Difference Analysis and Multiple Regression of College Students' Network Behavior from the Perspective of Big Data

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Abstract. With the rapid development of information technology, the Internet has become the main media and important way for college students to obtain information, learn and communicate. The advent of the era of new media has greatly enriched the means and approaches of ideological work in colleges and universities. Therefore, the research on college students' Internet behavior is particularly important. Through questionnaire survey and using SPSS data processing software, this paper conducts a difference analysis on the network behavior of different groups of college students, carries out multiple regression on the influencing factors of college students' network behavior, summarizes the existing problems and puts forward reasonable suggestions, so as to explore the leading path of ideological and political education on college students' network behavior.

1. Introduction

Internet is gradually becoming a necessity of college students' daily life. While enjoying the convenience brought by the rapid development of Internet technology, ideological and political education in colleges and universities is also facing new challenges of network behavior management. We should pay close attention to the discordant voice in the network, investigate and supervise the Internet motivation and network behavior of college students. Then reasonably intervene in the network behavior of college students, guide them to develop correct online habits in the process of using the network, and regulate their network behavior [1]. In the context of information technology, college students have different ideas, which further profoundly affect their behavior tendency. To do a good job of ideological and political education for college students in the network era, it is necessary to objectively analyze and understand the behavior of college students [2].

In this study, students from Wuhan University of Technology are selected as samples. Following the principle of random sampling, 4150 formal questionnaires are issued and 3682 questionnaires are returned, covering all schools and grades. Among them, 3626 valid questionnaires are used for data analysis, and the actual effective recovery rate is 87.37%. In this paper, SPSS data processing software is used to analyze the network behavior of college students. The differences of different student groups are analyzed by independent sample T-test and one-way ANOVA. Difference tests are conducted from 10 aspects such as gender, ethnicity and political status. Multiple regression method is used to analyze the influencing factors and explore the influencing factors of the observation indexes.

2. Different network behavior of different groups of college students

To study different factors for different groups of students in the network behavior and the difference of health status, this paper analyzes the differences of network behavior of different groups of students from 11 aspects, such as gender, ethnicity, grade, political status, place of origin, family structure,
parents' education level, student cadre experience, one-child family or not, and family financial status. The results are shown in Table 1.

| Internet behavior | Index number | Online time | Weibo and WeChat Use | Online Opinions Attitude | Influence of network |
|-------------------|--------------|-------------|-----------------------|--------------------------|----------------------|
| **Gender**        |              |             |                       |                          |                      |
| Male              | 2628         | 2.729       | 4.324                 | 1.643                    | 1.935                |
| Female            | 998          | 2.953       | 4.720                 | 1.693                    | 1.993                |
| T value           | -5.839       | -13.73      | -1.073                | -2.405                   |                      |
| Significance      | .000         | .000        | .016                  |                          |                      |
| **Ethnicity**     |              |             |                       |                          |                      |
| Han               | 3399         | 2.796       | 4.428                 | 1.654                    | 1.942                |
| Non-Han           | 227          | 2.709       | 4.511                 | 1.695                    | 2.093                |
| T value           | 1.215        | -1.412      | -0.486                | -3.436                   |                      |
| Significance      | .001         |             |                      |                          |                      |
| **Grade**         |              |             |                       |                          |                      |
| Lower             | 1848         | 2.747       | 4.384                 | 1.656                    | 2.002                |
| Higher            | 1778         | 2.836       | 4.484                 | 1.657                    | 1.898                |
| T value           | -2.589       | -3.220      | -.003                 | 4.939                    |                      |
| Significance      | .010         | .001        | .000                  |                          |                      |
| **Political Status** |            |             |                       |                          |                      |
| CPC members       | 516          | 2.800       | 4.519                 | 1.659                    | 1.869                |
| Non-CPC members   | 3110         | 2.789       | 4.419                 | 1.656                    | 1.965                |
| T value           | 0.228        | 2.355       | 0.515                 | -3.124                   |                      |
| Significance      | .019         | .001        | .002                  |                          |                      |
| **Place of origin** |            |             |                       |                          |                      |
| Rural             | 1885         | 2.786       | 4.414                 | 1.7387                   | 1.9849               |
| Non-rural         | 1741         | 2.796       | 4.453                 | 1.5660                   | 1.9143               |
| T value           | -.269        | -1.240      | 4.204                 | 3.323                    |                      |
| Significance      | .000         | .000        | .001                  |                          |                      |
| **Family Structure** |          |             |                       |                          |                      |
| Two-parent family | 3364         | 2.789       | 4.426                 | 1.6464                   | 1.9459               |
| Non-two-parent family | 262  | 2.817       | 4.519                 | 1.7851                   | 2.0168               |
| T value           | -.421        | -1.660      | -1.647                | -1.607                   |                      |
| Significance      | .000         | .000        | .001                  |                          |                      |
| **Student cadre experience** | |             |                       |                          |                      |
| Yes               | 2193         | 2.786       | 4.5203                | 1.6441                   | 1.9357               |
| No                | 1433         | 2.798       | 4.2994                | 1.6759                   | 1.9745               |
| T value           | -.324        | 6.689       | -.750                 | -1.778                   |                      |
| Significance      | .000         |             |                      |                          |                      |
| **One-child family or not** | |             |                       |                          |                      |
| Yes               | 1926         | 2.768       | 4.4278                | 1.6210                   | 1.8981               |
| No                | 1700         | 2.816       | 4.4388                | 1.6967                   | 2.0109               |
| T value           | -1.368       | -3.52       | -1.827                | -5.302                   |                      |
| Significance      | .000         |             |                      |                          |                      |
| **family financial status** | |             |                       |                          |                      |
| Excellent         | 331          | 2.659       | 4.4894                | 1.7524                   | 1.7946               |
| General           | 2360         | 2.824       | 4.4263                | 1.6320                   | 1.9427               |
| Poor              | 935          | 2.753       | 4.4299                | 1.6841                   | 2.0274               |
| F test            | 4.493        | .658        | 1.680                 | 16.797                   |                      |
| Significance      | .011         |             |                      | .000                     |                      |
2.1. Differences in network behavior of students of different genders
As shown in Table 1, the mean value of the first item is 2.729 for boys and 2.953 for girls. Girls spend more time online than boys every day (T=5.839, P=0.000). In terms of the use of Weibo and WeChat, the average value of male students is 4.324, and that of female students is 4.720. The proportion of female students using Weibo and WeChat is higher than that of male students (T=13.728, P=0.000).

In terms of the influence of network, the mean value of male is 1.935, and that of female is 1.993. The influence degree of network on female is slightly higher than that of male (T=2.405, P=0.016).

2.2. Differences in network behavior of students of different nationalities
As shown in Table 1, the mean value of the second item shows that in terms of the influence of network, the mean value of Han students is 1.942, and that of non-Han students is 2.093. The degree of influence of network on non-Han students is greater than that on Han students (T=3.436, P=0.001).

2.3. Differences in network behavior of students in different grades
As shown in Table 1, the mean value of the third item is 2.747 for the lower grades and 2.836 for the higher grades. Higher grades spend more time online than lower grades every day (T=2.589, P=0.010). In terms of the use of Weibo and WeChat, the average value of lower grades is 4.384, and the average value of higher grades is 4.484. The proportion of higher grades using Weibo and WeChat is higher than that of lower grades (T=3.220, P=0.001). In terms of network influence, the mean value of lower and higher grades is 2.002 and 1.898 respectively. Lower grades are more susceptible to network influence than higher grades (T=-4.939, P=0.000).

2.4. Differences in network behavior of students with different political status
As shown in the fourth mean value in Table 1, in terms of the use of Weibo and WeChat, the mean value of party students is 4.519, and that of non-party students is 4.419. Party students have a higher ratio of using Weibo and WeChat than non-party students (T=-2.355, P=0.019). In terms of the influence of network, the mean value of party students and non-party students is 1.869 and 1.965 respectively, indicating that non-party students are more susceptible to network influence than party students (T=3.124, P=0.002).

2.5. Differences in network behavior among students from different places of origin
As shown in the fifth mean value in Table 1, in terms of online opinions, the mean value of rural students is 1.739, and that of non-rural students is 1.566. There is a significant difference between rural students and non-rural students in their treatment of online opinions. Rural students are more inclined to believe authoritative opinions (T=-4.204, P=0.000). In terms of the influence of network, the mean value of rural students is 1.985, and that of non-rural students is 1.914. The influence of network on rural students is greater than that on non-rural students (T=-3.323, P=0.001).

2.6. Differences in network behavior of students with or without cadre experiences
As shown in the seventh mean value of Table 1, in terms of the use of Weibo and WeChat, the mean value of college students with student cadre experience is 4.520, and that of those without student cadre experience is 4.299. The proportion of college students with student cadre experience using Weibo and WeChat is higher than that of those without student cadre experience (T=-6.689, P=0.000).

2.7. Differences in network behavior of students in one-child families and non-one-child families
As shown in the eighth mean value in Table 1, in terms of the influence of Internet, the average value of college students in one-child families is 1.898, and that of college students in non-one child families is 2.011, indicating that the influence of Internet on students in non-one child families is much greater than that on students in one-child families (T=5.302, P=0.000).
2.8. Differences in network behavior and health status of students with different family financial status

As shown in the ninth mean value in Table. 1, in terms of online time, the average value of college students with excellent family financial status is 2.659, and that of college students with poor financial economic status is 2.753. College students with poor family financial status spend more time online every day than those with excellent family financial status (F=4.493, P=0.011). In terms of the influence of network, the average value of college students with excellent family financial status is 1.795, and that of college students with poor family financial status is 2.027. College students with poor family financial status are more likely to be affected by network than those with excellent family financial status (F=16.797, P=0.000).

3. Analysis on the influencing factors of college students' network behavior

In this paper, taking the network behavior and health as well as the ideological and political education activities carried out by the school as independent variables, we use the forced entry variable method to carry out multiple regression to explore the main factors affecting the network behavior of college students. All models are overall significant, and the independent variables with forced entry method can explain 10.2%, 8.0%, 9.0% and 20.5% variation of "online time", "use of social tools", "attitude towards online opinions", and "negative influence of network", respectively. Among them, the independent variable has the greatest predictive power on the negative influence of network. The specific analysis is as follows:

3.1. Factors affecting college students' online time

The factors that have a positive and significant effect on college students' online time are: evaluation of school social practice activities (β=0.052, P=0.031), the degree of identification with core values (β=0.051, P=0.024).

The model shows that, the perception of learning pressure (β=-0.039, P=0.019), the evaluation of campus morality (β=-0.047, P=0.008), the realization degree of core values at individual level (β=-0.049, P=0.029), the influence of other courses on moral education (β=-0.053, P=0.015), the identification of the leadership system of the Communist Party of China (β=-0.057, P=0.046), the evaluation of school employment education (β=-0.06, P=0.01), life planning (β=-0.062, P=0.000), and the understanding degree of moral models (β=-0.084, P=0.000) have a significant negative effect on college students' online time.

3.2. Factors influencing college students' use of social tools

The factors that have a positive and significant influence on the use of social tools of college students are as follows: the situation of the communication between schools and families (beta = 0.365, P = 0.000), the willingness to participate in social practice (beta = 0.076, P = 0.000), the construction situation of school's new media public platform (beta = 0.069, P = 0.000), the situation of activities carried out by the party organizations (beta = 0.067, P = 0.000), life dream, which is the organic unity of the country's dream, the nation's dream and the individual's dream (life development attitude) (beta = 0.052, P = 0.02), the evaluation of school party activities (beta = 0.051, P = 0.039), the degree of understanding Chinese history (beta = 0.048, P = 0.006), the willingness to practice core values (beta = 0.045, P = 0.04), national pride and cultural confidence (beta = 0.041, P = 0.035), the willingness to seek psychological counseling (beta = 0.035, P = 0.044), the degree of influence from social trends (beta = 0.035, P = 0.046), the willingness to conduct moral behavior (beta = 0.041, P = 0.02).

The model shows that the recognition of the realization degree of core values at the national and social level (β=-0.054, P=0.037) and the number of associations that one student participates (β=-0.353, P=0.000) have a significant negative impact on the use of social tools.

3.3. Factors affecting college students' attitudes towards Internet opinions

The factors that have a positive and significant influence on the attitudes towards Internet opinions are as follows: the willingness to participate politics theoretical study (beta = 0.074, P = 0.000), life...
planning (beta = 0.071, P = 0.000), the degree of identification with core values (beta = 0.07, P = 0.002), the construction situation of school’s new media public platform (beta = 0.055, P = 0.001), the attention to ideological and political theory information (beta = 0.053, P = 0.002), the willingness to seek psychological counseling (beta = 0.047, P = 0.006), the degree of willingness to political participation (beta = 0.041, P = 0.028), social practice experience (beta = 0.037, P = 0.032), life ideal (beta = 0.035, P = 0.032).

The model shows that the value of life can be better realized only in the collective (β=-0.037, P=0.049), learning satisfaction (β=-0.045, P=0.011), the influence of ideological and political theory courses on moral education (β=-0.052, P=0.029), and national pride and cultural confidence (β=-0.054, P=0.005) have a significant negative impact on attitudes towards Internet opinions.

3.4. Factors influencing the negative network influence of college students'

The factors that have a positive and significant influence on the negative network influence are as follows: the degree of the willingness to join the CPC (beta = 0.067, P = 0.000), the evaluation of school employment education (beta = 0.064, P = 0.004), knowledge of the necessity of core values (beta = 0.058, P = 0.008), the evaluation of campus cultural activities (beta = 0.053, P = 0.031), the degree of influence from social trends (beta = 0.047, P = 0.004), the thought about Lei Feng's spirit (beta = 0.046, P = 0.004), and the understanding of Chinese history (beta = 0.035, P = 0.03).

The model shows that, the willingness to seek psychological counseling (β=-0.036, P=0.024), the view of Chinese and Western traditional holidays (β=-0.036, P=0.018), the understanding degree of moral models (β=-0.04, P=0.027), the evaluation of school social practice activities (β=-0.051, P=0.025), the influence of other courses on moral education (β=-0.06, P=0.003), life planning (β=-0.065, P=0.000), the evaluation of campus’ moral status (β=-0.07, P=0.000), the recognition of the realization degree of core values at the individual level (β=-0.078, P=0.000), life development attitude (β=-0.079, P=0.000), life satisfaction (β=-0.096, P=0.000), and learning satisfaction (β=-0.102, P=0.000) have a significant negative impact on the negative network influence.

4. Main questions and suggestions

Generally speaking, college students can correctly deal with the opportunities and challenges brought by the Internet era and use the Internet scientifically and reasonably. However, the survey also reflects some noteworthy problems, such as the fact that college students spend a lot of time on the Internet every day, and the role in guiding college students' Internet behavior needs to be further improved.

4.1. General Situation of College Students' Network Behavior

The survey finds that most of the students can deal with the relationship between the Internet and their study and life in a scientific and reasonable way, and they have a mature attitude toward the Internet, which is shown in the following aspects:

The degree of access to the Internet has increased. With the advent of the "Internet Plus" era, the proportion of college students who spend more than 2 hours online every day is relatively high. The motives of accessing the Internet are diversified and entertaining. College students use the Internet for a variety of purposes, and the top three are "entertainment", "communication" and "learning". Among them, the proportion choosing entertainment is as high as 82.87%, far higher than the proportion of 56.95% choosing study. Network media has become an important channel for college students to obtain information. The proportion of college students using Weibo and WeChat is as high as 90.62%, and the purpose of using it is mainly to transfer and share information. Most students have a mature and rational attitude toward the Internet. The survey results show that when some social issues arouse heated discussions on the Internet and form a variety of opinions, most students can think rationally and weigh by themselves, rather than drifting with the tide or being influenced by others' opinions. Most of the students can handle the relationship between the Internet and their study and life reasonably, and they think that the Internet has not exerted too much influence on their study, life and interpersonal relationship.
4.2. Existing main problems

The network behavior of college students is good on the whole, but in the new situation, there are some problems and hidden dangers in the use of the network of college students.

First, college students spend more time on the Internet every day and are more dependent on the Internet. According to the survey, the proportion of college students spending more than 4 hours on the Internet every day is more than 60%, indicating a great dependence on the Internet.

Second, the effectiveness of college students' use of network needs to be enhanced. That is to say, to some extent, there is using the Internet to the phenomenon of excessive recreation. According to the survey, 82.87% of college students choose "entertainment" as the top choice, and the "learning objective" choice accounts only for 56.95%. The effectiveness and rationality of college students' use of network need to be improved.

Third, the intrusion of the Internet on the study and life, to a certain extent, affects the college students' normal study and interpersonal communication. The survey shows that the Internet has a great impact on the study of college students and seeking and maintaining the balance between the virtual network world and the real life has become an urgent problem to face and solve.

4.3. Countermeasures and Suggestions

Ideological and political workers in colleges and universities should understand, study and use the Internet to study and figure out the network behavior of college students, so as to promote the timeliness and effectiveness of ideological and political work in colleges and universities [3]. In view of the problems of college students' online behavior, the suggestions are as follows:

First, continue to strengthen the network behavior education of college students. Based on the campus website, build an excellent network platform and a network public opinion position in universities, and filter the network information. Then efforts should be made to cultivate a group of teachers, counselors and students with correct orientation and wide influence, to set up role models and provide guidance and demonstration for college students' network behavior. Continue to strengthen media literacy education in colleges and universities, popularize network security knowledge among college students [4], enhance their vigilance against bad information online, and improve their discernment and self-control in the network world.

Second, pay attention to the network behavior education of different groups of college students. The difference analysis finds that it is necessary to focus on the characteristics of different groups of students to enhance the pertinence of education. Strengthen the correct understanding of girls' network behavior and reduce the negative influence of the network on them. Pay attention to non-Han students and guide them to correctly understand the network behavior to reduce the negative impact of the network. The lower grades are more susceptible to the influence of the network, so for the first and second grade students, we should use positive network cognitive concept to occupy the position of the network education of students. In addition, focus on rural college students, guide them to rationally treat network opinions, seriously think and analyze network attitudes, and reduce the negative impact of network.

Third, enrich the ways and methods of network behavior education for college students. Multiple regression analysis finds that the degree of identification with core values, the degree of understanding Chinese history, life development attitude, life planning, the willingness to conduct moral behavior, the evaluation of campus morality, and the understanding degree of moral models are positive significant impact on college students' network behavior. It can be seen that the network behavior education for college students should not be limited to one point, but should optimize the all-media environment, broaden educational channels, and form a new pattern of integration of traditional media and new media [5]. It is necessary to form a rich ideological and political education system, take multiple measures at the same time, infiltrate each other, form a resultant force, and finally produce the overall improvement effect of ideological and political quality.
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