

# The Role of Social Movement Organizations in Social Media

Evidence from the Chilean Student Movement

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# Agenda

- Introduction
- The Chilean Student Movement
- Hypotheses
- Data Collection
- Methodology
- Results
- Discussion

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# Introduction



## Social Movements in the Digital Era

Sources: Reuters, occupy.com, CNN



# Introduction



Social media has enabled people to start new movements without formal organizational structures

(Lovejoy and Saxton, 2012; Tufte, 2013; Howard and Hussain 2011; Bennett and Segerberg, 2012; Mason, 2012; Castells 2009)

Source: Slate.com



# Introduction



Are organizations still important  
for social movements?

Source: popularresistance.org

# Introduction



Social Movement Organizations (SMOs) continue enabling collective action and maintaining movements' existence.

(Karpf, 2016; Gerbaudo, 2016; González-Bailón, 2013)

Source: Olmo Calvo



# Introduction

This study sets out to identify the roles that organizations and their leaders perform in online environments.

Source: REUTERS/Laszlo Balogh



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# The Chilean Student Movement

- Its peak was between 2011-2014.
- Mr. Piñera was the president.
- Currently, Chile has 61 universities
  - 27 “Traditional” universities
    - 18 state universities
    - 9 private universities created before 1981
  - 34 “Private universities” created after 1981
- Less than 45% of the students study in “traditional” universities





# The Chilean Student Movement

## Student organizations

- By law, universities recognized by the Chilean government must have annually-elected student unions, supported by the university authorities.
- Once the elections are over, the new leaders of each university establish a national student union (CONFECH) to set the agenda of this social movement.



Source: The Clinic

Gómez-Zar4, 2018 (dgomezara@u.northwestern.edu)

# The Chilean Student Movement

## Main causes

- Lowest levels of public funding for higher education.
- Longest times to complete a degree (4~8 years)
- Financial-support based mostly on subsidized loans.
- Many universities used legal loopholes to turn profits.
- Job market crises



# The Chilean Student Movement

## Main demands

- Increase state support for public universities.
- More equitable admissions process, with less emphasis on standardized tests.
- Free public education
- Creation of a government agency to apply the law against profit in higher education.
- Improve accreditation processes
- End indirect state support for poor quality institutions
- Repeal of laws forbidding student participation in university governance.





# The Chilean Student Movement

## Social Media

- Diffusion and communication was supported by social media tools (Valenzuela et al., 2014)
- Organizations and leaders used primarily Twitter and Facebook to diffuse and coordinate massive protests.
- Access to the Internet increased from 45% in 2011 to 66.5% in 2013.



Source: CONFECH

Gómez-Zará, 2018 (dgomezara@u.northwestern.edu)

14











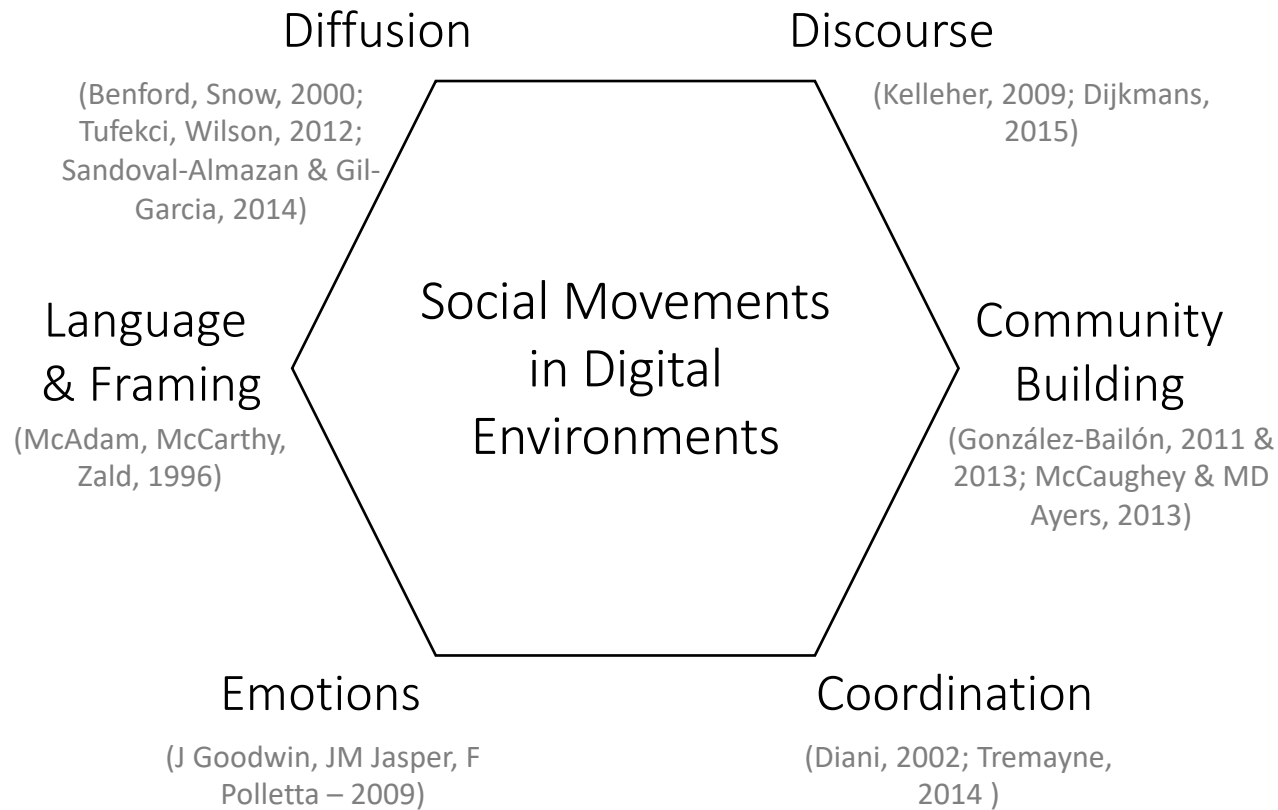


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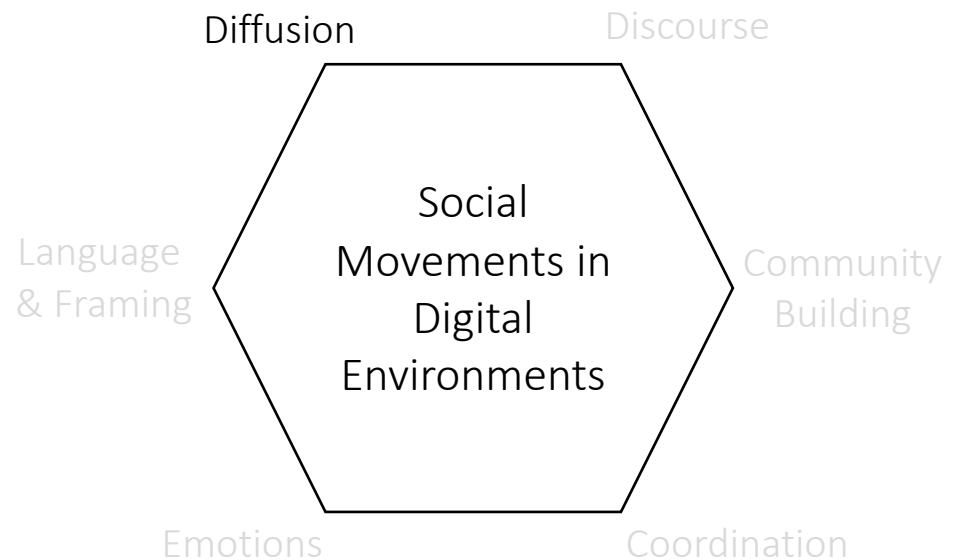
# Hypotheses



# Hypotheses

1

Organizations and their leaders used Twitter strategically to promote themselves and each other.

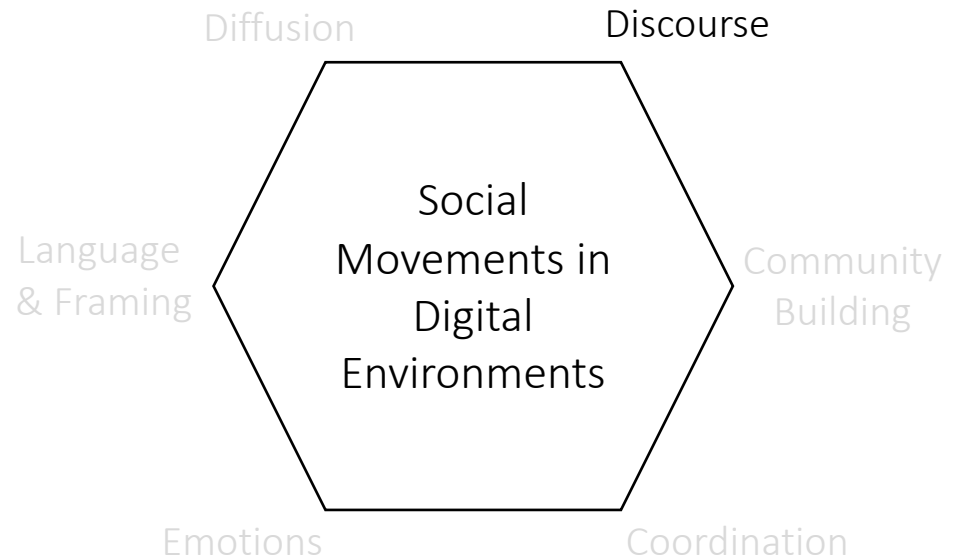




# Hypotheses

2

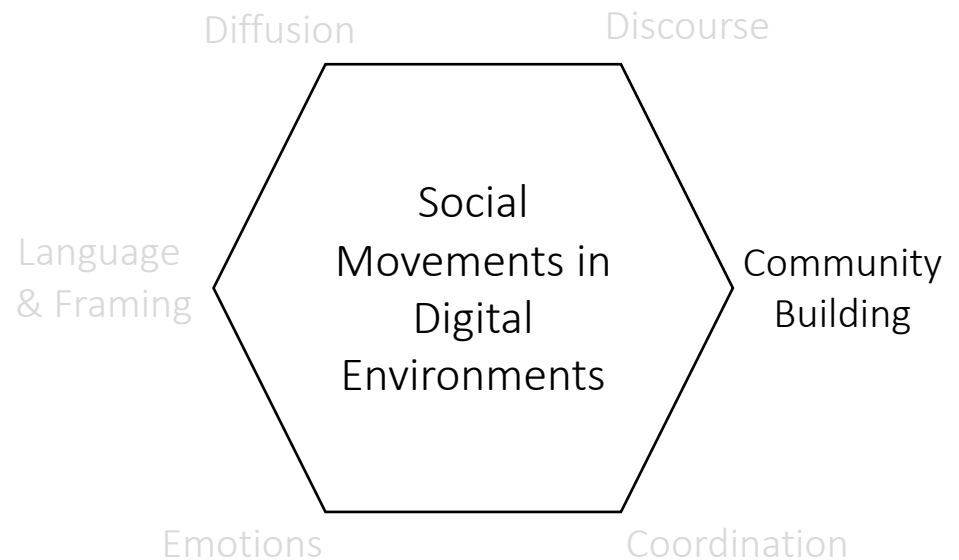
Organizations and their leaders used Twitter strategically to establish conversations with social media users.



# Hypotheses

3

Organizations interacted with less popular social media users, while leaders interacted with more popular users.

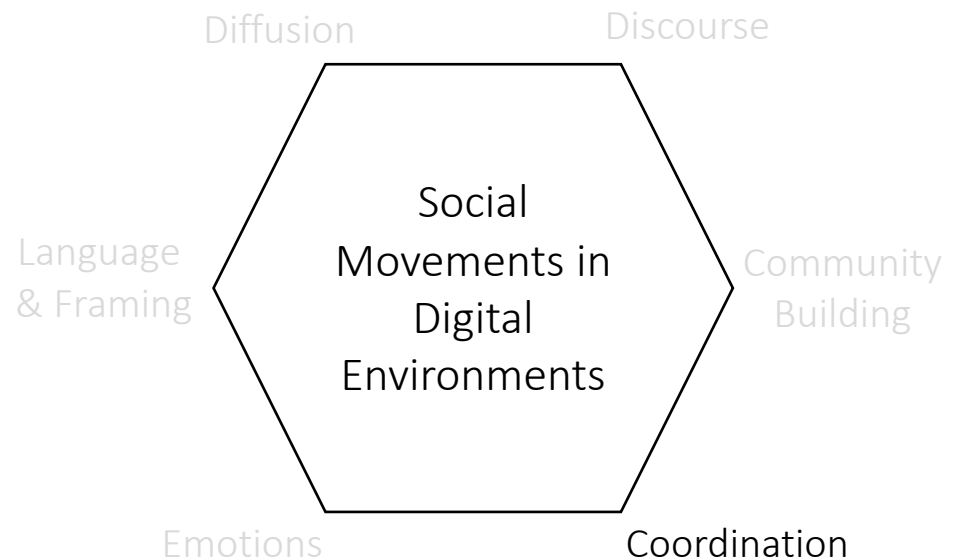




# Hypotheses

4

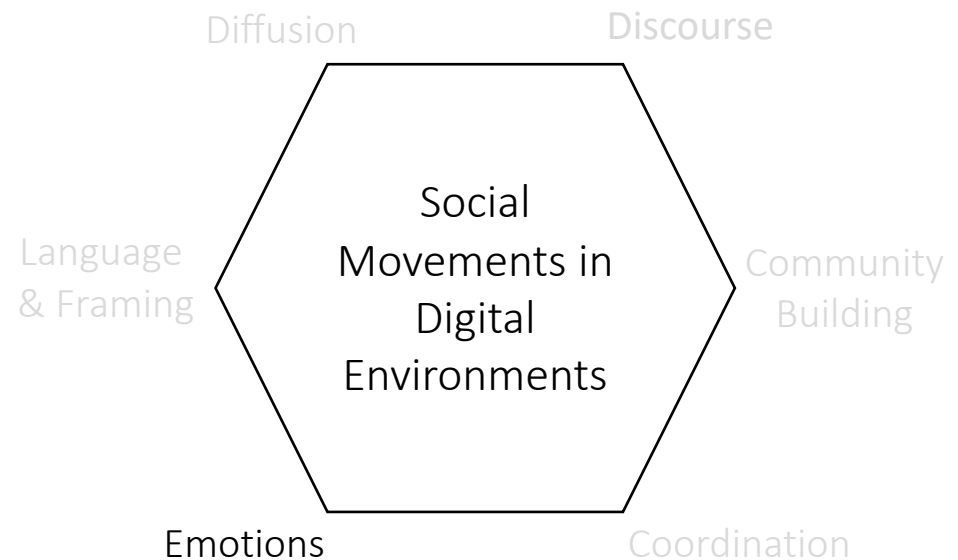
Organizations shared more informational resources on Twitter than their leaders did.



# Hypotheses

5

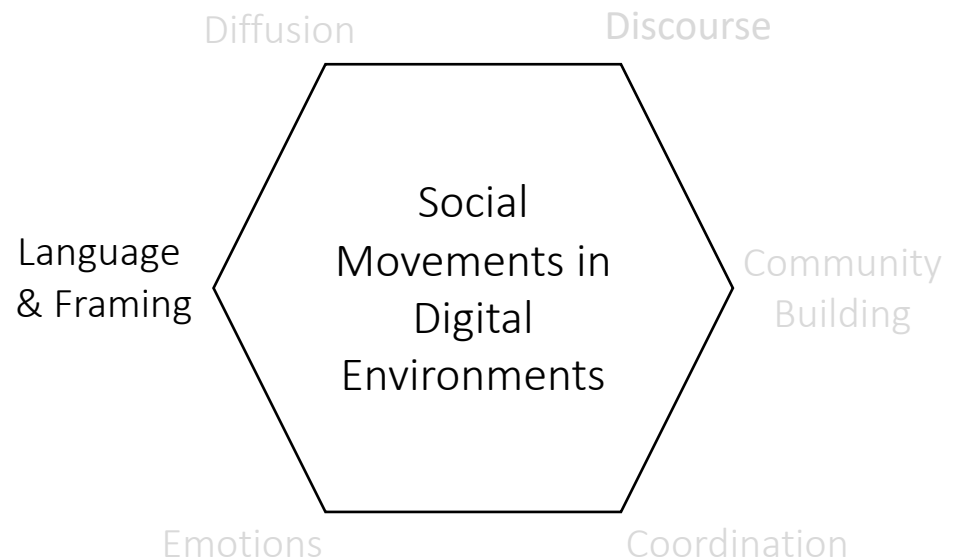
Organizations' made more neutral and consistent statements than their leaders over time.



# Hypotheses

6

Organizations' statements are more aligned with the movement's goals than leaders' statements.





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# Data Collection

- We used *Topsy Pro Analytics* to collect tweets.
- We established three datasets of tweets related to this movement during three years (2011-2013).
- In total, we collected 629,555 tweets from key users and hashtags.



# Data Collection

## Datasets

- 227,819 tweets collected from 20 Hashtags.
- 86,664 tweets from 41 organizations' accounts.
- 315,072 tweets from 86 leaders' accounts.





# Data Collection

Using the hashtags' tweets, we built two types of networks:

## Diffusion networks

### Retweet

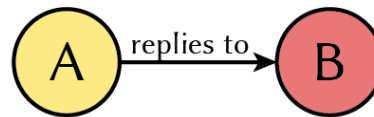
RT @B Tomorrow  
we'll march ...



## Discourse networks

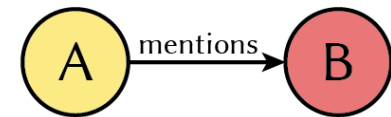
### Reply

@B Do you agree  
with ...



### Mention

Today @B said  
...



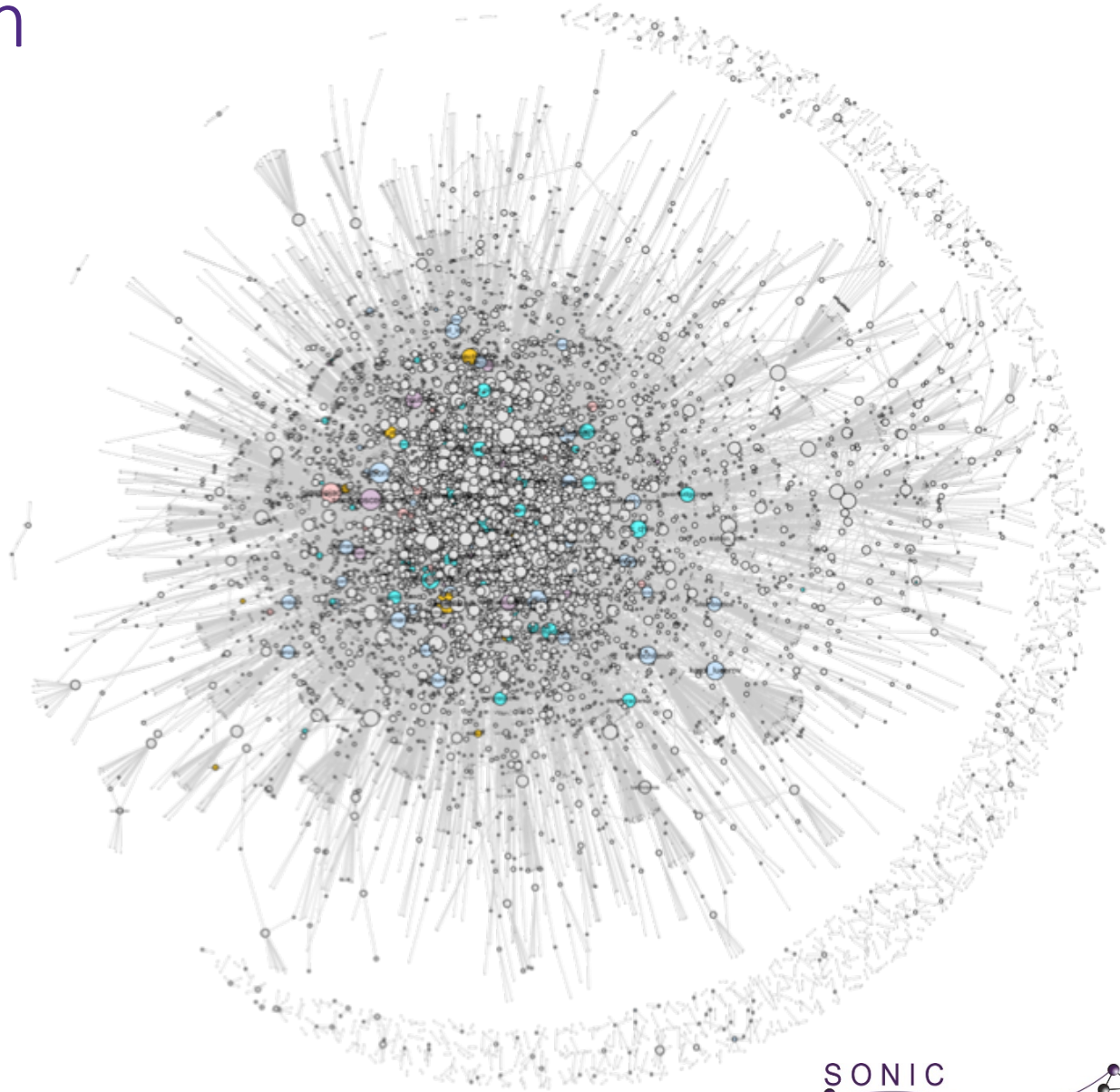
# Data Collection

## #YoApoyoALosEstudiantes

### Diffusion Network

14,964 users

24,765 retweets



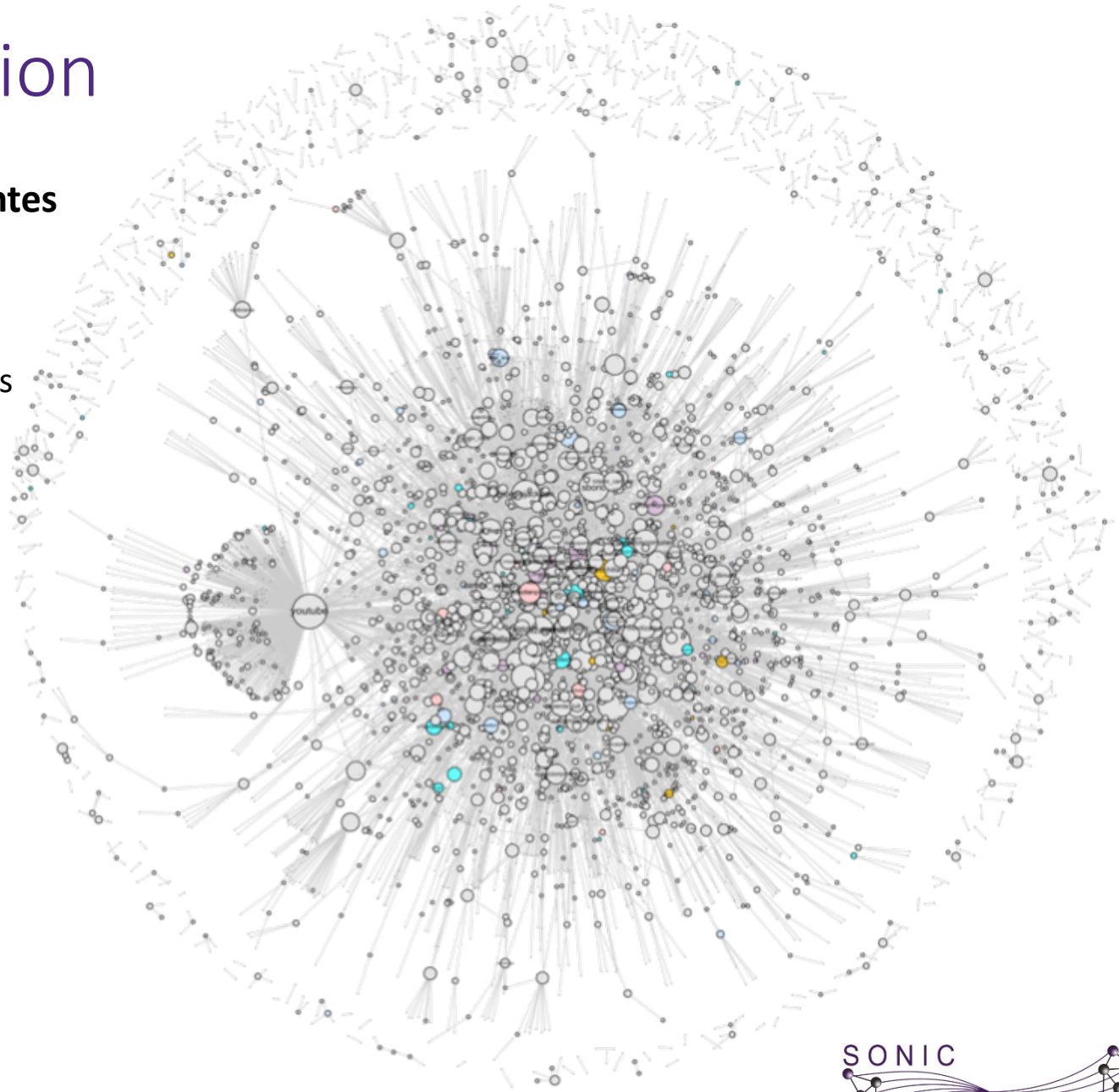
# Data Collection

## #YoApoyoALosEstudiantes

Discourse network

6,104 users

9,443 replies and mentions





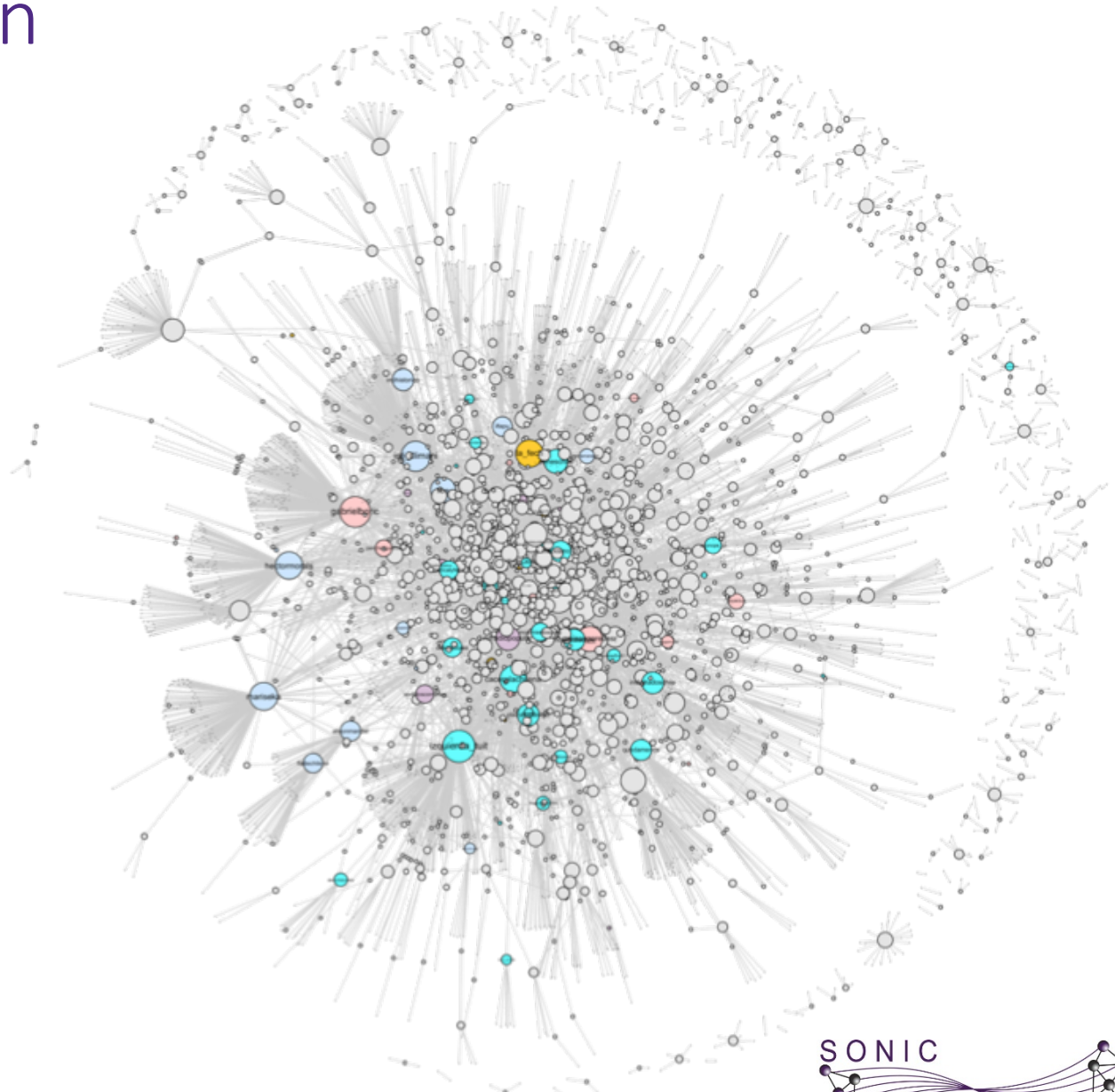
# Data Collection

## #FuerzaEstudiantes

Diffusion Network

5,862 users

8,208 retweets



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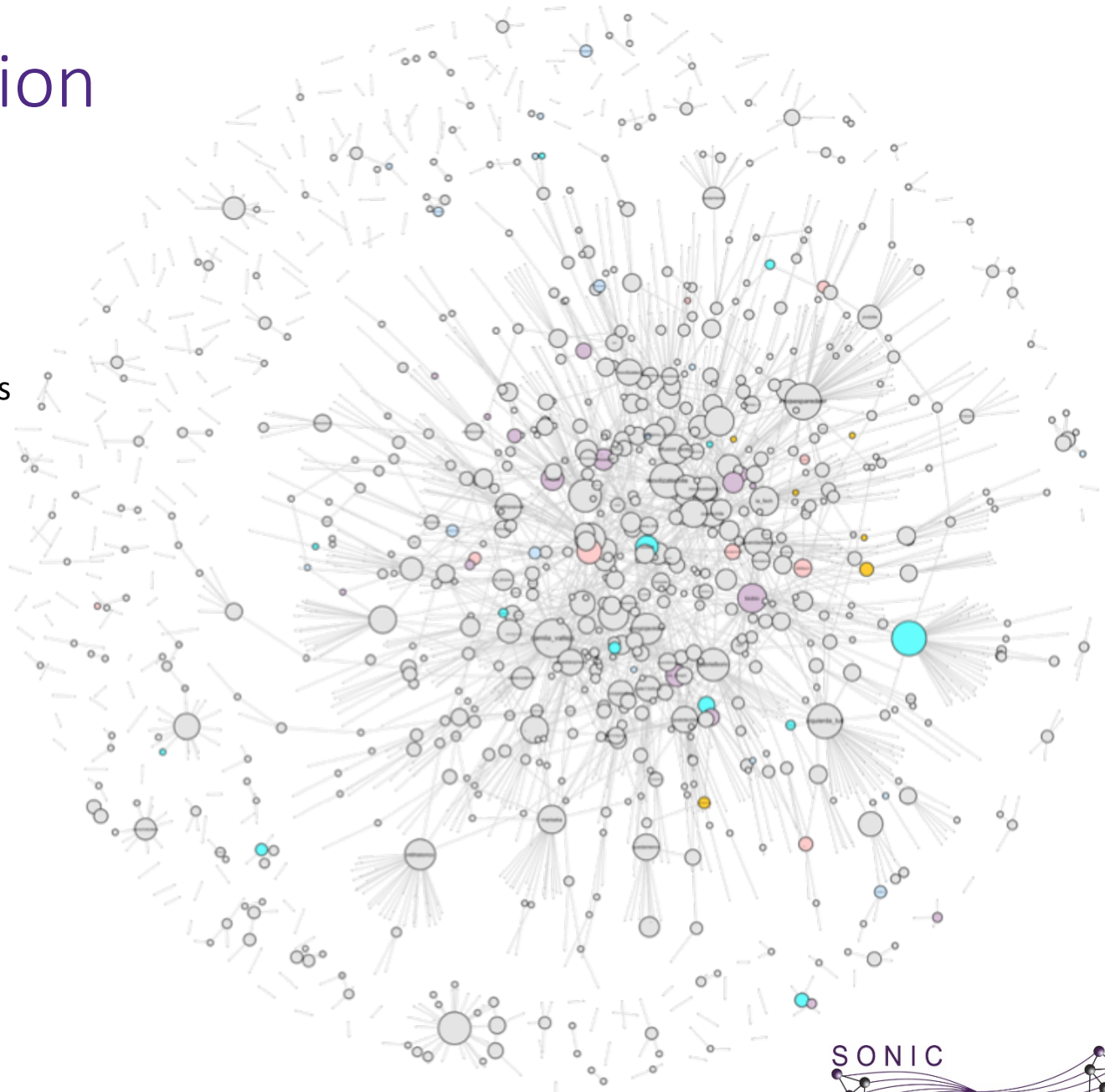
# Data Collection

## #FuerzaEstudiantes

Discourse network

2,024 users

2,453 replies and mentions



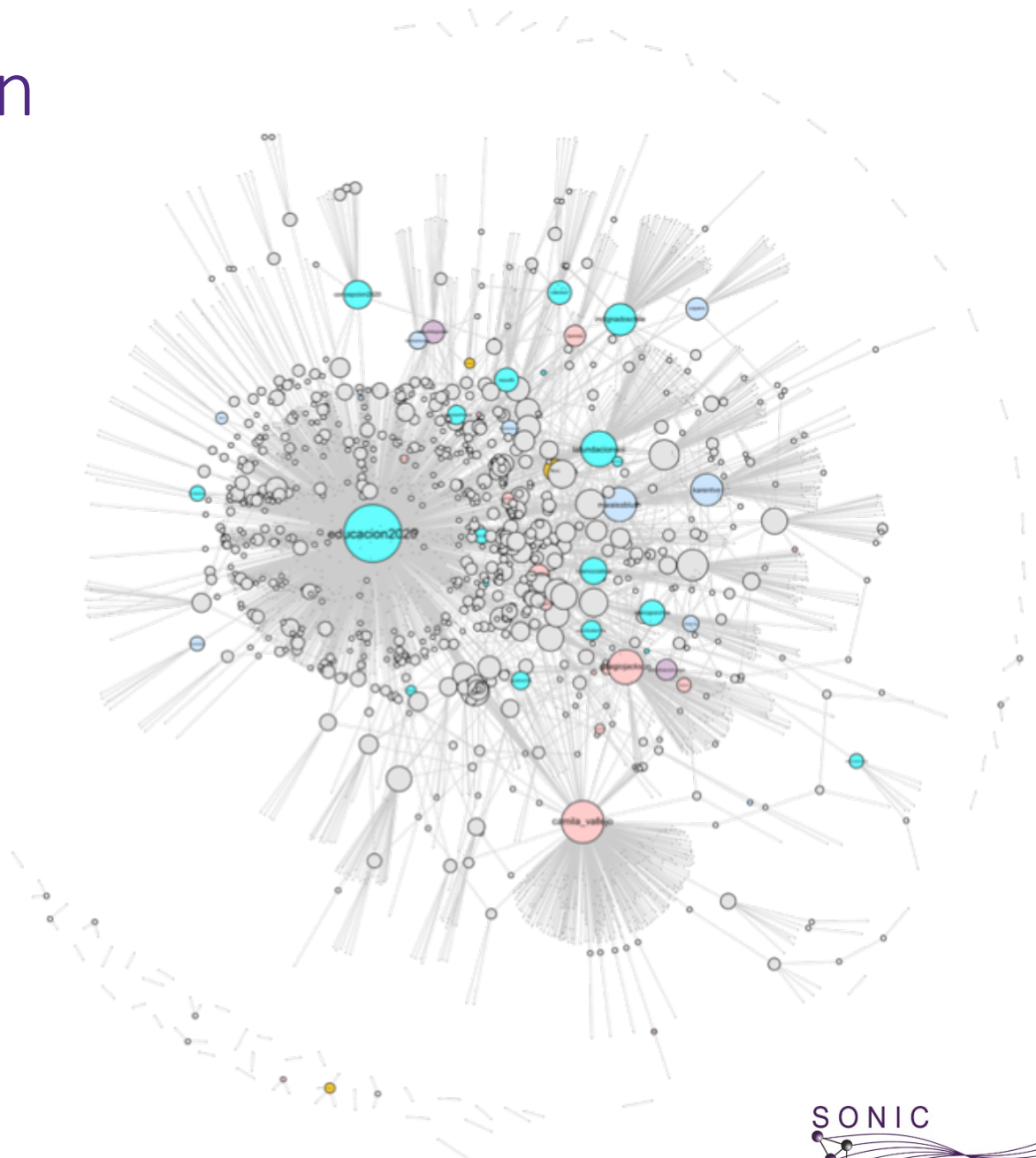
# Data Collection

## #EducaciónPúblicaAhora

### Diffusion Network

3,226 users

4,912 retweets





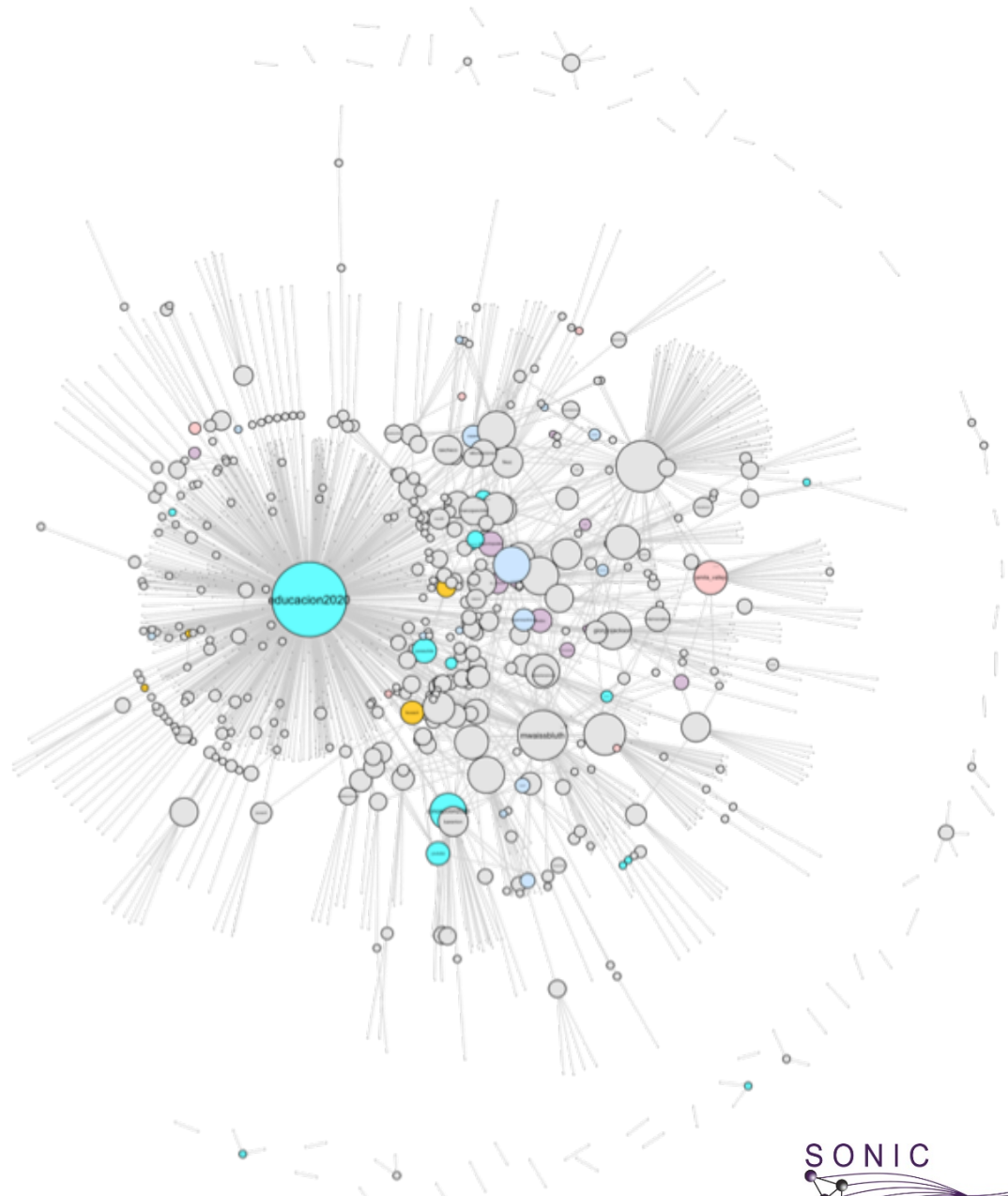
# Data Collection

## #EducaciónPúblicaAhora

Discourse network

1,533 users

2,126 replies and mentions



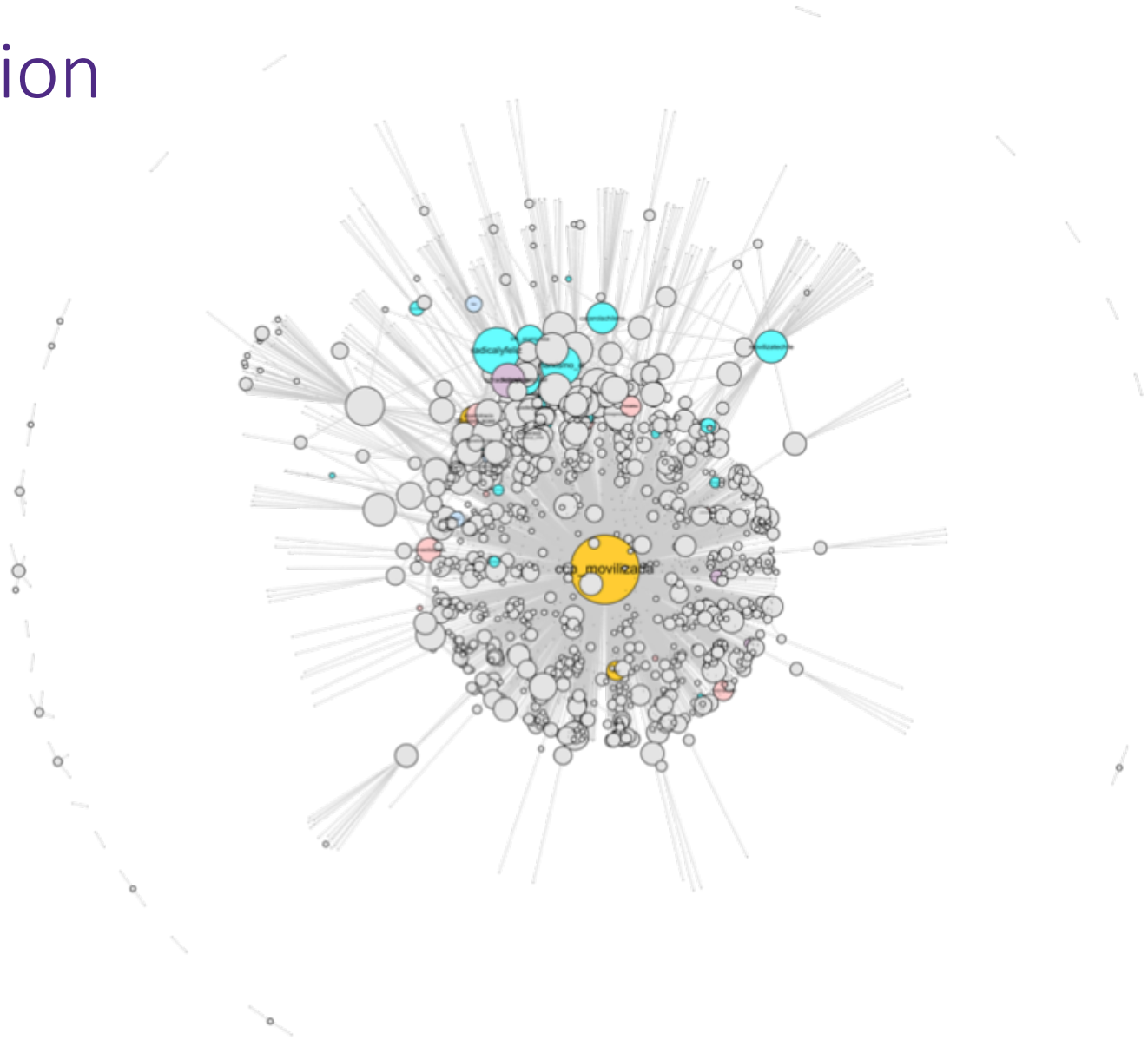
# Data Collection

## #SinTransar

### Diffusion Network

2,687 users

8,052 retweets



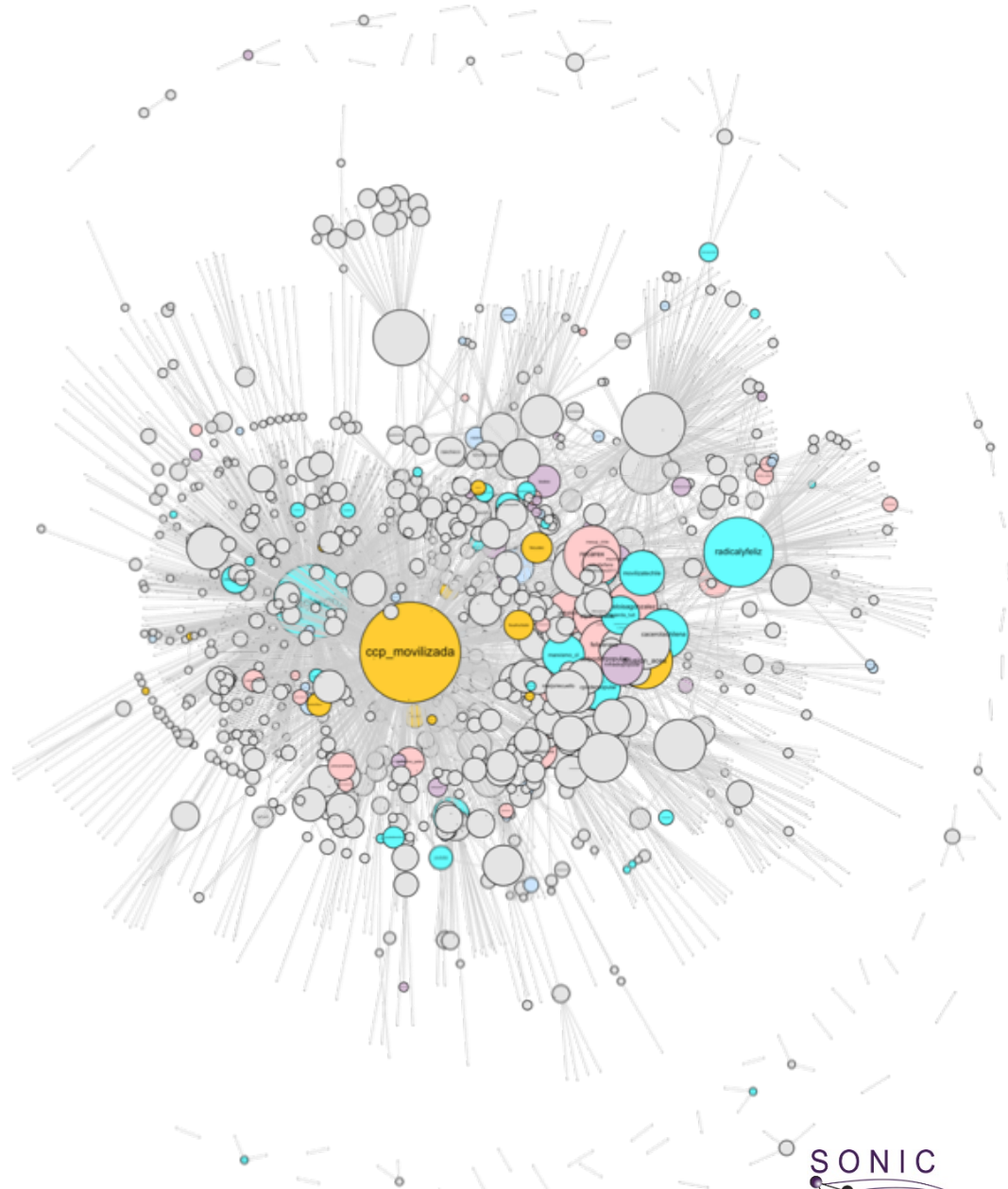
# Data Collection

## #SinTransar

Discourse network

919 users

2,535 replies and mentions





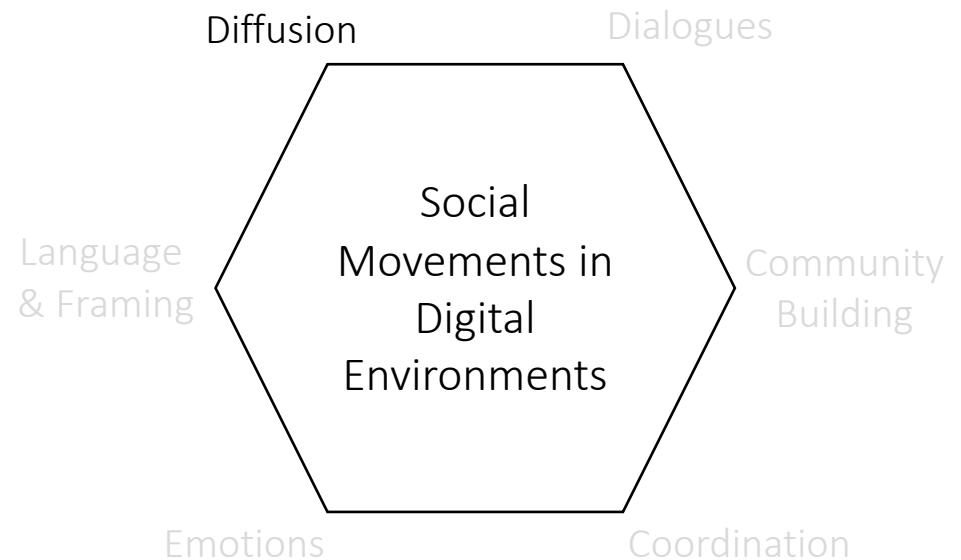
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## ERGM Analysis

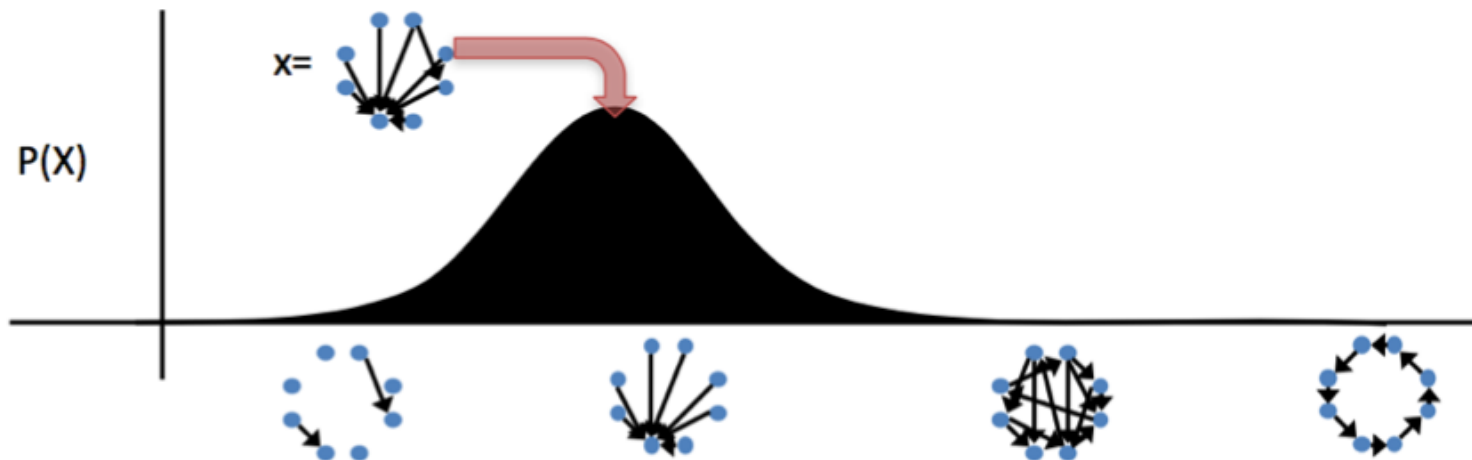
We checked if existed statistically significant differences between the observed networks and random networks with the same number of nodes.

$$P(Y = y) = \frac{1}{\kappa(\theta)} e^{\theta^T g(Y)}$$



# Results

- Exponential Random Graph Models (ERGMs) demonstrate if a specific network attribute is present in the observed network.
- An ERGM simulates several random networks and compares the observed attribute with the simulated networks.



# Results

| Controls                       | Estimate (SD)    | Odds-ratio |
|--------------------------------|------------------|------------|
| Structure Effects              |                  |            |
| Edges                          | -4.97 (0.07) *** | 0.01       |
| Reciprocity                    | 0.33 (0.41) †    | 1.39       |
| Popularity                     | -6.71 (0.18) *** | < 0.01     |
| Activity                       | 2.70 (0.13) ***  | 14.89      |
| Hierarchical structure         | 1.00 (0.09) ***  | 2.71       |
| Same targets                   | 0.04 (0.01) ***  | 1.04       |
| Actor Attributes               |                  |            |
| Leaders to Leaders             | -1.82 (0.54) *** | 0.16       |
| Leaders to Common Users        | -1.91 (0.37) *** | 0.15       |
| Leaders to Organizations       | -0.32 (0.43) †   | 0.72       |
| Organizations to Leaders       | -0.68 (0.61) †   | 0.51       |
| Organizations to Common Users  | 0.27 (0.27) †    | 1.31       |
| Organizations to Organizations | 0.22 (0.52) †    | 1.24       |
| Common Users to Leaders        | 0.63 (0.05) ***  | 1.88       |
| Common Users to Organizations  | 0.41 (0.06) ***  | 1.51       |

†  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Gómez-Zarà, 2018 (dgomezara@u.northwestern.edu)

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Organizations and their leaders retweeted less between themselves than expected.

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Organizations tended to retweet messages from common-users.

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Common users  
retweeted  
proportionally less  
organizations'  
tweets than leaders'  
tweets

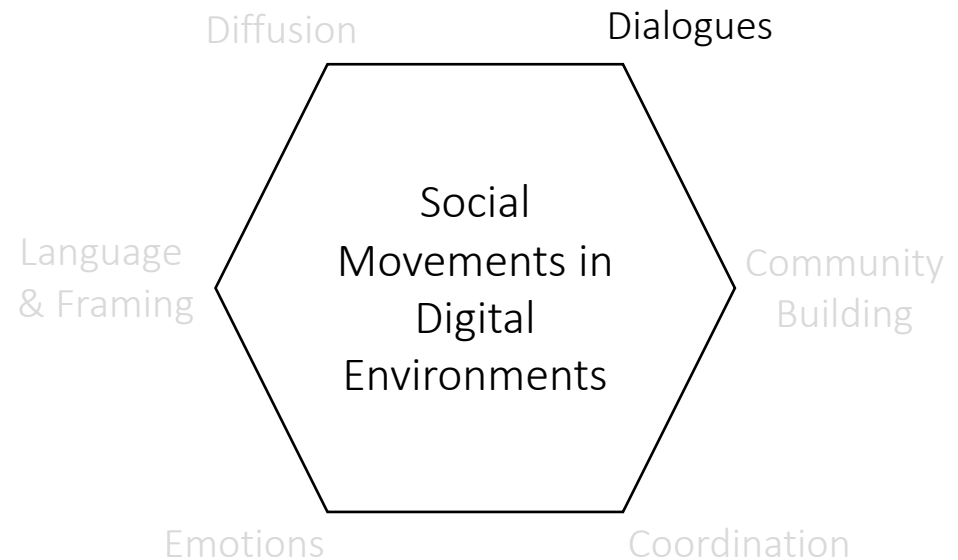
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# Results

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Organizations and their leaders used Twitter strategically to establish conversations with social media users.



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| Reciprocity                   | 2.07 (0.17) ***  | 7.93       |
| Popularity                    | -0.44 (0.11) *** | 0.65       |
| Activity                      | -1.58 (0.11) *** | 0.21       |
| Hierarchical structure        | 0.91 (0.07) ***  | 2.47       |
| Same targets                  | 0.02 (0.01) **   | 1.02       |
| Actor Attributes              |                  |            |
| Leaders to Leaders            | 0.73 (0.14) ***  | 2.07       |
| Leaders to Common Users       | 0.02 (0.11)      | 1.02       |
| Leader to Organization        | 0.51 (0.28) †    | 1.67       |
| Organization to Leaders       | 0.94 (0.25) ***  | 2.55       |
| Organizations to Common Users | -0.84 (0.2) ***  | 0.43       |
| Organization to Organization  | 0.38 (0.34)      | 1.46       |
| Common Users to Leaders       | 0.58 (0.09) ***  | 1.78       |
| Common Users to Organizations | 1.05 (0.08) ***  | 2.86       |

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Organizations and their leaders mentioned/replied to more users from their own groups than expected.

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Organizations mentioned and replied to leaders more than expected, but less to people.

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Common users mentioned/replied to more organizations than leaders.

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Leaders tended to reply and mention other leaders and organizations.

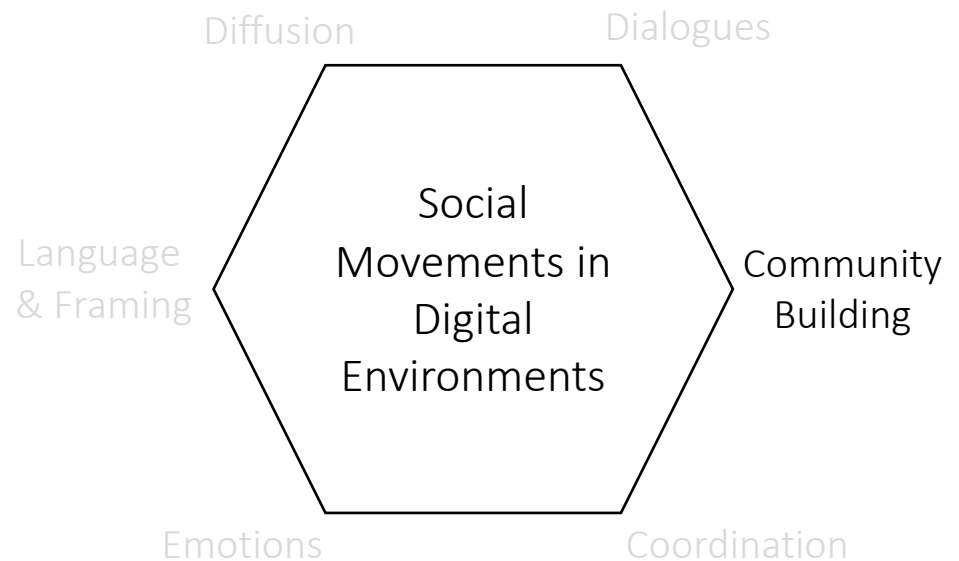
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# Results

3

Organizations interacted with less popular social media users, while leaders interacted with more popular users.



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Organizations interacted with less popular social media users, while leaders interacted with more popular users.

## Average neighbors' messages received

We analyzed with whom organizations and leaders interacted on each Twitter interaction network.

Did leaders talk with more popular users than organizations did?

# Results

## Average neighbors' messages received

| Retweet Network |                   | Reply Network |           | Mention Network |                 |
|-----------------|-------------------|---------------|-----------|-----------------|-----------------|
| Leaders         | SMOs              | Leaders       | SMOs      | Leaders         | SMOs            |
| 370 (373)       | <b>252 (224)*</b> | 18 (28)       | 9.54 (11) | 113 (136)       | <b>58 (53)*</b> |

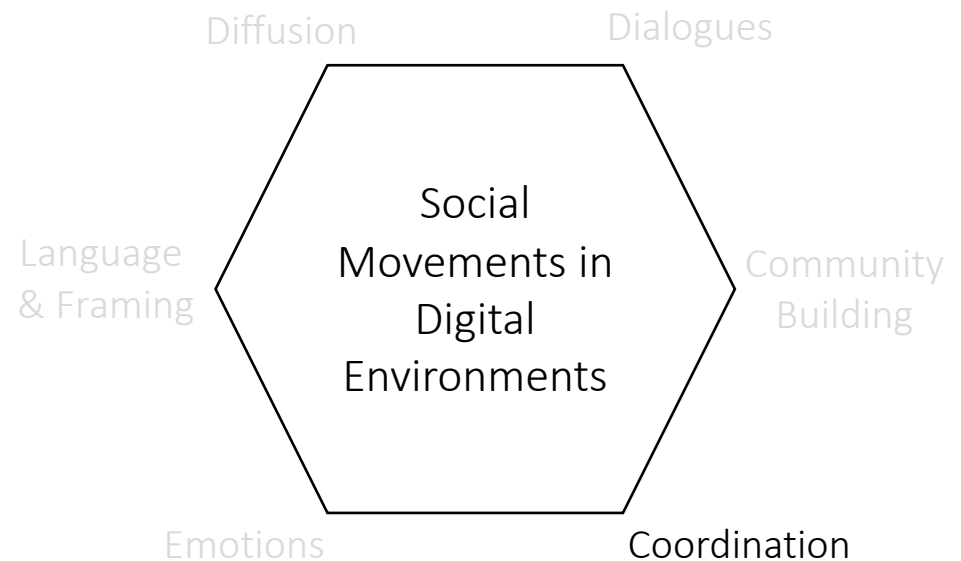
\*  $p < 0.05$

Organizations retweeted and mentioned *less-popular* users more than their leaders.

# Results

4

Organizations shared more informational resources on Twitter than their leaders did.



# Results

4

Organizations shared more informational resources on Twitter than their leaders did.

## Centrality Measures

- We compared network centrality measures in the Diffusion Networks.
- We counted and check if there were statistical differences between the number of links shared on Twitter, and the number of retweets made by each group.



# Results

## Descriptive statistics

|                            | Leaders (n=86)  | Organizations (n=41)   |
|----------------------------|-----------------|------------------------|
| # Links per user           | 16.93 (9.86)    | <b>59.64 (49.92)*</b>  |
| # Retweets per user        | 41.93 (23.87)   | <b>82 (59.53)*</b>     |
| # Times Retweeted per user | 272.07 (590.95) | <b>407.14 (615.52)</b> |

\*  $p < 0.05$

Organizations shared more links, retweeted more, and were retweeted more.

# Results

## Diffusion Networks Centrality Measures

|                      | Leaders (n=86) | Organizations (n=41)    |
|----------------------|----------------|-------------------------|
| Degree               | 26.65 (89.47)  | <b>64.13 (474.91)*</b>  |
| In-degree            | 23.91 (89.06)  | <b>58.017 (468.62)</b>  |
| Out-degree           | 2.74 (4.75)    | <b>6.11 (16.62)*</b>    |
| Hub                  | 0.02 (0.06)    | <b>0.03 (0.09)</b>      |
| Authority            | 0.02 (0.06)    | <b>0.04 (0.17)</b>      |
| Page Rank            | 0.004 (0.01)   | <b>0.007 (0.03)</b>     |
| Eigenvector          | 0.03 (0.07)    | <b>0.06 (0.17)</b>      |
| Betweenness          | < 0.001 (0)    | <b>0.001 (0.01)*</b>    |
| Estimate Betweenness | 7,751 (39,832) | <b>18,752 (95,390)*</b> |
| Clustering           | 0.05 (0.13)    | <b>0.06 (0.16)</b>      |

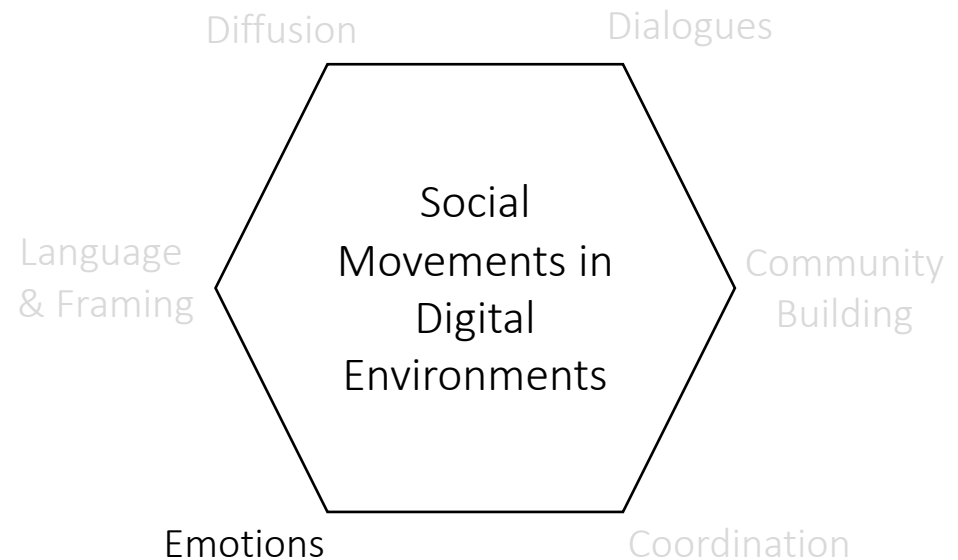
\*  $p < 0.05$

Organizations were central actors of the sharing information network.

# Results

5

Organizations' made more neutral and consistent statements than their leaders over time.



# Results

5

Organizations' made more neutral and consistent statements than their leaders over time.

## Sentiment Analysis

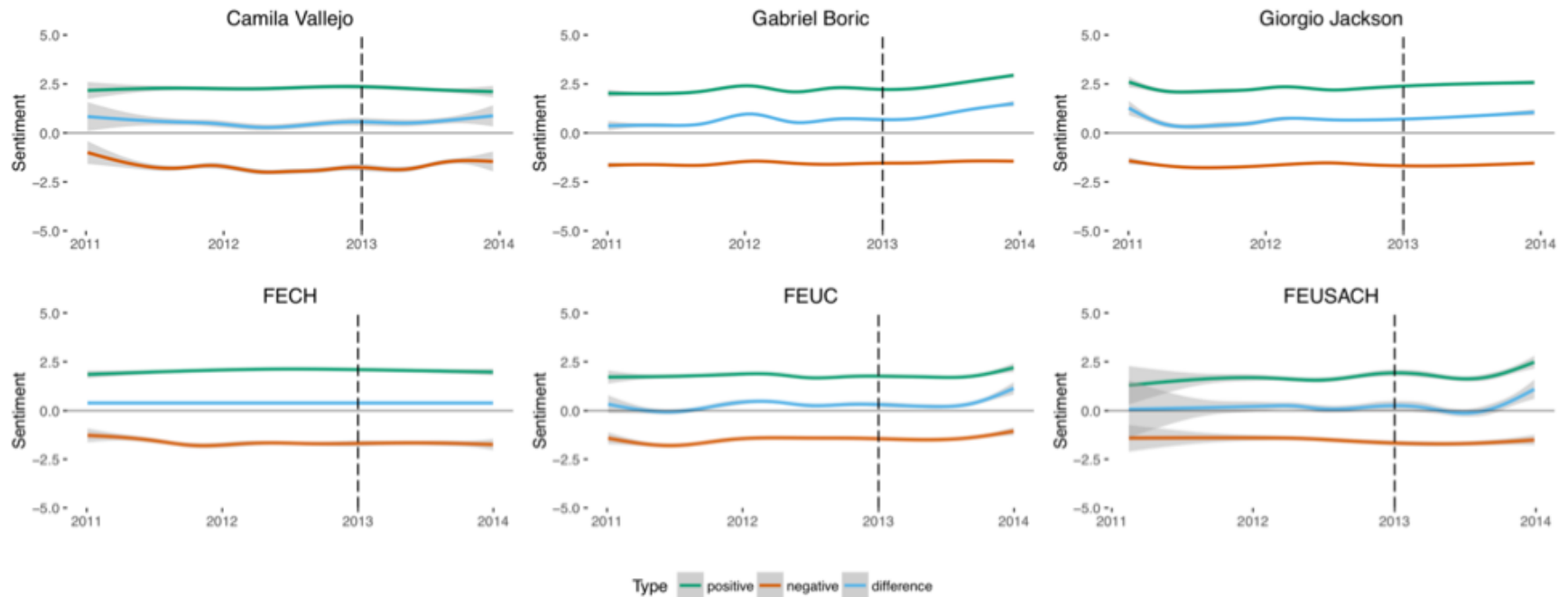
We analyzed the accounts of the three leaders who achieved parliamentary seats in 2013, and the three organizations from the top-ranked universities in Chile.

Longitudinal study over three years to compare if SMOs' statements.

We used Senti-Strength tool, which classifies each tweet with a positive (1 to 5) and negative score (-5 to -1).

# Results

## Sentiment Analysis





# Results

## Sentiment Analysis

|            | Leaders              | Organizations |
|------------|----------------------|---------------|
| Positive   | <b>2.32 (1.37)*</b>  | 1.84 (1.11)   |
| Negative   | <b>-1.58 (1.10)*</b> | -1.53 (1.06)  |
| Difference | <b>0.74(1.82)*</b>   | 0.31 (1.55)   |

\*  $p < 0.05$

Leaders' tweets were more emotional than organizations' tweets.

# Results

## Sentiment Analysis



|                      | As a leader (2012) | As a candidate (2013) |
|----------------------|--------------------|-----------------------|
| Camila Vallejo (+)   | 2.3 (1.26)         | 2.22 (1.25)           |
| Camila Vallejo (-)   | -1.83 (1.27)       | <b>-1.65 (1.19)*</b>  |
| Camila Vallejo (dif) | 0.47 (1.87)        | 0.56 (1.69)           |

\*  $p < 0.05$

Ms. Camila Vallejo was a candidate of the Communist Party  
Her messages became less negative in 2013.

# Results

## Sentiment Analysis



|                 | As a leader<br>(2012) | As a<br>candidate<br>(2013) |
|-----------------|-----------------------|-----------------------------|
| G. Jackson (+)  | 2.25 (1.35)           | <b>2.5 (1.38)*</b>          |
| G. Jackson (-)  | -1.61 (1.14)          | <b>-1.65 (1.13)*</b>        |
| G. Jackson (df) | 0.63 (1.81)           | <b>0.85 (1.86)*</b>         |



|               | As a leader<br>(2012) | As a<br>candidate<br>(2013) |
|---------------|-----------------------|-----------------------------|
| G. Boric (+)  | 2.2 (1.33)            | <b>2.54 (1.49)*</b>         |
| G. Boric (-)  | -1.57 (1.09)          | <b>-1.48 (1.01)*</b>        |
| G. Boric (df) | 0.63 (1.77)           | <b>1.06 (1.88) *</b>        |

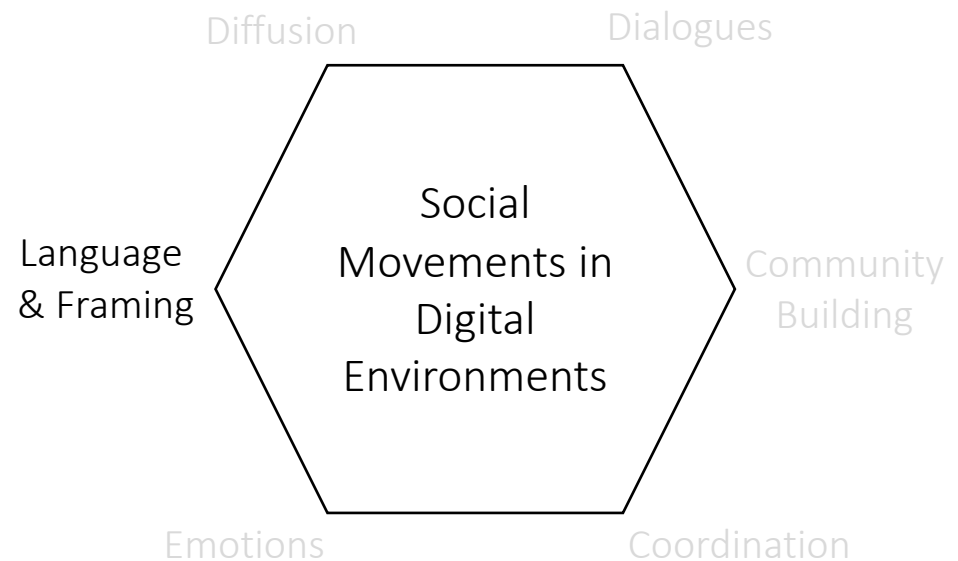
\*  $p < 0.05$

Mr. Jackson and Mr. Boric were creating their respective parties, and their messages became more positive.

# Results

6

Organizations' statements are more aligned with the movement's goals than leaders' statements.



# Results

6

Organizations' statements are more aligned with the movement's goals than leaders' statements.

## Qualitative Content Analysis

- We semantically analyzed the 100 most salient noun-keywords, following the categories provided by UCREL Semantic Analysis System.
- The accuracy of the automatic semantic analysis was manually corroborated through the analysis of the single keywords in context (KWIC) using the concordance software AntConc.



# Results

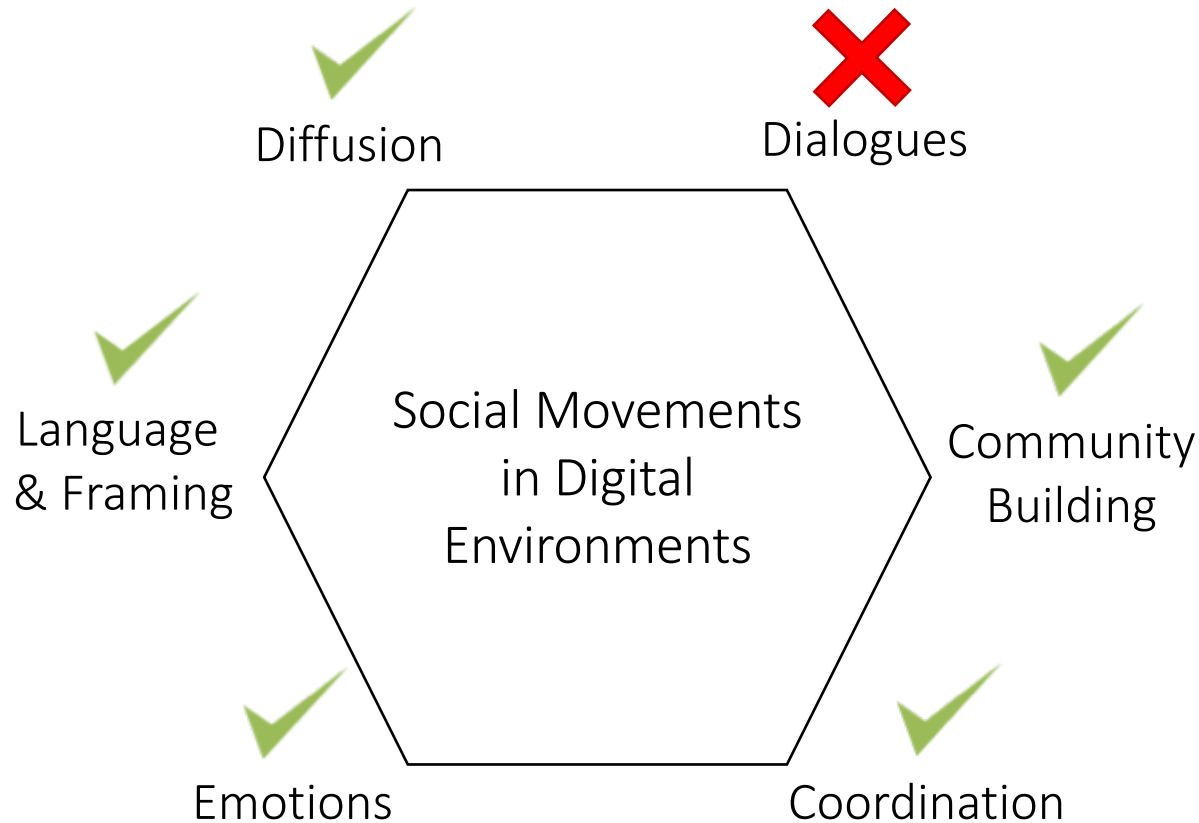
|                                          | Leaders                                                              | Organizations                                                                                                                                       |
|------------------------------------------|----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| G – government and public                | <i>Rdemocrática</i> ; JJCC; policital party, <i>concerta</i> , right | Production Development Corporation (CORFO), Ministry of Eucation (MINEDUC), minister, president, government, march, police (carabineros)            |
| I – money and commerce in industry       | job                                                                  | Scam, loans, ripped-off, banks, reduction, debtors, interests rate, occupation, strike.                                                             |
| P - education                            | UdeC (University of Concepción)                                      | High school students, u (university), scholarships, students, education, university(ies), families, campus, high school, classroom, students, dean. |
| Q – language and communication           | Greetings, stories.                                                  | News, diffusion, dissemination, statement, solution, declaration                                                                                    |
| S – social actions, states and processes | Hug, dude (wn), people, leaders, someone, mate, puta, wea            | Assembly, rights, federation, headquarter, community, beneficiary, federations, student movements.                                                  |

While leaders reflected a more relaxed, informal register, organizations used a neutral register, referring to educational, governmental and monetary areas

# Agenda

- Introduction
- The Chilean Student Movement
- Hypotheses
- Data Collection
- Methodology
- Results
- Discussion

# Discussion



# Discussion

- Student organizations and leaders used strategically social media to promote their goals and campaigns.
- Student organizations were more central actors than leaders: organizations were fundamental to connect different communities.
- Student organizations' messages showed a greater consistency on the movement's goals.
- The findings reveal the crucial role of student organizations, where they adapted individual identities to unite and galvanize of people under a common cause.



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