Let's Talk Absolut: The Effect of Group Interactions on Attitude Moralization via Perceived Dyadic Harm

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Abstract

Many highly-polarized societal debates, where opinions are situated far apart, become entrenched and difficult to solve. Recently, a growing body of research has investigated moralized attitudes to explain this phenomenon. In contribution to this framework, we shed light on the involvement of group interactions in the process of moralization. Specifically, we developed a longitudinal study in which we assessed the participants in two waves leading to the presidential elections 2020 in America ($N = 303$). In this context, we tested the hypotheses that (1) the attitude diversity within group discussions (i.e., discussion heterogeneity) predicts moralization of the same attitudes and (2) that this relationship is mediated by dyadic harm. The results showed support for both hypotheses. These findings imply that people with a more homogeneous attitudinal discussion network perceive stronger dyadic harm, leading to the development of a moral conviction. Taken together, our study suggests that moralization does not happen in a social vacuum and research investigating the prediction of moralization should include or control for social factors within their work. Directions for further research in this topic should include an experimental measurement of discussion heterogeneity to establish a causal relationship with moralization.

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Perceived Dyadic Harm

Every day we are exposed to countless different opinions about our society. Current societal challenges such as the investment into climate change measurements or vaccination decisions are presented in advertisements, explained in the news, or discussed within our social circle. However, it seems that especially these discussions around societal challenges frequently become entrenched and difficult to resolve. Just recently we could witness how the choice of getting vaccinated quickly turned from a personal decision into an issue of right and wrong where people morally condemned the behavior of the other side (Bor et al., 2020). Throughout the last years, research findings pointed at this moral conversion of opinions as one reason for the entrenchment of societal discussions (Skitka, 2010 for a review). During this so-called process of attitude moralization, an individual's attitude on a specific topic becomes a moral conviction which cannot be described as a mere opinion anymore but rather is seen as a reflection of what is fundamentally right or wrong (Kovacheff et al., 2018; Skitka, 2010). The resulting moral conviction is perceived by the individual as universally true (Morgan & Skitka, 2020). In practice, this means, if an action such as the consumption of meat conflicts with one's moral conviction, it would be morally wrong to engage in this action oneself and for everyone else (Rozin et al., 1997). As a result, highly polarized situations can arise where both sides of a debate perceive their point of view from a moral high-ground based on their opposing moral convictions on a specific topic.

However, despite the observation that polarized societal discussions often involve moralized attitudes (e.g., Kovacheff et al., 2018), little is known about how group interactions between people in the context of societal issues may influence the emergence of such moralized attitudes. In the study reported here, we investigated the possibility that moralization is predicted by the social environment of a person. More specifically, we

examined the influence of the heterogeneity of discussion networks (discussion heterogeneity) on individual's attitude moralization about a polarized societal issue. Furthermore, we are building on the theory of dyadic morality (TDM) and experimental research suggesting cues to *dyadic harm* (i.e., intentional harm inflicted on a vulnerable other) as one trigger for moralization within polarized contexts (D'Amore et al., 2021). Following that, we will investigate the possibility that this relationship is mediated by an individual's perceptions of dyadic harm towards attitudinal opponents (Schein & Grey, 2018).

Polarization as a Setting Ground for Moral Convictions

Clearly, not everyone shares the same opinions, and not everyone judges a situation in the same way. As a result, compromises need to be made when it comes to topics relevant on a societal level. Therefore, group interactions such as debates are relevant to resolve attitudinal conflict, foster societal development, and bring social change within a functional democracy. In contexts of salient intergroup comparison (pro- vs anti an issue), people like to surround themselves with similar opinions, so they search for like-minded others within a societal debate (Bliuc et al., 2007). In other words, societal-level polarization between opposing groups often goes hand-in-hand with consensualization (i.e., reducing the tension of opinion differences by fining a common understanding of a topic) amongst similar-minded individuals at the network level (Goldenberg et al., 2020).

The groups and corresponding identities formed based on similar opinions within a specific topic are referred to as opinion-based groups (Bliuc et al., 2007; Gray et al., 2014). It was shown that the more people look for confirmation of their opinion in the society, the stronger their affiliation with their opinion-based group and the stronger their anger felt towards the outgroup (Zhu et al., 2021). Based on these findings, we argued that the phenomenon of opinion-based groups becomes particularly apparent in polarized debates

where the attitudes of the opposing groups are set far apart from each other, and the group affiliation is strong. Polarization structurally divides the society, so people tend to be dismissive of information from the opposing structural side, and creates an environment where people mainly encounter information they already agree with (Sunstein, 2009). As a result, chances of a fruitful dialogue or a final compromise decrease and interactions between the two opinion-based groups in society become more complex. Importantly, given that morally convicted individuals tend to be intolerant towards alternative views (e.g., Skitka et al., 2005), resolving said opinion differences becomes especially difficult when the attitudes about the debate grow beyond a mere opinion, and people perceive it as a moral conviction (Thomas & McGarty, 2009). In such a situation, compromises are far away, and the tipping point for a violent escalation is dangerously close (Brady et al., 2020; Mooijman et al., 2018).

This hostile dynamic between two opposing groups could further lead to a moral polarization, where both sides hold an opposing moral viewpoint of the situation. For example, a recent study suggests that the context of polarization between opinion-based groups creates a functional basis for the formation of moral convictions because it features conflict-prone outgroup actions (e.g., announcing their willingness to use violence against ingroup members) that can serve as a trigger for moralization (D'Amore et al., 2021). Taken together, polarized contexts provide a fertile ground for the formation of political moral convictions, which in turn may lead to the escalation of pressing societal conflicts.

Dyadic Harm as the Pathway to Moralization of Polarized Issues

Previous work on the formation of moral convictions has suggested that an individual's confrontation with certain events relevant to the issue could serve as a trigger for the moralization of attitudes (e.g., Wisneski & Skitka, 2017). For example, in the context of meat-eating, it has been established that stimuli with strong evocative properties of negative emotions towards meat eating led to moralization (Feinberg et al., 2019). The moralizing

effect of this so-called *moral shock* is explained by the strength of the emotions induced by the evocative stimuli. There are consistent findings that negative emotions serve as a route to attitude moralization (Clifford, 2019; Rozin et al., 1997, 1999). Importantly, these emotions need to be felt in direct relation to the issue of moralization for this effect to occur (i.e., *integral affect*; Skitka et al., 2018): while some stimuli such as witnessing a person consciously eat a moldy sandwich could induce strong negative emotions, these emotions do not necessarily lead to the moralization of a person's attitude on an unrelated topic. Hence, attitude moralization could be triggered when confronted with a moral shock relevant to the specific topic as soon as it evokes strong emotional responses.

In line with the theory of dyadic morality (TDM), recent experimental work proposed the perception of dyadic harm as an important ingredient for the moralization of attitudes on a specific topic (D'Amore et al., 2021). The perception of dyadic harm refers to harm that is perceived as intentionally inflicted towards a vulnerable other person (Schein & Grey, 2018). For its moralizing properties, it is argued that the intentional characteristic of dyadic harm poses as a value violation, which triggers a value-protective response of strong emotions (D'Amore et al., 2021; Tetlock, 2003; also see Leal et al., 2019). This is because the perception of dyadic harm inflicted by an outgroup will indicate that not only this act, but the whole group is immoral and poses a threat to society, and as such, this group needs to be stopped to protect the societies (i.e., the ingroup's) values (Leal et al., 2019; Rai & Fiske, 2012). Following this reasoning, an experimental study found that if people were confronted with actions that involved strong (versus weak) intentional harm by the opinion-based outgroup, it led to strong emotions and, in turn, the moralization of attitudes (D'Amore et al., 2021). Thus, the perception of dyadic harm inflicted by an outgroup can be seen as a relevant trigger for moralization.

Importantly, perceptions of dyadic harm can be highly subjective and shaped by both personal and social factors. For example, moralized attitudes also increase the perception of dyadic harm leading to a feedback circle between the two (Schein & Grey, 2018). In the theory of dyadic morality, this feedback cycle is referred to as a dyadic loop. It is argued here that due to the group differences in their perceptions of harm, the dyadic loop can lead to very different perceptions of moral rights and wrongs from one group to another. The strength of the dyadic loop effect depends on the group dynamics, suggesting that the process of attitude moralization is also highly dependent on the moral perceptions of one's close social environment (Schein et al., 2016).

Within group dynamics and the development of moral convictions

Until today social factors have been widely overlooked in the research on the development of moral convictions, which might be due to the apparent robustness of strong moral convictions towards most types of social influence. Individuals with a strongly moralized attitude would rather end relationships with people having incongruent attitudes than finding a compromise (Aramovich et al., 2012; Conover & Miller, 2018). Once moralized, influence from and within the group, such as peers and even authorities, is ineffective (Wisneski et al., 2009). This could partly explain why so little is known about how social factors might influence the moralization of attitudes. However, recent research on the development of moralization suggests that new cultural norms can lead to the moralization of culture-specific norms during a short stay within a different culture (Takamatsu et al., 2021). This study suggests that group dynamics such as norms could also play a role in the moralization of attitudes on specific norm relevant topics as well. Moreover, this is also in line with research on the dyadic loop, suggesting group dynamics (i.e., social interactions) as a relevant predictor for the perception of dyadic harm inducing moralization

(Schein et al., 2016). To conclude, group dynamics in terms of social interactions with similar-minded people could predict perceptions of dyadic harm about the outgroup.

In this research, we argue that social interactions within groups are an active part of group dynamics and, therefore, the main reason behind the influence of social norms on an individual's attitude moralization. This is argued because a discussion entails the process of consensualization within the discussion group (e.g., Koudenburg & Kashima, 2021). People engage in discussions to reduce the tension of opinion difference; the underlying goal of a discussion is reaching a common understanding of an issue, especially when those other people are relevant to the individual (such as when discussing with important others from one's network; Levitan, & Visser, 2008). Thus, whether this process of group consensualization leads to the strengthening or the weakening of the individual attitude depends on the homogeneity of the attitudes within a given discussion group (Kaplan, 1977).

Overview and Hypothesis

In the present research we connected knowledge on two types of group dynamics with research on the development of moral convictions. Based on this, we investigated the effect of network heterogeneity via dyadic harm on an individual's attitude moralization within a polarized context. First, in line with previous research, we expected that inter-group dynamics can serve as a trigger for moralization: When an issue-relevant outgroup action is perceived to involve strong dyadic harm against the ingroup, this can trigger individuals' attitude moralization about a specific issue (D'Amore et al., 2021). Second, extending previous research, we proposed that intra-group dynamics could strengthen the influence of those outgroup cues of dyadic harm on an individual's attitude moralization: Discussing specific issues within networks of similar-minded others (i.e., in homogeneous discussion networks, as opposed to heterogeneous networks), can strengthen individuals' attitude moralization when confronted with outgroup cues of dyadic harm (Hypothesis 1), because it

can increases individuals' subjective perception of dyadic harm from the outgroup (Hypothesis 2). We predicted stronger moralization about the different societal issues if people discuss their opinions mainly within a homogeneous group (Hypothesis 1), and that this relationship is mediated by increased perceptions of dyadic harm (Hypothesis 2). Figure 1 shows the full dyadic harm mediation model.

Figure 1

Dyadic Harm Mediation Model
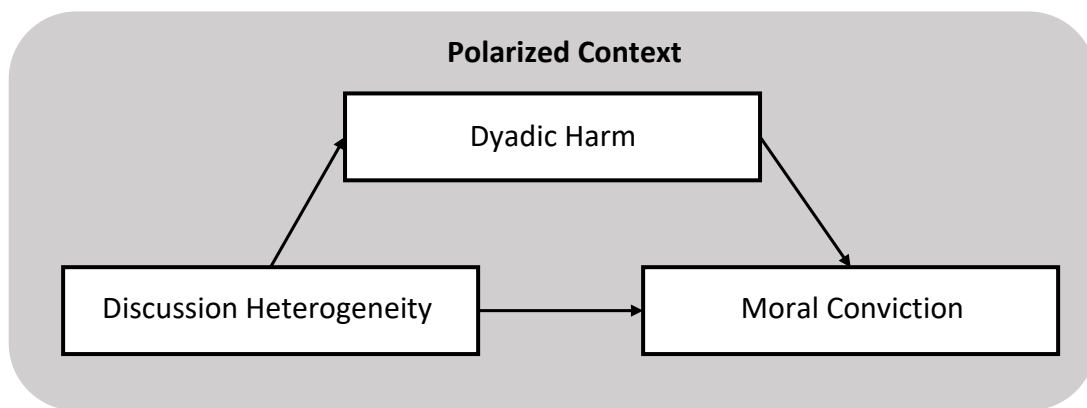
To test these hypotheses, we conducted a longitudinal study with two waves to capture individual change in moralization over time. Our study was set within the polarized context of the US 2020 elections and revolved around three prominent societal issues that were strongly debated within this period: Supreme Court Justice, Climate Accord Paris, and Mask-wearing. We decided to collect a sample of supporters for the democratic side of the election (i.e., Biden), therefore the outgroup was Trump supporters. Specifically, for each issue, we included cues to dyadic harm by the political outgroup of supporters for the republican (i.e., Trump) side of the election in order to assess the discussion heterogeneity, perceived dyadic harm, and moral conviction of the participants.

Methods

Participants

The sample consists of Americans with self-stated support for Biden in the 2020 election ($N = 303$). The sampling consisted of two waves, in which the participants of the first wave were invited to take part in the second wave as well. Participants were recruited via the crowdsourcing marketplace Mechanical Turk (MTurk). To ensure good data quality, we included attention checks in the survey and screened for potential bots. Participants who failed to correctly answer the checks for bots and attention in the first wave ($n = 25$) were not invited for participation in the second wave and hence excluded from the final dataset. For each wave, the participants were financially compensated, with an amount of $0.50 (Wave 1), $0.90 (Wave 2) and $1.50 (Wave 3 and 4) leading to a maximum total of $4.40 across the four waves in the study, with a total of $1.40 for participation in the first two waves reported in this study. In total 606 responses were collected across the first two waves used in this study. The age, gender, and education (Edu) distribution are shown in Table 1. For education level the number one stands for a low, two for medium, three for a high education level.

Table 1

Sample Description: Participant Demographics

	M Age	*SD* Age	*M* Edu	*SD* Edu	*N* (Men)	*N* (Women)	*N* (other)	*N* (Total)
Total	45.80	13.60	2.23	0.49	127(41.91%)	172 (56.76%)	4 (1,32%)	303

Note. All the participants were of at least 18 years, all living in the United States.

Materials

The materials described in the following were presented and collected online using Qualtrics (2005), and the whole study was run on the participants' personal device (e.g. laptop, computer). The data were collected in two waves within a bigger frame of measurements. However, only the following materials are used in this study (for more information, see D'Amore et al., 2022). At the end of the study, every participant had to answer several

demographic questions, including gender, age, and education level. All the other measurements reported below were assessed multiple times in the context of three recent relevant issues (i.e., Supreme Court Justice, Climate Accord Paris, and Mask-wearing).

Moral Conviction

The moral conviction was measured using the moral conviction scale by Skitka and Morgan (2014). The scale was slightly adapted to fit with the topics used in this study (see Appendix A). The moral conviction scale consists of four items (for example: "To what extent is your attitude about a national mandate for mask-wearing in public connected to your beliefs about fundamental right and wrong?"). Each item was rated based on a five-point scale on which a high number indicated a high moral conviction (i.e., 1 = *Not at all*, 2 = *Slightly*, 3 = *Moderately*, 4 = *Much*, 5 = *Very Much*). The topic-specific moral conviction score for each participant was computed by creating the mean scores of the four items for each of the three topics. Consequently, participants could achieve a score between 1 and 5. The reliability of the moral conviction score was found to be excellent throughout the three topics (Bland & Altman, 1997), with Cronbach's Alpha equal to $\alpha = .93$ for Supreme Court Justice, $\alpha = .95$ for Climate Accord Paris, and $\alpha = .93$ for Mask-wearing.

Perceived Dyadic Harm

A questionnaire developed by D'Amore and colleagues (2021) was used to measure perceived dyadic harm. Following Schein and Gray, (2018), the questionnaire was built around the three central elements of perceived dyadic harm: anticipated suffering of the victims, perceived intention to harm, and anticipated dyadic causality (see Appendix A). One example of the perceived intention to harm was included in the following item "In the context of the [issue], we think that Trump and his supporters have the *intention* to harm or hurt other people". The participant could indicate their agreement to the statements on the same five-point scale used for the measure of moral conviction where a high number suggested that the

participant agrees very much. The mean of the three questions computed the participant's score within each of the three topics. Therefore, a score between 1 and 5 could be achieved, where 5 would resemble the strongest perception of dyadic harm possible. The reliability of the perceived dyadic harm questionnaire was shown to be high to excellent within the three topics (Bland & Altman, 1997), with Cronbach's Alpha equal to $\alpha = .92$ for Supreme Court Justice, $\alpha = .90$ for Climate Accord Paris, and $\alpha = .86$ for Mask-wearing.

Real-Time Cues to Dyadic Harm. Due to the context of this study, it was possible to connect the three topics with real-time stimuli of naturally emerging information about the outgroup (e.g., current news messages describing how Trump acted in relation towards the Paris Climate Agreement). The participants answered the dyadic harm questionnaire based on these real-time events which were presented just before and on the same page with the dyadic harm questionnaire to create a standardized reference for the questions.

Discussion Heterogeneity

To assess network heterogeneity, participants had to indicate five people they frequently discuss political matters with (adapted from Levitan & Wronski, 2014; see Appendix A). For each of these people, participants had to indicate over the curse of the study how much their attitude differs from their own (e.g., "for each discussant from your social network listed above, please indicate how different their attitudes are from your own attitude on [issue]"). These questions were asked to be answered in reference to the last months, therefore the measurement of the second timepoint concerned the timeframe between the two measurements and, therefore, is used in this study. The difference could be indicated on a five-point scale where a higher score resembled a bigger difference. Topic-specific network heterogeneity for each participant was calculated by the mean of the five items for each of the three topics. Therefore, a score between 1 and 5 could be archived, where a higher score reflects higher network heterogeneity.

Procedure

The data were collected in two waves on relevant time points before the presidential election. The first wave was one month before the election (26. September to 2. October) and the second right before the election day (26. October to 2. November). On each wave, the participants entered the study online over a link on MTurk. Proceeding the start of the study, an information letter was presented, and the participants had to actively give their consent to the given information (see Appendix B). Next, they started with the topic-specific survey that was assessed three times to capture each of the three specific topics (in a randomized order). Specifically, for each topic block, participants first indicated their attitude on the specific topic on a single question (i.e., In the context of the political topics debated in the 2020 presidential election, what is your attitude on [Issue]), then reported on their network heterogeneity for this specific topic. Afterwards, a topic-specific news message about real-time events was presented to the participants. As described above, the news messages included cues about the intentional harm of their political opponent (Trump supporters) based on actual news messages emerging in between the two measurement waves. They served as reminders to ensure that all the participants answered the questions within the same context of outgroup events, enabling a direct comparison between participants' responses through this standardized approach. In the following, the participants were presented with the dyadic harm scale and finally the moral conviction scale. Each block, all questionnaires were answered in the context of one of the three news topics. The issues and the questions of the different scales were presented in a randomized order. The waves ended with the indication of some demographics, and the participants were thanked for their participation. The study described here took around 8 minutes to complete.

Data Analysis Plan

During the data preparation, the data was scanned for duplicates and impossible data (i.e., scores that are out of the answer range). After that, participants with attitudes opposed to their expected political direction were excluded from the further analyses. This was necessary as the real-time cues to dyadic harm were tailored for one direction of attitudes (opinion-group) and would not induce the perception of outgroup harm in the other. Based on that, 30 responses had to be excluded. Since each participant answered all the questionnaires three times (i.e., once for each topic) a total of 979 responses could be used in the following analysis. Following that, a reliability analysis was conducted for the moral conviction scale as well as the perceived dyadic harm measurement and variable descriptives were calculated.

Both Hypothesis 1 and 2 will be analyzed using a multilevel model with the individuals at level-2 and repeated (topic-specific) observations at level-1. Due to the three different topics the questionnaires were administered in (i.e., Supreme Court Justice, Climate Accord Paris, and Mask-wearing), each participant will have three responses on two time points. The linear mixed model (LMM) was chosen as a suitable analysis to control for the clustered data for each individual within the three topics. To test Hypothesis 1, discussion heterogeneity at Wave 2 will be included as a continuous between-subject predictor for within-subject attitude moralization. With respect to the longitudinal research design, the LMM contained the post-measurement of moral conviction (at Wave 2; continuous: 1-5) as the dependent variable, while controlling for the individuals' pre-measure of moral conviction (at Wave 1) in order to test the effect of the predictor on within-person *change* in a moral conviction from Wave 1 to Wave 2. As an additional controlling factor, topic (qualitative: Justice, Climate, and Mask) and its interaction with the pre- measure of moral conviction will be added to the model to account for differences between the three discussion topics in the average strength of moral conviction as well as in the average strength of moralization from Wave 1 to Wave 2, respectively.

The mediation effect of Hypothesis 2 will be analyzed following the guidelines offered by Baron and Kenny (1986). First, to establish the relationship between the predictor and the mediator variable (a-path), an LMM with the post-measurement of dyadic harm as the dependent variable and post discussion heterogeneity as continuous predictor will be conducted. Second, another LMM like that of Hypothesis 1 will be used that now includes both the predictor and the mediator variable simultaneously (c'-path) to analyze how much of the potential effect of discussion heterogeneity on moral convictions is mediated by dyadic harm. Thus, again, the post-measurement of moral convictions will be the dependent variable, and the covariates will be the pre-measurement of moral conviction together with the factor topic and their interaction.

Results

During the data inspection, descriptives were calculated for the variables within each of the three topics and were summarized in Table 2. Of interest to note here are the low means for discussion heterogeneity. These indicate generally rather homogeneous discussion networks in the sample. Second, the scores of the pre-measurement of moral conviction were already rather high. Following that, an Intra-Class Coefficient (ICC) was calculated for the dependent variable (i.e., moral conviction at Wave 2) in order to test if a multilevel model is necessary to account for the variation due to clustering. Specifically, the ICC indicates how much (proportion) of the total variance in moral conviction is explained by between-subject variance (level-2) compared to the within-subject variance (level-1). The ICC was calculated based on random effects for the individuals and the measures (i.e., topic-specific). The ICC for moral conviction was .79 with a 95% confidence interval from .80 to .75 ($F(1,303) = 4.95, p < .001$). Meaning that 79% of the total variance is explained through stable between-subject differences in participants' tendency to have stronger (weaker) moral convictions across topics and the remaining 21% explained through within-subject differences in moral

conviction between the specific topics. This high proportion of variance explained at the between-subject level would suggest that the intra-subject reliability of the repeated measurement of moral conviction across the three topics is *good* (Koo & Li, 2016), suggesting that a random intercept model such as the LMM described above is suited to analyze the data.

Table 2

Descriptive Statistics

Topic		*N*	Range	Minimum	Maximum	Mean	Std. Deviation	Variance
Justice	Discussion Heterogeneity	284	2.60	1.00	3.60	1.63	0.63	0.40
	Dyadic Harm	284	4.00	1.00	5.00	3.95	1.12	1.26
	Moral Conviction	284	4.00	1.00	5.00	3.77	1.17	1.37
	Moral Conviction Post	284	4.00	1.00	5.00	3.68	1.17	1.37
Climate	Discussion Heterogeneity	298	3.40	1.00	4.40	1.59	0.64	0.40
	Dyadic Harm	298	4.00	1.00	5.00	3.50	1.18	1.39
	Moral Conviction	298	4.00	1.00	5.00	3.76	1.15	1.33
	Moral Conviction Post	298	4.00	1.00	5.00	3.70	1.18	1.39
Mask	Discussion Heterogeneity	297	3.60	1.00	4.60	1.45	0.63	0.04
	Dyadic Harm	297	4.00	1.00	5.00	3.93	0.98	0.94
	Moral Conviction	297	4.00	1.00	5.00	3.99	1.07	1.16
	Moral Conviction Post	297	4.00	1.00	5.00	4.11	1.00	1.00

Hypothesis testing

Hypothesis one was analyzed using a LMM with the post measurement of moral conviction as the dependent variable, discussion heterogeneity as predictor, topic as a factor and the pre-measurement of moral conviction as covariate (see Table 3, Model 1). Discussion heterogeneity at Wave 2 was marginally significant in predicting individuals' increase in moral conviction at Wave 2 relative to Wave 1 $F(1,800.09) = 2.76$, $p < .097$. The negative effect ($b = -0.08$, $p = .097$) means that a more homogeneous discussion environment predicts an increase in the persons moral convictions. This outcome is in support of Hypothesis 1.

Table 3

Results of Model 1 and 2

Measure		Model 1				Model 3			
		b	*df*	*p*	95% CI	*b*	*df*	*p*	95% CI
Intercept (Mask)		2.47***	413.80	<.001	[2.11;2.84]	1.32***	522.69	<.001	[0.92;1.73]
Topic	*Justice*	-0.34	404.13	.116	[-0.76;2.08]	-0.22	414.83	.279	[-0.63;0.18]
	Climate	-0.78***	442.17	<.001	[-1.19;-0.39]	-0.55**	444.75	.004	[-0.92;-0.18]
	Mask	.	.	.	.	.	.	.	.
Discussion Heterogeneity		-0.08^	800.09	.097	[-0.18;0.02]	-0.04	802.72	.346	[-0.14;0.05]
Pre-Moral Conviction (Mask)		0.44***	319.50	<.001	[0.36;0.52]	0.38***	329.32	<.001	[0.30;0.46]
Topic*Pre-Moral Conviction (PMC)									
	*Justice*PMC*	0.01	403.04	.904	[-0.09;0.11]	-0.03	414.82	.535	[-0.13;0.07]
	*Climate*PMC*	0.13**	446.48	.010	[0.03;0.23]	0.10*	446.57	.029	[0.01;0.19]
	*Mask*PMC*	.	.	.	.	.	.	.	.
Perceived dyadic harm						0.33***	767.80	<.001	[0.28;0.40]

Note. Fixed effects, no random slopes; ***: $p <.001$, **: $p <.010$, *: $p <.050$, ^: $p <.100$. Mask was the reference

topic for the other two topics (Justice, Climate)

The second hypothesis was that the relation of discussion heterogeneity and moral conviction (Hypothesis 1) is mediated by perceived dyadic harm (Hypothesis 2). As described under the Data Analysis Plan, the mediation was broken down by conducting two separate LMMs'. The first one analyzed the relationship between the measurement of dyadic harm (mediator) as the dependent variable and discussion heterogeneity (predictor) as the covariate (Model 2). This analysis showed a significant main effect of discussion heterogeneity on perceived dyadic harm $F(1,743.93) = 6.80, p < .009$. This negative effect means that a less heterogeneous discussion network predicts stronger perceptions of dyadic harm $b = -0.14$, 95% CI [-0.24, -0.03], $SD = 0.05$. The second LMM was the same as the model for Hypothesis 1, but it included dyadic harm as an additional covariate (Model 3). In line with Hypothesis 2, it showed a marginally significant main effect of the dyadic harm measurement $F(1,767.80) = 126.74, p < .001$ (Table 3, Model 3). Also, in line with Hypothesis 2, the effect of discussion heterogeneity reduced in size and became insignificant. In other words, after the between subject effect of dyadic harm was entered in the same model used in Hypothesis 1, the between-subject effect of discussion heterogeneity on within-subject moralization was not significant anymore. This means that perceived dyadic harm partially mediates the predictive power of discussion heterogeneity on the development of individuals' moral convictions (see Figure 2 for a visualization and Table 3 for full results of Model 1 and 2).

Figure 2

Full Mediation Model

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                        ┌─────────────────────┐
                        │    Dyadic Harm      │
                        └─────────────────────┘
           -0.14, p = .009                    0.33, p < .001

┌──────────────────────────┐  -0.04, p = .346 (-0.08, p = .097)  ┌──────────────────────┐
│ Discussion Heterogeneity │ ───────────────────────────────────▶│  Moral Conviction    │
└──────────────────────────┘                                     └──────────────────────┘
```
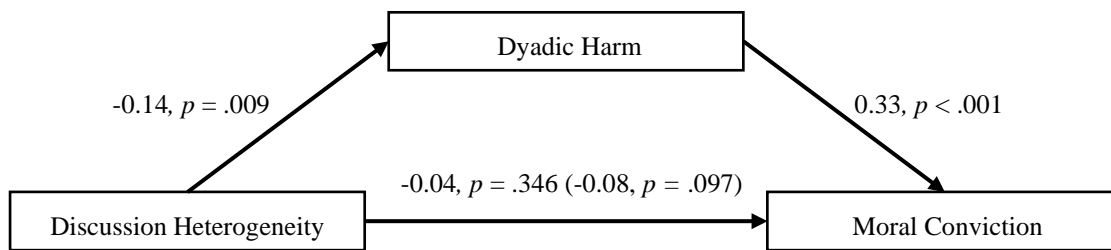
Note. Full mediation model for effects of the discussion heterogeneity on moral conviction via dyadic harm. Displayed values are unstandardized regression coefficients and the corresponding p-values.

Discussion

This study examined how moral convictions develop within the context of societal polarization. Specifically, we investigated the effect of discussion heterogeneity on moralization of attitudes and the mediating role of dyadic harm within polarized contexts. We expected that discussion heterogeneity can predict the development of moral convictions (Hypothesis 1). Furthermore, we expected that the relationship of discussion heterogeneity and the development of moral convictions is mediated by dyadic harm (Hypothesis 2). First, we found that discussion heterogeneity has a negative effect on the moralization of attitudes. However, while this effect was in line with Hypothesis 1, it was only marginally significant. This means when people discuss political topics with similar minded others, they are more likely to develop moral convictions over this topic than individuals who discuss political topics within a social circle where opinions are somewhat mixed. Second, we found that discussion heterogeneity has a negative effect on perceived dyadic harm. Third, we found that the peoples' perceived dyadic harm can partly explain the effect of discussion heterogeneity on moral convictions. The second and third findings indicate that discussing political topics inside a homogeneous social network can predict people's perception of dyadic harm for the same topics, which has an effect on the development of moral

convictions. These findings are in line with Hypothesis 2. Taken together, our results imply that the opinion diversity of people's discussion networks for political topics is a relevant predictor for the moralization of these societally polarized topics. Moreover, this seems to be the case because of a highly emotional value-protective reaction due to the perception of dyadic harm (D'Amore et al., 2021).

Implications

The current study extends theoretical and practical knowledge in multiple ways. First, this research supports the notion that there is a social component within the moralization of attitudes. To date, only a few studies have investigated the relationship between social factors (i.e., norms) and moralization (D'Amore et al., 2021; Takamatsu et al., 2021). Our study adds to the literature by indicating that the attitude heterogeneity of in-group discussions (i.e., shared versus opposed attitudes within the discussion group) can predict moralization. The literature on attitude change, reveals conformity to majority group opinions as one of the most replicated findings of social psychology (Cialdini & Trost, 1998 for a review).

Based on our findings, we can assume similar processes within the context of attitude moralization via group discussions. Specifically, group discussions involve the process of consensualization, which entails the need to find a common understanding of a topic to reduce the tension of opinion difference (e.g., Koudenburg & Kashima, 2021). In line with this, studies have shown that such attitudinally homogeneous networks predict strengthened partisan identification and negative outgroup bias (Druckman et al., 2018). Looking at these findings in the context of our study, we can assume the reason that interactions within attitudinally homogeneous (versus heterogeneous) networks predict moralization is a strengthening of the perceived intentional outgroup harm. Accordingly, attitudes of people's discussion ingroup are a new relevant factor in the development of moral convictions in the context of polarized societal discussions.

However, the findings of our study are not in line with research highlighting the resistance of already formed moralized attitudes towards normative and majority influence (Aramovich et al., 2012; Conover & Miller, 2018). These studies indicate that strong moral convictions will lead individuals to distance themselves from dissimilar others and, thus, to be unaffected by any form of social influence. Yet, our research indicates that, at least in polarized contexts, this is not the case within the process of moralization. We showed that moralization, in which a simple attitude or a weak moral conviction turns into a strong moral conviction, is susceptible to and predictable by the social context. Taken together, this means that moralization does not happen in a social vacuum and research investigating the prediction of moralization should include or control for social factors.

Second, this study supports the notion that the perception of dyadic harm is the key to understanding moralization within the context of polarized debates (D'Amore et al., 2021). We studied harm as a dyadic, intuitively perceived continuum as described by the *TDM* (Schein & Grey, 2016). Our findings further support that perceived dyadic harm will initiate a moralization-triggering and value protective response. In line with this, we found a mediating role of dyadic harm in the relationship between moralization and peoples' discussion heterogeneity. Specifically, our findings indicate that members of a discussion group with a similar attitude will have a stronger perception of dyadic harm by the outgroup regarding that attitude. Consequently, we found that the perceived dyadic harm predicts moralization. Thus, our findings further support the effect of dyadic harm on the development of moralization within the specific context of polarized debates. Furthermore, we unveil the central role of dyadic harm within the effect of social factors on the moralization of attitudes. Overall, dyadic harm should be seen as a situational trigger for the development of moral convictions and a key variable to understand how social factors influence moralization.

Third, we investigated the relationship between discussion heterogeneity and moralization within the context of polarized debates. Our study highlighted the relevance of polarized debates as a unique environment for moralization. On the one hand, this is the case because the clear-cut group definitions within the polarization context are specifically relevant for developing moral convictions through (outgroup) triggers. Polarization implies an already strong in and outgroup salience which amplifies the effect of potential outgroup triggers for moralization (Bagozzi & Lee, 2002; Druckman et al., 2018). On the other hand, this context is especially relevant for the consequences of moralization within our society. When a polarized debate becomes morally loaded, several aspects can hinder a beneficial conflict resolution. For one, research found that in a debate where moral convictions are at stake, people are less inclined to find a compromise (Ryan, 2017). More precisely, current debates involving morally convicted attitudes become entrenched because people are less likely to accept a compromise. For another, since moralized attitudes are perceived as fundamentally right or wrong, it is not easy to tolerate opinions that oppose one's view. People with strong moral convictions are less tolerant towards individuals who do not share the same moral convictions (Skitka et al., 2005). To sum up, polarized contexts provide a fertile ground for the development of moralization and provide an environment where moralization obstructs outgroup compromises and increases the divide between differently minded people. As such, our findings about the role of discussion heterogeneity within the development of moral attitudes could help us to further understand how societal discussions become entrenched and provide a starting point as to how such entrenchment could be avoided. Specifically, knowing that homogeneous discussion groups could strengthen individuals' moralization tendencies suggests that in order to avoid escalation of disagreements (Mooijman et al., 2018), we may need to find ways to encourage political discussion networks where a wide range of opinions are represented.

Limitations and Future Research

Overall, our study successfully established discussion heterogeneity as one relevant predictor for moral conviction. Nonetheless, this study was limited in several ways. First, the non-experimental implementation of discussion heterogeneity led to a sample with rather homogeneous discussions. This means that the findings should be interpreted as the comparison between completely homogeneous vs moderately homogeneous discussion networks. Therefore, our relatively small effect sizes should be interpreted in light of the small diversity within our sample's discussion networks (i.e., low averages with relatively little variance). As stated before, people prefer to surround themselves with similar-minded others within polarized contexts (Bliuc et al., 2007); this will often lead to a rather homogeneous social environment. Therefore, one direction for future research would be to experimentally control discussion heterogeneity by actively mixing people of different and similar attitudes. An additional advantage would be that such an experiment can establish the effect of discussion heterogeneity on moralization causally.

Second, the effects of discussion heterogeneity on moral conviction and perceived dyadic harm were only marginally significant. Statistically, this means that in the current study, the chance for a type I error (i.e., an effect is falsely accepted) is slightly increased. Therefore, the results reported in our study should be interpreted with caution and further replication is needed.

Third, the sample in this study was restricted to Americans. The same was also the case for the societally polarized debates (i.e., the debates were mainly relevant for the USA). Even though we investigated the process of moralization within three different topics, it is difficult to generalize these findings further outside of the USA. It could be that because of their already very polarized two-party system, the baseline moral convictions are already high and, therefore, less changeable. The found effect might be different within the context of

other countries and systems. Overall, further research is needed to investigate the effect of discussion heterogeneity on moralization within countries with less strictly defined political outgroups.

Finally, one interesting field of further research would be replicating the prediction of moralization based on digital social networks. Specifically, social networks are designed to create groups of like-minded people where users can frame and reinforce a shared narrative (Cinelli et al., 2021); such homogeneous online networks have been found to increase radicalism (Atari et al., 2021). Therefore, social networks limit exposure to diverse perspectives, representing an ideal but dangerous foundation for moralization.

Conclusion

At the current point, social factors have been widely overlooked in the research on moralization. We build on research that identified certain triggers (i.e., dyadic harm) for the process of moralization (D'Amore et al., 2021). We found that discussion heterogeneity can predict the moralization of attitudes and that this effect can be largely explained by dyadic harm. That is, attitude heterogeneity within individuals' social networks can predict the perception of harm and, in turn, moralization of the attitude. This suggests that moral convictions do not develop in a social vacuum. Along these lines, the people's discussion network is a relevant predictor for moralization within polarized contexts. Future research needs to experimentally address the effect of discussion heterogeneity on moralization in order to establish causality in this relationship.

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Appendix A

Material

Discussion partners

Please think about the people with whom you would discuss any societal or political topics, or events that happened in society. During the last couple of months, did you talk with anyone face-to-face, on the phone, by email, or in any other way about any political or societal issues, elections or presidency? You could think about relatives, but also about friends or colleagues.

Please list five people by <u>reporting their first name</u>.

Note: If you did not discuss any of these things with anyone, please report the names of the people you regularly discuss any kind of important matters with.

      ○   Name discussant 1 (1)

         _____

      ○   Name discussant 2 (2)

         _____

      ○   Name discussant 3 (3)

         _____

      ○   Name discussant 4 (4)

         _____

      ○   Name discussant 5 (5)

         _____

Next, we will ask you about your views on more specific topics that are discussed in the context of the 2020 presidential election.

Bot Exlusion

Please confirm that you are human by answering the following question: How much do you get when you add three plus three? Please enter the answer as a number and not in letters.

    _____

Topic 1 Mask wearing

Attitude Mask Wearing

In the context of the political topics debated in the 2020 presidential election, what is **your**

attitude on a national mandate for **mask-wearing** in public as a means to stop the spread of the current Coronavirus?

	Strongly against (1)	Against (2)	Neither against nor in favor (3)	In favor (4)	Strongly in favor (5)
National mandate for **mask-wearing** in public (1)	⊂	⊂	⊂	⊂	⊂

Discussion Heterogeneity Mask Wearing

For each discussant from **your social network** listed above, please indicate **how different their attitudes are from your own attitude** on the issue of **mask-wearing** in public. If you are not certain about their attitudes, please give an estimation.

	Not at all different (1)	Slightly different (2)	Moderately different (3)	Much different (4)	Very much different (5)
Insert Name Discussant (1)	⊂	⊂	⊂	⊂	⊂
Insert Name Discussant (2)	⊂	⊂	⊂	⊂	⊂
Insert Name Discussant (3)	⊂	⊂	⊂	⊂	⊂
Insert Name Discussant (4)	⊂	⊂	⊂	⊂	⊂
Insert Name Discussant (5)	⊂	⊂	⊂	⊂	⊂

Dyadic Harm Mask Wearing

The Democratic presidential candidate, Joe Biden, called for a national mandate for **mask-wearing** in public "to stop the spread of the Coronavirus". Trump supporters oppose a national mandate for mask-wearing, as often voiced by President Trump. This can be seen in numerous ways. For example, Trump rejected the advice of the nation's top infectious disease expert Dr. Anthony Fauci, who urged governors to be "as forceful as possible" in the wearing of masks, whereas Trump argued that "there are many problems with masks". Also, Trump did not wear a mask during his speeches at several of his rallies, and neither did most

of his attendees (who are Trump supporters). In response, the Nevada governor criticized
Trump for "taking reckless and selfish actions". With these examples in mind (along with any

similar examples that come to mind), please indicate whether and to what extent you agree
with the following statements.

	Not at all (1)	Slightly (2)	Moderately (3)	Much (4)	Very much (5)
In the context of the issue of **mask-wearing**, I think that Trump and his supporters have the **intention** to harm or hurt other people. (1)					
In the context of the issue of **mask-wearing**, I think that Trump and his supporters are making other people **feel hurt and/or suffer from harm**. (2)					
In the context of the issue of **mask-wearing,** we need to know whether you read this before you answer. Please **confirm** that you read this by selecting the answer option not at all. This **prevents other people from suffering**. (4)					
In the context of the issue of **mask-wearing**, I think that Trump and his supporters are directly **responsible** for any harm or suffering that other people could experience. (3)					

Moral Conviction Mask Wearing
To what extent is your attitude about a national mandate for **mask-wearing** in public...

	Not at all (1)	Slightly (2)	Moderately (3)	Much (4)	Very much (5)
…connected to your beliefs about fundamental right and wrong? (1)					
…connected to your beliefs about fundamental right and wrong? (2)					
…based on moral principle? (3)					
…a moral stance? (4)					

Topic 2 Climate

Attitude Climate

In the context of the political topics debated in the 2020 presidential election, what is **your attitude** on the United States **rejoining the Paris Climate Agreement** as a means to stop global warming?

	Strongly against (1)	Against (2)	Neither against nor in favor (3)	In favor (4)	Strongly in favor (5)
Rejoining the **Paris Climate Agreement** (1)	(	(	(	(	(

Discussion Heterogeneity Climate

For each discussant from **your social network** listed above, we would like to ask you **how**

different their attitudes are from your own attitude on the issue of rejoining the Paris Climate Agreement. If you are not certain about their attitudes, please give an estimation.

	Not at all different (1)	Slightly different (2)	Moderately different (3)	Much different (4)	Very much different (5)
Insert Name Discussant (1)	(	(	(	(	(
Insert Name Discussant (2)	(	(	(	(	(
Insert Name Discussant (3)	(	(	(	(	(
Insert Name Discussant (4)	(	(	(	(	(
Insert Name Discussant (5)	(	(	(	(	(

Dyadic Harm Climate
The Democratic presidential candidate, Joe Biden, aims to **rejoin the Paris Climate Agreement** "to address the grave threat of climate change to the environment, communities, national security, and economic wellbeing". The majority of Trump supporters oppose rejoining the Paris Climate Agreement, as often voiced by Trump himself. This can be seen in numerous ways. For example, in 2017, Trump himself withdrew the United States from the Paris Climate Agreement "because it was too costly for the U.S. economy". Instead, Trump has made efforts to scrap rules limiting methane pollution from oil and gas infrastructure, which are known to be contributing to global warming. More recently, in response to the wildfires, Trump "has rejected climate science" saying "I don't think science knows" and argued that the climate "will start getting cooler, you just watch". With these examples in

mind (along with any similar examples that come to mind), please indicate whether and to what extent you agree with the following statements.

	Not at all (1)	Slightly (2)	Moderately (3)	Much (4)	Very much (5)
In the context of the issue of **rejoining the Paris Climate Agreement**, I think that Trump and his supporters have the **intention** to harm or hurt other people. (1)					
In the context of the issue of **rejoining the Paris Climate Agreement**, I think that Trump and his supporters are making other people **feel hurt and/or suffer from harm**. (2)					
In the context of the issue of **rejoining the Paris Climate Agreement,** we need to know whether you read this before you answer. Please **confirm** that you read this by selecting the answer option not at all. This **prevents other people from suffering**. (4)					
In the context of the issue **rejoining the Paris Climate Agreement**, I think that Trump and his supporters are directly **responsible** for any harm or suffering that other people could experience. (3)					

Moral Conviction Climate
To what extent is your attitude about rejoining the Paris Climate Agreement....

	Not at all (1)	Slightly (2)	Moderately (3)	Much (4)	Very much (5)
…connected to your beliefs about fundamental right and wrong? (1)	(	(	(	(	(
…connected to your beliefs about fundamental right and wrong? (2)	(	(	(	(	(
…based on moral principle? (3)	(	(	(	(	(
…a moral stance? (4)	(	(	(	(	(

Topic 3 Justice

Attitude Justice
In the context of the political topics debated in the 2020 presidential election, what is **your attitude** on the **confirmation of a new Supreme Court Justice** (replacing Ruth Bader Ginsburg) **before the Presidential inauguration** in 2021?

	Strongly against (1)	Against (2)	Neither against nor in favor (3)	In favor (4)	Strongly in favor (5)
Supreme Court Justice **confirmation before inauguration** (1)	(	(	(	(	(

Discussion Heterogeneity Justice
For each discussant from **your social network** listed above, please indicate **how different**

their attitudes are from your own attitude on the issue of **Justice confirmation before the inauguration**. If you are not certain about their attitudes, please give an estimation.

	Not at all different (1)	Slightly different (2)	Moderately different (3)	Much different (4)	Very much different (5)
Insert Name Discussant (1)	(	(	(	(	(
Insert Name Discussant (2)	(	(	(	(	(
Insert Name Discussant (3)	(	(	(	(	(
Insert Name Discussant (4)	(	(	(	(	(
Insert Name Discussant (5)	(	(	(	(	(

Dyadic Harm Justice

The Democratic presidential candidate, Joe Biden, opposes the **confirmation of a Supreme Court Justice before the Presidential inauguration** "to make sure the voters first pick a President, and that President should then select a new Supreme Court Justice". In contrast, the majority of Trump supporters aim to have selected a new Supreme Court Justice before the inauguration, as voiced by Trump himself. This can be seen in numerous ways. For example, in response to the former Judge Ginsburg's death, the president of an anti-abortion group said "In the genuine grief that you have as a nation over the death of a Supreme Court Justice, you have to plan quickly." Similarly, President Trump himself said directly at one of his campaign rallies in North Carolina "I will be putting forth a nominee next week." With

these examples in mind (along with any similar examples that come to mind), please indicate whether and to what extent you agree with the following statements.

	Not at all (1)	Slightly (2)	Moderately (3)	Much (4)	Very much (5)
In the context of the issue of **Justice confirmation before the presidential inauguration**, I think that Trump and his supporters have the **intention** to harm or hurt other people. (1)					
In the context of the issue of **Justice confirmation before the presidential inauguration**, I think that Trump and his supporters are making other people **feel hurt and/or suffer from harm**. (2)					
In the context of the issue of **Justice confirmation before the presidential inauguration,** we need to know whether you read this before you answer. Please **confirm** that you read this by selecting the answer option not at all. This **prevents other people from suffering**. (4)					
In the context of the issue **Justice confirmation before the presidential inauguration**, I think that Trump and his supporters are directly **responsible** for any harm or suffering that other people could experience. (3)					

Moral Conviction Justice

To what extent is your attitude about a Supreme Court Justice confirmation before the Presidential inauguration...

	Not at all (1)	Slightly (2)	Moderately (3)	Much (4)	Very much (5)
…connected to your beliefs about fundamental right and wrong? (1)	(	(	(	(	(
…connected to your beliefs about fundamental right and wrong? (2)	(	(	(	(	(
…based on moral principle? (3)	(	(	(	(	(
…a moral stance? (4)	(	(	(	(	(

Demographics

Text Finally, please answer demographic questions.

Gender What is your gender?

○ Male (1)

○ Female (2)

○ Other (3)

Age How many years old are you?

18 26 34 43 51 59 67 75 84 92 100

Age ()

Education What is your highest education level?

○ Less than high school (8th grade or below) (1)

○ Some high school, no diploma (2)

○ High school diploma or equivalent (3)

○ Some college, no degree (4)

○ Technical/Associate's degree (5)

○ Bachelor's degree (6)

○ Master's degree (7)

○ Doctoral/Professional degree (MD, JD, PhD, etc.) (8)

Appendix B

Information Letter and Consent Form

Why do I receive this information?
Welcome! You receive this information because you chose to participate in this study via M-Turk. This study is about views toward the United States and its presidency, and is conducted in the period from September 24 (2020) to May 31 (2021). This research is approved by the Ethical Committee of the Psychology department at the University of Groningen. This research is conducted by Chantal D'Amore, MSc, prof. dr. Martijn van Zomeren and dr. Namkje Koudenburg (University of Groningen).

Do I have to participate in this study?
Participation in the research is voluntary. However, your permission is needed. Therefore, please read this information carefully. If you decide to not participate, you do not need to explain why, and there will be no negative consequences for you. You have this right at all times, including after you have consented to participate in the research.

Why do we conduct this research?
The purpose of this research is to gain more understanding about the experiences that Americans have in the period around the presidential election.

What do we ask of you during the study?
To participate in this study, you need to be 18 years or older. Also, you need to be a U.S. citizen.
In this study we will first ask you for consent to participate in this six-part study. Note that we are interested in a diverse group of participants, and therefore we will first ask some questions about you. Based on your answers, we will either continue or stop your participation in this study. When your participation is continued, we will ask you some questions about your views on topics that are widely discussed in U.S. society, and we will ask you to estimate other people's views on these topics. All you will need to do in this study

is to respond to survey questions.

 This study consists of six separate parts. The first part (completed today) is the longest and takes about 20 minutes. Afterwards, we will contact you five times in the period between now and June 2021. Those surveys will take approximately 12 minutes to complete each time. For the goals of this research, it is very important that you are willing to participate repeatedly in the multiple parts of this study. To compensate for your repeated efforts, you will still receive compensation after each time you participate, and each time you participate this compensation increases up until a maximum of $1.25 for the sixth survey.

 What are the consequences of participation?
 There are no risks known concerning participation in this study.

 How will we treat your data?
 Your data will be used to gain information regarding the experiences and views of Americans around the Presidency. We will ask you about some demographic information, namely your age, gender, political orientation, and education level. We will never be able to link this information with your name or email address. The personal information you provide in the surveys will only be accessible to the researchers involved in this research, and will never be shared with third-parties. We will use your MTurk Worker ID to link data from part 1 to all other 5 parts of the study. We don't have access to any personal information that MTurk may have of you. Your MTurk Worker ID will be disconnected from the data two weeks after participating in part 6 of the study. After this, it is no longer possible to trace your responses from the study back to you. Within these 2 weeks, you have the right to withdraw your data by contacting the researchers via MTurk.

 What else do you need to know?
 You may always ask questions about the research: during the research, and after the end of the research, by emailing (c.damore@rug.nl) the principal investigator.

 Do you have questions or concerns regarding your rights as a research participant? For this you may also contact the Ethics Committee Psychology of the University of Groningen: ecp@rug.nl.

 Do you have questions or concerns regarding your privacy, or regarding the handling of your personal data? For this you may also contact the Data Protection Officer of the University of Groningen: privacy@rug.nl.

As a research participant you have the right to a copy of this research information.

☐   Yes, I have read the above information and consent to participate in this research. I understand that my participation is completely voluntarily and that I can stop at any moment. (1)

☐   Ja, ik weetga akkoord met de verwerking van mijn Panel Inzicht nummer. (2)

☐   No, I do not consent to participate in this research (your participation ends here). (3)

Reminder
Important: you can only participate in this survey if you consent with participation and the treatment of your personal information.