

A Study on the Correlation Between Chinese Youth's Use of Internet Social Media and the Formation of Polarization Bias Cognition: Taking Contradictory Gender Bias as an Example

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Abstract: The phenomenon of group polarization caused by modern online social media is becoming increasingly severe, such as gender conflicts, increased intergenerational misunderstandings, extreme fixed cognition leading to online violence, etc. This work takes the phenomenon of contradictory gender bias as an example, discusses and designs experimental ideas to explore the correlation and impact of social media usage frequency on the phenomenon of contradictory gender bias. Through a questionnaire survey, 188 men and women aged 18-40 were surveyed on their social media usage habits and the degree of conflicting gender biases. Quantitative analysis and testing were conducted to determine the correlation between the frequency of social media usage and the degree of gender biases. The conclusion was drawn that internet social media filters fixed audience groups through big data, forming a fixed atmosphere of group public opinion. The characteristics of social media groups lead to group polarization, and obvious opposition leads to conflicts. Conflict also intensifies and forms solidified extreme radical biases and perceptions among groups. This study analyzes the common issues of group bias cognition and conflict opposition in internet social media from the perspective of social psychology, providing a comprehensive thinking model and experimental direction.

Keywords: Social psychology, conflicting gender biases, social media, group polarization effects

1. Introduction

With the vigorous development of modern online social media, communication between people has become faster and more convenient. However, the group polarization caused by online social media is also gradually intensifying. On the one hand, conflicts between groups are gradually intensifying with the influence of media: men and women argue and oppose each other in Zhihu, Xiaohongshu, and Weibo; On the other hand, the dominance of We Media and the clustering of social media have led to the concealment of truth, the solidification of cognitive paranoia, for example, the joint influence of film and television, news and social media has led to "Event of Sing! China", "Japanese Nuclear Waste Water Event". The extreme solidification of cognition and the intensification of online violence in events such as the film reviews of "Barbie" and "Creation of The God". People

who are often immersed in social media on the internet may develop a perception of a "harmful" world, but whether observed from reality or inferred from common sense, it can be found that their polarized cognition is not in line with reality.

It can be observed that the phenomenon of "public opinion field" and "echo room" formed by internet social media has led to increasingly severe group polarization and hostile media effects, which have a destructive effect on the safety and health of the internet and even the stability of real life. In view of this, this article takes the theory of contradictory gender bias, which is easy to observe and quantitatively analyze, as an example. Through a questionnaire survey method, 210 men and women aged 18-40 were surveyed on their social media usage habits and the degree of contradictory gender bias. The correlation between the frequency of social media usage and the degree of gender bias was quantitatively analyzed and tested, thus analyzing various issues related to both internet social media and polarized bias cognition, Provide a comprehensive thinking model and experimental direction for it.

2. Literature review

The literature explanation and analysis obtained by the author are as follows: One theory suggests that in the context of new media, people are more inclined to search for and accept information that supports rather than opposes their own decisions, attitudes, and values. By personally repeatedly receiving homogeneous content, repeatedly reinforcing the original stance, The "Echo Room" effect has been formed. This leads people to only converse with those who share their own views, while refusing to converse with those who hold opposite views. As a result, people can only hear more of their own echoes, ultimately distorting people's understanding of general consensus. With the commercialization of big data, social media is increasingly using algorithms to analyze users' personal preferences and implement personalized content push, resulting in users being "forced" to Receive more similar viewpoints. Individuals are polarized in their cognitive tendencies or perspectives due to the "echo chamber effect" and the algorithms inherent in the media [1-2].

The phenomenon of polarization in public opinion is the result of the combination of individual bias, group bias, and systemic bias. The specific manifestations of prejudice include interdependent biases at different levels of behavior (discrimination), attitude (prejudice), and cognition (stereotypes), interacting in complex ways. Similar biased individuals spontaneously approach each other and gradually move away from external competitive groups, resulting in a biased group that gathers and falls into a "polarization cycle" under the catalysis of systematic bias. In the process of prejudice, differences gradually propagate from the individual level and amplify to the group level, leading to extreme opposition at the systemic level of the public opinion field [3].

The theory of "group polarization" mentioned in multiple literature refers to Stoner's discovery in 1961 that the results of group decision-making are sometimes more radical and risky compared to the decisions made by individuals. It is ultimately defined as the phenomenon where the initial inclination of individual members towards a specific direction is enhanced after group discussion [4]. It can be abstracted as the phenomenon of viewpoint polarization in social cluster behavior, which refers to the phenomenon of group viewpoints gradually reaching extremes in interaction. The fundamental problem lies in how individual views or attitudes change and gradually become extreme. Group polarization may induce many harmful effects on social stability, such as bias assimilation and hostile media [5]. The hostile media effect refers to the tendency of individuals who have a strong pre existing attitude towards a certain issue to believe that seemingly neutral and impartial media coverage of a topic is actually biased towards their own side and advantageous to the opposing party's viewpoint. On the one hand, public opinion on many issues has become increasingly polarized under the influence of information cocoons and opinion leaders. On the other hand, the news spread by the media erodes the credibility of the mass media. The increase in

opposition to group positions and the decline in the credibility of mass media have greatly increased public bias towards media reporting, further weakening the level of media influence among the public. Since 1985, scholar Vallone conducted groundbreaking research on this effect, subsequent research has been conducted in the field of Western politics. These studies examined the existence of effects in media audiences, explored moderating factors, and the resulting outcomes.

The above literature provides a clear and complete explanation of the definitions and respective operating mechanisms of extreme cognition and bias phenomena, and all literature effectively analyzes and studies the theoretical analysis progress and prognosis treatment of phenomena. However, there is still insufficient information in the validation of the correlation and interaction models between internet social media and extreme cognitive bias, as well as in the combination of research. In terms of the research path of polarization theory, Most domestic literature focuses on conceptual analysis and theoretical explanation; Regarding the factors that lead to polarization and their correlation with media use, relevant Chinese literature often stops at theoretical descriptions or qualitative analysis of specific cases. Quantitative analysis of the relationship between the two is relatively rare in China. Therefore, the author proposes a preliminary practical experimental speculation and hypothesis: there may be a correlation between the frequency of social media use and the extreme perception of bias among groups. The degree of public opinion and frequency of media use will strengthen the perception and bias of group polarization.

In order to facilitate the design of practical experimental studies for quantitative analysis, this study adopts gender bias as polarized cognition, which is relatively easy to analyze and observe. The study focuses on the gender bias and extreme cognition of male and female groups aged 18-40, and quantitatively analyzes the habits and frequency of use of common internet social media such as Xiaohongshu, Weibo, Zhihu, etc. in their daily lives, To explore the correlation between the frequency of internet social media usage and group bias and polarized cognition.

Based on the observation of the above phenomenon, this article raises the following questions: 1. What are the causes of this phenomenon? 2. Taking gender opposition as an example, will internet social media exacerbate the cognitive formation of radical and extreme biases? 3. If the hypothesis is verified to be true, what is the principle behind it? How can such phenomena be alleviated or rectified? To explain and solve this type of problem, the author searched multiple relevant domestic literature and encyclopedia theories from the perspective of social psychology. Among them, the theory suggests that extreme cognition and bias, which are most in line with polarized cognition and bias phenomena, are referred to as the "group polarization effect" and "hostile media effect", The emergence of this phenomenon has multiple reasons for the "public opinion and echo room" effect of external media and the theory of "social learning and cultivation" within the group. In addition, there are also factors that affect the polarization cognition of the masses formed by social media polarization [6].

3. Research design

3.1. Research subjects

The participants were 18-40 year old people from Chengdu, Sichuan and Harbin, Heilongjiang, who distributed questionnaires online. A total of 218 questionnaires were collected, and a total of 188 valid questionnaires were collected, with an effective rate of 86.24%. Among them, 96 were females (51.06%) and 92 were males (48.94%). The average age of the participants is 27 years old.

3.2. Research Tools

This study adopts a questionnaire method. The questionnaire was adapted based on the Ambivalent Sexism Inventory (ASI) developed by Glick and Fiske, and the Ambivalence towards Men

Inventory (AMI). It was divided into six parts [7]. In order to fully utilize the questionnaire to observe the participants' explicit and implicit bias cognition in all aspects, according to the contradictory gender bias theory (positive and friendly gender bias BS, BS) and negative and hostile gender bias HS (host bias, HS), BS may tend to give positive and idealized evaluations of traditional gender roles, while HS may tend to give negative evaluations of unconventional gender roles [8] The first to fourth parts were set to measure the degree of participants' conflicting gender bias cognition. The questionnaire included a total of 42 questions on BS and HS of women and men, with participants answering questions such as "Women always want to gain power by controlling men" (HS), "Women should receive men's love and protection" (BS), and from "very disagree", "relatively disagree", "somewhat disagree" Choose their attitude from the six options of "somewhat agree", "relatively agree", and "strongly agree", and calculate the four part scores of the subjects using the Likert 6-point scoring method to determine their specific level of contradictory gender bias cognition.

The fifth part is a survey on the usage preferences and frequency of internet social media, mainly investigating the 1-3 favorite and most commonly used social media app names of the participants in the past three months. It focuses on whether the preferred media of the participants is biased towards the public opinion field, in order to conduct a key analysis and the duration of their use of these software within a day as the frequency of use. Generally, it is considered that the frequency of use is less than 2 hours, 2-4 hours are the frequency of mild use, 4-6 hours are the frequency of moderate use, and more than 6 hours are the frequency of severe use. They are divided into 1-4 groups in order; The last part is demographic variables, which include personal information such as the subject's number, gender, and age.

The questionnaire also includes one systematic lie detection question (to detect whether the subject chooses at will) and a self-awareness lie detection question ("I admit that I sometimes have biases or extreme cognition" to ensure that the subject does not intentionally or excessively choose a topic. If the subject chooses not, it is necessary to reconsider whether the subject's answer is valid or its meaning).

4. Results

4.1. Data statistics on the degree of gender bias in conflicts

After calculating and statistical analysis of the bias scores in the four parts of the test paper, it was found that according to the total bias level (four score dimensions accumulated), the bias level towards women (FS=FBS+FHS), the bias level towards men (MS=MBS+MHS), the bias level towards friendly gender (BS=FBS+MBS), the bias level towards hostile gender (HS=FHS+MHS), the bias level towards friendly women (FBS), and the bias level towards hostile women (FHS) The statistical table is listed in the order of MBS for the degree of bias towards friendly men and MHS for the degree of bias towards hostile men:

Table 1: Average score and average coefficient of questionnaire statistical data

	Total	FS	MS	BS	HS	FBS	FHS	MBS	MHS
Total score	9580	5005	4575	4756	4824	2660	2345	2096	2479
Average	101.91	53.24	48.67	50.95	51.32	28.3	24.95	22.3	26.37
Group1 Average	88.5	48.5	40	45.3	43.2	26.7	21.8	18.6	21.4
Group2 Average	101.925	52.75	49.175	50.45	51.475	28.3	24.45	22.15	27.025

Table 1: (continued).

Group3 Average	103.655 17	53.8275 86	49.82758 6	52.8620 69	50.793103	28.4482 76	25.379 31	24.413 793	25.413 793
Group4 Average	107.466 67	56.6	50.86666 7	50.1333 33	57.333333	29.0666 67	27.533 333	21.066 667	29.8
Average coefficient	0.48528 57	0.484	0.4867	0.48523 81	0.4887619	0.51454 55	0.4536 364	0.446	0.5274
Group1 Ave coe	0.42142 86	0.44090 91	0.4	0.43142 86	0.4114286	0.48545 45	0.3963 636	0.372	0.428
Group2 Ave coe	0.48535 71	0.47954 55	0.49175	0.48047 62	0.4902381	0.51454 55	0.4445 455	0.443	0.5405
Group3 Ave coe	0.49359 61	0.48934 17	0.498275 9	0.50344 83	0.4837438	0.51724 14	0.4614 42	0.4882 759	0.5082 759
Group4 Ave coe	0.51174 6	0.51454 55	0.508666 7	0.47746 03	0.5460317	0.52848 48	0.5006 061	0.4213 333	0.596

The average score coefficients are derived from each average score/total number of questions included, and are used to unify the percentage of bias. Preliminary observation of the above results suggests that the average bias towards kindness towards women and hostility towards men is more pronounced in the population, with coefficients greater than half. It can be inferred that the population ignores these two hidden biases, while the average degree of other biases is around 44.6%-48.8%; The average scores and coefficients of each group roughly increase with the increase of internet social media usage frequency, indicating an increase in the degree of bias. Among them, the total bias and the total bias of male and female groups have significantly increased, with female gender bias being particularly significant.

Draw different score box charts for 1-4 groups in the order described in the statistical table based on the box chart of each group's score data, as shown in the figure:

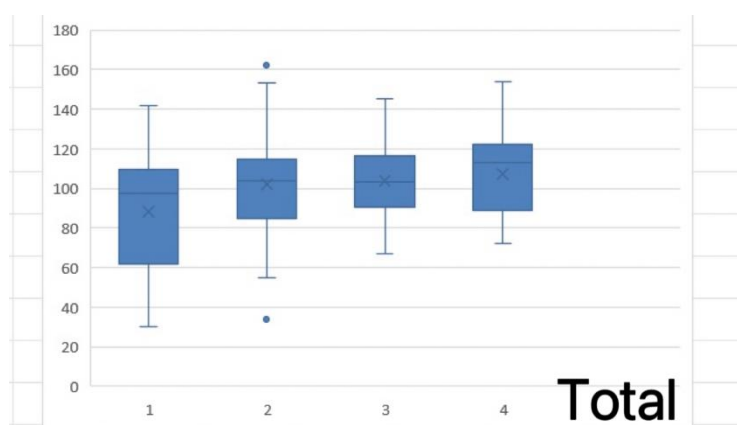


Figure 1: The box chart of total groups' score

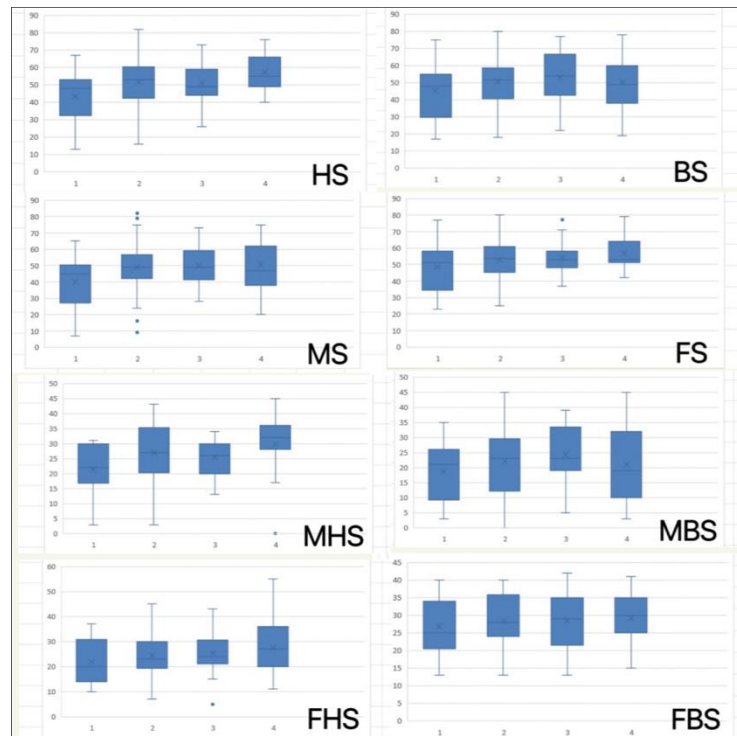


Figure 2: the box chart of each groups' score

4.2. Testing the Impact of Contradictory Gender Bias

Using independent sample t-test for various statistical data, the impact effect test was conducted to determine the frequency of internet social media usage and the degree of gender bias. It can be seen that all groups showed a significant correlation with $p < 0.001$; The r values of various tests ranged from 0.069 to 0.23, showing a weak positive correlation. Among them, the correlation between FBS, MBS, and BS was weak, while others showed a correlation degree greater than 0.1. Among them, the degree of HS hostility gender bias was particularly significant, $r = 0.2303$; The above situation can confirm that the addictive use of internet social media has a certain degree of enhancement effect on the perception of hostile gender bias. Therefore, it can be speculated that the addictive and rampant use of internet social media will slightly enhance people's perception of polarization bias in forming groups.

Table 2: Correlation test between frequency of social media usage and degree of bias

	Total	FS	MS	BS	HS	FBS	FHS	MBS	MHS
r	0.170859 132	0.178149 365	0.150478 01	0.082636 151	0.230314 552	0.069239 085	0.16162 304	0.071141 995	0.175743 839
p	5.78149E-91	7.756E-100	7.87088E-73	6.5856E-74	1.12282E-86	4.22312E-79	2.8431E-58	1.91629E-43	9.7735E-66

5. Conclusion

In the 18-40 year old Chinese youth group, the addictive use of internet social media can to some extent lead to gender biased cognition dominated by hostility, with hostility gender bias having a particularly significant impact. Overall, the impact of prejudice on women is greater than that on men, while the impact of hostility bias on men is greater than that on women, Thus, it can be

inferred that the excessive use of internet social media may have a certain enhanced impact on the group's perception of polarization bias. In addition, the statistical results indirectly indicate the group's disregard for the goodwill bias towards women and the hostility bias towards men.

This study focuses on the recently discussed social phenomenon and provides theoretical explanations and analysis. It proposes the hypothesis that internet social media affects the perception of group polarization bias, and designs a quantitative questionnaire experiment to verify the hypothesis. The results show that long-term use of internet social media by Chinese youth aged 18-40 slightly enhances their perception of polarization bias towards groups such as hostile gender bias, And it indirectly presents the degree of gender bias in different situations of this group. This result meets expectations and confirms the aspects and extent of the negative impact of social media addiction. In addition to the theoretical explanations in the literature mentioned above, social learning theory and cultivation theory can also be used to partially attribute this phenomenon: the supposed diversity of values has become similar to the mainstream opinions presented by the media due to exposure to the media. As a mass communication medium, the media represents and guides mainstream public opinion, thereby making public opinions tend to be consistent [9], and overly extreme content is also one of the factors that lead to bias. In addition to social psychological factors such as group and media, there is also a certain relationship between individual factors in the group and this phenomenon: blind confidence, weak independent thinking habits, and emotional intensification should also be included in the study of the phenomenon.

This study also has many shortcomings in sample size, experimental design, error control, and large SD values. Future experimental research should improve the questionnaire and sample structure. The questionnaire should systematically refine the variables of media factors and include a large number of young people from multiple regions to improve the experimental results. The highlight of this study is that there are currently few quantitative studies on media usage, gender bias cognition, and group polarization bias cognition in China. At the same time, the study selected the contradictory gender bias theory model for detailed cognitive analysis and investigation of gender bias, and rigorously targeted the analysis of clues to gender bias among Chinese youth groups. This study provides a detailed analysis of the cognitive and conflicting issues that have emerged in recent internet social media from the perspective of social psychology, providing a complete experimental direction, guiding research in social psychology and media, and ultimately calling on netizens to cultivate good habits of independent thinking and empathy, as well as contributing to a healthy and safe speaking environment for the internet [10].

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