THE ROLE OF SOCIAL MEDIA IN POLITICAL POLARIZATION IN PAKISTAN

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ABSTRACT

This research focuses on the contribution of social media networking sites to the intensification of political polarization in society by forming "echo chambers". Echo chambers are characterized by selective exposure that shield people from opposing viewpoints on specific issues. Social networking sites like Facebook and Twitter allow the users to limit the content they want to see on their newsfeed and filter the contacts they want to interact with. This feature of the social media sites possibly promotes even extreme ideologies by restricting diverse viewpoints, hence polarizing the society. Following the widespread concern regarding polarization and diverse viewpoints about its contributing factors in the literature. This research investigates the echo chamber effect of social media and whether it contributes to political polarization in society by exposure to reinforcement messages.

This research is a survey experiment conducted for the case of #Metoo movement. Respondents are randomly divided into treatment and placebo groups, where the treatment receives reinforcing messages (based on their initial beliefs, with the expectation to strengthen their beliefs) and the placebo groups receives messages unrelated to the me too movement. The pre-survey and post-survey questions will follow the treatment to check their change in position on the Meetoo movement and assess the treatment's (reinforcement messages) effectiveness. This survey experiment investigates the influence of social media and provides a better understanding of how

echo chambers on social media influence political polarization in Pakistan. For statistical analysis, OLS Regression and Difference in Difference approach are used. The results of this research shows that the treatment effects are statistically significant and patterns have been observed that provides evidence that reinforcement messages strengthen ones' beliefs moving their ideological position towards the extreme. The research will discuss the results drawn from the analysis and provide new avenues for future research prospects.

CHAPTER 1: INTRODUCTION

Political polarization, or the extremism of political attitudes or ideological radicalism, is an essential aspect of today's politics. It manifests itself as increasing differences between opposing political groups and diminishing common political ground, where people with conflicting opinions can mutually agree. Moreover, it intensifies the differences between opposing narratives, thus giving way to radicalism and extremism. (Carothers, 2019). It also has implications for political stability in a diverse national context because of the inevitable resentment between the opposing groups. Both extremes reinforce and abide by their own beliefs, thereby refusing to bind together and come to a mutual agreement. This increasing polarization is a worldwide concern, and despite substantial research on the topic, no consensus exists on the factors that contribute to political polarization in communities (O'Donohue and Carothers, 2019). However, substantial research suggests that social media plays an important role in promoting political radicalism. On the other hand, this is also true that technological advancements have made this world a global village. In this era of technology, where social media has emerged as an effective tool for political communication and information dissemination (Barbera, 2015), it is also seen as a massive polarization machine because of its feature to let people interact with like-minded people and the formation of groups who defend their beliefs (Prior, 2013; Sunstein, 2002; Webster, 2005). It has been suggested that social media contributes to political polarization by creating an echo chamber environment, defined by selective exposure, which shields people from opposing

viewpoints on specific issues (Bail et al., 2018). Facebook and Twitter, for example, may minimize contact with opposing and challenging perspectives and can further manipulate the formation of communities where like-minded individuals interact with each other, creating and reinforcing a shared view (Cinelli et al., 2020). However, it has been argued that this impact is sometimes exaggerated. According to Ngyuen and Vu (2019), there is no difference in polarization between those who get their news from social media sites and those who get their information from other sources.

Following the widespread concern regarding polarization and mixed findings in the literature, this paper attempts to find out the impact of social media on political polarization. I focus on the case of Pakistan because of its low literacy rate and people have less political knowledge. The interactive element of social media has particularly attracted youth who are not typically interested in political debates. They have begun to pay attention to political topics and engage in debate with others who are politically active and hold solid ideological beliefs. (Amjad, 2020) There is high dependence on social media for news and it is speculated to be the cause of increasing polarization in society. Henceforth, I will investigate

- *What is the impact of echo chambers, where people are exposed to arguments which reinforce their beliefs due to interaction with like-minded individuals?*
- *Do the exposure to reinforcement messages make individuals move away from moderate positions towards the extreme positions?*

- *Do the reinforcing messages shared through echo chambers on social media impact the minds of the networked public sphere and lead to a more politically polarized society in Pakistan?*

The strategy will test the *'echo chamber* effect with the specific focus on the impact of reinforcement messages and the *confirmation bias* theory. The term 'confirmation bias implies that people often pay more attention to the content that aligns with their preexisting beliefs than the one that challenges their preexisting perspectives. (Stroud, 2008)

There is an increase academic research on this issue, a lot is still missing. Most of the research in this field revolves around the case of the U.S., and the comparative literature on this issue is not yet established (Montalvo, 2005), which hints towards an increased need for research in this area. The connection between the countries with high literacy and political polarization (maybe because of the increased time spent on political content) has been established in the literature (Henry, 2019) but no, or very less literature is available for countries with low literacy rates. This research contributes to the gap in the existing literature through experimental study about the adults in Pakistan. The extension to the 'missing case' of Pakistan is proposed because there is a lack of literature that claims the nature of the relationship in this case.

The theoretical expectation of this research is that reinforcement messages due to echo chambers, strengthens ones' beliefs and have a strong polarizing effect. To test the theoretical expectations, the matter of the Metoo movement is opted as it is one such movement that was

initiated on the internet, and has quickly polarized the community. It is based on a controversial issue that has divided the masses. It doesn't leave room for grey areas and often forces people to choose one side. For this research, a survey is designed on Qualtrics and is advertised on Facebook for the representative sample. Respondents are randomly divided into treatment and placebo groups, where the treatment receives reinforcing messages (based on their initial beliefs, with the expectation to strengthen their beliefs) and the placebo groups receive messages unrelated to the Metoo movement. The survey has a few questions that can gauge the opinion of both groups, and those questions are repeated at the beginning and then at the end of the survey.

This research uses an experimental-based deductive approach where the already existing echo chamber and confirmation bias theory is tested through a lab experiments. For statistical analysis, OLS Regression and difference in difference approach are used. The results of this research show that the treatment effects are statistically significant and patterns have been observed that provide evidence that reinforcement messages strengthen ones' beliefs moving their ideological position towards the extreme.

Following the introduction, the study pursues the following structure. *Chapter 2- Literature Review* gives insight into the relevant literature, theories and previous research about social media as a contributing factor to political polarization along with the research gaps in the existing literature that requires investigation and study. *Chapter 3- Theoretical Framework* gives insight into the relevant theories and the proposed hypothesis of the study. *Chapter 4 – Research Design*

will describe the polarizing factors and the need for research in Pakistan for the study. Furthermore, it will also cover the experimental design, sampling procedure, and the survey flow. *Chapter 5- Discussion and Analysis* will analyze demographic factors to check the comparability of the placebo and treatment groups, followed by Statistical analysis and the experiment's findings. The *Chapter 6 - Conclusion* provides summary of the research and reviews significant findings and limitations, followed by the suggestions for further research.

CHAPTER 2: LITERATURE REVIEW

2.1 The Discourse of Political Polarization

Political polarization is one of the most heated debates and discussions amongst scholars and academics because of its adverse consequences on political stability (Leo, 2018). It is because when individuals align themselves strongly with a specific political ideology, they start binding themselves according to certain identities and political affiliations; and this world becomes a space with coexisting ideological groups (Green et al., 2002, Iyengar et al., 2012). The strong biases towards one particular identity can consequently lead to inter-group conflicts, based on the inclination towards the 'us', and the hostility towards the 'them' group (Turner et al., 1987). The extremism of political affiliations can restrict individuals from having a civil discussion with the other groups and prevent them from coming and agreeing to a mutual ground(Lee, 2018) Thus, making political polarization an area of concern, and a crucial matter for academic debate.

2.2 Digital Intervention: Bridging Gaps or Intensifying Polarization?

Notably, in the last few years, because of the innovative intervention of digital technologies and active use of social media sites, the debates regarding the impact of social media on society's political polarization have started to get momentum. This argument can be traced to Van Alstyne and Brynjolfsson (1996), who argued that information technologies could result in ‘cyber balkanization’. It means that technology may "shrink geographic distances", henceforth forming a

global village; however, it was also hypothesized that technology could lead to a split in the societies as a result of more balkanized interactions. It could be because "the internet makes it easier to find like-minded individuals, strengthening far-flung communities which have the same ideology and are scattered geographically"; and once like-minded people align with each other, "their subsequent interactions can further polarize their views or even ignite calls-to-action".

Additionally, Tornberg (2018) claims that despite the earlier optimism regarding this virtual world that seemed to be bridging gaps, the online world is now beginning to seem less and less likely like a standard "table" that aims to "gathers us together" so that open discussions can take place. On the contrary, the virtual world seems to bring forth the worst kind of human instincts; it clusters humans together in groups that essentially interact with other individuals for the reaffirmation of their beliefs so that they can protect themselves from disagreements. It is like “echo chambers” that are in place to primarily reinforce the existing narratives and foster confirmation biases. (Bessi, 2015) At the same time, it is also argued that social media can support diverse discourses and narratives; however, there is a widespread concern that platforms like Twitter do not have a mechanism that can result in the communication amongst contradictory narratives. (Shore et al., 2018).

Moreover, Sunstein (2018) claims that the rise of the biased news channel and biased social-media sites can intensify the biases, further polarizing people's opinions, thereby driving them towards an extreme ideological discourse. This claim is based on the premise that due to the

extensive accessibility and availability of information on social media, the individuals opt for selective exposure where they choose to receive the information they agree with and avoid the ones they disagree with. Thus, the argument states that higher exposure to the same content reinforces and strengthens one's beliefs, and eventually drives them towards extreme positions (Stroud, 2010).

2.3 Social Networking Sites and The Trends of Political Polarization

Despite this straightforward relationship between social media sites and political polarization, the consensus in the literature is not very clear. Boxell et al. (2017) acknowledge the fact political polarization has recently increased, the surge is also witnessed for non-active social media users. According to their research, "the internet explains a small share of the recent growth in polarization". Nguyen and Vu (2019) also reinstated a similar conclusion after analyzing the survey data from 28 European countries. The result implied that there is no evident difference in the polarization level of the ones who rely mainly on social media for their source of information, and the ones who rely on their sources for the information. Interestingly, the research also reflects that those individuals who engage in cross-cutting discussions on social media have a lower level of political polarization (Heatherly, Lee, and Lu 2017).

Furthermore, Bakshy et al. (2015) and Barberá (2015) share that Facebook and Twitter users are also being observed to have a surprisingly high level of diverse perspectives. Barberá has also made an effort to observe if the virtual communication takes the form of an “echo chamber”

or a “national conversation”. In his research, he found out that the discussions on online platforms are highly issue-dependent and that political polarization greatly depends on the topic of the discussion. According to his research, the universalization of the virtual world does not restrict the cross-cutting engagement and discussion within the networked public spheres. This is particularly true when it comes to nonpolitical ideological discussion. However, when political matters are discussed, there is indeed a visible inclination towards the information received from the ideologically similar resources compared to the ideologically opposing resources. (Barbera et al. 2015)

In an article, “Network structure and patterns of information diversity on Twitter", it was reported that on average, Twitter users post more centrist content than the content they receive on their feeds; thereby, undermining the prevailing narrative of social networking sites being echo chambers. (Schmidt et al., 2017)Most probably, the widespread view of such polarization might result from a network paradox where the behavior of nodes can be mistaken to be typical (Feld, 199). According to his findings, the members of the social network core do show cross-sectional polarization. They are responsible for most of the tweets received due to their active status and popularity that could also explain the polarization on social networking sites.

2.4 Echo Chamber, Selective Exposure and Ingroup Homophily

Sunstein (2002) defines group polarization as “the members of a deliberating group that intentionally move towards a more extreme position indicated by the member’s deliberation

tendencies" In this scenario, the echo chamber is perceived as a mechanism that reinforces the existing ideologies within a specific group, and thus moving the individuals towards the extreme position. The effect of echo chambers has been witnessed in diverse digital platforms like blogs (Gilbert et al., 2009), forums (Edward, 2013), and social networking sites (Barbera, 2015). Literature also highlights the impact of an echo chamber on human tendencies and behavior like selective exposure and ingroup homophily (Baumann, 2020; Sunstein, 2001). Selective exposure entails that humans tend to view and perceive the information that aligns with their existing beliefs (Prior 2002). The homophily implies that individuals like to surround themselves with like-minded individuals who share similar characteristics, such as gender, socio-economic background, and political orientation. (McPherson et al. 2001). Both selective exposure and homophily are such aspects of human behaviorism that can further prompt the echo chambering- because the continuous exposure of similar information and being surrounded by like-minded individuals strengthens the existing narratives of human beings. (Garimella et al., 2018; Sunstein, 2001) Despite the concurring research on the functioning of echo chambers, the impact and the presence of echo chambers have been questioned in the last few years. (Dubois, 2018; Barbera, 2015; Bruns, 2017)

Before going into the effect of echo chambers, it is crucial to understand the underlying mechanism and how it functions. Now-a-days, there is a diverse and wide range of information and content across all social networking platforms. To manage the intake of information,

individuals choose the type of information they want to consume. (Guess, 2018) Interestingly, it has also been claimed that social media sites tend to tailor user's experiences based on personal attributes, geographical location, browsing histories, or associated networks (Bozdag 2013). This leads to the news feed and search results that differ in ways that are not visible to the users. (Zuiderveen Borgesius et al. 2016) Although such personalization techniques do aim at the accessibility of relevant information to the user, "filter bubbles" might be produced as a byproduct of these techniques, which can restrict the engagement with diverse or opposing information. (Pariser 2011) Thus, as a result, the algorithmic personalization can lead to the idiosyncratic perception of the surrounding environment, thereby further intensifying the confirmation bias that undermines the opportunity to absorb a wide range of diverse information (Guess et al., 2018).

2.5 Confirmation Bias and Political Polarization

The term 'confirmation bias implies that people often pay attention to the content that aligns with their preexisting beliefs as compared to the one that challenges their preexisting perspectives. (Stroud, 2008) America's partisan segregation also owes this confirmation bias impact of echo chambers environment, or inflow of opinions, that strengthen past ideological views (Bakhshy 2015). Prior, in his work "Media and Political Polarization", expressed that within the late 1900s, around twenty-five percent of the Americans were recognized to be associated with a political party. Mainstream media would probably be too centrist for their taste. Most of the audience likes partisan media, and the ones who favor inflow of one-sided information might be

already partisan (Prior, 2013). In bounded conference models (Vicario 2017), individuals interact with only those who have similar views and are regarded as having a kind of confirmation bias. In such models, polarization may be a typical result as agents do not have a broad choice of interactions (Lorenz, 2007)

2.6 Research Gap

Despite a number of academic research on the matter of political polarization, a lot is still missing. Most of the research in this field revolves around the case of the U.S., and the comparative literature on this issue is not yet established (Montalvo, 2005), which hints towards an increased need for research in this area. It has also been established that high literacy and people with more political information seem to be more polarized than those with low internet literacy (Herny, 2019). The plausible reason for this may well be that people in such situations spend more time perusing the political content. So, there have been studies about the nations with high literacy rates. However, relatively less literature is available for the nations where the literacy rate is low, and individuals have less political knowledge. Pakistan is one such country that is characterized by low levels of internet literacy and individuals lack the readiness for internet usage (Khan, 2018). The absence of this ability to understand, verify, and produce online information makes it a plausible cause of polarization. The contention around the impact of social media on political polarization through the formation of echo chambers and the exposure to fortification messages (Barbera, 2015) is exceptionally persuading. The research is proposed to aid the 'missing case' of

Pakistan, as there is a lack of literature that would provide evidence for the confirming nature of the relationship between the role of social media and level in developing countries. Considering the increased political polarization in Pakistan, coupled with the rising number of internet users (Zahid, 2019), this study is an effort to analyze the impact of social media on Political polarization in Pakistan.

CHAPTER 3: THEORETICAL FRAMEWORK

3.1 The Research Puzzle

The broad disagreement is regarding the role played by digital technology in bring people from different political backgrounds closer, or alienate ideological communities. In this study, the puzzle is the double-edged role of social media due to increased connectivity in recent years. On one side, technology and the internet can amplify the effects of confirmation bias because users are more inclined to re-transmit the same material they have been selectively exposed to, resulting in divided societies that devolve into online "echo chambers" where the same viewpoints are repeated. On the other hand, it could lead to a greater variety in the information and perspectives that users are exposed to. Following the puzzle, this study aims to examine the role of reinforcement messages generated by the echo chamber effect and determine if they strengthen one's stance, as the confirmation bias theory predicts.

3.2 Echo Chamber Effect

The echo chamber is defined as a technique for reinforcing an existing group's perspective with increased exposure to posts containing reinforcement messages, with the intention that the entire group will gravitate towards extreme positions. No one can read every post on the internet or connect with every user; instead, individuals must choose where to focus their attention. Because of the human tendency toward homophily (McPherson, Smith-Lovin, and Cook, 2001) and confirmation bias (Nickerson, 1998), social media users are more likely to follow those who share their views. In terms of the theoretical approach, it has been suggested that increased access to information on social media may lead to selective exposure to ideologically congenial content, creating an "echo chamber" setting that could foster social extremism and political polarization (Adamic & Glance, 2005; Prior, 2007; Iyengar & Hahn, 2009).In current literature, the related idea

is defined as an "echo chamber," which mirrors one's own opinions back to reinforce established beliefs (Bail et al. 2018). An *echo chamber* is defined in this network as users who share two characteristics: *opinion and network polarization*. When it comes to a particular issue, *opinion polarization* indicates that they are more likely to hold similar opinions. The term "network polarization" refers to the fact that they are more densely connected than outside networks (Tornberg, 2018). In other words, an echo chamber is a network of nodes that are more likely to share a common opinion on a particular subject. In this study, the echo chamber is defined as a technique for reinforcing an existing group view by increased exposure to posts containing reinforcement messages, hoping that the entire group will gravitate towards extreme positions.

3.3 Confirmation Bias

Another theory that dominates the literature on this subject is the ‘confirmation bias concept, which was popularized by Raymond Nickerson (1998) in psychology and is now embraced by other authors regarding social media and political polarization (Geschke et al. 2019). It suggests that, rather than questioning their inherent preconceptions, social networking pays more attention to arguments that are likely to affirm their preexisting biases (Sanders, 2020). Polarization can be induced by introducing "stubborn" agent’s who want to stick to their initial beliefs rather than interacting with and learning from their peers (Acemoglu, 2010). This technique is similar to confirmation bias. Overall, while the literature shows that some notion of "bias" in networks is necessary to reproduce realistic dynamics of opinion formation, it remains challenging to provide a cohesive framework that accounts for information aggregation, polarization, and learning (Sikder, 2020). This research aims to naturally capture the influence of confirmation bias on social interaction through an experimental investigation and examine how it can radically change the way a networked, decentralized society processes information and leads to political division. This research builds on confirmation bias research, intending to test a hypothesis based on the concept of an "echo chamber.”

3.4 Hypotheses

Reinforcement messages and stronger political polarization are the independent and dependent variables in this study, respectively. Based on the polarizing mechanism of echo chambers, it is expected that positive and negative reinforcement messages would move people towards the extremes, away from the moderate position. Not only that, it is expected that the treatment group with positive and negative reinforcing messages would be more polarized on the issue, than the placebo group which did not receive these reinforcing messages. So, the proposed hypotheses for this research given as:

H1: Positively reinforcing Metoo movement messages would lead to stronger support of the Metoo movement.

H2: Negatively reinforcing Me too movement messages would lead to stronger opposition of the Metoo movement

H3: Reinforcing messages would lead to higher polarization.

CHAPTER 4: RESEARCH DESIGN

4.1 Case Selection- Pakistan

Pakistan has a low degree of internet literacy and has a low level of readiness to use the internet. My understanding is that this lack of ability to analyze, critique, and generate knowledge online, might be the likely reason for polarization. It is because people start believing what they receive through their contacts and sometimes they do not even know the context of the information. There is an inability to spot false news. This may be because they have not followed the discussion on the particular topic from an authentic source, and they believe that the news reached to them through their contacts is very credible. As a result, they are more susceptible to the echo chamber effect and the polarization that follows.

The research will focus on the Pakistani youth because young social media users are more prone to party affiliation and polarization. So it is especially crucial to understand these dynamics for these groups. In recent years, the use of social networking platforms for democratic and political discourse among adolescents has skyrocketed (Stieglitz and Dang-Xuan, 2012). Its interactive element has particularly attracted youth who are not typically interested in political debates. They have begun to pay attention to political topics and engage in debate with others who are politically active and hold solid ideological beliefs. (Amjad, 2020)

During the recent elections in Pakistan, the use of social media escalated; all political figures, candidates, and even fans exploited this communication medium to achieve their objectives. It was used to share agendas and was also utilized to criticize opponents publically (Jarral, 2018). In Pakistan, where political institutions are still fighting to acquire a successful democracy, the relationship between social media usage and political division among the youth is crucial and needs to be examined (Amjad, 2020).

The goal is to draw attention to a specific fact in the population and find a link between social media usage and political division in Pakistan. This is a real-world process that has changed dramatically over time. Given the lack of such research and the scarcity of descriptive data for this population, a collection of data points is required in this area. This necessitates the use of an experimental design, with an echo chamber setting being simulated to test the premise that reinforcement messages cause political polarization.

4.2 Facebook As a Testing Mechanism

Facebook is one of the renowned and most active social media platforms in Pakistan. In fact, according to the Global Social Media Stats in Pakistan, as of April 2021, Facebook had a 78.99% activity/usage compared to 16.37% of Twitter (Stat-counter, 2021). Facebook's massive activity and reach imply that Facebook has more engaging activity from active users, than that of other social media platforms and has people from diverse socio-cultural and political backgrounds. Additionally, research suggests that Twitter users are more woke and more affluent than other social media users (Lapowski, 2019). Since this research wants to target the population that represents social media users, rather than that of only a specific section of Pakistan's youth, Facebook was selected for the experimentation purpose. Also, Twitter is comparatively a newer launch than Facebook, and most of the people are not aware or active on Twitter in Pakistan. Therefore, Facebook seemed to be the most optimal social media platform for the execution of this experiment.

4.3 Sampling

Random sampling is opted for this experiment because the research aims to keep the selection biases to a minimum. The survey aims to give equal representation and reach out to the population from diverse socio-cultural and political backgrounds through randomized selection. Additionally,

randomized selection also helps in collecting a representative sample of youth active on social media. The advertisement is posted on Facebook for the sampling procedure. The Advertisement was available to all Facebook users in Pakistan between 18 and 40, as the target group is the young generation. Through the Facebook algorithm, the survey link is randomly exposed to the target group, and they were asked to consent to participate in the survey.

Furthermore, to maintain the authenticity and validity of the survey, financial incentives were also be provided to the participants. The economic incentives play a pivotal role in ensuring that participants maintain their focus throughout the survey, concentrate on questions, and answer the questions with utmost authenticity. Another critical factor in ensuring the research's validity is keeping respondents engaged until the end of the experiment and convince them to read the content shared with them. In this research, financial incentives are used to encourage the participants to take part in the survey and increase the representation.

The respondents are provided with the opportunity to win (up to Euros 200). This incentive was included in the Facebook advertisement, and only those respondents who completed the experiment are eligible for the lucky draw. The poll was completely anonymous, the data was used in aggregate, and participation was entirely voluntary. The survey was created using Qualtrics, and the link to the survey was be distributed to participants via advertising.

4.4 Data Collection

The data is collected in an artificial setting. The treatment and placebo groups are assigned at random; the former one gets the treatment, and efficacy is measured compared to the placebo group. For this experiment, Facebook stimulation through an artificial setting is constructed because, in an artificial environment, the information accessed by the respondents can be controlled in a manner that a causal relationship between the information and the outcome polarization can be gauged. On the contrary, in a natural environment, there is the influence of

external factors that impact the information accessed by the participants, the unpredictability of human behavior, uncertainty about the content to be shared in the upcoming posts, and other factors like the social and cultural background of the respondent. For this reason, one cannot conclude that the relationship between the variables is a causal one and not a correlation. However, in an artificial setting, complete information accessible by the respondents minimizes the uncertainty and unpredictability during the experimentation, and randomization minimizes the impact of omitted variable bias.

4.5 Experiment Design and Survey Flow

The study has a sample of 270 people, who were divided into treatment and placebo groups at random. Both groups were asked some questions about their ideology or views on a Metoo movement in the beginning, and the treatment group was exposed to reinforcing posts that align with their ideologies. They were questioned about their level of support for the topic and their initial thoughts on the matter. Then they were put in a simulated Facebook environment, where they could see various posts similar to what they see on Facebook, and their reactions were being recorded. They were questioned again on ideological issues at the end of the experiment. Thus, both groups were asked the same questions at the start and the end to determine their starting and final positions. However, the treatment group received some reinforcing content in the middle to reinforce their perspective. The placebo group was also exposed to certain statements; however, their content is not related to the Meetoo movement.

The results of the preliminary and final polls were compared. Their responses to their positions and sharing of statements were used to evaluate their position. The ideological difference between the two groups (treatment and placebo) were quantified, and the level of polarization was observed. The “difference in difference” technique was used, and the polarization difference between post and pre-survey positions was examined. In this case, the difference is expected in the treatment and placebo group explaining the intervention's influence (reinforcement messages).

The critical polarization was judged through a set of questions. The central question gauged participants' stance on the #Metoo movement. A scale of 1-10 was used where 1 represents the extreme opponent, and 10 represents the extreme proponent of the movement. Based on the response, the ideological position was gauged, whether they belong to the opponents' or proponents' category. However, a set of questions used to ensure their position are given as follows:

*The **#MeToo movement** is a social movement that calls for gender equality and recognition of women's rights. It is controversial in Pakistan as some believe that it opposes established norms and cultural traditions.*
Following this, we would like to know your position on the #Metoo movement matter.
On a scale from 1 to 10, where one means strongly oppose, and ten means strongly support, how much do you oppose or support the #Metoo movement?

Based on the response, the ideological position was gauged, whether they belong to the opponents' or proponents' category. However, in order to ensure their position, a set of specific questions were asked, which are given as follows:

1. On a scale from 1 to 10, where one means strongly oppose and ten means strongly support, how much do you oppose or support women's right to abortion?
2. On a scale from 1 to 10, where one means strongly oppose and ten means strongly support, how much do you oppose or support women's right to make decisions about their marriage?
3. On a scale from 1 to 10, where one means strongly disagree and ten strongly agree, how much do you disagree or agree with the following statement?
"There is no such thing as marital rape".

These questions address a few of the most sensitive aspects of the Metoo movement. After the first general question, these questions are the specific ones and served as the follow-up questions to check whether participants support or oppose the Metoo movement. This strategy is used to ensure participants' stance on the Metoo movement and matters related to it.

The outcome variable for this experimentation is polarization. The survey participants were randomly divided into two groups; the treatment group and the placebo group. Initially, both the placebo group and the treatment group were shown similar central and follow-up questions. However, after that, the placebo group was exposed to the posts on general issues unrelated to the Metoo movement. It was done so that the content and the information do not positively influence their stance on the Metoo movement.

On the other hand, after the central #Metoo movement question and follow-up questions, the treatment group was exposed to the statements and the content that can either reinforce or influence their beliefs regarding the matters of the Metoo movement. There were two sets of posts. Those who supported the movement were exposed to the set of posts that were expected to positively depict the #Metoo moment to reinforce their views in favor of the movement. The same was done for the opposing group, where the content is designed so that their views were expected to get strengthened against the movement. All the groups were exposed to the statements as they appear on their newsfeed on Facebook, and they were supposed to share their expected reaction with the options, such as like, comment, share, ignore, prefer not to answer.

The statements shown to the Treatment group, who will be opposing the #Metoo movement are as follows (All the statements are following the phrase 'How would you react if you see this post on your newsfeed', and the options given as like, comment, share, ignore, prefer not to answer).

Since it was expected that both the groups would move in the opposite directions after reading these statements, the survey ensured that the content shown to both the groups is the exact opposite to each other. It also ensured that the same aspects are being covered for both groups. For this reason, the order of the statements was also kept the same. The statements for the supportive group are given as (All the statements are following the phrase 'How would you react if you see this post on your newsfeed', and the options given as like, comment, share, ignore, prefer not to answer):

The statement in bold is the statement shown to the Supportive groups (having a value equal to or greater than 6 in the central question). The other statements are for the opposing group (taking a position at five or less than 5). In order to get the idea of how it looks, the picture of one of the questions from the survey is added here:

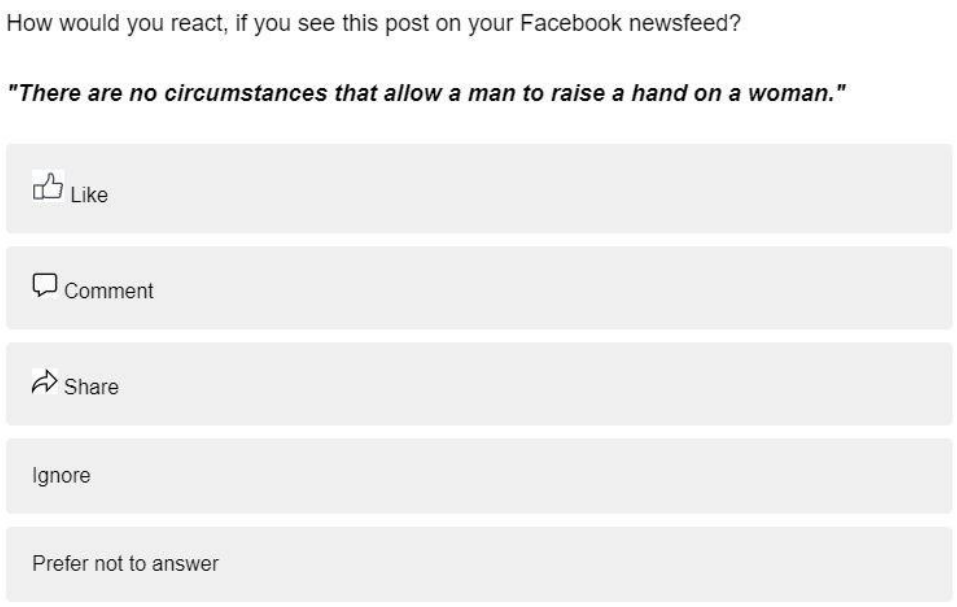


Figure 1: A snapshot of a question from the survey.

The statements for the supporting group (in bold) and opposing group (in light) are given as:

1. *"Because we're still confused about this: Feminism is a belief in the social, economic, and political equality of all genders."*

"Feminism and Aurat March is another name for shamelessness. What rights? Women have all the rights that they should have."

2. *"They do not want women to get an education, because then women would become more powerful."*

"If education makes women powerful and independent and they stop following what their husbands or fathers say, then an uneducated woman is better than an educated one."

3. "The Aurat March manifesto also demands the recognition of women's unpaid labour (like house chores), and the provision of maternity leave and day-care centres to ensure women's inclusion in the labour force."

"Women are too demanding when they ask for more inclusion in the labour force. It is the husband's responsibility to provide financial support to the family. Women should not go to work, as this is not their prime responsibility."

4. "We need to teach our sons and make them better boys so that tomorrow they can be better husbands."

"God has made men superior to women. No one should teach us (men) how we should behave."

5. "Women have the right over their bodies. This means if they don't want a child, they can opt for abortion."

"Abortion violates the sanctity of life and is a rebellion against God's will. Therefore, women should not have the right to abortion."

6. "Sex after marriage, without your wife's consent is marital rape. And that is a form of sexual and domestic abuse."

"There is no such thing as 'marital rape'. Once a woman is married, she is bound to fulfil her husband's sexual needs. "

7. "There are no circumstances that allow a man to raise a hand on a woman."

"The man is the head of a family. If a woman is wrong about something, he can make use of the force to tell her the right way."

8. "We care about the struggles men go through. We demand support for women's inclusion in the labour force so that we can contribute to the family budget and be less of a burden on our fathers' and husbands' money."

"Women don't care about the struggles man go through. They just cash on their fathers' and husbands' money."

9. "We (the women) don't just use the "harassment card" to our benefit. Harassment is real and we should have the right to freely file against it."

"Women use the 'harassment card' to get even with men when they know they can't win an argument otherwise."

10. "Liberal men and women are not being anti-religion and shameless. It is just that people use religion to support their point when they want to oppose feminists."

"Liberal women and men don't even respect their parents and their religion. How can then they ask for equality in the name of shamelessness?"

11. "In the #metoo movement, we are not fighting to take off the hijab, we are just saying that it should be one's personal choice."

"In 'non-Muslim' countries, women are fighting for Hijab, whereas in Pakistan, women are fighting to take off the Hijab."

12. "Women want to be equal to men, not the same. Therefore, on feminists strive for equality, women should not be expected to rob a bus, or gang rape a man."

"If you wish to strive for equality then kidnap men as well. Rob a bus, gang rape a man, so that I can understand what you [women] mean by equality."

Since the research wants to see the impact of the echo chamber, the placebo group is not treated, and the diverse statements have been shown in this case. The expectation is that like-minded individuals and reinforcement messages would not influence them in this case. The statements being exposed to the placebo group are given as (All the statements are following the phrase 'How would you react if you see this post on your newsfeed', and the options given as like, comment, share, ignore, prefer not to answer):

1. *"The world's richest countries are hoarding vaccines. This is morally indefensible."*

2. *"The situation is pretty tensed in Gaza as Israeli Terrorism continues with airstrikes on defenceless civilians."*

3. *“A situation in which the populations of advanced, rich countries are safely inoculated while millions in poorer countries die in the queue, would be tantamount to vaccine apartheid."*

4. *"Since everyone is concerned about reopening schools and exam schedules in the pandemic, the Interprovincial Education Ministers Conference (IPEMC) took place at the beginning of June 2021. It was decided that Board exams would begin after June 15. Intermediate and Matric exams would be given priority so that results can come in before university admissions."*

5. *"Celebrities are so quick to post or tweet about Black Lives Matter ' or other issues. However, when it comes to injustice in the Middle East like the attacks in Palestine, Syria, Lebanon, etc., not a single word... it is so disappointing."*

6. *"The Global Climate Risk Index has placed Pakistan on the fifth spot on the list of countries most vulnerable to climate change in its annual report for 2020."*

7. *"In the last week, a school in Bhara Kahu had at least 25 students who had a heat stroke. They got fainted, and some had bleeding noses due to the power outage in a current heatwave. Here are a few heats safety tips that might save us. It is advised to stay hydrated, stay cool, seek shade, wear loose light clothing, avoid exercise or overexertion in extreme heat usually between the hours of 10-5, and never leave kids or pets in the car."*

8. *"The school timing schedule has been changed in all private and public schools in Punjab amid scorching weather. All schools need to start from 7 am to 11:30 am."*

9. *"Prime Minister Imran Khan launches third annual polio-vaccine drive intending to target 33 million children in Pakistan."*

10. *"Prime Minister Imran Khan promised that by 2030 Pakistan would produce 60 per cent of its electrical power from renewable sources."*

11. *"Historic day!*
    Overseas Pakistani get the right to vote in the elections for the National Assembly. It took 73 years for this change.
    Congratulations, my people! You have every right to become part of the decision-making process in this country."

12. *"One thing was made evident as the Budget 2021-2022 was presented in the National Assembly on Friday that the government is aiming to please as much of the population as it could. The reduction of taxes on several industries seemed to reflect that."*

The Placebo and treatment groups are further divided into four groups based on their answers to the question meant to gauge their position before and after the treatment. For both groups, those who positioned themselves at values five and below were termed opposing groups, and those who had values of 6 and above were categorized as supporting groups. In the experiment, there were four groups of respondents, i.e., placebo supporting, placebo opposing, treatment supporting, and opposing treatment groups.

4.6 Manipulation Check

Manipulation checks are conducted in the research to determine the effectiveness of manipulation in the experiment. For this research one of the effective strategies could be to ask the respondents a few questions (or opinions about the matter) to gauge their understanding regarding the condition they are exposed to. This is the typical strategy in the cases where respondents are required to read longer texts as part of the treatment. But in this study, the whole survey was designed to ask questions and to share their reaction to exposure to certain statements. Also, the respondents were supposed to share their opinion before and after the treatment. So, asking their opinion again (for manipulation check) didn't seem to be the best option so it was hard to do the manipulation check in this case. I tried to ensure that respondents read the statements by keeping them short. Hence, in this research, there was no direct control for the manipulation effect, but an effort was made to ensure that respondents read the statements. Even if some respondents answered the treatment questions without reading the treatment messages, I still find very strong treatment effects.

Also, to ensure that respondents have read the text, the time duration for completing the survey was analyzed. The survey was expected to take 5 to 7 minutes according to the test trial; however, a few respondents had completed it in less than 3 minutes, which was only possible if some questions would be left unread. For that, some responses were not counted for the analyses who

took less than 180 seconds to complete the survey. Thereby an effort was made to ensure that they have read the text, however, there is no confidence about the ones who actually did it.

In order to see the impact of the intervention on the supporting and opposing behaviors of the treatment groups, regression analyses is being conducted. The change in support is the dependent variable, whereas the dummy variable for treatment is independent variable in this case. Regression analysis is being run while controlling for other demographic factors to establish the causality of the treatment.

In addition to that, a difference in difference approach is used after the testing and data collection. A difference-in-difference technique compares variations in the outcome/result over time in a quasi-experimental setting. As a result, the objective is to prove that, regardless of one's position on a particular issue, once one receives a large number of messages, one's opinions become more polarized. The polarization difference will have a positive value at the end of the calculation, indicating that the polarization has increased. Based on the differences in responses generated by respondents in the treatment and placebo groups, the hypothesis (exposure to reinforcement messages will lead to political polarization) is examined.

CHAPTER 5: ANALYSES AND DISCUSSION

5.1 Descriptive Statistics

As explained earlier, Facebook advertisements were used to recruit the participants. The initial responses were 293. However, some respondents did not complete the survey. The final number of responses that contributed to this analysis was 270. The responses were randomly assigned to the treatment group using Qualtrics in-build randomization mechanism. The randomization minimized the impact of omitted variable bias. In order to analyze the causal impact of treatment, the placebo and control groups were matched for different demographic factors. Since the support of the #Meetoo Movement can vary due to the Education level, Region, Marital status, Employment, etc., the statistical summary was drawn for different factors to ensure that the two groups are similar.

Summary Statistics

intervention Variable	N	Placebo Mean	SD	N	Treatment Mean	SD	Test
Treatment	133	0	0	136	1	0	F=1.777965065322 2e+31***
Gender	133			136			X2=2.255
... Female	69	51.9%		68	50%		
... Male	61	45.9%		60	44.1%		
... Prefer not to say	3	2.3%		8	5.9%		
Education	133			136			X2=2.98
... Bachelors	47	35.3%		45	33.1%		
... Intermediate	20	15%		25	18.4%		
... Masters/ M.Phil	56	42.1%		61	44.9%		
... Matric	6	4.5%		4	2.9%		
... Other	4	3%		1	0.7%		
Region	133			136			X2=1.889
... Khyber Pakhtunkwa	25	18.8%		30	22.1%		
... Other	14	10.5%		11	8.1%		
... Punjab	68	51.1%		62	45.6%		
... Sindh	26	19.5%		33	24.3%		
Marital_Status	133			136			X2=0.867
... Divorced/ Separated	2	1.5%		3	2.2%		
... Married	50	37.6%		52	38.2%		
... Prefer not to say	9	6.8%		6	4.4%		
... Single, Never Married	72	54.1%		75	55.1%		
Employment	133			136			X2=2.714
... Employed	41	30.8%		45	33.1%		
... Intern	4	3%		2	1.5%		
... Prefer not to say	3	2.3%		5	3.7%		
... Student	40	30.1%		32	23.5%		
... Unemployed	45	33.8%		52	38.2%		
Socialmedia_usage	133			135			X2=3.542
... 1- 2 hours	39	29.3%		40	29.6%		
... 2 - 3 hours	29	21.8%		36	26.7%		
... 30 to 60 minutes	17	12.8%		17	12.6%		
... Less than 30 minutes	7	5.3%		2	1.5%		
... More than 3 hours	41	30.8%		40	29.6%		
News_source	133			136			X2=3.289
... Directly from people (family members, friends, co-workers, etc.)	2	1.5%		6	4.4%		
... Print (newspaper, magazine)	5	3.8%		2	1.5%		
... Social Media (e.g. Facebook, Twitter, Whatsapp, YouTube, Instagram, Telegram, etc.)	111	83.5%		112	82.4%		
... Television	15	11.3%		16	11.8%		
Reliousness	113	7.08	1.905	118	7.144	2.039	F=0.061
Religious practices	104	6.663	2.56	113	6.487	3.12	F=0.206
Traditionalist	121	7.339	2.064	127	7.417	2.28	F=0.081
Statistical significance markers: * p<0.1; ** p<0.05; *** p<0.01							

Figure 2: The statistical summary of the data.

The above table shows the balance of different factors in placebo and treatment groups. The chi-square test shows the statistical significance, and it can be seen that none of the variables has the statistically significant value for the difference. The visual representation below also shows the comparison and the distribution of respondents according to different factors which might impact their position regarding the movement.

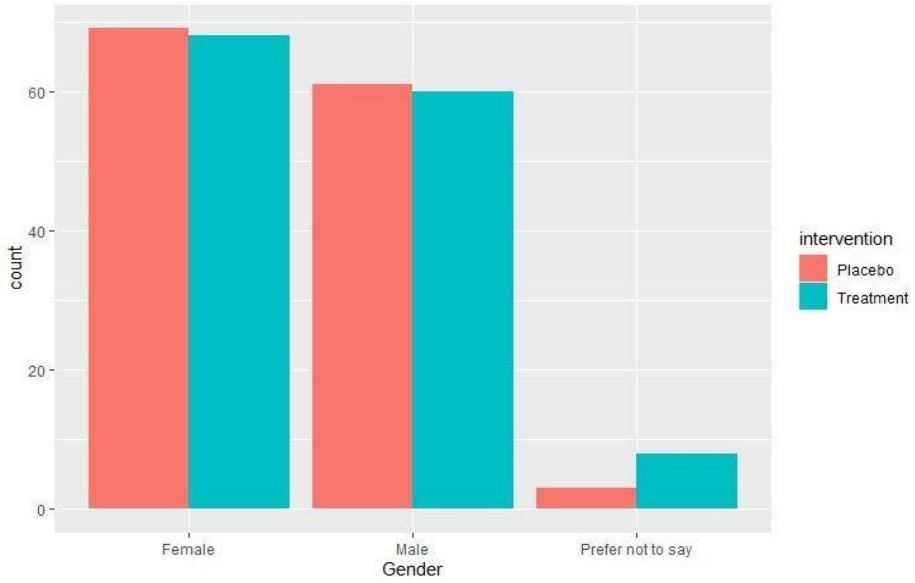


Figure 3: The statistical distribution of respondents on the basis of gender.

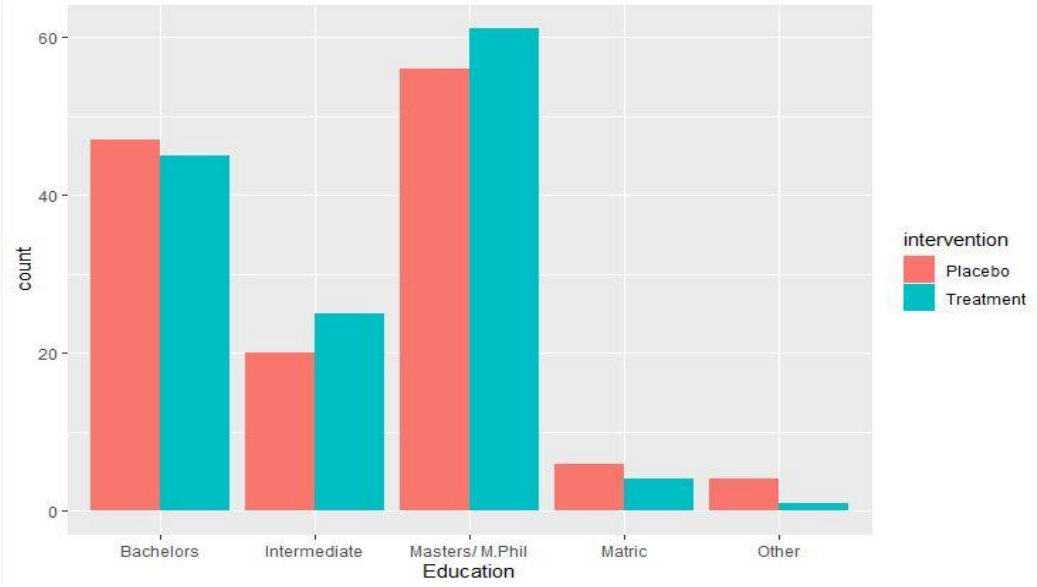


Figure 4: The statistical distribution of respondents on the basis of education

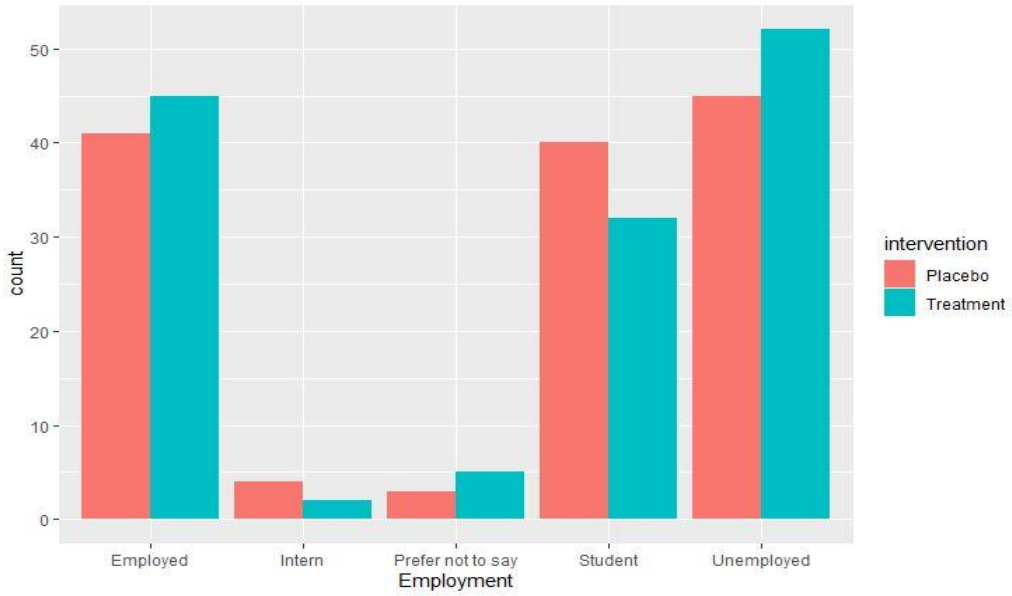


Figure 5: The statistical distribution of respondents on the basis of employment.

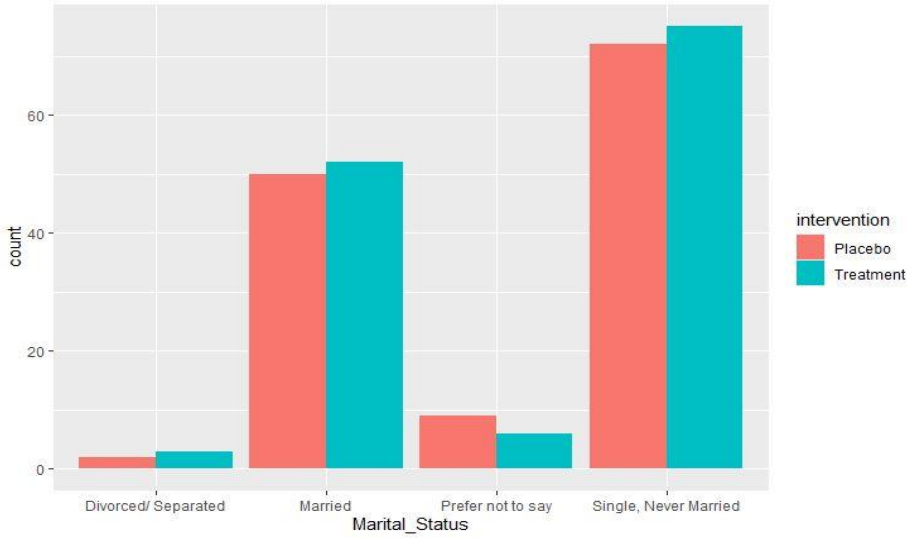


Figure 6: The statistical distribution of respondents on the basis of marital status.

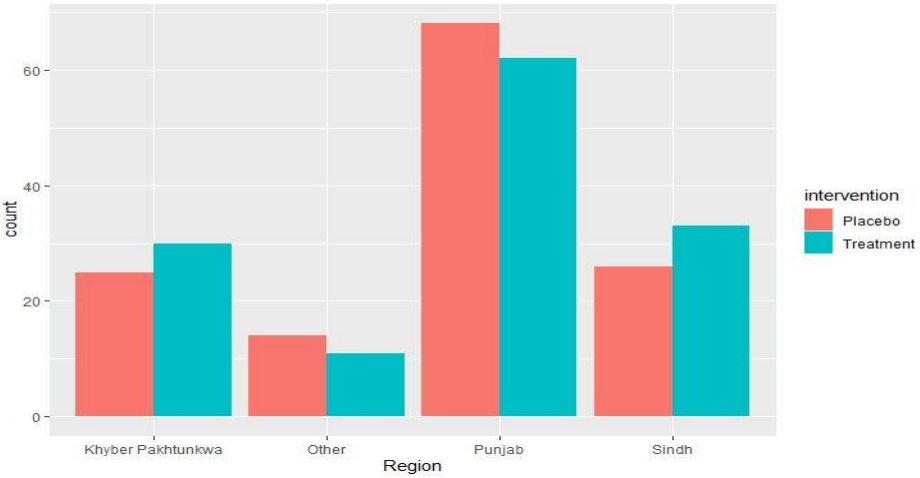


Figure 7: The statistical distribution of respondents on the basis of region.

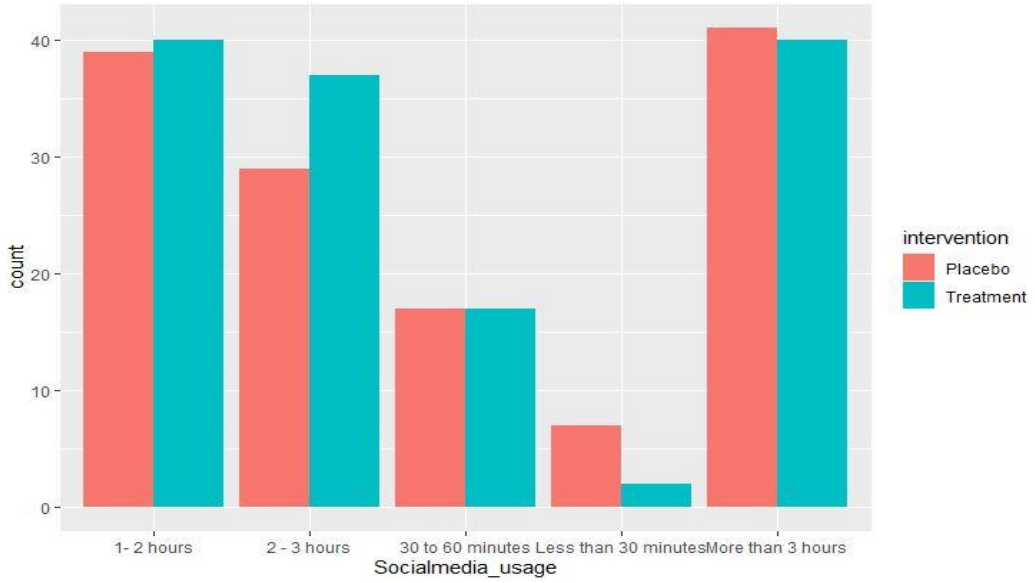


Figure 8: The statistical distribution of respondents on social media usage.

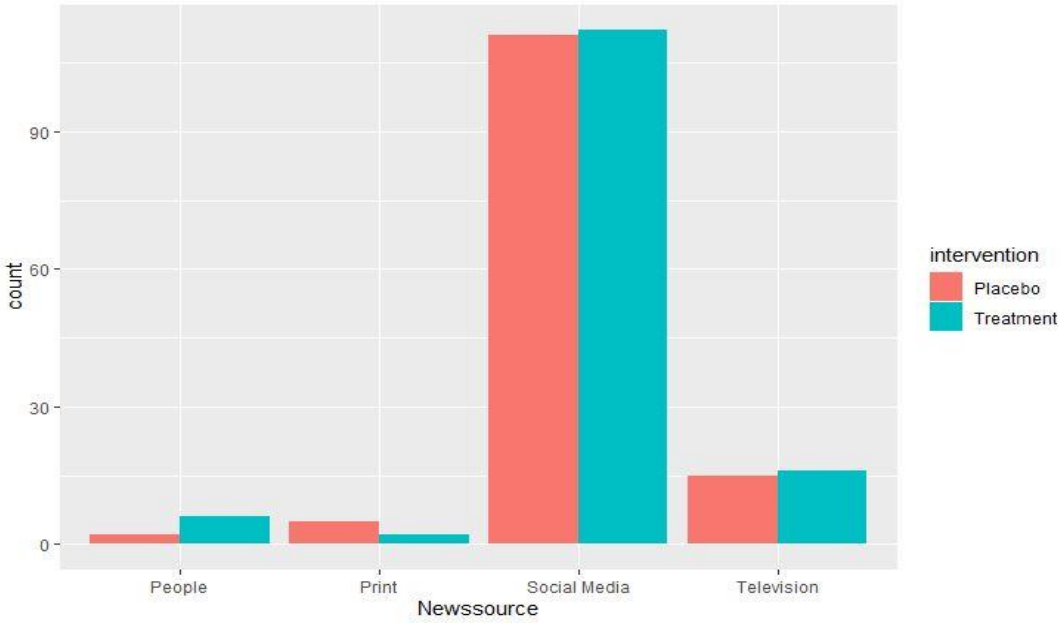


Figure 9: The statistical distribution of respondents on the basis of newsource.

Box plot was used to analyze categorical variables (Gender, Region, Marital Status, etc.), whereas continuous variables like age were analyzed using the box plot. All the plots showed a similar distribution of participants and showed that the groups are balanced across various demographic factors. The distributions according to religious inclination and age are given as:

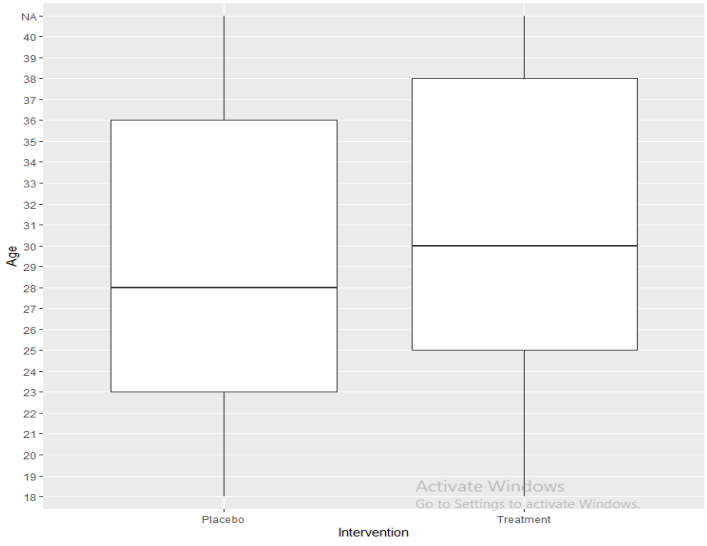


Figure 10: The distribution of respondents according to age.

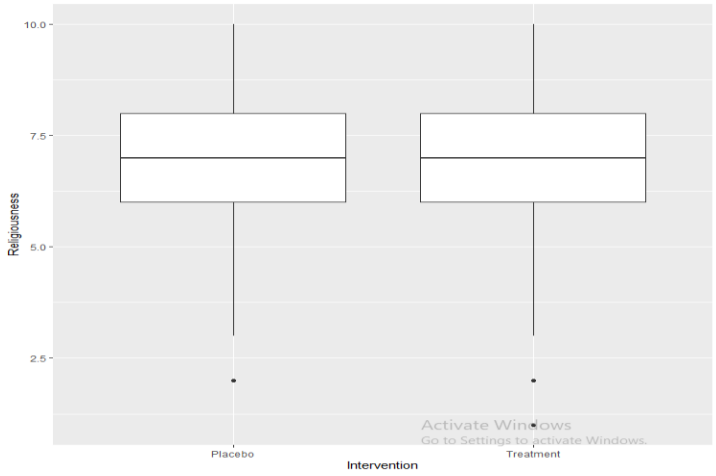


Figure 11: The distribution of respondents according to religiousness.

Other than balancing the groups on demographic factors, the initial position of the respondents is also crucial. The pre-treatment position of supporting groups in the placebo group was compared with that of in treatment groups to ensure that both the groups are comparable. The change towards the end of the experiment is the causal change as an effect of the treatment. In the same way, the comparison was made for the placebo and treatment groups for initial opposing behaviour. The visual representation of the behaviour is given as:

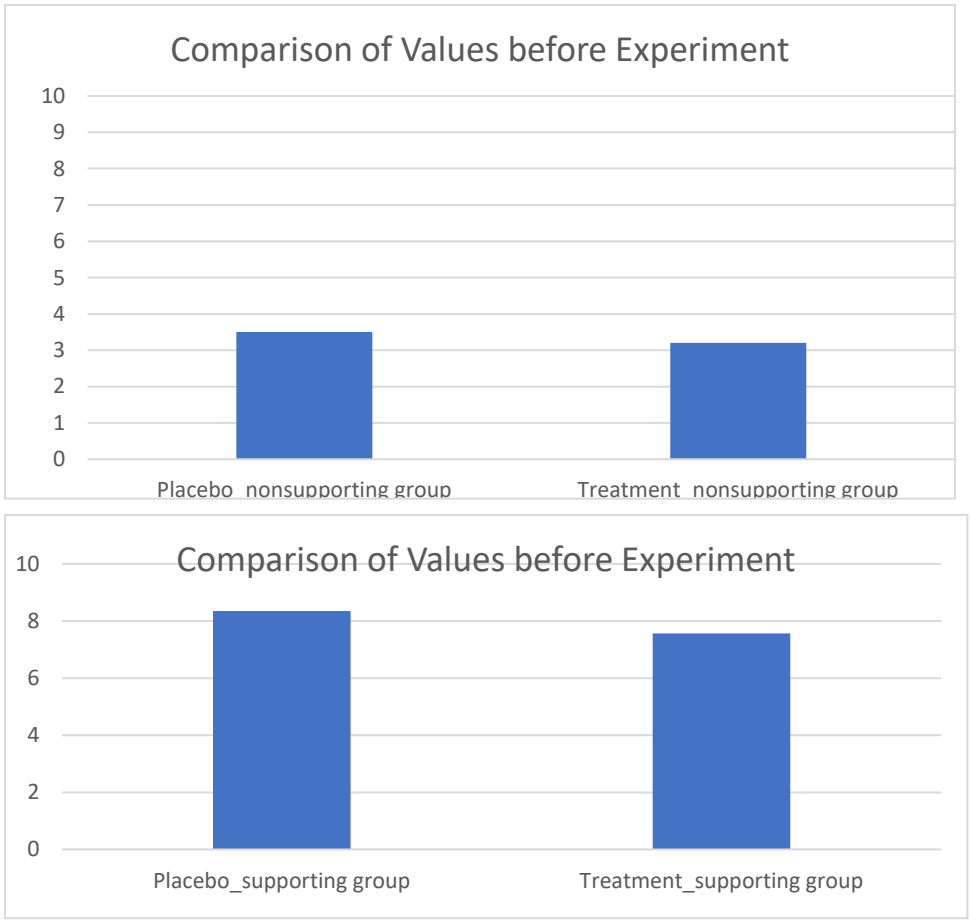


Figure 12: Comparison of values of two groups for initial position

5.2 Statistical Analyses

In order to see the impact of the intervention on the supporting and opposing behaviors of the treatment groups, regression analyses were being conducted. Individual polarization of the groups is calculated by the difference of the values take before and after the treatment. This individual polarization was the outcome variable in these analyses. Thus, the dependent variable was support change, and the explanatory variable was a dummy variable for the treatment, showing whether a respondent has got the treatment or not. For both the supporting and opposing groups, linear regression was being run between change in support (dependent variable) and treatment (an independent variable that indicates whether a person was in a placebo or treatment group). Control for variables like gender, region, education, marital status etc., were also included in the regression analyses to estimate the causal effect of a treatment on an outcome. It showed whether supporters become more supportive when they were treated with reinforcing messages. In another regression model, the whole process was repeated for the opposing group.

Table 1: OLS regression model for Treatment effect

	Model 1	Model 2
(Intercept)	0.32	0.65
	(0.81)	(0.61)
Treatment Supporting	1.63***	
	(0.42)	
Gender. Male	-0.41	-0.00
	(0.43)	(0.30)
Education. Intermediate & Below	0.11	0.61
	(0.55)	(0.45)
Education. Masters/ M.Phil.	-0.94	-0.14

	(0.50)	(0.33)
Region. South Region	-0.05	0.33
	(0.45)	(0.33)
Marital_ Status. Single	0.53	-0.47
	(0.49)	(0.34)
Employment. Student	-0.99	-0.52
	(0.63)	(0.42)
Employment. Unemployed	-0.87	-0.65
	(0.51)	(0.35)
Social Media Usage. More than 2 hours	0.05	-0.27
	(0.43)	(0.29)
News Source. Social Media	-0.40	0.43
	(0.58)	(0.43)
Treatment Opposing		-0.91**
		(0.30)
---	---	---
R^2	0.17	0.15
Adj. R^2	0.10	0.08
Num. obs.	129	140

==========

*** p < 0.001; ** p < 0.01; * p < 0.05

The regression table shows that the 'Treatment supporting' coefficient is significant and has a positive value, which shows the positive association between the treatment (reinforcement messages) and supportive group. Similarly, 'Treatment opposing' also showed statistically significant results but in the opposite direction. The effect of the treatment is also apparent in the regression plot.

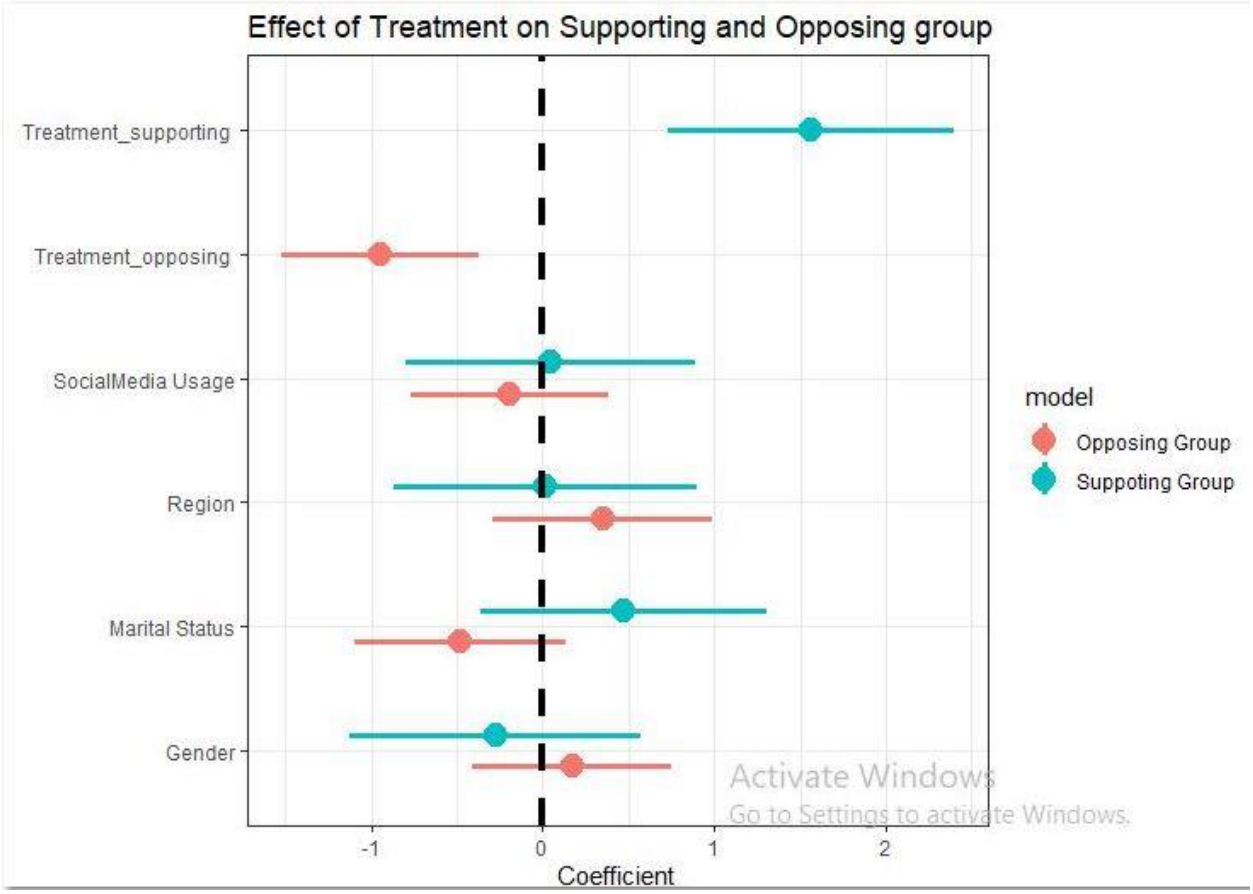


Figure 13: Treatment effect on Supporting and Opposing Groups

The figure summarizes the effect of the intervention on the treatment groups. The first hypothesis assumes that the positive reinforcing me too movement messages would lead to stronger support of the Metoo movement. As evident through the linear regression the treatment of supporting group has a value of 1.63 and is statistically significant ($p < 0.001$). This impact is also apparent in the *figure 13*, which shows that supporting treatment has a strong effect when it comes to change in position for the supporting groups. Hence the experiment provides evidence that the first Hypothesis (H1) is supported.

In the same way, the second hypothesis assumes that negative reinforcing me too movement messages would lead to stronger opposition of Metoo movement. The regression analysis shows a negative value of 0.91 with statistical significance ($p<0.01$). The negative value indicates that the respondents change their position in the negative (as opposing to the supporter's) direction. F*igure 13* also indicates the strong effect of the treatment on the opposing group, hence providing evidence in support of the second hypothesis (H2).

These changes before and after are observed through the difference between the observations of the treatment and the placebo group. This difference explains the polarization as the polarization is the distance between positions on the spectrum. In this scenario, the polarization is calculated by the mean difference of the score of the opposing and supportive groups based on the stance of participants on the Metoo movement. The change in polarization will be calculated by the difference of the polarization taken before and after the treatment (for both the placebo and the placebo treatment groups separately).

The mean value calculated for the placebo-supporting and non-supporting groups before the experiment were 8.3 and 3.5, respectively, and after the experiment were 7.4 and 3.8, respectively. The placebo groups' polarisation before and after the treatment is calculated by finding the difference of values of supporting and opposing groups (before and after the treatment). The polarization values for the placebo group before and after the treatment are given as:

Polarization of placebo group before = mean value of placebo supporting before – mean value of placebo opposing before

= 8.3 -3.5

= 4.84

Polarization of placebo group after = mean value of placebo supporting after – mean value of placebo opposing after

= 7.4 -3.8

= 3.67

Similarly, the mean values calculated for the position of treatment supporting and non-supporting group before the experiment were 7.5 and 3.2, respectively, and after the experiment were 8.3 and 2.6, respectively. The treatment groups' polarisation before and after the treatment is calculated by finding the difference of values of supporting and opposing groups (before and after the treatment). The polarization values for the treatment group before and after the treatment are given as:

Polarization of treatment group before = mean value of treatment supporting group before – mean value of treatment opposing group before

= 7.57 -3.2

= 4.37

Polarization of treatment group after = mean value of treatment supporting group after – mean value of treatment opposing group after

= 8.3 -2.6

= 5.73

Once the values of polarization for all the four groups are obtained, the polarization for both (Placebo and treatment) groups can be calculated by calculating the difference of the values before and after the treatment.

Polarization for the placebo group (Difference for placebo) = Polarization of placebo group after - Polarization of placebo group before

= 3.67-4.84

= - 1.17

Polarization of treatment group (Difference for treatment) = Polarization of treatment group after - Polarization of treatment group before

= 5.73 – 4.37

= 1.36

The polarization value for the treatment group is 1.36, which shows that polarization has increased by 1.36 points due to the intervention. At the same time, the value of polarization for the placebo group is -1.17. The negative value indicates the decrease in polarization level for this group.

In order to analyse the impact of the treatment (reinforcement messages), the difference in difference method is followed, and calculated polarization of the placebo group is subtracted from that of the treatment group.

Difference-in-difference = Difference for treatment group - Difference for placebo group

= 1.36 – (1.17)

= 2. 53

The number 2.53 is a causal change, and it shows that the intervention (reinforcement messages) has caused an increase in polarization as assumed by the third hypothesis (H3). The echo chamber effect is created in the lab experiment and as expected the reinforcement messages made the treatment supporting and opposing groups change their positions towards the extreme ends. The increase of the distance between the mean positions of both the groups increases the polarization of the group meeting the theoretical expectations. But the for the placebo group, results came out to be a bit unexpected. The supporting and opposing groups were expected to retain their position in before and after conditions as they were not exposed to any statement regarding #metoo movement. But their position was still changed and they moved towards the center (reducing the distance). Hence a decrease in polarization was observed for this group. This is just a speculation that time has an impact in such a case, and that with time question gets sinks in respondents' minds and they respond differently when they are asked the same question the next time. Whatever the reason is, one aspect is worth noting here, that condition would hold for the treatment group here as well. This is clearly shown in the graphical representation of difference-in-difference estimation in the figure below.

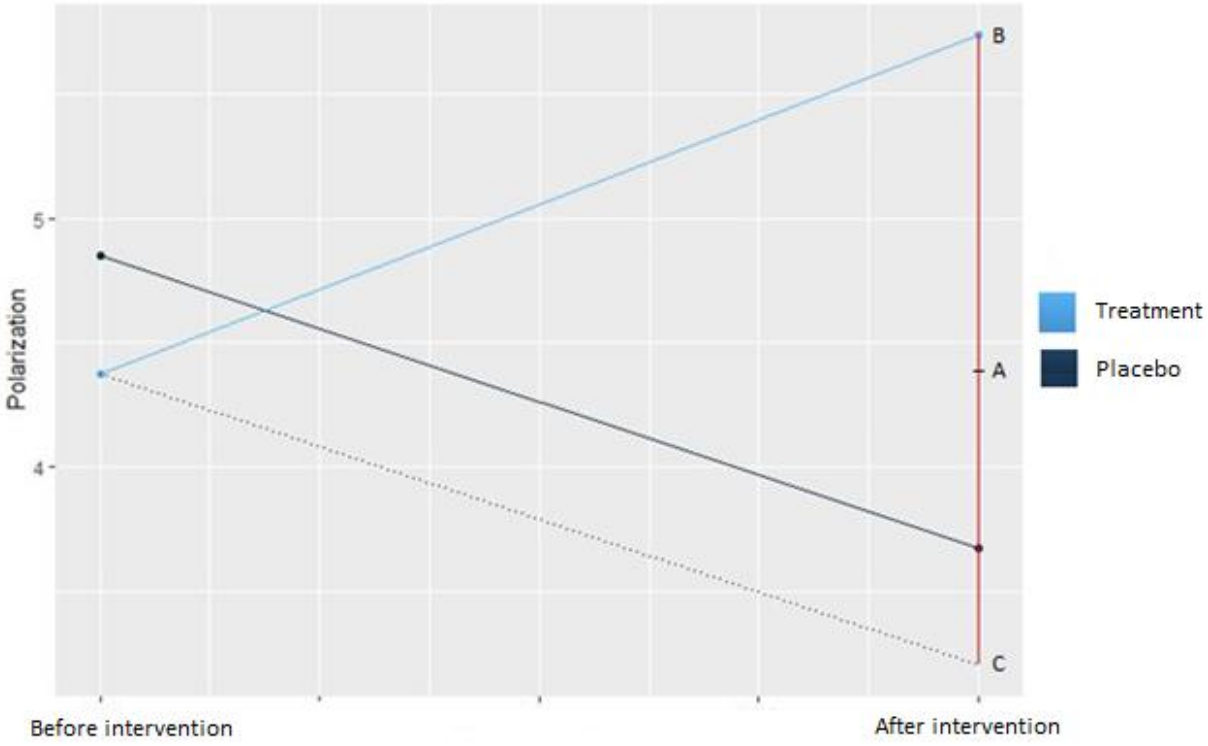


Figure 14: The graphical representation of difference-in-difference estimation.

The difference in difference analysis also relies on a parallel assumption that the unobserved differences between treatment and control groups are constant over time in the absence of the treatment. In the absence of the treatment, the expected trend is shown by the dotted line in the image. The blue line represents the actual trend for the treatment group, and the red line shows the difference in trend due to intervention. Hence the treatment effect is really strong in this case and is even more than what we see apparently from point A to B (the difference of polarization before and after = 1. 36). In fact, it is measured from where the treatment group would have been in the absence of the treatment to where it actually is (Point C to B). This distance is indicated by the vertical red line in the figure above (value = 2.53). It supports the assumption made by the

third hypothesis that reinforcement messages increase the polarization. The size of polarization in treatment group is greater than the placebo group. Though it can't be said that null hypothesis is rejected, the evidence suggests that the third hypothesis (H3) is supported.

CHAPTER 6: CONCLUSION

6.1 Summary of the Research

Social media contributes to political polarization by forming so-called "echo chambers," characterized by selective exposure, the spread of reinforcement messages, and shielding people from opposing viewpoints on specific issues. The main puzzle is whether digital technology can bring people from different political backgrounds together or alienate ideological communities. The role of messages produced by the echo chamber effect is examined in this study to discover if they support one's position or not. The argument is that social media impacts political polarization through exposure to reinforcement messages (Barbera, 2015). The extension to the 'missing case' of Pakistan is proposed because there is a lack of literature that claims the nature of the relationship in this case. Given the rise in political polarization in Pakistan and the rapid growth in internet users (Zahid, 2019), this study is an attempt to examine the impact of social media on political polarization in the country. The goal is to show that no matter how one feels about a topic, once they start getting exposed to increased similar content, they become more stringent in their beliefs, which increases polarization. Their feelings get more intense, and they become more polarised. The matter under discussion is a real-world process and has expressed a sudden change over time, which justifies the need for this research.

The theoretical expectation of this research is that reinforcement messages due to echo chamber strengthens ones' beliefs and have a strong polarizing effect. To test the theoretical

expectations, the matter of the Metoo movement is opted as it is one such movement that was initiated on the internet that has quickly polarized the community. It is based on a controversial issue that has divided the masses. It doesn't leave room for grey areas and often forces people to choose one side. For the research design of this study, a survey on Qualtrics is designed and is advertised on Facebook for the representative sample. Respondents are randomly divided into treatment and placebo groups, where the treatment receives reinforcing messages (based on their initial beliefs, with the expectation to strengthen their beliefs) and the placebo groups receive messages unrelated to the Metoo movement.

For the statistical analysis, OLS Regression and Difference in Difference approach is used. The results of this research show that the treatment effects are statistically significant and patterns have been observed that provide evidence that reinforcement messages strengthen ones' beliefs moving their ideological position towards the extreme.

6.2 Limitations

One of the research limitations is its generalizability and validity, compared as it was a lab experiment with small sample size. The ideal way to increase the generalizability would be to conduct this research in a natural environment. But in such observational studies, the causality of the treatment could not be established owing to the influence of external factors that impact the

information accessed by the participants, the unpredictability of human behavior, uncertainty about the content to be shared in the upcoming posts, and other factors like the social and cultural background of the respondents. So, there is a tradeoff between generalizability and causality. This research is a complex study but has been conducted in a simplified manner, so its external validity is low. The generalization is difficult because the sample size is relatively smaller and due to time constraints, the reinforcement statement had a smaller time interval in-between. This experiment is not the substitute for the real-life situations that users face while interacting with each other on social media. Nothing could be said about generalizability for other countries or other people in Pakistan.

6.3: Contribution to The Existing Literature

Although there have been academic studies and research in political polarization, most studies have concentrated on Western countries where people are more politically aware. The literacy rate is higher than the Eastern countries. Hence, this specific research study reflects the crucial role of social media information on political polarization and radicalism in communities where the literacy rate is lower. People are not as politically aware or active as they usually are in more developed countries. Unlike most of the comparative literature that revolves around the case of the U.S, this research reflects on cultural, socio-economic, demographical and political factors that harness and give rise to political polarization through the means of social networking sites. Furthermore, this study also emphasizes that limited access to information and lower literacy rate

in developing countries like Pakistan often act as an instigator in furthering the political divide and promoting polarization and radicalism in society. The research also reflects on the significance of the social networking sites and the content available and accessible on them, as it has a more significant influential tendency than other mediums.

6.4 Suggestions for Future Research

Owing to the generalizability problem, it is highly recommended that such a study is conducted as an observational study to see the trend in a natural environment. I believe that the impact would be stronger if a person is exposed to same information repeatedly for a few days. I Or if the same information is received from different sources. This was not possible in this study for some time constraints. Also, the study is not generalizable to the older in Pakistan as the sample covers only adults ranging between 18 to 40 years of age. It is also because both youth and adults have different methods of accessing news and because the impact of socio-cultural and religious factors is more substantial on the older generations than the youth. Also, older people are stubborn in their beliefs and are less active on social media. However, the effect of the experiment for this age group is very strong, hence establishing how the trend lines for the older ones are worth documenting.

Control for manipulation check is essential for such studies, which were missing in this research. To gauge the impact of the treatment, it is recommended to conduct the investigation

while controlling for manipulation and understand each participant's cognizance and understanding regarding the condition to which they are exposed.

While checking the impact of treatment on polarization, an interesting trend appeared that polarization was decreased for the placebo group. However, they were not exposed to any statement regarding the #Metoo movement. It was expected to remain the same, but the decrease in polarization is worth examining. The speculation is the time effect that with time questions gets sinks in respondents' minds, and they respond differently when they are asked the same question the next time. One of the reasons could be that some content might sound strange for the first time. It would be an interesting study to see the effect of the time or if irrelevant questions still impact.

Another recommendation is regarding the differing impact of positive and negative statements. It has been observed that the positive messages had a more polarizing effect than that of the negative ones though the statements were expected to have an equal, more substantial impact. This is worth examining why people tend towards the positive polarization and if this is the case in the natural environment.

APPENDIX

A snapshot of Facebook post for the participation in the survey.

CENTRAL EUROPEAN UNIVERSITY

Thank you for your interest in our study regarding discussion trends on social media. The study will take about 5 - 7 minutes to complete.

We are interested in your opinion about different topics discussed on Facebook and highly appreciate your answer to each question.

You can choose not to answer a given question by selecting 'prefer not to answer', but still continue the survey. You can stop your participation in the survey at any time.

By completing the survey, you get a chance to win one cash prize. There are a total of 10 cash prizes with up to PKR 2000. The prizes will be randomly drawn in the first week of July and you will be contacted in case you won.

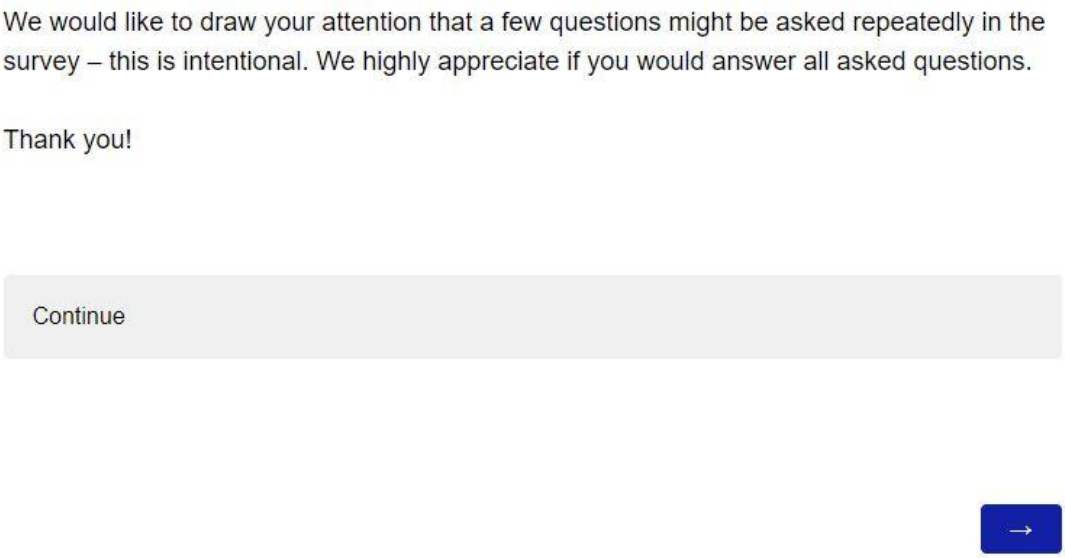
Your privacy is very important to us! Your responses will be stored anonymously and kept completely confidential. Your personal information will be only used to contact you in case you win a prize and deleted afterwards.

The data from this research will be reported only in the aggregate.

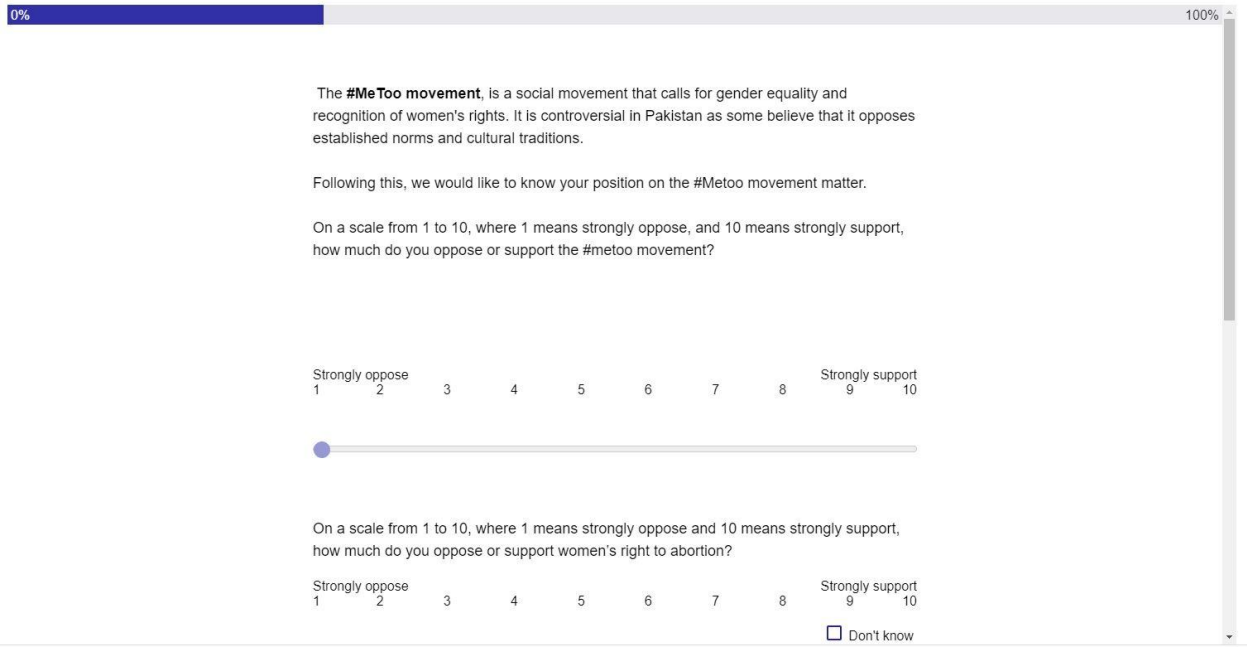
Thank you! We appreciate your effort and time!

Yes, I voluntarily choose to participate in this study.

No, I don't want to participate



These images show the consent that was acquired from the respondents before the beginning of the survey.



A Screenshot of the question to check respondent's position and critical polarization regarding #Meetoo movement

How would you react if you see this post on your Facebook newsfeed?

"Historic day !
Overseas Pakistani get the right to vote in the elections for the National Assembly. It took 73 years for this change.
Congratulations my people ! You have every right to become part of the decision making process in this country."

Like

Comment

Share

Ignore

Prefer not to answer

A post from placebo group

How would you react, if you see this post on your Facebook newsfeed?

"There are no circumstances that allow a man to raise a hand on a woman."

Like

Comment

Share

Ignore

Prefer not to answer

A post from treatment group

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