Effectiveness of Mediation on Gossip

New Mexico

Supercomputing Challenge

Final Report

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Team 130

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EXECUTIVE SUMMARY

This project studies the effectiveness of using mediators to slow or discourage the effects of gossip. For the purposes of this report, gossip is information that may or may not be correct and is spread or passed between people or organizations. Gossip encourages or discourages the subject of the information.

The data gained from this project focused on the rate of gossip spread. Since the data gain of this project depends on the participation and understanding of participants, we found that the results will vary depending on the following points:

- Timeliness of gossip
- Personal maturity (age) and gender of participants
- Personal understanding/experience of gossip consequences
- Ease of access to gossip sources – social media (Twitter, Facebook), texts, phone, etc.

We had initially chosen this topic for our project because we have been personally and organizationally affected by negative gossip that resulted in terrible and permanent consequences for the targeted individual. Additionally, several schools in our district were affected by gossip when a text message was mistakenly interpreted as a threat against the student body. Due to the fear created by the gossip, over 1,400 students out of 2,700 were absent for one day. These widespread absences created a significant loss of state funding which is based on student attendance.

Organizationally, many companies have strict confidentiality rules to protect their products, formulas, or other proprietary information that they have spent time and money to develop. In the same way, governments must keep secrets to protect their interests. In these cases, information sharing is not considered gossip but is treason and is punishable by death in many countries. For example, Edward Snowden had access to confidential intelligence data that he made public while a contracted computer data analyst for the NSA. This has resulted in the loss of good faith and ultimately will cost the United States' standing with its international allies and enemies. http://en.wikipedia.org/wiki/Edward_Snowden

INTRODUCTION

In this project, we attempted to describe the effectiveness of mediators and their training to control the spread of gossip personally or in an organization. We chose this topic because recently, a colleague was driven to make extreme and permanent personal decisions as a result of negative gossip. In order to help control the spread of gossip, we decided to study the effectiveness of mediators who have been specifically trained to help control how gossip is created and spread. Through our simulation we intend to show that mediators help to control the spread of gossip throughout a population.

DESCRIPTION

For our simulation our biggest limit was only having four variables instead of ten. This helped us to narrow down our results so we could get an accurate but still a random result. Prior to this experience we had never done any type of coding or even looked at Netlogo before the start of this year but our teacher convinced us it would be a great experience for us to learn, and it has been, especially at the kickoff. We hope that these skills we have learned can help us with our futures.

We accomplished this coding project through Netlogo using an epidemic type simulation. We also used many scientists and their opinions to further develop our code. We needed to learn the Netlogo program and the way it would work, so we started exploring with Netlogo and how it works and the different features and variables we could add into our code. When the coding began it took a lot of trial and error to get it actually functioning properly. We had many scientists who study social science and behavioral sciences help us to improve and add onto our code.

In our final Netlogo program, we used slider variables to control the number of mediators and their gossip mediation strength (the amount of training they have) to see the effects that

mediators can have on the spread of gossip throughout a simulated population. Figure 1 shows a screenshot of our software interface. We also used a graph that charts the data as time progresses in the simulation. There are three different types of people: the **brown figures** are the **non-gossipers,** the **blue figures** are the **mediators** which attempt to stop the gossipers, and the **red figures** are the **gossipers** who spread it to any brown figure with whom they come in contact. The software also has a counter which shows how many gossipers are on the screen at one time.

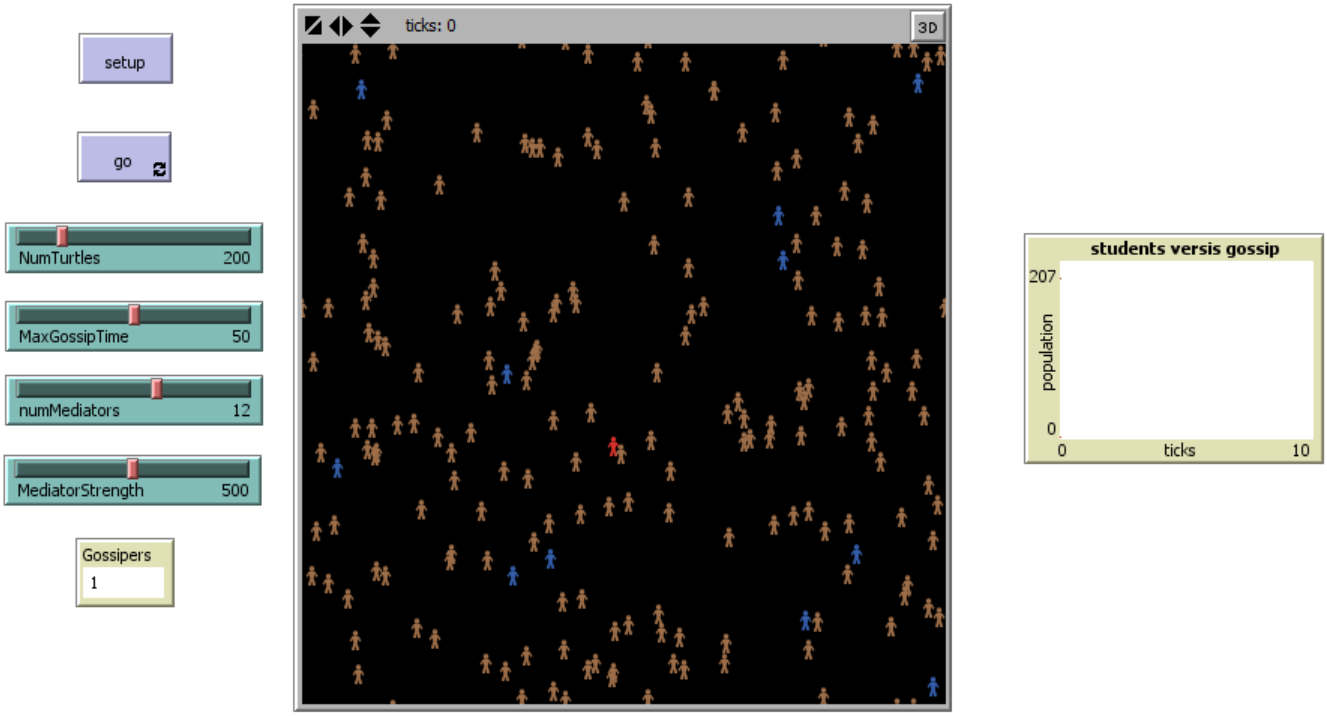

Figure 1 - Screenshot of software interface

SIMULATION CODE

```
globals[
  gossip-time]
to setup
  clear-all
  create-turtles NumTurtles     ;uses a slider to control the initial population of agents[
    set color brown   ;regular students
    set shape "person"
    setxy random-xcor random-ycor
    set gossip-time 0
    let i 0
      repeat numMediators[
      ask turtle i[
        set color blue  ;mediator/principal]
      set i i + 1]
        ask turtle 1
          set color red   ;gossip initiator
      set gossip-time 0]  ]
  reset-ticks   ;resets counter at beginning of program
end

to go
  ask turtles[
  if color = brown[
    move]
  if color = red[
    move
    spread-gossip  ;check-gossip-time]
  if color = blue[
    move
    mediate]
;if color = white;[
;  move;]]
  tick
end
to move      ;turtles have random movement
  right random 15
  left random 15
  forward 1
end

;to spread-gossip   ;red turtles will spread the gossip
  ;if count turtles-here with [color = red] > 0
;[  ;  set shape "person"
  ;  set color red
  ;  set gossip-time gossip-time + 1 ;]
;end

to spread-gossip   ;red turtles will spread the gossip
  ask turtles with [color = red] [
    if gossip-time < MaxGossipTime[
      set gossip-time gossip-time + 1]  ]
  ask other turtles-here with [color = brown][
      if random 10 < 5 [
```

```
      set color red
      set shape "person"]
   ;]
 ;ask turtles with [color = white];[
   ask other turtles-here with [color = brown][
     set color red
     set shape "person"]]
 end

;to check-gossip-time     ;once turtles gossip-time reaches the  MaxGossipTime allowed they will turn white
 ; if gossip-time > MaxGossipTime
 ; [
 ;   set shape "person"
 ;   set color white
 ; ]
;end

;to mediate    ;gossipers will be mediated by principal and will lose gossip-time
 ; if count turtles-here with [color = blue] > 0
 ; [
 ;   set gossip-time gossip-time - 5
 ; ]
;end

to mediate           ;gossipers will be mediated by principal and will lose gossip-time
  ask turtles with [color = blue][
    ask other turtles-here with [color = red][
      set gossip-time gossip-time - MediatorStrength
          if gossip-time < 0[
       set color brown
       set shape "person"]]
  end
```

RESULTS

In order to remove the gossip from society or keep the gossip from overwhelming the population it required a combination of many, well-trained mediators. However, the simulation also showed that human factors (randomness) can change the outcome of identical gossip simulations. Even if variables were left constant between two simulations, no two were the same. They all changed and gave different results.

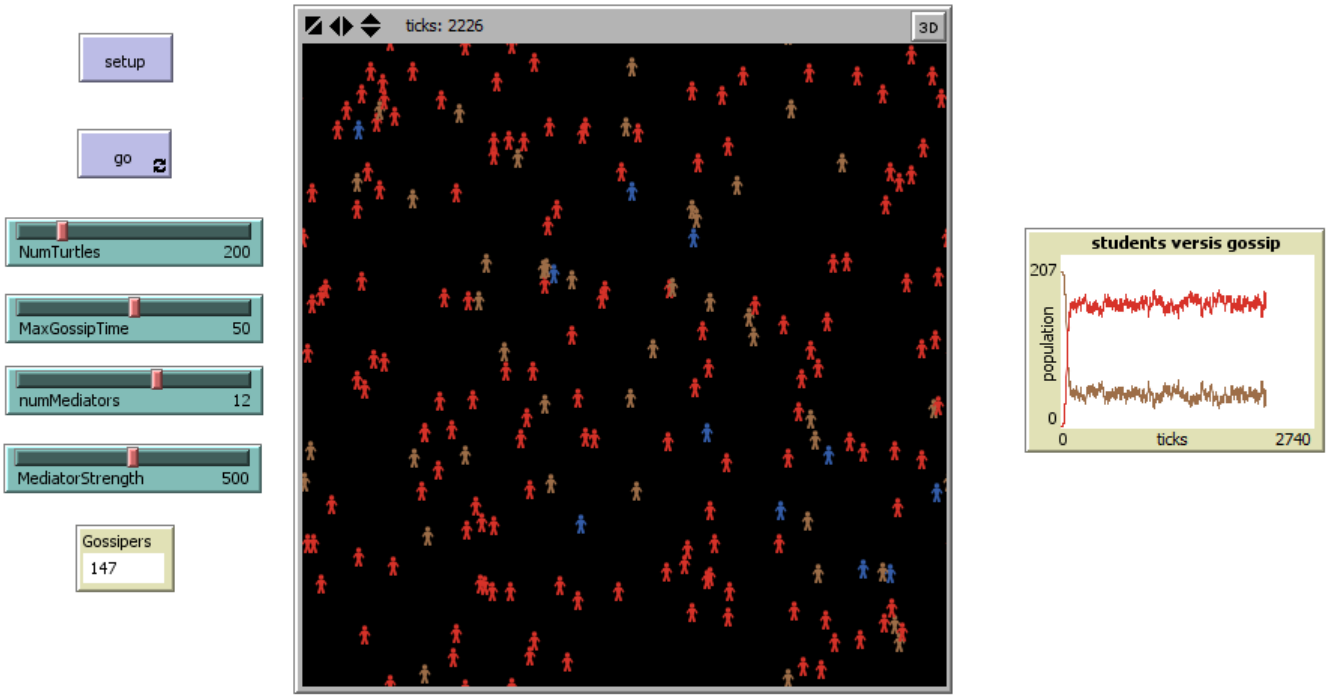

Figure 2 - Simulation of mediator effect on gossip

Figure 2 shows an example simulation of the effects well-trained mediators can have on gossipers. The first slide variable, called **NumTurtles**, sets the population or number of people for the simulation. **MaxGossipTime** is the amount of times a brown figure can hear the gossip before they switch to a red figure and start to spread the gossip. **NumMediators** is the number of mediators present in the simulation. Finally, the **MediatorStrength** variable represents the effectiveness a mediator has in persuading a red figure to stop spreading gossip. This variable attempts to represent the amount of training the mediators have. On the right side of the simulation, a graph with red and brown lines show the number of gossipers and non-gossipers as time passes in the simulation.

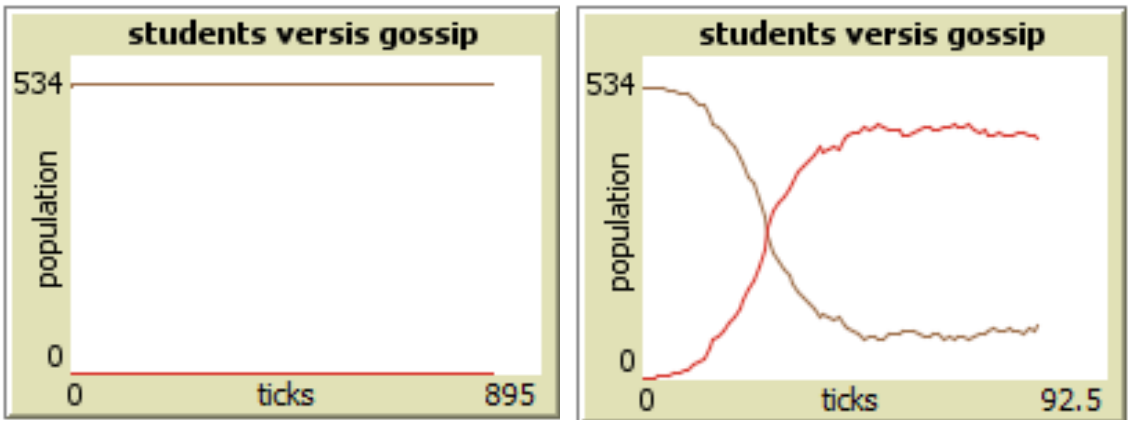

Figure 3 – Identical simulations with vastly different results

Two simulations were run with 10 mediators, each having 50 strength, and a population of 534 people. As can be seen from the charts in Figure 3, the number of gossipers in the right simulation grows to approximately 450 people while the number of gossipers in the left simulation went to 0 (gossip was eliminated from the population). The difference can be explained by random variables such as the placement of the mediators and the movement of the gossipers throughout the board.

The randomness can represent that humans are different and depending on the gossip or the situation, people spread it very differently.

In the first graph the mediators got to the gossiper before he could spread the gossip to any other students. This prompt action of the mediators shows how in some cases it can be quickly and easily eliminated from the population as a whole.

As shown in the second graph the gossip immediately and very quickly spread throughout the population, however with the mediators present they were able to keep the spread of gossip at a constant and more manageable rate, instead of the gossip completely overwhelming and taking over the whole population.

Through this project we have achieved a greater and more profound understanding of the effect of negative gossip and how it is able to spread through a society over time. We have also had the

opportunity to see how and if we can effectively chart and help to control the spreading of negative gossip. This project has also helped us to learn how to program through the use of Netlogo. Also this experience has helped us to see that simulations can be used to solve real world problems.

CONCLUSIONS

Our original intent was verified by Netlogo epidemic simulations. We found that the amount of training the mediators had was the most effective variable in controlling the gossip. In addition the more mediators there are to help control the situation, the faster the gossip slows down and/or stops spreading. In application to a real life situation, we feel this simulation could be effective in helping bring awareness to the problem of negative gossip and its influence on a society or a person.

RECOMMENDATIONS

We can expand this project by making different mediators have different training levels throughout the population. In that way not every mediator would be the exact same. We have also hypothesized about the idea of providing “good” gossip to a population that would benefit the people and the society as a whole to function better. We have also considered making different areas or places where gossip could be spread more or less frequently. We have put thought into making the simulation as accurate as possible to mimic a real life situation so that we can find the most effective number and training of mediators to help discourage the gossip from spreading.

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