A Review of Conformity Behavior Studies in Social Networks

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Abstract: This article contains research on the development of conformity behaviors in social networks, in which individuals change their ideas or behavior in keeping with a group. Social networks originated from the experiment called small world phenomenon, which concluded that in the United States, the average distance between one person to another person is six persons, which can also be called Six Degrees of Separation, proving the existence of a social network of people. Conformity behavior refers to individuals changing their behavior under real or imagined group pressure to adapt to the behavioral responses of others. conformity behavior in social networks is mainly studied through questionnaires, websites, and simulation modeling.

Keywords: social network, conformity behavior

1. The current status of conformity behavior research in social networks

1.1. Overview of conformity behavior in social networks

Conformity means that individuals change their behaviors and beliefs under real or imagined group pressure to adapt to the behavioral responses of others. Social psychologists believe that individual conformity behavior is due to the consistency pressure of the group, and the individual in order to seek behavior reference and avoid the fear of deviation, to remove the conflict between groups and themselves. Individuals not only in action but on faith will change the original point of view. conformity is different from obedience and compliance. Obedience is the tendency to take actions under the command of others, and individuals may be forced to do so. Compliance is the tendency to act according to the demands of others at their request. Sherif used the autokinetic movement phenomenon to prove that informative social influence will occur in unclear situations, that is, conformity behavior occurs due to the desire for accurate action [1]. Asch found that in clear circumstances, normative social influences will occur, that is, the individual will follow the majority due to the pressure of the group and the fear of deviation from the group [2]. It is worth mentioning that group polarization and small group consciousness are related to the concept of conformity. Group polarization refers to the phenomenon of making decisions more extreme after group discussion, and small group consciousness refers to a mindset that excessively pursues group consensus within a cohesive group.The reasons for the emergence of small group consciousness are: the cohesion of the group is high, and the individual cannot refute it, such as in the family, the decision made by the parents, if the child has different views, he will often not refute it; the influence of group norms,

where members believe that the group is very noble and cannot make mistakes; The higher the leader's competence, the less likely there is to find a better solution within the group than the leader's preferred choice, and the greater the risk.

The concept of social networks sterns forms the experiment of Small World Problem from Stanley Milgram that demonstrated the existence of networks connecting people in society. The theory can be summarized as follows: no more than six people should be separated from any stranger, that is, you can know any stranger through a maximum of six people. Nowadays social networks generally refer to Social Networking Services such as WeChat, Weibo, Facebook, and Ins.

In social networks, herd behavior, namely conformity and a similar phenomenon to information cascade, refers to the information being asymmetric, decision-makers may judge according to their information, and may also make decisions according to the behavior of others, but decision-makers tend to follow the behavior of others and ignore their own information.

1.2. Current research on conformity behavior in social networks

In order to prove that individual judgments are influenced by group pressure under uncertain conditions, Sherif used the autokinetic movement phenomenon to illustrate how informative influences can lead to a normative embodiment. In a dark room with no reference, the participants were asked to judge the movement of light spots. Each group informed other groups of their judgments. By the third round, the judgments of all are basically same, that is, the group standard was established. Later studies found that such established group norms existed for a long time, even if the original participants were not at present [3].

Asch asked the subjects to judge and compare the length of A, B and C the standard line in the clear situation that we can see from the Figure 1, but when the other team members uniformly chose the wrong one, only about a quarter of the subjects kept independence, namely no conformity existed from beginning to end. 50%—80% of the subjects at least once chose the wrong answer, overall at least one third of the subjects will have conformity. Later, Asch changed the factors in the experiment and found that conformity was most obvious when the group size was 3-4 subjects; when the subject had at least one subject with the same answer, the possibility of conformity was greatly reduced [2].
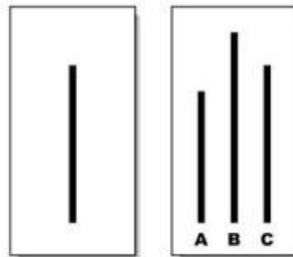
Figure 1: Asch design of conformity

Previous studies have shown that there is obvious herd behavior in the network P2P lending market. P2P stands for Peer-to-Peer, and the P2P lending market matches people who want small loans but cannot successfully borrow from the traditional lending market with financial institutions willing to lend, it allows these institutions to communicate directly with individuals, without banks acting as intermediaries, and it can theoretically bring significant benefits to lenders and borrowers. The decision tree is used to simulate the formation of herd behavior when decision makers obtain and analyze data. Researchers found that when herd behavior occurs, individuals will follow the behaviors of others and ignore the information they own. In addition, from the Table 1 we can see that friend bids and bid count will affect the decision time of investors, which also verifies the occurrence of

herd behavior. Researchers found that a friend bid can shorten the decision time, which is shorter than no friend bid and is statistically significant. This indicates that the borrower is more likely to rely on high precision public information rather than the information they analyze. Also, perfect information will reduce the possibility of herd behavior, such as A and B two rental houses, bid counts were both 100 times, A was reviewed 100 times, and B was reviewed 1000 times. For any tenant, it is difficult to distinguish between bid A and B in quality, but if the bid and browse times are, herd behavior will reduce [4].

Table 1 Statistical comparison of listings with and without a friend bid of Luo (2011)

With friend bid	Average time interval
Yes	6251
No	7931

In addition, the researchers research people on the choice of virtual house wall color on a leading social networking site in China, to explore how to balance the needs of belonging and friends. The experimental process is shown in Figure 2, first randomly select a group of participants, they have more than ten friends on Kaixin Network, one-third of which will directly present the choice of Figure 3, another third will be told the favorite color among friends firstly and choose like Figure 4, and the rest of the participants will tell them the most popular color of users on the platform. Researchers found that the most popular color will increase the possibility of the user using the color, but as the color of adoption rate gradually increases, the consistency of behavior will lower and increase, namely U-shaped curve. In addition, users of lower economic status and the new website users, prefer to choose the most popular color, namely herd behavior. What's more, when participants chose their favorite color, they were reluctant to change their choice, even when they knew what the most popular color was. Besides, when the participants were female, they were less likely to follow the herd than male, but if they did not live in China, their likelihood of following the herd was much higher. The researchers also chose Chinese who settled abroad and remained active on Kaixin Net as participants, although most of their circle of friends were like them, they still occupied a minority on the entire platform, and their presence on Kaixin Net implied that they had a strong willingness to maintain friendships with people living in China, so they were more likely to follow the herd. In order to study the effect of age on conformity, researchers selected subjects who were born after 1990, born in 1980 to 1989, born in 1970 to 1979, born in 1960 to 1969, and born between 1950 to 1959. They found that subjects born between 1950 to 1959 were more likely to follow the herd because social factors influenced them during the critical years of their formative years, causing them to show a higher demand for conformity [5].
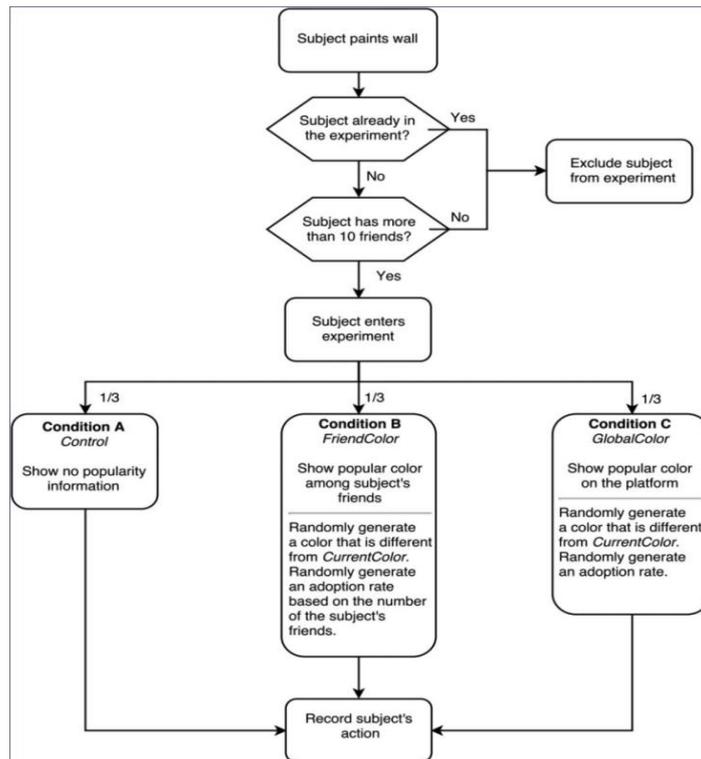
Figure 2: Design of the Experiment of Sun (2019)

Figure 3: Screenshot of the virtual homes application of Sun (2019)

Figure 4: Screenshot of the message window for a random subject in condition B of Sun (2019)

The concept of information cascade was first described in a laboratory experiment scenario using a specific set of numbers. The experiment specifically describes a sequential prediction game where students receive private sample information and make predictions about unknown events. The predictions made are public and sequential, so in the sequence, subsequent students can use the observed information to determine and infer the private information obtained by the previous students. The experimental materials that need to be prepared include a pair of cards, three bright colored marbles, three dark colored marbles, and three opaque cups. Mark the two cups A and B respectively, and place two dark and one bright marbles in A, and one dark and two bright marbles in B. After preparing the experimental materials, start the experiment: Randomly distribute the cards to the students to determine the order. The students will be taken to private space one by one, displaying the marbles in A and B. They will be told that the probability of each cup being selected is equal, and then use a coin toss to determine whether it is A or B cup. In the third unmarked cup, one of the marbles in the selected cup will be displayed. Students will predict whether it is a marble in A or B and inform other students of their predictions. The horizontal axis in the Figure 5 represents the correct rate, and the vertical axis represents the probability of information cascade, and we can find that when the correct rate is 0.7, the probability of correct information cascade is 0.753; when the correct rate is 0.8, the probability of correct information cascade is 0.857. That is to say, when the action taken by the individual can provide information to others, it presents a positive externality, that is, the other person benefits from the action taken by the individual. And when only past behavior is observed and the information obtained is ignored, this positive externality is weakened, and when the information
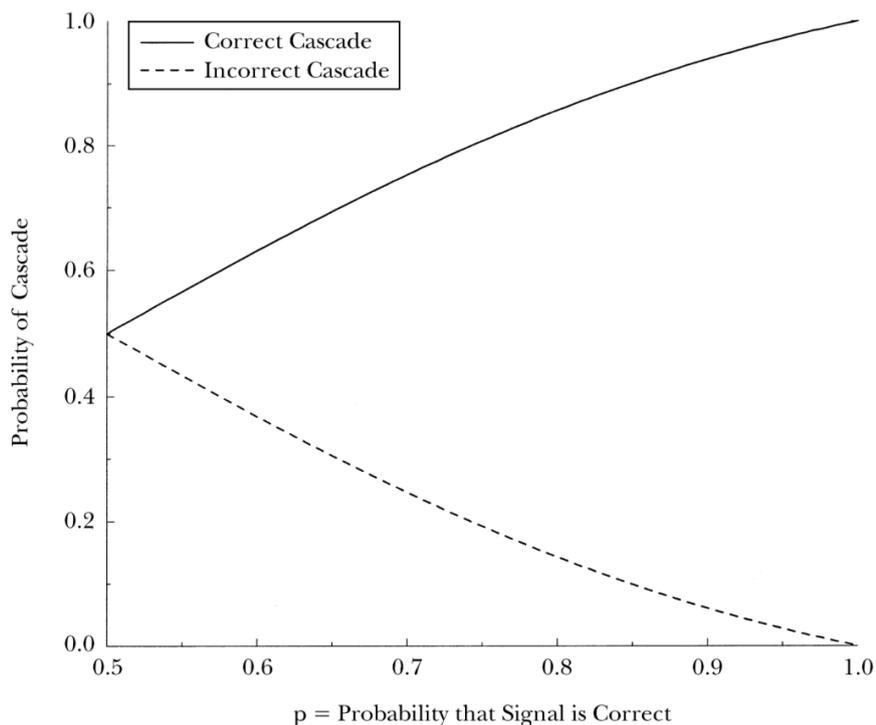
cascade begins, the profit and loss brought by the information externality disappears together. When a person makes decisions based on the private signals he receives instead of following a cascade of information, his actions increase the amount of public information, which benefits those who come after. This altruistic behavior, in the long run, will eventually produce a higher rate of accuracy [6][7].

Figure 5: Cascade Probabilities of Bikhchandani (1998)

Table 1
Sample results from session 2 of Anderson and Holt (1997) experiments

Order in decision sequence	1st	2nd	3rd	4th	5th	6th	Urn used for draws
Period 1 decisions	A	B	A	A	A	A	Urn B
Private signal (probability of Urn A)	a (2/3)	b (1/2)	a (2/3)	a (4/5)	a (8/9)	b (4/5)	
Period 2 decisions	A	B	B	A	A	B	Urn B
Private signal (probability of Urn A)	b (1/3)	b (1/2)	b (1/3)	a (1/2)	a (2/3)	b (1/2)	
Period 3 decisions	A	A	A	A	A	A	Urn A
Private signal (probability of Urn A)	a (2/3)	a (4/5)	b (2/3)	a (4/5)	a (4/5)	a (4/5)	
Period 4 decisions	B	A	A	A	A	A	Urn A
Private signal (probability of Urn A)	b (1/3)	a (1/2)	a (2/3)	a (4/5)	a (8/9)	a (8/9)	
Periods 5 decisions	A	B	B	B	B	B	Urn B
Private signal (probability of Urn A)	a (2/3)	b (1/2)	b (1/3)	b (1/5)	a (1/3)	a (1/3)	
Period 6 decisions	A	A	A	A	A	A	Urn A
Private signal (probability of Urn A)	a (2/3)	a (4/5)	b (2/3)	b (2/3)	a (8/9)	a (8/9)	
Period 7 decisions	B	A	B	B	B	B	Urn B
Private signal (probability of Urn A)	b (1/3)	a (1/2)	b (1/3)	b (1/5)	b (1/9)	a (1/3)	
Period 8 decisions	A	A	B	A	A	A	Urn A
Private signal (probability of Urn A)	a (2/3)	a (4/5)	b (2/3)	a (4/5)	b (2/3)	a (4/5)	
Period 9 decisions	A	A	A	A	A	A	Urn B
Private signal (probability of Urn A)	a (2/3)	a (4/5)	b (2/3)	b (2/3)	b (2/3)	b (2/3)	
Period 10 decisions	A	B	B	B	B	B	Urn B
Private signal (probability of Urn A)	a (2/3)	b (1/2)	b (1/3)	b (1/5)	b (1/9)	b (1/9)	

Key: "Correct" cascade – correct prediction, inconsistent with private information, consistent with Bayes' rule. "Incorrect" cascade – incorrect prediction, inconsistent with private information, consistent with Bayes' rule. Error – inconsistent with Bayes' rule.

Figure 6: Sample results from session 2 of Anderson and Holt (1997) experiments

The experimental results we can see from the Figure 6 showed that when the current two people predicted A, the attractiveness of the information inferred to be a dark marble exceed that of the information seen by the third person himself, even if he saw a bright marble; When the first person predicts A and the second person predicts B, the two opposite predictions are balanced, and third person will make a prediction based on his own information. For example, when the fourth person also sees bright color marble and predicts B, the information cascade appears, which affects the fifth and sixth students.

2.   The influencing factor of conformity behavior in social networks

2.1.   Contextual factors

First of all, the size of the group will affect conformity, the larger the group, the greater the pressure of the group, and the easier it is to conformity. However, when the group size exceeds 3-4 people, the

increase of the group, not always leads to increased conformity. What's more, the greater the cohesion of the group, the more serious the consequences of deviating from the group, and the easier conformity to occur.

2.2. Personal factors

Self-awareness will influence conformity behavior, when people with strong self-awareness will act according to their own standards, and less conformity behavior. While people with strong public self-awareness will act on the requirements of others as the standard, conformity is more likely. In addition, people with lower social status tend to choose conformity. Sometimes gender will also affect the occurrence of conformity behavior.

3. Shortage and Outlook

Previous studies have found that conformity occurs in various social networks, and individuals will feel the pressure brought by the group in the social network indeed so more or less conformity behaviors will occur. However, the models used in various studies, such as decision tree model, and group conformity model, have not been widely verified in various fields, and their effectiveness needs to be improved.

4. Conclusions

This review briefly describes the conformity behavior in social networks, focusing on previous and recent research, and finds that conformity affects the establishment of team norms from Sherif's herd experiment. Find that conformity behavior occurs in team choices, even if the choices are wrong from Asch's experiment; In the Internet P2P lending market, it was found that the participation of acquaintances shortens the time for investors to consider; In experiments with Kaixin Net users, it was found that there is a stronger willingness to make friends, low social or economic status, and newcomers tend to engage in herd behavior; In the information cascades experiment, it was found that decision-makers were often more likely to prefer the information obtained externally, and ignored the information they had to make decisions. In addition, the factors that influence herd behavior are explored, understanding that conformity occurs not only by personal factors, such as personality, independent will, etc., but also by environmental factors, such as the pressure and size of the team.

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