

“Birds of same feathers react together”. A Survey experiment on influence of Echo Chambers in political Behavior of Contemporary Chile.

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Social media is a central component in the structuring of social ties and the circulation of political ideas in today's world. recent years have shown how social phenomena such as echo chambers, fake news, culture battles and a series of digital activisms can promote diverse ideas that fragment and challenge governance in western democracies.

In this experimental survey we will analyze the effects of echo chamber membership on political behavior in contemporary Chile.

For this purpose, we have designed a survey of approximately 15 minutes duration, with four experimental questions, each one a study in itself.

1. Have any data been collected for this study already?

No, no data have been collected for this study yet

2. What's the main question being asked or hypothesis being tested in this study?

Question:

How does membership in echo chambers and digital citizenship affect our political behavior in front of people of opposing political thought?

Hypothesis 1:

We will determine whether participants randomized to three experimental conditions (Control, like-minded, and opposite) tend to have higher levels of anger due to social closeness with opposite-minded people, within a sample of N = 750 people of all ages, economic income, and political positions, after controlling for the effects of echo chamber membership and digital citizenship.

Hypothesis 2:

We will determine whether randomized participants in three experimental conditions (Control, like-minded and opposite) tend to have better performance evaluating fake or real news headlines, within a sample of N = 750 people of all ages, economic income, and political positions, after controlling for the effects of echo chamber membership and digital citizenship.

Hypothesis 3

We will determine whether randomized participants in four experimental conditions (Friends/Validated argument, Friends/Misinformation argument, acquaintance/Validated argument and acquaintance/Misinformation argument) tend to broke social ties through Facebook, within a sample of N = 750 people of all ages, economic income, and political positions, after controlling for the effects of echo chamber membership and digital citizenship.

Hypothesis 4

We will determine whether randomized participants in four experimental conditions (Friends/Political topic, Friends/non-political topic, parent/political topic and parent/non-political topic) tend to openly discuss, within a sample of N = 750 people of all ages, economic income, and political positions, after controlling for the effects of echo chamber membership and digital citizenship.

This is a randomized experiment using data obtained survey-panel from the Centre for Experimental Social Science (CESS-USACH) from University of Santiago de Chile.

3. Describe the key dependent variable(s) specifying how they will be measured.

1) Anger level due to closeness to people of opposite political thought.

Using a list experiment to measure behaviors while avoiding social desirability bias (Chouhoud, 2019; Droitcour et al., 2011; Kramon & Weghorst, 2019; Kuklinski et al., 1997; LaBrie & Earleywine, 2000), participants are asked how angry they feel about the list of sentences presented.

On a bipolar scale of 1 to 7, where 1 is "not at all angry" and 7 is "very angry," as an ordinal variable.

2) *Percentage of successful distinction between false and real informative headlines.*

Behavioral outcome. people are confronted with seven items (news headlines), which they must rate as true or false. each set has three true and four false items (but the participants do not know this).

the result is a percentage of correctness, also available in numerical form (0 to 7).

3) *Self-reported emotions (Anger, Fear and Happiness and sadness) (Marcus et al., 2017) when exposed to a discussion situation with people of opposite thinking, variable in quantity and type of argumentation.*

Participants are shown a vignette with various political situations and respond to four slides in a self-reported manner with different emotions: anger, fear, sadness and joy. the slides range from 0 to 100.

This result will be considered as a continuous numerical variable.

4) *Tendency to maintain or break social ties, depending on the amount of discussion and type of argumentation.*

A behavioral variable. In the same vignettes presented for dependent variable 3, participants will also have to decide whether to break their relationship with the person presented or prefer to maintain their social ties.

This variable is binomial (0 = maintains ties; 1 = breaks ties).

5) *Self-reported emotions (anger, fear, and happiness and sadness) (Marcus et al., 2017) upon exposure to a discussion situation with friends or family, with political or non-political topics.*

Participants are shown another vignette with various political situations and respond to four slides in a self-reported manner with different emotions: anger, fear, sadness and joy. the slides range from 0 to 100.

This result will be considered as a continuous numerical variable

6) *Tendency to avoid discussion or express political disagreement according to type of social bond (family/friend) and topic of discussion (political/non-political).*

A behavioral variable. In the same vignettes presented for dependent variable 5, participants will also have to decide whether they openly discuss or prefer to avoid discussion.

This variable is binomial (0 = avoid discussion; 1 = discuss openly).

4. How many and which conditions will participants be assigned to?

It is important to note that for the assignment of experimental conditions a block randomization (Gerber & Green, 2012) will be performed considering two variables: membership in echo chambers and levels of digital citizenship.

Echo chamber membership is classified based on a recently validated scale (Kaakinen et al., 2020) and divided into two levels: low membership and high membership.

On the other hand, digital citizenship is a reduced scale of a widely validated (Choi, 2016; Choi et al., 2017; Lozano Díaz & Fernández Prados, 2018) and divided into two groups: low digital citizenship and high digital citizenship.

In this way there are 4 balanced blocks that will allow us to do subgroup analysis in each experimental condition

Study 1 – List Experiment

We will randomly assign participants to 1 of 3 possible conditions: Control, like-minded and opposite.

1) Participants in the control group were asked to respond about their level of anger based on a list of three statements: "Your AFP [Mortgages agency in Chile] has lost one-third of your savings because of bad financial decisions."/ "Big companies pollute the environment" / "Professional sports players sign contracts worth hundreds of millions"

2) Participants in the like-minded group will be rated based on the answer to a previous question, whether they believe that during the October 2019 social mobilizations human rights were violated.

If participants say they agree or strongly agree with this statement, they respond their level of anger to the following set of phrases: "Your AFP has lost a third of your savings because of bad financial decisions"/ "Professional athletes sign contracts for hundreds of millions"/ "Big companies pollute the environment"/ "A new neighbor hands you a poster that says 'The only 18th I celebrate is October'" [a play on words because Chile's national holidays are celebrated on September 18].

If participants say they disagree or strongly disagree with this statement, they answer their level of anger in front of the following set of statements: "Your AFP has lost a third of your savings because of bad financial decisions"/ "Professional sportsmen sign contracts for hundreds of millions"/ "Big companies pollute the environment"/ "A new neighbor hands you a poster that says 'No more criminal outburst in Chile!'"

3) In the participants of the opposite group it is the same as the like-minded group but in opposition. The same question about human rights violations is used as a logic.

If participants say they disagree or strongly disagree with this statement, they respond their level of anger to the following set of phrases: "Your AFP has lost a third of your savings because of bad financial decisions"/ "Professional athletes sign contracts for hundreds of millions"/ "Big companies pollute the environment"/ "A new neighbor hands you a poster that says 'The only 18th I celebrate is October'" [a play on words because Chile's national holidays are celebrated on September 18].

If participants say they agree or strongly agree with this statement, they answer their level of anger in front of the following set of statements: "Your AFP has lost a third of your savings because of bad financial decisions"/ "Professional sportsmen sign contracts for hundreds of millions"/ "Big companies pollute the environment"/ "A new neighbor hands you a poster that says 'No more criminal outburst in Chile!'"

Study 2 – Fake news

We will randomly assign participants to 1 of 3 possible conditions: Control, like-minded and opposite. On this occasion, questions on ideological self-positioning will be used, obtaining four categories: left, center, right and "none", since in Chile the process of political disaffection is deep and long-standing. In the target group people are presented with a set of 7 items, which are news headlines. people must decide whether they consider these headlines to be true or false.

1) In like-minded Group

It is classified in this way: Those who classify themselves as left, receive 7 news items related to the left (unions, left-wing characters, women's work, about state control, etc); Those who classify themselves as right-wing will see 7 items related to it (entrepreneurship, repression, relationship with military, crime, migration, etc). People who declare themselves to be of the center will have their 7 items related to aversion to violence, value of individual freedoms, etc. And in the case of those who classify themselves as "none" they have 7 items on political corruption, abuses on the part of the State, relationship between business and politics.

2) In opposite group

In the opposing group, the participants will respond to opposing ideas, established as follows:

- If the participant identifies himself as a leftist, he will be presented with the right-wing set.
- If the participant is a right-winger, he/she will be presented with the left-wing set.

- If the participant is from the center or "none", he/she will be randomly presented with the left or right set.

3) in control group

In the control group, 7 items are randomly presented as a mixture of all the previously described sets, maintaining the proportion of four false and three real.

all experimental conditions have three true and four false items (but people do not know this), so as to make them more comparable.

Study 3 – Vignette Experiment on stretch ties and political discussion

In this vignette experiment the participants will be divided into four experimental conditions, divided into two two-level variables. This 2x2 factorial design is shown in the following table.

	Type of argumentation (validate argument or misinformation)	
Type of social bond (friend or acquaintance)	Friend + validate argument	Friend + misinformation argument
	Acquaintance + validate argument	Acquaintance + misinformation argument

This vignette presents an argumentation around the October social revolt in Chile, 2019. Each vignette (or factor) is a different way of arguing: a friend using valid arguments in public opinion (in other words: without misinformation), a friend giving an opinion based on misinformation, an acquaintance giving an opinion based on valid argumentation, and an acquaintance giving an opinion based on misinformation.

Study 4 – Vignette Experiment in political discussion with parents and friends

In this vignette experiment the participants will be divided into four experimental conditions, divided into two two-level variables. This 2x2 factorial design is shown in the following table.

	Type of conversation (political or non-political)	
type of social bond (parent or friend)	Parent + political conversation	Parent + Non-political conversation
	Friend + political conversation	Friend + Non-political conversation

In this vignette a variable argumentation is presented: it can be "political" or "non-political"; those who answer the political topic will talk about migration, and those who talk about non-political topics will talk about family inheritance or disagreements between friends. The second factor relates to the type of person I am dealing with: whether it is a relative (a cousin) or a friend.

5. Specify exactly which analyses you will conduct to examine the main question/hypothesis.

To address Hypothesis 1, we will run an ordinal logistic regression with levels of anger included as our outcome/dependent variable, and treatment/control included as our predictor/independent variable. We will enter membership to echo chambers (two levels) and digital citizenship (two levels) as covariates in the balanced model. [A p-value of less than .05](#) will indicate a significant effect of the predictor variable(s) on our outcome/dependent variable, levels of anger.

To address Hypothesis 2, we will run an ANOVA with a number of correct answers such as our outcome/dependent variable, and treatment/control included as our predictor/independent variable. A p-value of less than .05 will indicate a significant effect of the predictor variable(s) on our outcome/dependent variable, number of correct answers.

To address Hypothesis 3, we will run a binomial logistic regression with likelihood of breaking social ties included as our outcome/dependent variable, and treatment/control included as our predictor/independent variable. We will enter membership to echo chambers (two levels) and digital citizenship (two levels) as covariates in the balanced model. A p-value of less than .05 will indicate a significant effect of the predictor variable(s) on our outcome/dependent variable, likelihood of breaking social ties.

To address Hypothesis 4, we will run a binomial logistic regression with likelihood of open discussion included as our outcome/dependent variable, and treatment/control included as our predictor/independent variable. We will enter membership to echo chambers (two levels) and digital citizenship (two levels) as covariates in the balanced model. A p-value of less than .05 will indicate a significant effect of the predictor variable(s) on our outcome/dependent variable, likelihood of open discussion.

Study 1 – List Experimental

In this study we will first analyze the difference between the means of each of the experimental conditions. This is a basic but powerful form of analysis in experimental designs.

Secondly, a Kruskal Wallis hypothesis test will be performed to observe if there is a statistically significant difference for qualitative variables and in non-parametric samples.

Finally, an ordinal logistic regression will be performed, specifically using the ordered logit model using three analysis models: model 1 = "treatment" variable, model 2 = model 1 + echo chamber membership, model 3 = model 2 + digital citizenship.

6. Any secondary analyses?

To test all the hypotheses, an analysis of difference between the means will be performed as a base element of the experiments.

for hypotheses 1, 3 and 4, the Kruskal Wallis test for non-parametric variables will also be performed.

7. How many observations will be collected or what will determine the sample size? No need to justify decision, but be precise about exactly how the number will be determined.

Our final sample will reach a maximum of N= 750 participants, of different ages, economic income, political positions and areas of the country. Only people 18 years of age or older can answer.

As it is a sample drawn from a panel of participants, only people aged 18 years or older can answer.

8. Anything else you would like to pre-register? (e.g., data exclusions, variables collected for exploratory purposes, unusual analyses planned?)

Participants under 18 years of age are excluded.

Only persons who have completed the survey in full will be considered as valid cases.

In order to control the people who will enter the research, quotas were established for entering the survey. 188 people between 18 and 29 years old, 188 between 30 and 40 years old, 188 between 41 and 65 years old, and 186 over 65 years old will be able to enter the survey.

The age brackets are selected based on the division made by Lindh et al. (Lindh et al., 2019) based on the political generations that have lived in Chile.

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