeting the Dutch population. With this data, several t-tests and regressions were performed, in order to obtain the results on the relation between information treatment, biased beliefs and support for campaigns, in the realm of gender inequality in executive positions. The findings show that people have biased beliefs on the gender gap in executive business positions. Furthermore, the findings suggest that people update these beliefs after being exposed to the information treatment. It is also shown that, on average, more support for campaigns aimed at reducing gender inequality is demanded from people that initially overestimated the percentage of female executives, compared to those who underestimated this percentage. However, the analysis also yielded a lot of insignificant results. Therefore, the conclusion is that the information treatment probably does not completely have the desired results, but still for some people, information treatment can help them to see and support actions against the issue of gender inequality, differently. However, these results should be interpreted with caution due to several limitations of the study. These could be addressed in further research.

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1. Introduction

Gender inequality remains a major discussion point all over the world (World Economic Forum, 2021). The inequality between men and women is not only reflected in the domains of knowledge and health, but is also clearly present in the domain of power (EIGE, 2021). This power domain covers the gender inequality in decision-making positions in the political, social and economic realm. Specifically, when looking at the economic realm, the Gender Equality Index was only 46.8% for the European Union in 2020, where 100% would mean perfect equality between men and women. Furthermore, only 26.6% of the board members from listed companies were women. For the Central bank members, the percentage of women was even lower, at 22.1% (EIGE, 2021). This indicates that, still in 2020, women are highly underrepresented in decision-making positions in business.

Many previous research already investigated the topic of gender inequality and the causes of why it can persist in decision-making positions. For example the research of Wynn, & Correll (2018) shows that gender inequality in business is mainly determined by gender stereotypes formed in the past. Women are thought to be less capable than men in many fields and are therefore faced to disadvantages in the working environment. More evidence flows from the research of Hill, Miller, Benson, & Handley (2016), which shows that the inequality is mainly due to the fact that decision-making positions are associated with stereotyped traits, such as: aggressiveness, strength and conflict engagement. This manifests itself in hiring biases, less promotion opportunities and worse evaluations for women compared to men. This leads to the fact that women are systematically excluded from decision-making positions in business (Rhode, 2003). Over the past few years, it is becoming increasingly clear that this is a societal issue and therefore many affirmative actions have been designed. These affirmative actions, such as gender quotas in boards, aim to take away the gender biases in business and aim to promote gender inclusion and equal opportunities for men and women (Crosby, Sabattini, & Aizawa, 2013). Even though these affirmative actions reduce gender inequality slightly, countries have made very little progress over the last years in reducing gender gaps in all areas of economic life (OECD, 2017). Gender stereotypes still remain and as a result, women remain to be underrepresented in decision-making positions in business.

In the Netherlands there has been an active exploration to gender equality from 1960 onwards. Before this, women were represented in traditional gender roles and even had to stop working when they got married. However, this changed when the Equal Treatment Act was implemented by the Dutch government in 1994 (Gerards, 2006). The purpose of this act was

equal treatment for men and women and no discrimination to anyone. This also applied for the workplace. As a result, the Netherlands made some great improvements over the years where more gender equality was the central goal. In 2013, the Dutch government even implemented a law to ensure gender balanced boards. This forced companies to have at least 30% women on their executive and supervisory board (European Parliament, 2015). This seemed like a great step in achieving more gender equality. Indeed, from the Gender Equality Index it became clear that the Netherlands (74.1%) was ahead of most other European Countries (average: 67.9%), in 2020. However, when looking at the percentage of women in executive positions in largest listed companies, this is still only 12.4% (Lückerath-Rovers, 2019). Although, this was an increase of 10% since 2006, it still demonstrates that gender inequality in the Netherlands is still unresolved. Especially in decision-making positions, despite the positive changes and the 30% female representation target. This is a societal issue, as research of Hyde (2014) proves that when looking at the leadership effectiveness for men and women, there are no gender differences. More importantly, it is proven that although men seem to be self-assured leaders, women are rated to be more competent leaders (Paustian-Underdahl, Walker, & Woehr, 2014). Furthermore, it is an societal issue as gender equality is a fundamental human right and it is proven to contribute to the Gross Domestic Product growth of a country (Hsieh, Hurst, Jones, & Klenow, 2019).

Considering all previously mentioned information, it becomes clear that gender inequality is a societal issue that still persist, even in a highly developed country like the Netherlands. This is mainly due to the misperceptions people have about the abilities of men and women in decision-making positions. Therefore, this research distinguishes itself from others by not looking at the misperceptions on why women do not achieve decision-making positions, but by focusing more specifically on the biased beliefs about the general issue of the gender gap (the ratio men/women in executive positions). People hold different beliefs about the severity of this societal issue. To illustrate, there are people that think there are more women in executive positions than there actually and there are people that think there are less women in executive positions than there actually are. It is thus interesting to investigate whether people hold biased beliefs on the gender gap and to what extent these biased beliefs can be corrected. Furthermore, it is investigated how correcting people's beliefs can contribute to more gender equality.

From research of the Dutch "Centraal Bureau voor de Statistiek" (CBS) it becomes clear that the majority of females (61%) and also a part of the males (41%) in the Netherlands indicate

that they want the gender gap in decision-making positions to be reduced to a large extent in the next five years (CBS, 2020). However, as previously mentioned, it could be the case that these opinions are based on biased beliefs about the issue of gender inequality. This paper will therefore investigate if people indeed have biased beliefs about how this gender gap in executive positions in the Netherlands will be in 2025. Furthermore, it will be investigated whether providing people with correct information about the gender gap for 2025, will reduce or enlarge the support for reducing this gender inequality, at this moment in time. For example, it could be the case that when people find out that in 2025 only 32% of the executive positions is fulfilled by women (Lückerath-Rovers, 2019), their views shift for the changes they want to see for the next five years in reducing gender inequality in decision-making positions. This leads to the following research question:

"Do people update their beliefs about the gender inequality in executive positions, by giving them correct information, and does this lead to more or less support for reducing gender inequality in the Netherlands?"

This research is scientifically relevant, as there is no previous literature on these biased beliefs about the gender gap in executive positions in business yet. Furthermore, there also does not exists literature yet on how these beliefs and information treatment can affect people's willingness to support organizations and policy that aim to reduce gender inequality. In addition, the approach of predicting how people think the gender gap will be in the future, is also never been used before in previous literature. Moreover, this research focusses on a sample from the Netherlands, which is different from the research in the realm of biased beliefs on societal issues, which mainly focusses on the United States (US). In contrast to the US, where there are strong differences between republicans and democrats, the Netherlands is expected to be far less polarized, as the Netherlands is typically governed by coalitions. This could largely impact the research results.

This research is also socially relevant, as it can help in understanding if there are biased beliefs about this societal issue. Furthermore, it can help in understanding if these biased beliefs can be mitigated by providing people with correct information. This way governments gain insights on the issue. This could help them in designing new policies or information campaigns, in order to reduce the societal issue of gender inequality in executive positions. Examples of such campaigns could be providing information at universities to students that enter the labor market in the near future. This way, more and more people (and the new generation of board

members) become informed about the societal issue. Furthermore, a possible example of government policy could be to implement more strict gender quotas where the distribution of men and women in boards for example should be 50/50. In addition, the government can decide to give more support to Non-Governmental Organizations (NGOs) or to give more power to trade unions.

In order to answer the research question, firstly, hypotheses will be formulated in the theoretical framework. Secondly, the data collection and methodology to answer the hypotheses, will be discussed. Thirdly, the results will be presented and explained in the results section. Lastly, all relevant findings, relations to previous literature, implications and limitations of the study and suggestions for further research will be presented in the discussion and conclusion.

2. Theoretical framework

The approach of this research is similar to other research papers that investigate how biased beliefs and information treatment can affect support for reducing a societal issue. For example, Haaland, & Roth (2019) studied whether information treatment influences the support for reducing racial discrimination. Their findings show that when correct information on racial discrimination is provided, people update their beliefs and are more willing to support pro-black policies. Furthermore, Haaland, & Roth (2020) investigate how information treatment affects beliefs about the labor market concerns and support for pro-immigration policy. Their findings show that people update their beliefs and become more supportive for pro-immigration policy, because of the information treatment. In addition, Settele (2021) researches the relationship between the beliefs about the gender wage gap and the demand for public policy. Her findings show that information treatment indeed causes the support for reducing the gender wage gap to change.

From the above mentioned papers it becomes clear that a lot of people hold biased beliefs on several societal issues. The reason for these biased beliefs could be that people simply do not know the facts about a certain societal issue. Another, probably more important reason for why these biased beliefs can persist, is the behavioral concept: confirmation bias. This implies that people only seek for information that confirms their existing beliefs or interpret information in the same way as their existing beliefs (Oswald, & Grosjean, 2004). However, from the previous literature mentioned above, it becomes clear that people can update these

biased beliefs when they are provided with correct information. It is therefore interesting to investigate whether people hold biased beliefs about the gender gap in executive positions and if these beliefs are updated when people are provided with correct information. The first and second hypotheses are therefore:

H1: "The Dutch population holds biased beliefs on the gender gap in executive positions in the Netherlands for 2025."

H2: "The Dutch population that holds biased beliefs, updates these beliefs after receiving correct information on the gender gap for 2025."

Furthermore, from the research papers mentioned above, it becomes clear that people are more willing to support campaigns that reduce the societal issue after updating their beliefs. It is therefore interesting to research whether people that over- or underestimated the gender gap for 2025, based on their prior beliefs, have more or less support for policies and organizations that aim at reducing gender inequality, after having received the correct information. This leads to the third hypothesis:

H3: "People that overestimated the gender gap in executive positions in the Netherlands for 2025, based on their prior beliefs, are more willing to support campaigns that aim at reducing gender inequality, after receiving the correct information on the gender gap for 2025, compared to people that underestimated the gender gap."

In addition, it is interesting to research whether younger generations have more support for campaigns aimed at reducing gender inequality than older generations. There could be a difference in perceptions, because in the past there was a fully male-dominated workplace where women had none to very few rights (Kranzberg, & Hannan, 2017). Research shows that older people therefore have more prejudices than younger people, because they are more likely to hold on to stereotypic thoughts (Radvansky, Copeland, & Hippel, 2010). Older people seem to not change their attitudes that were formed in the past, when these stereotypic prejudices were more strongly supported and more widely distributed (Gilbert, 1951). Furthermore, it could also be that older people have more trouble inhibiting their unconscious stereotypes (Hippel, Sliver, & Lynch, 2000). It may thus be the case that older people adhere to these stereotypes from the past and therefore stick to the traditional view that women are less capable of fulfilling executive positions than men. This may result in older people having less support for campaigns that aim at reducing gender inequality. The fourth hypothesis is therefore:

H4: "Older generations have less support for reducing gender inequality, compared to younger generations."

Finally, it is interesting to investigate whether there are differences in support for reducing gender inequality, based on gender. Research suggest that men overestimate their abilities, placing themselves in decision-making positions. This causes women to not be able to achieve decision-making positions (Reuben, Rey-Biel, Sapienza, & Zingales, 2012). Men are thus more likely to think that they have better abilities than women. As a result, this could cause men to be less likely to support campaigns that aim at reducing gender inequality, compared to women. Furthermore, it is suggested that men tend to not see the issue of gender inequality. Research namely shows that 88% of men are convinced that women have the same opportunities as men (Grant, 2015). It could thus be the case that men see gender inequality as a less or none at all severe issue, which may cause them to not wanting to support campaigns aimed at reducing gender inequality as much as women. This leads to the fifth and final hypothesis:

H5: "Men have less support for reducing gender inequality, compared to women."

3. Experimental design

The experiment consisted of five stages. In the first stage, participants were asked about research criteria, their consent and they were informed with some prior information on the topic. This first stage will be now be explained further. In order to make sure everyone belonged to the targeted sample, the respondents were asked if they were Dutch. If they answered "yes", the survey continued, if they answered "no", the survey automatically closed. Furthermore, all participants were asked for their consent to participate in the research study and were informed that their answers were completely anonymous. Finally, the respondents got some information on the percentage of females that were in executive business positions of the largest listed companies in the Netherlands in 2020, which was 12.4% (Lückerath-Rovers, 2019). This prior information, served as an anchor and some background information for people that did not have a clue at all about this societal issue. The information was presented in a neutral way, by just showing the percentages of men and women in executive positions, to prevent people from social desirability answering. This phenomenon of social desirability answering, which means that respondents would answer the questions in a way that they think the researcher would want

them to answer (Krumpal, 2013), could otherwise cause a bias in the results. Especially for a highly discussed topic like gender inequality.

In the second stage, the respondents were asked to predict the percentage of females that would be in executive business positions of the largest listed companies in the Netherlands in 2025. This stage indicates whether the respondent over- or underestimated the percentage of women in executive positions in the Netherlands for 2025. This is an important outcome variable, as it indicates whether people hold biased beliefs on this societal issue. In addition, the respondents were asked how confident they were in their predictions. This could namely be an important explanatory factor for the beliefs the respondents indicated. Furthermore, the respondents were asked to state their view on gender inequality in executive positions in the Netherlands, using a scale ranging from "not close to the ideal" to "extremely close to the ideal". The answer to this question was used to determine the prior beliefs about this societal issue. It was important to assess this prior beliefs, as otherwise no conclusions could be drawn according to updating beliefs (Haaland et al., 2020).

The third stage covered the treatment. All respondents were randomly allocated to either the control or the treatment group, by means of a randomization in the survey flow, resulting in a between subjects approach. The treatment group obtained the information treatment, while the control group received no treatment at all and directly moved on to stage four. The treatment consisted of correct information on the percentage of women in executive positions in the largest listed companies 2025 in the Netherlands. This percentage is 32%, according to the expected trend as calculated in the Dutch Female Board Index 2020 (Lückerath-Rovers, 2019). Moreover, the respondents in the treatment group were informed whether they over- or underestimated the percentage of females in executive positions in the largest listed companies in the Netherlands, by showing them the correct information and a pop-up with their outcome. This was expected to let people update their beliefs on the societal issue. In order to obtain information on this updating, a question on the respondent's beliefs at this moment was asked. This question read: "Do you think that gender inequality in executive positions is a more severe or less severe issue, compared to your previous answer, now that you were provided with the correct information?". The answers to this question will be used later on in the data analysis to determine whether people updated their beliefs through the information treatment, thus serving as a manipulation check. In addition, the respondents were asked if they were surprised by the correct information on the distribution of gender in executive positions for 2025.

In stage four, all respondents were asked about their support for campaigns that aim at reducing gender inequality in executive positions in the Netherlands. For this purpose, the following question was asked: "Indicate for each affirmative action below (more gender quotas, more strict labor laws, more influence of trade unions, more support for NGOs) if you think the Dutch government should stimulate this in order to reduce the gender inequality in executive positions". A critique for such a self-reported measure, is that experimenter demand effect can cause the answers to not reflect the actual behavior of the respondents (Haaland, & Roth, 2019). Therefore, the respondents were also provided with information about a charity in the Netherlands that aims at reducing gender inequality, namely: WO=MEN. They were asked what amount of money they were willing to donate to this charity, if they would get €15 at that moment. This behavioral outcome measure takes away the concerns for the experimenter demand effect. In order to also cancel out income-effects for this question, the respondents were provided with the information that they could actually win €15 at the end of the survey, which they thus could donate or keep to themselves.

The fifth stage existed in order to obtain some more insightful information for robustness checks in the data analysis and information on the demographic control variables. For the robustness checks purpose, the respondents were asked to what extent they trusted the information given in the survey, how much confidence they had in the overall effectiveness of the Dutch government and their average donation frequency per month. Furthermore, the questions on the control variables contained the respondent's age, gender, employment status, highest/current educational attainment and, if applicable, their type of immigrant background. These controls were chosen as they can increase the explanatory power of the results from the data analysis.

4. Data and Methodology

4.1 Data collection and sample

In order to answer the research question: "Do people update their beliefs about the gender inequality in executive positions, by giving them correct information, and does this lead to more or less support for reducing gender inequality in the Netherlands?", this research uses an experimental approach. The data was collected through an online survey, utilizing the survey software Qualtrics. The experiment took place online. This was the most efficient way to gain a large enough sample, in times of the current Covid-19 pandemic. In order to distribute the survey, social channels like WhatsApp, Facebook and LinkedIn were used. The targeted sample

consisted of people from the Dutch population, as they were likely to be the most engaged with this societal issue in the Netherlands. Within the Dutch population, no specific target group was addressed. This way, different groups can be compared and the results can hopefully be generalized to the whole Dutch population due to the variety of people. In order to obtain as much responses as possible, the survey was available both in English and Dutch. This gave the respondents the opportunity to complete the survey in their preferred language. The full survey and the link to the survey can be consulted in Appendix B.

In total, there were 168 responses to the survey. However, 37 responses were omitted either because the survey was not completed, the respondent did not belong to the Dutch population or the respondent did not give their consent for participating in the research study. These discarded respondents were, on average, similar across the treatment and control group. As a result, the final data set consisted of 131 responses. Each participant was randomly allocated to either the control group or the treatment group, resulting in a sample size of 68 respondents for the control group and 63 respondents for the treatment group.

4.2 Variables

The main outcome variables of this study are: *women 2025*, *donate amount*, *policy index* and *updated severity*. These variables indicate the prior beliefs on the gender gap in executive positions and whether people are more or less supportive for policies that aim to reduce gender inequality after the information treatment. The treatment variable is indicated by *treatment*, indicating if a respondent was in the control group (*treatment*=0) or in the treatment group (*treatment*=1). The control variables are *age, female, employed, education* and *immigrant*. These demographic control variables will be used in the data analysis to increase the explanatory power. Furthermore, variables were collected in order to execute robustness checks. These variables include: *confidence 2025, view inequality, surprise, trust, confidence government* and *donation frequency*. The choice option scales for the variables that make use of one, are based on the suggested scale points of the online survey software Qualtrics. The choice option scales for each question can be consulted in Appendix B. A more detailed explanation of each variable will be given in the following parts.

4.2.1 Outcome variables

The variable *women 2025* indicates what percentage of women the respondents thought there would be in executive positions in the Netherlands in 2025. This variable is measured by

giving the respondents the opportunity to fill in a percentage that had to equal 100% together with the percentage of men they thought would be in executive positions in 2025. Based on this variable, the variable *overestimated* was created. This variable indicates whether the respondents underestimated (*overestimated*=0) or overestimated (*overestimated*=1) the percentage of female executives for 2025. In addition, the variable *absolute difference* was created, indicating the perception gap from the expected trend (|Answered percentage of women in executive positions for 2025 – 32|). To illustrate, if a respondent thought the percentage of female executives for 2025 was 50% (*women 2025*=50), the respondent would then have overestimated (*overestimated*=1) the percentage of female executives, as 50 is larger than 32. Furthermore, the value of the *absolute difference* for this respondent would be 18, as 50 minus 32 equals 18.

The amount of money that people were willing to donate to the charity WO-MEN is indicated by the variable *donate amount*. In order to measure this variable, respondents had to indicate an amount between €0 and €15, using a slider. The variable *donate amount* will thus be a number between 0 and 15 for each respondent.

The variable *policy index* indicates for each affirmative action (more gender quotas, more strict labor laws, more influence of trade unions, more support for NGOs) separately, if the respondents thought the government should stimulate these actions, by giving the options ranging from "definitely not" to "definitely yes". In order to transform these outcomes into one useful outcome for the data analysis, values were allocated to each answer option: "definitely not": -2, "probably not": -1, "neutral": 0, "probably yes": +1 and "definitely yes": +2. Utilizing these scores the variable *policy index* was created. This variable indicates the score for all affirmative actions together. To illustrate, if a respondent choose "probably yes" (+1) for the stimulation of more gender quotas, more support for NGOs and more strict labor laws, and "definitely not" (-2) for more influence of trade unions, the variable *policy index* would show a score of 1 (1+1+1-2=1) for this respondent. This variable allows for a better understanding of the data analysis, as the variable is continuous instead of categorical.

The variable *updated severity* indicates how the respondents update their views on gender inequality. In order to answer this question, the respondents had to express their thoughts on the gender inequality issue after receiving the correct information. By means of indicating if they thought gender inequality was a more/less/equally severe issue, than they indicated before. In order to make this variable more compatible for using in the data analysis, scores

were assigned to each answer option: "more severe issue": +1, "issue remained at the same severity": 0 or "less severe issue": -1.

4.2.2 Control variables

The variable *age* shows the respondent's age in years. This continuous variable is measured by asking the respondents for their age.

The variable *female* indicates if the respondent was male (*female*=0) or female (*female*=1). The respondents could also choose for the option "prefer not say", however this option was not chosen, which concludes in only two gender categories.

The respondents were also asked to choose their employment status from the following options: "student", "employed (full-time/part-time)", "unemployed" and "retired". From these answers, the binary variable *employed* was created, indicating a 0 if the person was not employed ("student", "unemployed" and "retired") and indicating a 1 if the person was employed ("employed (full-time/part-time)").

The respondents were also asked to state their current/highest completed educational attainment. The choice options were: "high school", "MBO (Middle Vocational Education)", "HBO (Higher Vocational Education)", "WO (university)". In order to make the *education* variable more easy to use in the data analysis, the choice options were ranked from 0 to 3, with 0 for the lowest educational attainment ("high school") and 3 for the highest educational attainment ("WO (university)").

The last control variable *immigrant*, measures if the respondent has an immigrant background (*immigrant* =1) or not (*immigrant*=0).

The descriptive statistics for the above mentioned outcome and control variables can be found in Table 1.

Table 1. Descriptive statistics of the main variables

Variable	No. observations	Mean	Std. deviation	Minimum	Maximum
Treatment	131	0.481	0.502	0	1
Outcome variables					
Women 2025	131	29.893	10.372	14	70
Donate amount	131	9.389	5.953	0	15
Policy index	131	0.466	3.836	-8	8

Updated severity	131	-0.061	0.387	-1	1
Control variables					
Age	131	36.229	17.134	19	87
Female	131	0.580	0.495	0	1
Employed	131	0.511	0.502	0	1
Education	131	1.908	1.056	0	3
Immigrant	131	0.069	0.254	0	1

Notes: This table shows the descriptive statistics of the main variables for the data analysis. The columns represent the variable, number of observations, mean of the variable, and the minimum and maximum value of the variable, respectively. The variables *treatment, female, employed* and *immigrant* are presented as proportions. All other variables are presented as continuous variables.

4.2.3 Robustness check variables

The variable *confidence 2025* indicates how confident the respondents were in predicting the percentages for men and women in executive positions for 2025. The choice options for this variable ranged from "not confident at all" to "extremely confident.

The variable *view inequality*, indicates how people saw the issue of gender inequality in executive positions, before the treatment. This variable will help to see whether people update their views based on the information treatment. The choice options for this variable ranged from "not close to the ideal" to "extremely close to the ideal".

The variable *surprise* indicates to what extent the respondents were surprised by the correct information on the gender distribution in executive positions for 2025. The choice options for this variable ranged from "definitely not" to "definitely yes".

The variable *trust* indicates to what extent the respondents trusted the information given in the survey. This is an interesting variable as it can explain why people might or might not update their beliefs after receiving the information treatment. The choice options for this variable ranged from "definitely not" to "definitely yes".

The variable *confidence government* indicates the overall confidence the respondents had in the effectiveness of Dutch government policies. This variable might have some explanatory power in the decision whether people want more or less government interventions to reduce the gender inequality. The choice options for this variable ranged from "none at all" to "a great deal".

The variable *donation frequency* indicates the frequency with which the respondents donate to charity on average per month, including all charities. This variable might have some

explanatory power in the amount people choose to donate to the specific charity WO=MEN. The choice options for this variable ranged from "never" to "very frequently".

4.3 Analysis strategy

The data analysis will start by checking if the randomization of the sample, into the control and treatment group, worked properly. This randomization check is executed by running several two sample t-tests with different variables to check whether there are significant differences between the two groups before the treatment. If the t-tests show a p-value greater than 0.05, it can be concluded that the randomization worked properly, as this indicates that the null hypothesis of the difference in means being 0, cannot be rejected. If this is the case, the two groups can be compared in order to assess the treatment effect.

In order to test the first hypothesis, if the Dutch population holds biased beliefs on the gender gap in executive positions in the Netherlands for 2025, a one-sample t-test will be executed. This t-test tests whether the percentage of female executives that people indicated there would be in 2025 is equal to the actual expected trend of 32% from The Dutch Female Board Index 2020. If the p-value for this test is smaller than 0.05, it can be concluded that the null hypothesis, that the *women 2025* variable is equal to 32, can be rejected. This would yield the conclusion that the mean of the variable *women 2025* is significantly different from 32%. If this is the case, the first hypothesis cannot be rejected, which indicates that, on average, people hold biased beliefs on the gender gap for 2025. In addition, it will be investigated whether the difference in a different demographic group, significantly influences their absolute difference from the actual percentage. By means of a regression of the *absolute difference* on the *treatment* and control variables. This results in the following formula:

$$Absolute\ difference_i = \beta_1 + \beta_2 Treatment_i + \sum_{j=1}^{5} \gamma_i Control\ variable_{ji} + \varepsilon_i$$

Where $Control\ variable_j$ for $j = 1, ..., 5$ represents the five control variables: *age*, *female*, *employed*, *education* and *immigrant*. In order to increase the explanatory power, these control variables will be used in all subsequent regressions, if not stated otherwise.

The second hypothesis, if people update their biased beliefs after receiving the correct information, will be tested by executing two separate multiple regressions. These regressions will follow the approach of Haaland, & Roth (2019). In these regressions, the variable *updated severity* will be used as an indicator of the posterior beliefs about gender inequality. The first

regression, will have *updated severity* as the dependent variable and the independent variables will be the *treatment*, *overestimated*, an interaction term between the *treatment* and *overestimated* and the control variables. The interaction term is added, since it is expected that the treatment effect will be different for respondents that initially over- or underestimated the percentage. To illustrate, it is expected that the people who overestimated the percentage of females in executive positions for 2025, will indicate that the issue is more severe in stage two, compared to their view on gender inequality in stage one, and the other way around. This regression thus allows to investigate whether the respondents that over- or underestimated the percentage, change their view on the severity of gender inequality. This results in the following formula:

$$
\begin{aligned}
Updated\ severity_i \\
= \beta_1 + \beta_2 Treatment_i + \beta_3 Treatment \cdot Overestimated_i + \beta_4 Overestimated_i \\
+ \sum_{j=1}^{5} \gamma_i Control\ variable_{ji} + \varepsilon_i
\end{aligned}
$$

The second regression will measure to what extent people learn from the information that they were given. This regression will also take the *updated severity* as the dependent variable. The independent variables will be the *treatment*, *absolute difference*, interaction between *treatment* and *absolute difference* and the control variables. This results in the following formula:

$$
\begin{aligned}
Updated\ severity_i \\
= \beta_1 + \beta_2 Treatment_i + \beta_3 Treatment \cdot Absolute\ difference_i \\
+ \beta_4 Absolute\ difference_i + \sum_{j=1}^{5} \gamma_i Control\ variable_{ji} + \varepsilon_i
\end{aligned}
$$

If a significant coefficient is obtained from the regressions, it can be concluded that this variable has a significant influence on the *updated severity*. To illustrate, if a positive significant coefficient is found for *treatment* in the second regression, it implies that people in the treatment, on average, think gender inequality is a more severe issue after receiving information, compared to those who were not in the treatment.

The third hypothesis, if people that overestimated the gender gap for 2025 are more willing to support campaigns that aim at reducing gender inequality, will be investigated two-fold. Firstly, the support for campaigns will be measured by the amount of government support for affirmative actions the respondents want to see, via the *policy index* variable. Secondly, the support for campaigns will be measured by the amount that the respondents would want to

donate to the charity WO=MEN, via the variable *donate amount*. This leads to the following two sub-hypotheses:

H3a: "People that overestimated the gender gap in executive positions in the Netherlands for 2025, based on their prior beliefs, are more willing to support affirmative actions stimulated by the Dutch government that aim at reducing gender inequality, after receiving the correct information on the gender gap for 2025, compared to people that underestimated the gender gap."

H3b: "People that overestimated the gender gap in executive positions in the Netherlands for 2025, based on their prior beliefs, are more willing to donate to a charity that aims at reducing gender inequality, after receiving the correct information on the gender gap for 2025, compared to people that underestimated the gender gap."

Based on the results for these two sub-hypotheses, a general conclusion will be drawn for hypothesis three. The hypotheses will be tested, by running two separate multiple regressions. The first regression, considering H3a, will have the *policy index* as the dependent variable and *treatment* and *overestimated* as the main independent variables. Moreover, the control variables will be added to the regression. This leads to the following formula:

$$Policy\ index_i = \beta_1 + \beta_2 Treatment_i + \beta_3 Overestimated_i + \sum_{j=1}^{5} \gamma_i Control\ variable_{ji} + \varepsilon_i$$

The regression to test H3b will be similar to the one for H3a, only changing the dependent variable into the variable *donate amount*. This results in the following formula:

$$Donate\ amount_i = \beta_1 + \beta_2 Treatment_i + \beta_3 Overestimated_i + \sum_{j=1}^{5} \gamma_i Control\ variable_{ji} + \varepsilon_i$$

If a positive significant coefficient for *overestimated* is found in both regressions, it can be concluded that people that overestimated the percentage, indeed have more support for campaigns that aim at reducing gender inequality, compared to those who underestimated the percentage. Thus, rejecting the null-hypothesis of there being no difference in support for campaigns that aim to reduce gender inequality, based on if people over- or underestimated the percentage.

In order to test the fourth hypothesis, if older generations have less support for reducing gender inequality than younger generations, it is important to define what is meant by older and younger generations. Concerning the determination of the threshold for when one belongs to

the older or younger generation, the descriptive statistics of the variable *age* were investigated. These statistics showed that the median age of the sample was at 27 years. This implies that if the threshold would be at 27 years, the samples for older and younger generations would be the same size, which improves the reliability of the analysis. Therefore, a new variable *age27* was created, indicating a 0 for respondents younger than or equal to 27 years (from now on the younger generation) and indicating a 1 for respondents older than 27 years (from now on the older generation). This variable was used in the multiple regression to test the fourth hypothesis. In order to test this hypothesis the two-fold approach as mentioned for hypothesis three will also be utilized. This results in the following two sub-hypotheses:

H4a: "Older generations have less support for affirmative actions stimulated by the Dutch government that aim at reducing gender inequality, compared to younger generations."

H4b: "Older generations are less willing to donate to a charity that aims at reducing gender inequality, compared to younger generations."

In order to test H4a, a multiple regression will be executed. The dependent variable is *policy index* and the main independent variables are *treatment* and *age27*. Furthermore an interaction term between *treatment* and *age27* and the remaining four control variables will be added. The interaction term between *treatment* and *age27* is useful in this regression as it will show how the dependent variable will be influenced if the respondent is in the treatment group and is from the older generation. This results in the following formula:

$$Policy\ index_i = \beta_1 + \beta_2 Treatment_i + \beta_3 Treatment \cdot Age27_i + \beta_4 Age27_i$$
$$+ \sum_{j=1}^{4} \gamma_i Control\ variable_{ji} + \varepsilon_i$$

Where $Control\ variable_j$ for $j = 1 \dots, 4$ represents the remaining four control variables: *female*, *employed*, *education* and *immigrant*.

The regression to test H4b will be similar to the regression to test H4a, only changing the dependent variable into *donate amount*. This results in the following formula:

$$Donate\ amount_i$$
$$= \beta_1 + \beta_2 Treatment_i + \beta_3 Treatment \cdot Age27_i + \beta_4 Age27_i$$
$$+ \sum_{j=1}^{4} \gamma_i Control\ variable_{ji} + \varepsilon_i$$

If a negative significant coefficient for *age27* is found in both regressions, it can be concluded that people from the older generation, indeed have less support for campaigns that aim at reducing gender inequality, compared to people form the younger generation. Thus, rejecting the null-hypothesis of there being no difference in support for campaigns that aim to reduce gender inequality, based on the respondent's generation.

Hypothesis five, if men have less support for reducing gender inequality than women, follows the exact same approach as hypothesis four. The two sub-hypotheses that follow from this are:

H5a: "Men have less support for affirmative actions stimulated by the Dutch government that aim at reducing gender inequality, compared to women."

H5b: "Men are less willing to donate to a charity that aims at reducing gender inequality, compared to women."

In order to tests H5a, a multiple regression will be executed. The *policy index* is the dependent variable and the *treatment*, *female* and the interaction between these two are the main independent variables. Furthermore, all remaining control variables will be added to the regression. This results in the following formula:

$$Policy\ index_i = \beta_1 + \beta_2 Treatment_i + \beta_3 Treatment \cdot Female_i + \beta_4 Female_i + \sum_{j=1}^{4} \gamma_i Control\ variable_{ji} + \varepsilon_i$$

Where $Control\ variable_j$ for $j = 1 \dots, 4$ represents the remaining four control variables: *age*, *employed*, *education* and *immigrant*.

The regression for H5b will be the same as the regression for H5a, only changing the dependent variable into *donate amount*. This results in the following formula:

$$Donate\ amount_i = \beta_1 + \beta_2 Treatment_i + \beta_3 Treatment \cdot Female_i + \beta_4 Female_i + \sum_{j=1}^{4} \gamma_i Control\ variable_{ji} + \varepsilon_i$$

If a positive significant coefficient for *female* is found in both regressions, it can be concluded that female respondents, indeed have more support for campaigns that aim at reducing gender inequality, compared to male respondents. Thus, rejecting the null-hypothesis of there being no difference in support for campaigns that aim to reduce gender inequality, based on in which gender the respondent has.

5. Results

5.1 Randomization check

The first main step in the data analysis is checking if the randomization worked properly. On average, the treatment and control group should only differ with respect to their treatment status. In order to verify if the randomization worked properly, a two sample t-test was run for all control variables: *age* (t(129)= 0.656, p= 0.513), *female* (t(129)= -0.511, p= 0.611), *employed* (t(129)= 0.773, p= 0.441), *education* (t(129)= 0.038, p= 0.970), *immigrant* (t(129)= -0.461, p= 0.645). Furthermore, a t-test was run for several robustness check variables, including: *view inequality* (t(129)= 0.832, p= 0.407), *confidence government* (t(129)= -0.424, p= 0.672) and *donation frequency* (t(129)= 0.008, p= 0.993). The results show that all p-values are greater than 0.05, indicating that the null hypothesis of the difference in means being 0, cannot be rejected. Therefore, it can be concluded that the randomization worked properly. The two groups can thus be compared in order to assess the treatment effect.

5.2 Beliefs about gender inequality for 2025

For the purpose of investigating the beliefs about the topic of gender inequality, a t-test and regression were executed. The results of which will be explained in this section. The t-test on whether the mean for *women 2025* is equal to 32% (t(130)= -2.325, p= 0.022), shows that the null-hypothesis, of there being no difference between the mean of *women 2025* and 32, can be rejected (p<0.05). This implies that the mean percentage of women that the respondents thought would be in executive positions in 2025 (29.89%), is significantly different from 32%. The mean percentage differed by 0.80% between the treatment (29.48%) and control (30.28%) group, as can be consulted in Table 1 in Appendix A. The significant difference of the mean percentage from 32% indicates that the respondents have biased beliefs on this topic, as they either over- or underestimated the percentage. Therefore, the first hypothesis: *"The Dutch population holds biased beliefs on the gender gap in executive positions in the Netherlands for 2025."* cannot be rejected, which indicates that, on average, people hold biased beliefs on the gender gap for 2025. From the descriptive statistics in Table 1, it can be concluded that although on average people were close to the exact percentage, there was a large spread at the individual level. The minimum value was 14% and the maximum value was 70% for the percentage of female executives in the Netherlands.

To investigate and explain these results further, some descriptive statistics of the variables *overestimated* and *confidence 2025* will be shown in Table 2 and 3 in Appendix A.

From Table 2 in Appendix A it becomes clear that no one predicted the correct percentage of female executives. Specifically, 71.76% of the respondents underestimated the percentage and 28.24% of the respondents overestimated the percentage. In addition Table 3 in Appendix A shows that only 5.34% of the respondents were extremely sure about their predictions, indicating that the majority of people (94.66%) doubted the percentage they answered.

Furthermore, it is investigated if the beliefs about gender inequality vary systematically by people's backgrounds, by exploring the absolute amount that the respondents were away from the actual percentage. The regression results are shown in Table 4 in Appendix A. The only significant result covers the effect of the variable *immigrant*, indicating that, on average, the absolute difference of the percentage is significantly larger when one is an immigrant, compared to when one is no immigrant. This result might be driven by the fact that immigrants have a more biased view based on what the gender gap is in their country of origin and they might have less knowledge about the Netherlands than non-immigrants. For all other control variables, no significant differences in the predicted percentages were found.

In conclusion, hypothesis one cannot be rejected, which indicates that, on average, the Dutch population holds biased beliefs on the gender gap in executive positions for 2025. These results might be driven by the fact that people are not confident in their own predictions. In addition, the absolute difference in these biased beliefs only, on average, significantly differs for immigrants versus non-immigrants.

5.3 Updating beliefs about gender inequality

This section will show the results of the investigation of whether people update their beliefs about gender inequality. Table 2 shows the regression results on the *updated severity*. From column 1 of Table 2, it becomes clear that, on average, respondents that were in the treatment group and initially underestimated the percentage, decrease their updated severity significantly. This implies that the initial "underestimators" believe the issue of gender inequality becomes less severe after receiving the information treatment. Furthermore, the regression shows that, on average, females believe that gender inequality is a significantly more severe issue than males.

When considering column 2 of Table 2, the only significant result is for the variable female. Indicating that, as with the previous regression, on average, females believe that gender

inequality is a more severe issue than males. No further conclusions can be drawn, as all other coefficients are not significant.

In order to investigate the results more in-depth, the variable *trust* is examined as this variable is a critical factor in whether the information treatment can affect the view on gender inequality. Table 5 in Appendix A, shows that a large part of the respondents (44.27%) definitely trusted the information given in this survey. However, this also implies that the majority of the respondents (41.22%) doubted the information or was neutral (14.50%) for this question. This could be an explanatory factor of why so little significant results could be obtained for the *updated severity*. To illustrate, it could be the case that people did not update their beliefs because they did not (completely) trust the information that was given in the survey. Therefore, a regression was executed where only the respondents were taken into account that completely trusted the information. However, this regression yielded no additional relevant significant results.

In conclusion, hypothesis two: *"The Dutch population that holds biased beliefs, updates these beliefs after receiving correct information on the gender gap for 2025."*, is rejected, as no sufficient significant evidence is obtained. There is an significant effect of the *treatment* on the *updated severity*, however no learning effects were obtained. Therefore, it is concluded that it remains unsure if people update their beliefs after receiving the correct information.

Table 2. Regression results for updating beliefs

	(1) Updated severity	(2) Updated severity
Treatment	-0.213***	-0.0861
	(0.0779)	(0.0947)
Treatment*Overestimated	0.253	
	(0.170)	
Overestimated	0.00583	
	(0.0304)	
Age	3.76e-05	0.000867
	(0.00243)	(0.00234)
Female	0.133**	0.129*
	(0.0653)	(0.0677)
Education	-0.0363	-0.0354
	(0.0428)	(0.0438)
Employed	-0.0161	-0.0135
	(0.0715)	(0.0731)
Immigrant	0.133	0.139
	(0.257)	(0.231)
Treatment*Absolute difference		-0.00671

		(0.0116)
Absolute difference		-0.00203
		(0.00182)
Constant	-0.00711	-0.0197
	(0.145)	(0.152)
No. Observations	131	131
R-squared	0.114	0.079

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

5.4 Support for reducing gender inequality based on prior beliefs

This section will present the results for the investigation of the support for reducing gender inequality, based on the prior beliefs. The results of both regressions to test the sub-hypotheses can be found in Table 3. From this table, it becomes clear that when looking at column 1 and 2, the variables *treatment* and *overestimated* yield no significant coefficients. It can thus not be concluded that the treatment or whether one over- or underestimated the percentage for 2025 influences the support for more government policies or the donation amount. Therefore, no conclusion can be drawn for H3a and H3b. From the table however, a significant increase is found for the variable *female* (Table 3 column 1), indicating that when the respondent was a female, she had on average significantly more demand for the government supporting affirmative actions, compared to males. This results was not obtained when the donation amount was the outcome variable. The variable *immigrant*, however, had a positive significant coefficient on the donation amount (Table 3 column 2), indicating that when the respondent had an immigrant background, he or she on average, stated a higher donation amount, compared to non-immigrants.

In addition, all respondents that indicated no government confidence at all or a donation frequency of never were excluded from the sample. These excluded respondents were mostly in the control group (55.88%) and mostly male (52.94%). Furthermore, the majority of the excluded respondents was non-immigrant (91.18%), unemployed (64.72%) and higher educated (64.71%). The regressions as specified in the analysis strategy for hypothesis three were run again, the results can be consulted from Table 6 in Appendix A. In contrast to the earlier mentioned results, this regression shows a positive significant coefficient for *overestimated*. This indicates that, on average, the policy support significantly increases if one had initially overestimated the percentage, compared to those who underestimated the percentage.

Furthermore, everyone from the sample that doubted the information in the survey was excluded. This way, only the respondents that definitely trusted the information in the survey were left. The majority of these excluded respondents was in the treatment group (52.05%), female (50.68%), non-immigrant (94.52%), employed (53.42%) and higher educated (67.13%). This regression, as can be consulted in Table 7 in Appendix A, shows a significant positive coefficient for *overestimated*, when the donation amount was the outcome variable. This indicates that on average, the donation amount significantly increases if one had initially overestimated the percentage, compared to those who initially underestimated the percentage.

Based on the above mentioned information, hypothesis three: *"People that overestimated the gender gap in executive positions in the Netherlands for 2025, based on their prior beliefs, are more willing to support campaigns that aim at reducing gender inequality, after receiving the correct information on the gender gap for 2025, compared to people that underestimated the gender gap."* , cannot be rejected. It becomes clear that when restricting the sample, people that initially overestimated the percentage of female executives, are more willing to support campaigns that aim at reducing gender inequality.

Table 3. Regression results for support for reducing gender inequality

	(1) Policy index	(2) Donate amount
Treatment	-0.667	-0.395
	(0.647)	(1.021)
Overestimated	0.922	1.436
	(0.813)	(1.166)
Age	-0.0102	0.0462
	(0.0206)	(0.0353)
Female	2.488***	1.262
	(0.651)	(1.081)
Education	-0.367	-0.272
	(0.331)	(0.552)
Employed	-0.727	1.136
	(0.676)	(1.120)
Immigrant	0.600	4.852***
	(1.391)	(1.133)
Constant	0.482	6.373***
	(1.183)	(2.189)
No. Observations	131	131
R-squared	0.133	0.103

Notes: Robust standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

5.5 Support for reducing gender inequality based on gender

This section will show the results for the investigation of the support for reducing gender inequality, based on gender. Table 4 presents the regression results for both sub-hypotheses of hypothesis four. From this table, it can be concluded that, on average, treated respondents from the younger generation want significantly less support of affirmative actions by the government. In addition, respondents that were in the treatment and were from the older generation, on average, want significantly more support of affirmative actions by the government. Furthermore, respondents from the control group and the older generation, on average, want significantly less support of affirmative actions by the government. The results indicate that the older generation shifts from wanting less support to more support, based on the treatment. While in contrast for younger generations, the opposite occurs. The information treatment thus definitely has an effect on the support for reducing gender inequality via government support of affirmative actions, resulting in the older generation having more support for this type of campaigns. Therefore, H4a can be rejected.

When investigating H4b, the only significant coefficient covers the variable *immigrant*. Indicating that respondents with an immigrant background, on average, have a higher donation amount than those without an immigrant background. There are no significant effects for the donation amount based on gender. Therefore, there is not enough evidence to draw a conclusion about H4b.

Two robustness checks were executed, by excluding the respondents without any government confidence and a donation frequency of never from the regressions and by leaving out the respondents that doubted the information. The results yielded no different significant coefficients, indicating that the results were robust to leaving out these responses.

In conclusion, hypothesis four: *"Older generations have less support for reducing gender inequality, compared to younger generations."*, is rejected, as no sufficient evidence was found. However, the result that older generations demand more support when being treated, remains interesting and should be taken into account.

Table 4. Regression results for age on support for reducing gender inequality

	(1) Policy index	(2) Donate amount
Treatment	-1.804**	-1.630
	(0.788)	(1.387)
Treatment*Age27	2.192*	2.801
	(1.267)	(2.004)
Age27	-2.294**	0.0777
	(0.986)	(1.772)
Female	2.527***	1.272
	(0.644)	(1.102)
Education	-0.524	-0.348
	(0.322)	(0.525)
Employed	-0.107	0.925
	(0.721)	(1.382)
Immigrant	0.220	4.458***
	(1.406)	(1.114)
Constant	1.594	8.704***
	(0.995)	(1.762)
No. Observations	131	131
R-squared	0.153	0.098

Notes: Robust standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

5.6 Support for reducing gender inequality based on age

This section will show the results for the investigation of the support for reducing gender inequality, based on age. Table 5 shows the regression results to test hypothesis five. From column 1, it becomes clear that females, on average, significantly demand more support from the government for affirmative actions. Therefore, H5a cannot be rejected, indicating that men, on average have less support for reducing gender inequality via government policies.

However, as presented in column 2, there is no significant difference in the donation amount between men and women. Therefore, there is not enough evidence to draw a conclusion on H5b. Furthermore, by executing a robustness check, it was found that the results are robust to leaving out the respondents that have no confidence in the government at all, respondents that have a donation frequency of never and respondents that doubted the information.

In conclusion, hypothesis five *"Men have less support for reducing gender inequality, compared to women."*, is rejected, as no sufficient significant evidence is obtained. However, the result that women, on average, have more support for reducing gender inequality via government policies, should be taken into account.

Table 5. Regression results for gender on support for reducing gender inequality

	(1) Policy index	(2) Donate amount
Treatment	-1.346	-1.336
	(1.074)	(1.763)
Treatment*Female	1.249	1.744
	(1.399)	(2.182)
Female	1.896*	0.435
	(1.008)	(1.478)
Age	-0.00122	0.0592*
	(0.0206)	(0.0352)
Education	-0.301	-0.176
	(0.331)	(0.549)
Employed	-0.862	0.946
	(0.705)	(1.145)
Immigrant	0.345	4.466***
	(1.446)	(1.145)
Constant	0.686	6.674***
	(1.188)	(2.196)
No. Observations	131	131
R-squared	0.127	0.096

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

6. Discussion and conclusion

6.1 Brief overview of the study

The central goal of this paper was to investigate how information treatment affects biased beliefs and support for reducing gender inequality in executive business positions. This research is scientifically relevant as it distinguishes itself from previous literature, by not looking at the causes of gender inequality, but by researching the biased beliefs people may have about this societal issue. Furthermore, this research is socially relevant as it can help in understanding if there are biased beliefs on this topic and how these can possibly be corrected by means of information treatment.

In order to answer the research question: "Do people update their beliefs about the gender inequality in executive positions, by giving them correct information, and does this lead to more or less support for reducing gender inequality in the Netherlands?", data was collected through an experiment. With this data, several t-tests and regressions were executed to eventually form a conclusion on the relation between information treatment, biased beliefs and support for campaigns, in the realm of gender inequality in executive business positions.

6.2 Main findings and the relation to previous literature

The results of the data analysis show that, as expected, the Dutch population holds biased beliefs on the gender gap in executive positions for 2025. Furthermore, it is shown that these biased beliefs are updated when people are provided with the correct information. These results are in line with the findings of Haaland, & Roth (2019), Haaland, & Roth (2020) and Settele (2021), as they also indicate that people have biased beliefs on societal issues, but update them after receiving correct information. However, these significant positive updating results, are not obtained when looking at the learning effects. This is not the same as in the research of Haaland, & Roth (2019), as they do find significant learning effects from the information. The inconsistency can be explained due to lack of a large enough sample size or due to the outcome measure difference. While the study of Haaland, & Roth (2019) uses a posterior, this research only estimates how people think about the issue of gender inequality rather than actually asking them for a posterior percentage. Another possible reason could be the source of the information treatment, as it was indicated that only 44.27% of the respondents completely trusted the information that was presented.

In addition, the effect of the information treatment on the support for campaigns that aim at reducing gender inequality, was investigated two-fold. Firstly, by taking government support for affirmative actions as the outcome variable. Secondly, by taking the amount that the respondent were willing to donate to a charity that is dedicated to reduce gender inequality as the outcome variable. The results for two restricted samples show that, on average, the policy support increases if one had initially overestimated the percentage of female executives, compared to those who underestimated the percentage. These findings are in line with the research of Haaland, & Roth (2019), Haaland, & Roth (2020) and Settele (2021), as they also find a positive influence on policy support after information treatment. Furthermore, the results show that, on average, the donation amount increases for people that initially overestimated the percentage of female executives. No significant effects of overestimated were found for the complete sample. This is probably due to the considerable difference in sample sizes of this research (131 responses) and the above mentioned previous research (±1700 responses).

Moreover, it was investigated if the support for campaigns aimed at reducing gender inequality was significantly different when looking at the respondents' age and gender. The results indicate that older generations demand more support for affirmative actions after they had been informed with the correct information, compared to younger generations. This result is not in line with research of Radvansky et al. (2010), as they conclude that older people stick

to stereotypes formed in the past. The cause of the discrepancy, is probably the age threshold that was set at 27 years for this research for when someone belongs to the older or younger generation. The research of Radvansky et al. (2010), defines the younger generation as 18 to 25 years and the older generation as 60 to 88 years. There is thus a large age difference between the two researches. Therefore, future research could check if the significant difference is still found if the same age groups as in the research of Radvansky et al. (2010) are used. No significant differences were obtained when the donation amount was used as the outcome variable.

For the difference in support between men and women, it was found that women, on average, demand more governmental support for affirmative actions than men. This is in line with the findings of Reuben et al. (2012) which show that men think they are more capable of fulfilling decision-making positions in business than women and therefore not giving women an opportunity. As with the age difference, no significant differences were obtained with the donation amount as the outcome variable.

6.3 Implications of the findings

Taken together, the findings suggest that people have biased beliefs on the gender gap in executive positions for 2025. In addition, the findings suggest that the information treatment probably does not completely have the desired results, but still for some people, the older generation in particular, information treatment can help them to see and support actions against the issue of gender inequality differently. This results in a relevant implication of the study.

The government can host information campaigns about the gender distribution in executive business positions in the Netherlands. This way, it will be more likely that increasingly more people get familiar with the facts about the distribution, intended to lead to less people having biased beliefs on this topic. These information campaigns should be focused specifically on the older generation (people older than 27 years), as it is shown that these people significantly change their support for reducing gender inequality after being informed. For example, these information campaigns can be held at companies with a very high ratio of people older than 27 years. Furthermore, they should also focus on immigrants, as it is shown that these people, on average, yield larger biased beliefs. In addition, these information campaigns can also be hosted on university campuses, informing the board members of the future. By

performing these information campaigns, the awareness of gender inequality arises, which hopefully leads to a more equal distribution of gender in the near future.

6.4 Limitations of the study and possible further research directions

The results of this study should be interpreted with caution, due to several limitations. The first limitation of this study concerns the data collection. As the survey was distributed via social channels like WhatsApp, Facebook and LinkedIn, almost all respondents were friends and relatives from the experimenter. This could lead to social desirability answering due to social norms, especially for a highly debated topic like gender inequality. These social norms may have unintended effects, like influencing the donation behavior of the respondents (Croson, Handy, & Shang, 2010). Therefore, a possible direction for further research would be to use a sample of random people that are not connected with the experimenter.

The second and third limitation of this study concern the sample. The sample size of this study (131 responses), is relatively small when looking at other research in this realm (±1700 responses). This may have influenced the internal validity and therefore also the external validity of the results. Furthermore, as the median age was at 27 years, this implies that there were more younger people than older people in de sample. This resulted in an age threshold for the younger generation at 27 years, which can be questioned. It is thus important for further research to collect a larger and more diverse sample to conclude more reliable findings. This sample could be obtained by distributing the survey via external agencies that help with data collection.

The fourth limitation of this study concerns the information treatment. From the results it becomes clear that the a large part of the respondents doubted the information in the survey (41.22%), and some people were neutral (14.50%) about if they trusted the information. This may have influenced the results. It could for example be the case that people did not update their beliefs or did not want more campaigns aimed at reducing gender inequality, because they did not trust the information in the survey. This creates an opportunity for further research, by making more efforts to convince people that the information in the survey can be trusted. This can be obtained by describing the source of the data more precisely.

The final limitation of this study concerns the design of the survey. The duration of the survey was not equal for the control and treatment group, due to the information treatment. This resulted in a longer survey for the treatment group, which can lead to increasing questionnaire

fatigue effects (Galesic, & Bosnjak, 2009). In order to address this limitation, future research can make use of filler questions which are not related to the information treatment (Malhotra, 2006). This way, both groups will have a questionnaire of the same size, resulting in the questionnaire fatigue effects having the same effect on both groups. This will result in more valid treatment effects.

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8. Appendix

8.1 Appendix A

Table 1. Descriptive statistics of the variable *women 2025* by *treatment*

Women 2025	No. observations	Mean	Std. deviation	Minimum	Maximum
0 (=control group)	68	30.279	11.280	14	70
1 (=treatment group)	63	29.476	9.365	14	65

Notes: This table shows the descriptive statistics of the variable *women 2025* by the treatment status of the respondent. The columns represent the variable, number of observations, mean of the variable, and the minimum and maximum value of the variable, respectively. The rows represent the treatment status, indicating a 0 if the respondent was in the control group and a 1 if the respondent was in the treatment group.

Table 2. Descriptive statistics of the variable *overestimated*

Overestimated	Frequency	Percentage
0 (=underestimated)	94	71.76
1 (=overestimated)	37	28.24
Total	131	100

Notes: This table shows the descriptive statistics of the variable *overestimated*. The columns represent the variable, frequency and related percentage, respectively. The variable *overestimated* is 0 if the respondent underestimated the percentage of female executives for 2025 and 1 if the respondent overestimated this percentage.

Table 3. Descriptive statistics of the variable *confidence 2025*

What is your confidence in your predicted percentage for 2025?	Frequency	Percentage
A bit confident	42	32.06
Extremely confident	7	5.34
Neutral	33	25.19
Not at all confident	6	4.58
Somewhat confident	43	32.82
Total	131	100

Notes: This table shows the descriptive statistics of the variable *confidence 2025*. The columns represent the variable, frequency and related percentage, respectively. The variable *confidence* 2025 can take five values, as represented by the rows of the table.

Table 4. Regression results for the *absolute difference*

	(1) Absolute difference
Treatment	-1.421
	(1.171)
Age	-0.0413
	(0.0426)
Female	1.646
	(1.119)
Education	-0.188
	(0.687)
Employed	-0.438
	(0.681)
Immigrant	4.172**
	(1.747)
Constant	10.44***
	(3.372)
No. Observations	131
R-squared	0.048

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 5. Descriptive statistics of the variable *trust*

Do you trust the information given in this survey?	Frequency	Percentage
Definitely yes	58	44.27
Neutral	19	14.50
Probably not	8	6.11
Probably yes	46	35.11
Total	131	100

Notes: This table shows the descriptive statistics of the variable *trust*. The columns represent the variable, frequency and related percentage, respectively. The variable *trust* can take four values, as represented by the rows of the table.

Table 6. Regression results for the support for reducing gender inequality, excluding

respondents without confidence in government and a donation frequency of never

	(1) Policy index	(2) Donate amount

	(1)	(2)
Treatment	-0.600	-0.103
	(0.695)	(1.217)
Overestimated	1.600**	1.495
	(0.799)	(1.289)
Age	0.00235	0.0573
	(0.0206)	(0.0392)
Female	2.084***	1.523
	(0.750)	(1.321)
Education	-0.205	0.429
	(0.344)	(0.639)
Employed	-0.518	1.413
	(0.755)	(1.348)
Immigrant	-0.0197	4.931***
	(1.553)	(1.552)
Constant	0.0969	4.431*
	(1.283)	(2.481)
No. Observations	97	97
R-squared	0.140	0.107

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 7. Regression results for support for reducing gender inequality, excluding the respondents that doubted the information given in the survey

	(1) Policy index	(2) Donate_amount
Treatment	-0.409	0.505
	(0.878)	(1.677)
Overestimated	1.079	3.429*
	(1.416)	(1.821)
Age	-0.00695	-0.0581
	(0.0467)	(0.0698)
Female	1.605	1.685
	(1.362)	(2.090)
Education	0.161	-1.577*
	(0.563)	(0.830)
Employed	-0.388	3.831**
	(1.173)	(1.815)
Immigrant	-2.712	6.406**
	(1.968)	(2.422)
Constant	0.298	10.28***
	(1.822)	(3.167)
No. Observations	58	58
R-squared	0.137	0.239

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

8.2 Appendix B

Link to the survey:

https://erasmusuniversity.eu.qualtrics.com/jfe/form/SV_eEFva3TZwQtfnlY

Gender distribution in executive positions in the Netherlands

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Thank you in advance for participating in this survey. It will take approximately 7 minutes to finish. Your answers will be handled with trust and are completely anonymous.

I am researching the gender distribution (ratio men/women) in executive positions in listed companies in the Netherlands. Therefore the research is restricted to people living in the Netherlands.

! You can win a price of €15, by finishing the survey completely !

For any questions about this survey, please contact: 506084jm@student.eur.nl

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Q1. Do you give your consent for participating in this research study?

○ Yes (1)

○ No (2)

Skip To: End of Survey If Do you give your consent for participating in this research study? = No

Q2. Are you currently living in the Netherlands?

○ Yes (1)

○ No (2)

Skip To: End of Survey If Are you currently living in the Netherlands? = No

---

You will be provided with some background information on the situation in the Netherlands in 2020 first:

  Every year, the Dutch Female Board Index, estimates how the executive positions in listed companies in the Netherlands are distributed among gender. The findings show that in 2020, the ratio men/women in executive positions was approximately 88/12. This means that 88% of all Dutch executives in listed companies was male and that 12% was female.

Source: Lückerath-Rovers, M. (2020). The Dutch Female Board Index 2020. TIAS.

Take the previously given information into account when answering the following questions.

For all questions, we will look at the gender distribution in executive positions in listed companies in the Netherlands.

✳

Q3. What do you think the gender distribution in executive positions will be in 2025? (make sure the percentages add up to 100%)

Men : _____   (1)
Women : _____   (2)

Total : _____

Q4. How confident are you in your prediction for the gender distribution in 2025?

	Not confident at all (1)	A bit confident (2)	Neutral (3)	Somewhat confident (4)	Extremely confident (5)
1 (1)	○	○	○	○	○

Q5. What is your view on gender inequality in executive positions?

	Not close to the ideal (36)	Slightly close to the ideal (37)	Moderately close to the ideal (38)	Very close to the ideal (39)	Extremely close to the ideal (40)
1 (1)	○	○	○	○	○

Timing

First Click (1)

Last Click (2)

Page Submit (3)

Click Count (4)

You will now be provided with the correct information on the gender distribution in executive positions 2025.

The expected ratio of men/women in executive positions in listed companies in the Netherlands is 68/32 in 2025, according to the trend as calculated in the Dutch Female Board Index. This means that in 2025, 68% of all Dutch executives in listed companies is expected to be male and that 32% is expected to be female.
Source: Lückerath-Rovers, M. (2020). The Dutch Female Board Index 2020. TIAS.

A graphical representation of the gender distribution in 2020 and 2025 is shown below:

Display This Question:

If What do you think the gender distribution in executive positions will be in 2025? (make sure the... [Women] > 32

Based on a previous answer, you ***overestimated*** the percentage of female executives in listed companies in the Netherlands for 2025. This means that you thought there would be more women in executive positions in 2025, than is actually expected.

Based on a previous answer, you ***underestimated*** the percentage of female executives in listed companies in the Netherlands for 2025. This means that you thought there would be less women in executive positions in 2025, than is actually expected.

Q6. Do you think that gender inequality in executive positions is a more severe or less severe issue, compared to your previous answer, now that you were provided with the correct information?

○ More severe issue (1)

○ Issue remains at the same severity (2)

○ Less severe issue (3)

Q7. Are you surprised by the correct information on the distribution of gender in executive positions for 2025?

	Definitely not (11)	Probably not (12)	Neutral (13)	Probably yes (14)	Definitely yes (15)
1 (1)	○	○	○	○	○

End of Block: Block 3

Start of Block: Block 9

Please click the arrow below in the right corner to continue the survey.

End of Block: Block 9

Start of Block: Block 4

Q8. Indicate for each affirmative action below if you think the Dutch government should stimulate this in order to reduce the gender inequality in executive positions.

	Definitely not (1)	Probably not (2)	Neutral (3)	Probably yes (4)	Definitely yes (5)
More gender quotas (1)	○	○	○	○	○
More strict labor laws (2)	○	○	○	○	○
More influence from trade unions (4)	○	○	○	○	○
More support for NGOs (Non-Governmental Organizations) (3)	○	○	○	○	○

End of Block: Block 4

Start of Block: Block 5

Timing

First Click (1)
Last Click (2)
Page Submit (3)
Click Count (4)

Please read the following information about the goals of the Dutch charity WO=MEN, carefully:

"WO=MEN is the platform that fights for global gender equality and empowerment of women and girls. We monitor policies, share knowledge, join forces and connect & mobilize people. We work for social transformation to realize equal power relations between women and men regardless of sexual orientation and gender identity."
 Source: https://www.wo-men.nl/

Any respondent of this survey can potentially win an amount of €15. This person will be randomly chosen and will be informed at the end of the survey. If you are the lucky winner, you can choose to keep the money to yourself or to donate (part) of the money to WO=MEN.

Q9. How much of the €15 would you be willing to donate to WO=MEN, if you are the lucky winner?
(indicate your answer by moving te slider)

	0	5	10	15
8 ()				
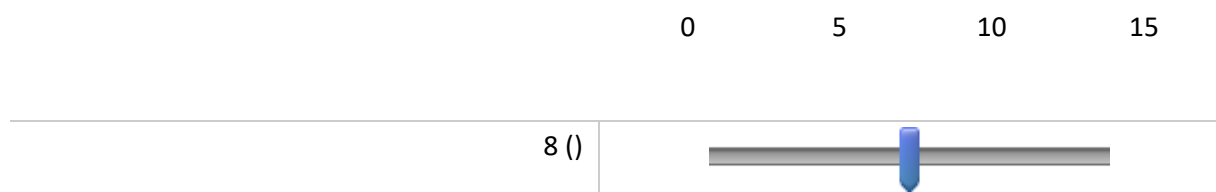
You have reached the next part of this survey. Please answer the following questions.
(remember there is no right or wrong answer)

Q10. Do you trust the information given in this survey about the gender distribution in executive positions?

	Definitely not (11)	Probably not (12)	Neutral (13)	Probably yes (14)	Definitely yes (15)
1 (1)	○	○	○	○	○

Q11. How much confidence do you have in the overall effectiveness of Dutch government policies?

	None at all (6)	A little (7)	Neutral (8)	A lot (9)	A great deal (10)
1 (1)	○	○	○	○	○

Q12. How frequently do you donate to a charity on average per month?

(this includes all charities)

	Never (4)	Rarely (5)	Occasionaly (6)	Frequently (7)	Very frequently (8)
1 (1)	○	○	○	○	○

Page Break

✳

Q13. What is your age? (in years)

_____

Q14. What is your gender?

○ Male (1)

○ Female (2)

○ None of the above (3)

Q15. What is your employment status?

○ Student (1)

○ Employed (full-time/part-time) (2)

○ Unemployed (3)

○ Retired (4)

Q16. What is your highest completed or current educational attainment?

○ High school (1)

○ MBO (Middle Vocational Education) (2)

○ HBO (Higher Vocational Education) (3)

○ WO (University) (4)

Q17. Do you have an immigrant background?

○ Yes (1)

○ No (2)

Q18. Please indicate what type of immigrant background.

○ Western (1)

○ Non-Western (2)

○ Prefer not to say (3)

End of Block: Block 7

Start of Block: Block 6

✳

Q19. If you want to participate in the lottery to win €15, please enter your e-mail address. The lucky winner will receive an e-mail. Good luck!

Important: If you do not want to participate, leave this question open. You will receive an error message, please click "continue without answering" here.

_____

End of Block: Block 6