

The Effect of Gender Differences on Perceived Polarization

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PSB3E-BT15: Bachelor Thesis

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January 13, 2024

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Abstract

Previous research states that men and women differ in conversational behaviours and personality traits, such as agreeableness. Women focus on building rapport with their partner while being higher in agreeableness. Men, on the other hand, concentrate on asserting dominance and have lower agreeableness levels. These gender differences might affect their partners' perceived polarization during conversations. The current study paired people based on their opinions on a statement they had to discuss in order to examine the relation between agreeing and disagreeing conditions, your conversation partner's gender and polarization, with your partner's agreeableness levels possibly affecting the relationship. 146 participants were recruited via the Prolific Panel. No support was found for either hypothesis. An explorative analysis revealed that participants' gender was significantly related to perceived polarization, with women perceiving higher levels of polarization. Further research should be conducted to investigate possible causes of this finding. Future research should also examine how gender stereotypes may affect conversation dynamics and polarization levels.

Keywords: structural polarization, gender differences, agreeableness

The Effect of Gender Differences on Perceived Polarization

Interpersonal communication is a part of daily human life. During this, people might exchange different opinions on topics like political policies, leading to conflict or even polarization. According to Koudenburg and Kashima (2021), polarization constitutes different opinions, leading to groups formed around them. It has two components: perceived opinion differentiation and perceived structural differentiation. Polarization can lead to the subgroups harbouring negative emotions towards the outgroup, leaving future discourse at a higher risk for further polarization. Several factors, such as level of agreement, gender, and personality traits, might influence how much polarization is perceived, which we aim to explore.

Polarization is dominant in politics. Parties often hold conflicting values and attitudes, which can again lead to heavily polarized discussions. These can then influence how potential voters view the parties and their candidates. Polarization on sensitive political topics may be partially avoidable, but research can attempt to find strategies to regulate polarized conversations. Such regulations could increase cooperation between opposing parties and support them in finding common ground. The increased collaboration would lead to a more harmonious living together for politicians, the general voters, and the overall population.

Koudenburg and Kashima (2021) define polarization as a “state in which opinions in society are divided and partisan groups form around the divided opinions” (p. 1), but not all opinion differences lead to experienced polarization. Perceived opinion differentiation can result in healthy interaction because people want to develop a shared reality, which can be achieved through discussing opposing views and reaching common ground (Koudenburg & Kashima, 2021). The cause of polarization is perceived structural differentiation, the concern that different attitudes can result in subgroups of society that threaten the shared reality.

People tend to avoid discussing specific topics to prevent threatening their relationships with members from other subgroups (Koudenburg & Kashima, 2021).

One result of a polarized setting is echo chambers. Echo chambers are a concept mainly studied in social media usage but also apply to general human interaction. According to Cinelli et al. (2021), echo chambers can be defined as “ [...] environments in which the opinion, political leaning, or beliefs of users about a topic gets reinforced due to repeated interactions with peers or sources having similar tendencies and attitudes” (p. 1). In group polarization theory, echo chambers are seen as a reinforcing mechanism for pre-existing attitudes within a specific group. People will strengthen their beliefs through surrounding themselves with people who share similar attitudes. Group members will become more extreme and feel more justified in their attitudes (Cinelli et al., 2021). This can have negative consequences for more people outside of their group, as stereotypes and discriminatory habits become reinforced constantly. In the political context, echo chambers should ideally be avoided since they will ultimately lead to a group of people being underrepresented. Supporting Cinelli et al.’s (2021) idea, Smith & Postmes (2011) observed how people would discuss immigrants in groups and on their own. Based on the data, they found that in a group setting, individuals were more likely to discuss and validate negative stereotypes of immigrants. Here, the in-group can be compared to a type of echo chamber. The effect increased when the group reached a consensus on a stereotype versus disagreeing (Smith & Postmes, 2011), supporting the validation and reinforcement of negative stereotypes.

One type of common, often reinforced stereotype concerns gender. Ellemers (2017) indicates that with men, people focus more on assertiveness, dominance, and achievements, while the focus for women lies on being warm and nurturing. Whilst studies reveal more similarities than differences between genders, stereotypes remain widespread despite most of these differences not being innate but taught over humans’ life spans, shaped by social roles

(Ellemers, 2017). These gender differences also affect communication within and between genders. The polarized field of politics is still primarily dominated by men, but there has been little research on gender differences in deliberation (Caluwaerts & Reuchamps, 2014). Multiple studies have investigated how both genders differ in communication styles and habits, and many agree that men and women have different, innate views on communication. While women see conversations as a way to reinforce and build new relationships, men focus on asserting dominance (Gray, 2009; Leaper, 1991; Merchant, 2012; Tannen, 1990). Tannen (1990) refers to these styles as “rapport talk” and “report talk,” while Gray (2009) names them relationship-oriented or goal-oriented, respectively. A wide range of studies has further shown that men and women inherently differ in their conversation styles. For instance, women tend to weaken their statements in discussion, which might be linked to lower self-confidence (Merchant, 2012). This might then, in turn, affect how much polarization is perceived by both genders. Women naturally tend to offer their sympathies, occasionally offering unsolicited advice (Basow & Rubinfeld, 2003; Gray, 2009; Merchant, 2012; Tannen, 1990). Men prefer to solve problems, offering solutions to their conversation partners (Gray, 2009; Merchant, 2012; Tannen, 1990), and prefer to avoid so-called “troubles talk” (Basow & Rubinfeld, 2003, p. 187). Another essential conversation pattern where men and women differ is their active listening ability. According to Israel (2020), active listening is required to promote dialogue and foster understanding between both parties, which is also vital in the political context. Jansen (2019) states that while men are silent listeners, women express short remarks such as “mm-hmm” to indicate their listening. These differences can create disharmony between both genders. A study by Pence and James (2014) further showed that women have a higher ability to sense and respond in an active-empathic manner than men. Again, these differences might affect perceived polarization levels.

These conversation patterns may be affected by personality trait differences in genders. One widely accepted personality model, encompassing the traits of openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism, is the Big Five, or Five Factor Model, created by Donnellan et al. (2006). The trait agreeableness spans qualities representative of more social aspects, such as warmth, cooperation, and avoiding inharmonious situations (Larsen et al., 2020; McCrae & John, 1992), and was the focus of our research. Many studies investigating gender differences in the Big Five personality traits have concluded that the genders mainly differ on the neuroticism and agreeableness subscales, with women scoring slightly higher on both (Budaev, 1999; Lippa, 2010; Schmitt et al., 2008; Weisberg et al., 2011).

It could, therefore, be expected that talking to a man, who is generally lower in agreeableness, could negatively affect perceived polarization in the context of controversial discussions. At the same time, women are more agreeable, making discussions more pleasurable despite contrasting attitudes. Weisberg et al. (2011) added that these differences may be moderated by ethnicity and age. Said gender differences in personality traits may, therefore, also exert some influence on perceived polarization in a conversation.

Current Study

While many studies have been conducted on polarization, gender differences, and personality separately, research combining these elements is scarce. How these differences may affect polarization remains unclear. This is important to understand because the domain of politics is becoming less male-dominated, with many women joining the field. This new dynamic brings about novel challenges in communication if men and women behave differently in polarized discussions. We would expect perceived polarization to be lower

when participants are talking to women due to them withdrawing their statements and conforming with men.

Similarly, the role of personality traits in this relationship has only been scarcely explored. Since agreeableness has been shown to differ in men and women (Budaev, 1999; Lippa, 2010; Schmitt et al., 2008; Weisberg et al., 2011), we hypothesize that it mediates the relationship between gender and perceived polarization. Talking to women who are higher in agreeableness with more submissive conversation patterns will result in less perceived polarization. When talking to men, on the other hand, we expect lower agreeableness and, as a consequence, higher perceived polarization since their focus lies on dominating the conversation and occasionally interrupting their partner.

The present research, therefore, aims to connect research on polarization, gender differences, and personality traits. An experimental survey design will be used to examine the relation between the gender of the conversation partner and perceived polarization, as well as a possible mediating role of the partner's agreeableness. Based on common stereotypes and differing agreeableness levels, plausible expectations would be that when disagreeing, having a male partner will lead to higher perceived polarization. At the same time, this will not be the case for women since women tend to be more agreeable. When both parties agree, we expect no change in perceived polarization. More specifically, the following can be expected:

H1: In the disagreement condition, talking to a male partner will lead to higher perceived polarization than talking to a female partner. In the agreement condition, partner gender will not affect perceived polarization.

H2: The relationship between the partner's gender and perceived polarization is mediated by the partner's level of agreeableness.

Method

Participants

Via Prolific Panel, we employed a paid online sample, our primary sampling method. To be recruited, participants had to be at least 18 years old and fluent in Dutch. To complement this data, we recruited a convenience sample through our networks, who were not compensated for their participation. Our sample included 146 participants ($M_{\text{age}} = 30.54$ years, $SD = 10.40$, range = 18-71). Out of these 146 participants, 83 people identified as male, while 61 people identified as female. No participants identified as other or indicated they would prefer not to say. Most participants had Dutch nationality (94.5%), but the sample also included participants with Greek, Surinamese, Indonesian, Azerbaijani, Turkish, and Polish nationality (5.5%). We asked participants to indicate who they voted for during the previous election. Most people voted for the PvdA/Groenlinks party (19.9%). This was followed by participants indicating their vote for PVV (15.8%) or not having voted (15.1%). Less than 10% voted for VVD, NSC, D66, SP, PVDD, VOLT, or BIJ1. The DENK and FVD party were both voted by 1.4% of our participants. BBB, CU, and JA21 were voted by less than 1%. 4.1% of the people preferred not to say who they voted for. Post hoc, participants were excluded if they did not engage in a conversation or if they engaged in a conversation irrelevant to the topic of our study. The raw data included 210 participants, of which 64 were removed. 19 participants did not agree to the informed consent; one person only filled in the statement but did not complete the rest of the study. 17 participants did not have a conversation, while another 25 did not engage in a relevant conversation. Non-relevant conversations constituted interactions where participants merely greet one another or only one participant tried to engage.

We conducted a power analysis to detect a small to medium interaction effect ($f = .0.25$) with a power of 80%. Initially, the minimum sample size for a two-way Analysis of

Variance (ANOVA) was $N = 158$ ($f = .025$, $\alpha = .05$, $1 - \beta = .8$). To correct for the dependence between participants (participants were grouped into pairs), the design effect was employed (Snijders & Bosker, 2011). Based on previous research (Koudebung & Kashima, 2021), a conservatively estimated correlation between measurements of $\rho = .2$ was applied to our power analysis. After correcting for the design effect, it ultimately yielded a required minimum sample size of $N = 191$ for a two-way ANOVA. Since we did not recruit as many participants, the power of the analysis was lower. Furthermore, an original minimum sample size of $N = 154$ was necessary to analyse an additional mediating effect. Once the design effect was applied, the required sample size was $N = 186$. Once again, we were unable to reach this number, resulting in the analysis's lower power.

Research Design and Procedure

The design we used for our study was a between-subjects experiment, with one experimental factor, the disagree and agree conditions, and one quasi-experimental factor, partner gender. We employed a multilevel design in which participants were nested in conversation dyads. The partner's agreeableness level was included as a mediator. We used these values to investigate perceived structural polarization as our outcome variable.

Each participant filled out a questionnaire via Qualtrics. This was done individually through a computer or laptop. Participants were given information about the study, and their informed consent was asked. Our pre-measures included demographic questions, a version of the Mini IPIP, a short, self-report questionnaire with 24 items to measure the Big Five personality traits, and the honesty-humility scale, their opinion about the statement, the strength of it, and reading habits. During the questionnaire, each participant was introduced to the same discussion statement ("*The Netherlands should take in more refugees than it does now.*"). After introducing the statement, participants were asked about their moral convictions and perceived polarization regarding the statement.

Following these measures, the experiment was introduced. Each participant was instructed to have a 10-minute discussion with another participant about their opinion on the statement. Initially, we instructed participants to have an 8-minute chat, but after around 20 participants, we noticed eight minutes was insufficient, and the rest of the participants conversed for 10 minutes. Discussion partners were assigned to each other by Chatplat. The discussions took place on Chatplat. Participants were reminded not to disclose identifying information and to stick to the given statement in their discussion. We also encouraged them to remain patient if it takes some time before another participant joins the chat.

After the 10-minute chat, each participant continued by answering the post-measures. The post-measures were harmony, empathy, conversational receptiveness, future intentions, negative emotions, polarization perception, incrementality beliefs, affective polarization, knowledge, post-attitude, and post-moralization. The end of the questionnaire consisted of multiple manipulation checks. For the expected 20 minutes the study took, they were compensated with 3 GBP in Prolific Credits.

The study was approved by the ethical committee of the Faculty of Behavioural and Social Sciences at the University of Groningen.

Measures

Manipulation checks

Pairing. We included a procedure check to ensure all participants were paired with another participant to converse. People could indicate if they were paired or not, or that they were paired, but their conversation partner did not reply.

Statement as topic of conversation. Another procedure check was added to ensure that conversations were being held about the given statement. Participants could reply with either yes or no. This was also manually validated in the conversations' data.

Partner Statement. Lastly, we added a received manipulation check to assess how well participants can judge how their conversation partner responded to the initial statement. To examine this, we again gave the participant the statement and asked them to rate it how they think their partner did before the conversation.

Agreeableness

To assess the participant's level of agreeableness, we used the Mini IPIP scale, developed by Donnellan et al. (2006). We adapted the scale only to include the questions for agreeableness (2, 7, 12, and 17) ($\alpha = .69$), which we translated to Dutch. These four questions were administered using the following instructions: "The next statements are about you as a person. Indicate how accurately these statements describe you." Items were assessed on a 7-point Likert scale ranging from 1 (Very inaccurate) to 7 (Very accurate). An example of an agreeableness item was: "Sympathize with another's feelings."

Structural Polarization

To assess the participant's level of perceived structural polarization, we used the Polarization Scale, as used by Koudenburg and Kashima (2021) in their study on polarized discourse. Only the corresponding subscale was used since the focus was on structural polarization. For this assessment, participants needed to indicate their agreement with two statements regarding the topic of interest: "*Groups of people are in direct opposition with each other.*" and "*There are subgroups forming in society that represent the different opinion camps.*". Answers were collected on a 7-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree). Participants had to fill out the scale twice, once before having the conversation with another person, as a premeasure ($r_{SB} = .53$) and once after the conversation, as a post-measure ($r_{SB} = .65$). For both instances, we used the Spearman-Brown coefficient to calculate the reliability of the measure.

Results

Prior to the analyses, descriptives and frequencies were computed for the data. 83 participants had a conversation with a man, while 63 conversed with a woman. Of all the conversations, 58.2% were held in the agree condition and 41.8% in the disagree condition. More precisely, in the agree condition, only 7.5% of the participants agreed with the given statement, while in 50.7% of the cases, both participants disagreed. The frequencies for the ratings of the statement can be found in Table 1. Additionally, correlations between the variables can be found in Table 2.

Manipulation Checks

Pairing and Statement as topic of conversation were checked manually by the researchers who looked into the raw data and checked the answers for the items. Participants who indicated that they were not paired up in a conversation or did not have a conversation about the given statement were excluded from our analyses.

Partner Statement was examined by calculating the frequencies of people correctly estimating their partner's agreement or disagreement with the statement. We found a higher number of participants estimating this correctly.

Two-Way ANOVA

To assess the first hypothesis, predicting that talking to a male partner when disagreeing will lead to higher perceived polarization than when talking to a female partner, while perceived polarization will not be affected by partner gender in the agreeing condition, a two-way ANOVA was conducted using SPSS. Both condition and partner gender were categorical independent values, while perceived structural polarization was the dependent value. The means and standard deviations for perceived structural polarization and

agreeableness are presented in Table 3, split among both levels of our two independent variables.

Table 3

Descriptive Statistics

Dependent Variables: Post Polarization and Agreeableness

Partner Gender	Condition	Post Polarisation		Partner Agreeableness		N
		Mean	Std. Deviation	Mean	Std. Deviation	
Male	Agree	5.28	.99	5.31	.79	54
	Disagree	5.59	1.06	5.17	.87	29
Female	Agree	5.24	.95	5.79	.74	31
	Disagree	5.14	1.20	5.67	.78	32

Before conducting the analysis, the relevant assumptions were tested. First, we calculated the values for both the skewness and the kurtosis of the data, indicating that our data was only slightly negatively skewed (skewness = -0.17, $SE = 0.20$) with a slightly negative kurtosis (kurtosis = -0.28, $SE = 0.39$). For both measures, a value of 0 represents perfectly normally distributed data. Given that our values were close to 0, we found support for the normality assumption. Normality was further assessed using the Shapiro-Wilk test for each possible combination of factor levels. While half of the values approached normality (p -values ranged from .09 to .14), the other half violated the assumption with p -values of .02 and .05. These values were found in the female-disagree and male-agree conditions. No outliers were identified. Given that ANOVAs are robust to normality assumption violations, we decided to proceed with the data. Homoscedasticity was assessed via Levene's Test of Equality of Error Variances. Based on the test, we concluded that the assumption of homoscedasticity was not violated ($F(3,142) = 0.59, p = .62$).

The main effect of the condition (agree vs. disagree) on perceived structural polarization was not significant ($F(1, 142) = 0.34, p = .56, \text{partial } \eta^2 = .002$). Partner gender was also not significantly related to polarization ($F(1,142) = 1.82, p = .18, \text{partial } \eta^2 = .013$). Expectedly, we found no significant interaction effect of condition and partner gender on perceived structural polarization ($F(1,142) = 1.32, p = .25, \text{partial } \eta^2 = .009$). Based on these results, we concluded that neither the conditions of agreeing or disagreeing nor one's conversation partner's gender affect perceived structural polarization. Therefore, we did not find support for the first hypothesis.

Mediation Analysis

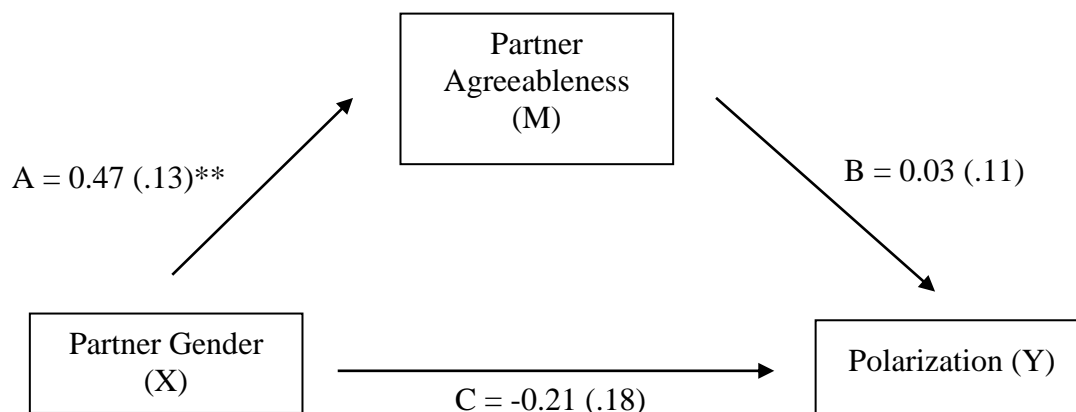
To test the second hypothesis, whether or not the relationship between partner's gender and perceived polarization is mediated by their partner's level of agreeableness, a mediation analysis was conducted in SPSS, using the PROCESS macro extension to run bootstrapping. Before the analysis, we checked the assumptions. By calculating the data frequencies, we confirmed that no missing values were present, and we had enough cases in both gender groups. We computed the Mahalanobis', Cook's, and Leverage's distances for perceived structural polarization and partner agreeableness to examine possible outliers. The Mahalanobis distance was calculated with 1 degree of freedom with a corresponding critical value of 10.83. To calculate the critical threshold of the Cook's distance, we used the formula $D_i = \frac{4}{(N-k-1)}$, with $N = 146$ and $k = \text{number of predictors} = 1$. With this formula, we arrived at a critical value of $D_i = 0.03$. Similarly, we used the formula $h_i = \frac{(2k+2)}{N}$ with the same values as just stated. Here, we came to a critical value of $h_i = .03$. Combining all three methods, one possibly influential outlier was found. Furthermore, we examined the histogram, showing that our data is roughly normally distributed, with a slight negative skew, see Figure 1. Lastly, we investigated the

scatterplot of our observations to check the homoscedasticity assumption. Figure 2 shows that our data is roughly evenly spread, meaning the assumption was met.

After the assumptions were tested, the PROCESS macro extension ran the mediation analysis. The coefficients and p -values for each mediation pathway can be found in Figure 3. First, we investigated the total effect of partner gender on perceived structural polarization, as previously shown in the two-way ANOVA, where no significant relation was found. We then ran a bootstrapping analysis to investigate the direct and indirect effects of partner gender on perceived structural polarization via partner agreeableness. The analysis revealed a significant effect between partner gender and the mediator partner agreeableness ($p < .001$). Additionally, neither partner gender ($p = .33$) nor partner agreeableness ($p = .98$) were directly related to perceived polarization. Further, we found no significant indirect effect ($B = -0.0006$, 95% $CI = [-0.07, 0.08]$). The confidence interval included 0, so we could not support the second hypothesis. Partner agreeableness did not indirectly mediate the relationship between partner gender and perceived structural polarization.

Figure 3

Mediation Coefficients



Note. Unstandardized beta coefficients and standard errors are reported.

** . Correlation is significant at the 0.01 level (2-tailed).

Explorative Analysis

Given that the previous analyses showed no significant relationships between the variables of interest, we ran an explorative analysis where pre-polarization levels were added as a covariate. Additionally, a two-way ANOVA was run where the participants' gender replaced partner gender.

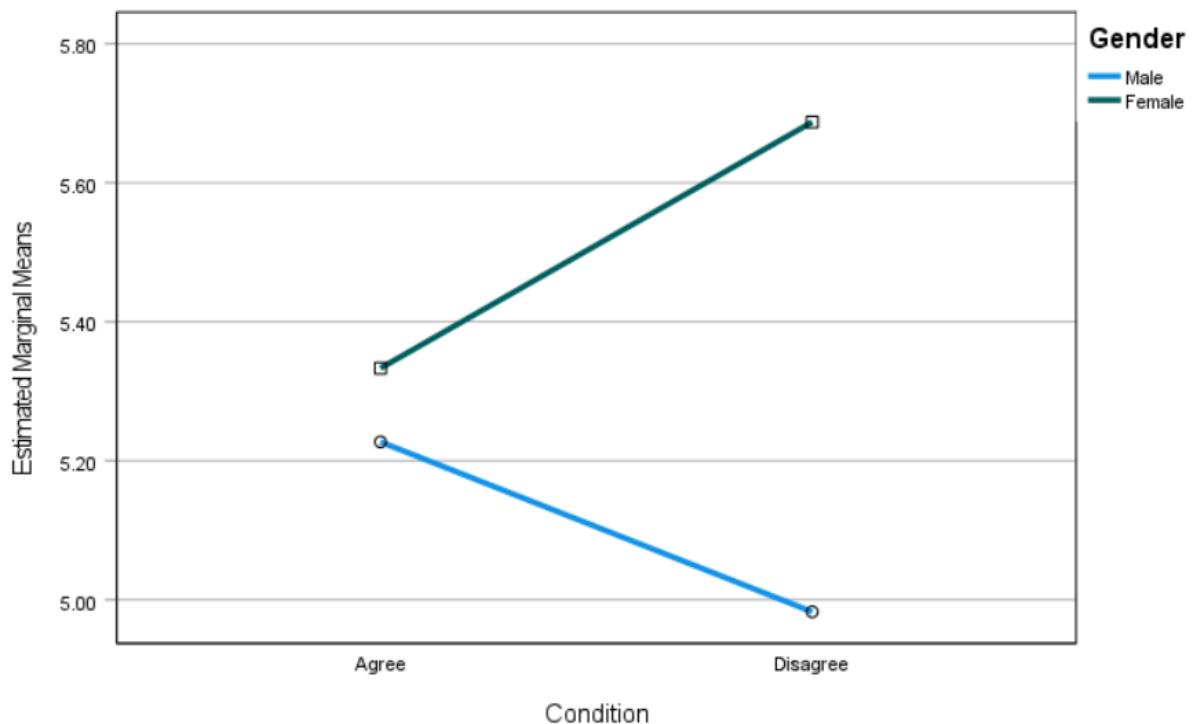
Adding pre-polarization levels from before the conversation was held into the two-way ANOVA revealed that pre-polarization was significantly related to post-polarization measures ($F(1,141) = 155.11, p < .001, \text{partial } \eta^2 = .52$). Even with the added covariate, the interaction effect of partner gender and condition on post-polarization remained non-significant ($F(1,141) = 1.91, p = .17, \text{partial } \eta^2 = .01$). We therefore still did not find any support for our first hypothesis and can therefore not support the notion that any of our independent variables are significantly related to a change in perceived polarization.

The assumptions for the ANOVA were tested again. The data was again only slightly skewed (skewness = -0.17, $SE = 0.20$) with a slightly negative kurtosis (kurtosis = -0.28, $SE = 0.39$), indicating that the normality assumption was met. The Shapiro-Wilk test for normality produced p -values ranging from .09 to .28, further supporting that the assumption was not violated. The female-disagree condition did violate the assumptions with p -values of .009. Two outliers were also identified, but due to the ANOVA's robustness to violations of normality, we did not remove these. Levene's Test of Equality of Error Variances indicated that the assumption of homoscedasticity was not violated ($F(3,142) = 0.83, p = .48$). Contrary to the previous analysis, gender was shown to have a significant main effect on perceived structural polarization ($F(1,142) = 5.30, p = .023, \text{partial } \eta^2 = .04$), with women experiencing higher polarization. The effect of condition remained non-significant. The interaction effect of condition and gender on polarization was marginally significant ($F(1,142) = 2.89, p = .09$,

partial $\eta^2 = .02$). This effect can be seen in Figure 4. Based on the plot, we can say that in the agree condition, both genders behave similarly, but the more people agree, the more polarization women perceive. Since we again found no significant main effects, we decided not to rerun the mediation analysis.

Figure 4

Estimated Marginal Means of Post Polarization



Discussion

Our results revealed no significant evidence for either of our two hypotheses. We did not find evidence for the notion of conversational partner's gender influencing how much polarization a person perceives. We also found no support for an effect of either agreeing or disagreeing with a person on how much polarization is perceived. Combined, these values also did not influence perceived structural polarization. Additionally, since there was no relationship between our values, we did not find an effect of agreeableness on the relationships. Our findings are not in line with what we expected based on prior research.

Theoretical Implications

Our explorative analysis revealed that participants' gender is related to their level of perceived polarization, yet the same cannot be said for their conversation partner's gender. Based on the research of Basow & Rubinfeld (2003), Gray (2009), Leaper (1991), Merchant (2012), and Tannen (1990) on communication patterns of both genders, we expected participants to perceive lower levels of polarization when disagreeing with a woman. However, we did not find any significant evidence for the main effects of the agree and disagree condition on polarization. This might be due to participants' unawareness of their partner's opinion, which may have prevented them from becoming as defensive. Additionally, the majority of participants did not have strong opinions regarding the statement, meaning polarization might have been lower in the first place.

We further did not find evidence for different polarization levels based on partner gender. One possible explanation for this is participants being blind to their conversation partner's gender. It might not be the actual gender causing the difference, but that stereotypes are activated once someone is told what gender they are talking to. Participants might have assumed they were talking to their respective gender, leading to men being less dominating and women not adjusting their statements as much. Alternatively, participants assuming they were speaking to the opposite gender might have experienced more polarization. Women might have felt more forced to agree had they known they were talking to a man, while a man might have put in extra effort to convince a woman. Future research could, therefore, investigate the role of gender stereotypes on conversations and polarization. The effect might also have been concealed by the conversation being held online instead of face-to-face. Roos, Koudenburg, and Postmes (2020) found that participants talking to a confederate were less responsive online. This lowered responsiveness may be a result of many conversation behaviours being non-verbal, such as nodding and inviting body language. Responsiveness

may suffer since these behaviours cannot be displayed and picked up over a screen. If we had conducted this study in a laboratory setting, the findings might have aligned more with what we expected. Another interesting study would be regarding online video chats, since non-verbal cues can partially be picked up on from just the upper half of the body. It would be appealing to compare polarization levels in the three different conversation settings.

Additionally, we did not find agreeableness a significant mediator for the relationship between the partner's gender and perceived polarization. Given that we did not find any main effects for partner gender and condition, mediation was unlikely.

However, our explorative analysis revealed that gender was related to polarization, with women perceiving more polarization. Previous research, as well as our research, showed that women score slightly higher on agreeableness than men, based on which we hypothesized that talking to a woman would lead to lower polarization due to her conversational behaviours, possibly linked to higher levels on the trait (Budaev, 1999; Lippa, 2010; Schmitt et al., 2008; Weisberg et al., 2011). Surprisingly, we found women perceiving higher polarization. This finding may again result from participants being blind to their conversation partner's gender. According to Merchant (2012), women tend to retract their statements and agree with a man, possibly to preserve the relationship. However, if a woman is unaware she is talking to a man, she may not feel the need to adjust her statement. Furthermore, since they did not know the other person's gender, they might feel more comfortable expressing and defending their point of view instead of retracting their statement. They might, therefore, experience more polarization simply because they do not adapt their opinions like they usually do and are met with unexpected negative repercussions. Further, given that the conversation was held in an online setting, female participants also possibly felt more secure in their statements due to their anonymity in the online chat box, lowering their felt need to agree and, therefore, increasing polarization. Their partners might

also have tried persuading them more to attempt to change their standpoint, leading to even more polarization. Thus, the finding might be influenced by the comparison women had from previous conversations where they behaved more submissively. One further explanation could be the classic stereotype of women being more sensitive. Because of their higher sensitivity, they might notice subtle changes in communication patterns more quickly and perceive them as a risk to their relationship with the conversation partner. Since women prioritize relationship building through communication (Gray, 2009; Leaper, 1991; Merchant, 2012; Tannen, 1990), this increased feeling of risk might then, in turn, lead to higher polarization. Lastly, the findings might be explained by what Jansen (2019) mentioned in her blog post about sex differences in listening. According to her, women show more active listening tendencies than men, who remain silent. While this is harder to pick up over chat, women might have sensed that they were not being listened to, leading to higher polarization.

Furthermore, our results are more generalizable across different contexts since participants did not know the opinion of their conversation partner. This is similar to real life since when talking to strangers, you rarely know their opinion on a subject before a discussion. Simultaneously, informing participants beforehand whether their conversation partner agrees or disagrees with them could have increased the risk of them becoming either defensive or refusing to engage with people disagreeing with them.

Compared to other research, we went a step further by investigating actual conversations instead of just hypothetical findings, such as those of Koudenburg and Kashima (2021). Therefore, our study extends polarization research by investigating whether the hypothesized findings hold in actual conversations.

Lastly, our conversation revolved around a more polarized topic than previous research due to the recency of the Dutch elections. Because of this, participants' opinions

were more conscious, therefore being more complicated to change. Since our goal was to use a polarizing topic for our conversations, this strengthened our setting.

Our results indicate what causes can be investigated, such as the role of stereotypes and different online versus real-life settings. Furthermore, this research is a starting point for filling the research gap on gender differences in polarization. We found evidence for gender being significantly related to perceived structural polarization, with women perceiving higher polarization, which other researchers could explore.

Limitations and Future Directions

One of our limitations was that the study suffered from insufficient power, as we could not reach the necessary sample sizes of 191 and 186 for the two-way ANOVA and mediation analysis, respectively. A higher power is needed mainly to detect interaction effects. The ANOVA analysing condition, own gender, and polarization showed a marginally significant interaction effect, so higher power could have led to more precise results. Similarly, the calculated Cronbach's alpha indicating the reliability of our agreeableness measures was not as good. While values above $\alpha = .6$ are questionable, values are acceptable above $\alpha = .7$. Our alpha, $\alpha = .69$, was therefore just below the acceptable threshold. However, the agreeableness items were taken from the validated Mini IPIP measure from Donnellan et al. (2006), which is why we proceeded even with our lower reliability. Lastly, gender, in this case, was treated as a strictly binary construct, lowering the study's generalizability. While participants could indicate other genders, only male and female participants were found in the sample.

Future research should be conducted to investigate whether it is not the gender of either person affecting the polarization but the stereotype connected to it. This could be tested in different settings, such as people just introducing themselves and stating their gender

truthfully or dishonestly, or in face-to-face settings where one can see their partner's gender. Another option would be to keep the setting online and see whether telling people they are talking to a man or a woman will change the outcome. It would be possible that when being told they were talking to a woman, people would become less polarized than when speaking to a man since they assume a woman is more likely to agree with them. If an effect exists there, it might support the idea that stereotypes influence how people talk to one another. Additionally, based on the findings from Roos, Koudenburg, and Postmes (2020) about lower responsiveness in online discussions, rerunning the experiment with an online chat box, an online video chat setting, and a face-to-face setting might be worthwhile to compare differences in perceived polarization levels. If any of the two online settings end up supporting research indicating that responsiveness is lower, politicians can ensure the use of the best communication setting recommended and avoid those lowering responsiveness.

Additionally, further research on the effect of one's gender on perceived polarization is needed based on our results from the explorative analysis. Based on research that found women scored higher on agreeableness, we expected them to perceive lower polarization. However, they reported higher levels of structural polarization in our experiment. It might interest researchers to analyse why that was the case. This could, for example, be done by asking participants to explain their polarization perception after the conversation.

Moreover, Weisberg et al. (2011) stated that gender differences may be moderated by ethnicity and age. Different age groups might have stronger opinions or may be differently willing to have discussions like the one in our study. The same may be said for different ethnicities, as cultural upbringing may affect the situation. Therefore, it may be helpful for future research to include more detailed measures of ethnicity and age and analyse their relations with polarization perceptions.

Lastly, while the recency of the Dutch elections helped us increase polarization, this could also partly be seen as a limitation. Not only was the statement we used more relevant, which made participants' opinions more conscious, and they were more used to talking about them, but they might also be more resistant to discussing and changing their opinions to avoid feeling regret about their vote. It might, therefore, be worth repeating the statement at a different time to compare how the increased relevance might have affected our results.

Conclusion

The current study did not find significant evidence for either condition or partner gender to affect perceived polarization. Agreeableness was, therefore, also not found to influence the hypothesized relationship. However, the explorative analysis revealed that gender is significantly related to perceived polarization, with women perceiving more overall polarization, possibly due to them changing their conversation behaviours in an anonymous setting. Further research should investigate possible causes for these findings, such as the possible role of gender stereotypes and the influence of the online setting.

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Appendix A

Chatplat Instructions

We introduced the chatting platform with the following instruction: “Now we would like you to have a conversation with another participant about this statement “*The Netherlands should take in more refugees than it does now.*” The conversation will take place in an online chat environment. We ask of you to only talk about this subject, and to reveal no personal information (for privacy reasons). It could take a few minutes before we have found a conversation partner for you. We ask for your patience. As soon as we have found a conversation partner, the conversation will start. The conversation will take 8/10 minutes.”

Appendix B

Measures

Mini IPIP (Donnellan et al., 2006)

Agreeableness Items

Sympathize with others' feelings.

Am not interested in other people's problems. (R)

Feel other's emotions.

Am not really interested in others. (R)

Appendix C

Table 1

<i>Statement</i>	N	%
Completely disagree	42	28.8%
Disagree	33	22.6%
Slightly disagree	30	20.5%
Slightly agree	28	19.2%
Agree	10	6.8%
Completely agree	3	2.1%

Table 2

Correlations

		Condition	Own Gender	Partner Gender	Own Agreeableness	Partner Agreeableness	Pre-Polarization
Own Gender	Pearson Correlation	.17*					
	Sig. (2-tailed)	.04					
Partner Gender	Pearson Correlation	.16	-.11				
	Sig. (2-tailed)	.06	.21				
Own Agreeableness	Pearson Correlation	-.05	.29**	-.15			
	Sig. (2-tailed)	.52	<.001	.07			
Partner Agreeableness	Pearson Correlation	-.03	-.15	.29**	-.09		
	Sig. (2-tailed)	.71	.07	<.001	.31		
Pre-Polarization	Pearson Correlation	.08	.18*	-.05	.11	.01	
	Sig. (2-tailed)	.34	.03	.56	.17	.88	
Post-Polarization	Pearson Correlation	.04	.18*	-.09	.07	-.01	.72**
	Sig. (2-tailed)	.62	.03	.27	.39	.94	<.001

Note: Correlations based on $N = 146$

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix D

Figure 1

Distribution of Polarization

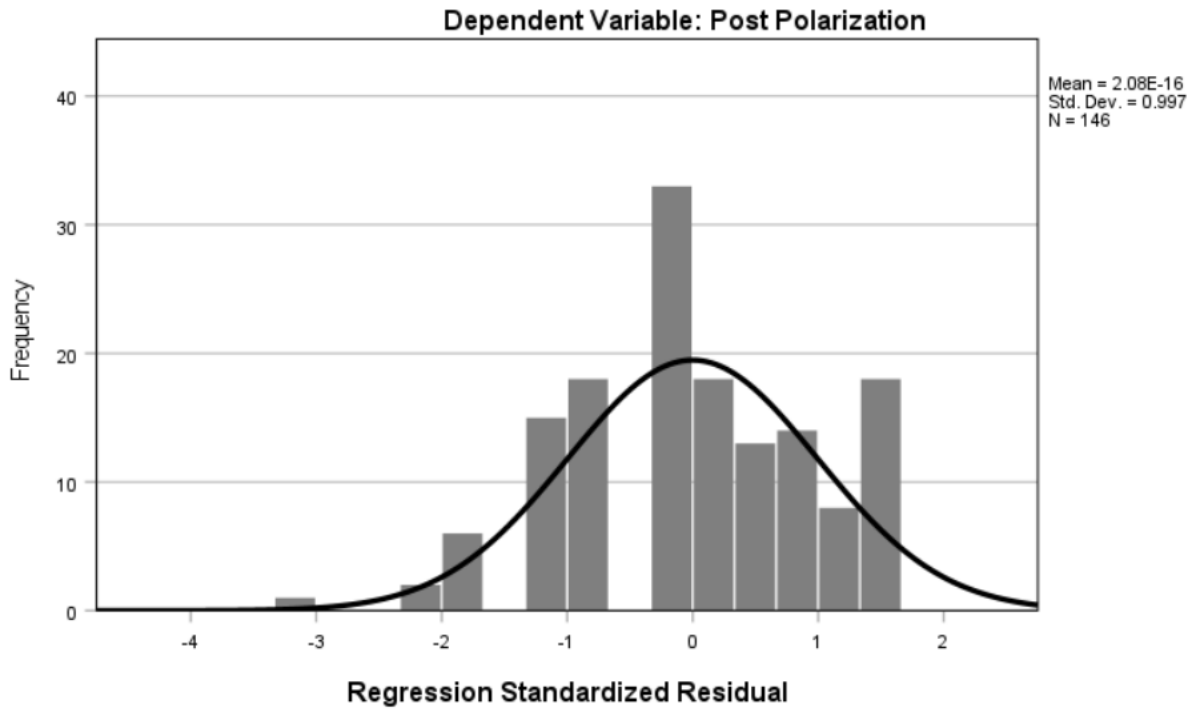


Figure 2

Spread Polarization

