Research on the Relationship Between College Students' Gender Role Identity and Mental Health from the Perspective of Big Data Analysis

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Abstract. This paper attempts to investigate the relationship between communication fear and social support of college students and use big data analysis to explore whether there is a significant gap in communication fear in gender and family origin. It also analyses whether there is a correlation between the dimensions of communication fear and social support and discusses the significance and role of big data analysis for mental health education. A survey of 182 college students was conducted using the Social Support Rating Scale and the Communication Fear Self-Rating Scale. A total of 182 questionnaires were distributed, of which 171 were valid questionnaires, and it was found that there were significant differences in communication fear between genders, no significant difference in communication fear between family background and whether it was an only child, and there was a negative correlation between communication fear and social support.

Keywords: College student · Communication fear · Social support · Big data technology

1 Introduction

With the continuous development of computer-related technologies and the widespread application of the Internet in learning and life scenarios, data records of various behaviors that occur in people's daily life have been recorded and preserved, and different types of data are associated together, making data mining methods. It has become an achievable value, and psychology studies the psychological activities of individuals through externally manifested behavioral activities, which makes the entry of big data into the field of psychology also beginning to become an operable technology.

In response to the problem of students' psychological stress, some scholars have proposed a psychological early warning intelligent lighting system based on big data analysis to realize the measurement of students' psychological pressure, establish an intelligent Internet of Things psychological status monitoring platform, complete real-time monitoring of students' psychological status, and monitor data at the same time. It is transmitted to the back-end database, and the current student's psychological state is

analyzed through big data, and the current self-pressure is visualized through the smart lighting system.

Communication fear is "a personal fear or anxiety, real or in the mind, that often occurs in communication or communication with others". The college stage is a period of high incidence of social anxiety. If no attention and intervention are taken, the fear of communication will continue to the whole life stage, which will have a negative impact on personal life, work, interpersonal communication, and physical and mental health. Existing studies have found that the formation of social anxiety may be related to childhood insecurities and parents' overly strict educational methods, and personality characteristics may also have an impact on communication fears. After there is communication fear, the emotions that people need cannot be effectively transmitted, and long-term repression can easily lead to psychological problems.

However, the variable probably receiving the most research attention as a potential moderator of the impact of stress is social support, which has been defined as information leading the individual to believe that he or she is cared for, loved, esteemed, and valued and is a member of a network of communication [4].

2 Experiment 1

2.1 Experimental Design

In view of the communication fears of college students on various occasions, the existing traditional psychological counseling methods have great limitations. To take intervention measures for groups with psychological problems, more comprehensive and timely methods are needed. However, in the process of information collection and processing using big data technology, personal privacy is also inevitable.

In this study, the questionnaire was mainly used to collect data and analyze it. A total of 182 college students were investigated, including the Communication Fear Self-Report Scale (PRCA-24) and the Social Support Rating Scale (SSRS), and the various dimensions they included were investigated. A total of 171 valid questionnaires were recovered, with an effective recovery rate of 93.9%. Among them, 62 were boys, accounting for 36.26%, and 109 were girls, accounting for 63.74%. The average age is 21.35 years; 96 urban students, accounting for 56.14%, 75 rural students, accounting for 43.86%; 91 only children, accounting for 53.22%, 80 non-only children, accounting for 46.78%. The evaluation results use spss.2.0 to analyze the data.

2.2 Research Tools

There are many scales for the measurement of social support, including the Hamilton Depression Scale, the Chinese Social Support Scale (SSRS), the Hoehn and Yahr stages, the Schwab and England Scale (SE), and the Unified PD Rating Scale (UPDRS). [3] This study will use the Communication Fear Self-Report Scale (PRCA-24) and the Social Support Rating Scale (SSRS) and investigate the various dimensions they contain.

The Communication Fear Self-Report Scale (PRCA-24) was originally created by McCroskey in 1970. The scale has 24 items and 4 subscales, each with 6 items. The scale

adopts a 5-level scoring method, and the higher the total score, the higher the degree of communication fear. The scale is currently the best and most used tool for evaluating general communication fear. It measures interpersonal communication with a > 0.90 of the total scale and a > 0.75 of the subscale, with high reliability and validity.

The social support rating scale includes three dimensions: objective support (3 items), subjective support (4 items) and utilization of social support (3 items). The design of the questionnaire is basically reasonable, the items are easy to understand without ambiguity, and it has good reliability and validity.

2.3   Research Results

2.3.1   Gender Differences in Each Dimension of Communication Fear

An independent sample t-test was performed with gender as the independent variable and communication fear as the dependent variable. Tables 1, 2 and 3 shows that the scores of girls in the total score of communication fear, meeting communication fear and public communication fear are higher than those of boys, and the difference is statistically significant.

2.3.2   Differences in Communication Fear in the Source of Students and Whether They Are Only Children

With the independent variable of the source of students, and the total score of communication fear and its dimensions as dependent variables, one-way ANOVA was performed. Table1 shows that there is no significant difference in the total score of fear of communication, fear of meeting conversation, fear of two-person communication, fear of group communication, and fear of public speaking in the place of origin of students.

Whether it is an only child is an independent variable, and the total score of communication fear and its dimensions are used as dependent variables to conduct a one-way ANOVA. Table 2 shows that there is no significant difference in the total score of fear of communication, fear of meeting conversation, fear of two-person communication, fear of group communication, and fear of public speaking in the place of origin of students.

2.3.3   Correlation Analysis of Communication Fear and Social Support and Its Dimensions

As shown in Table 3, except for objective support in communication fear and its dimensions, there are negative correlations between social support dimensions and communication fear dimensions.

Table 1. Differences of communication fear in students' places of origin

Analysis of variance results			
	Total fear score	Subgroup	Both get credits
Town($n = 54$)	77.06 ± 14.99	19.37 ± 4.48	18.17 ± 4.66
Countryside($n = 47$)	76.26 ± 15.23	18.53 ± 4.38	18.53 ± 4.20
F	0.071	0.900	0.169
p	0.791	0.345	0.682

Analysis of variance results		
	Meeting score	Public points
Town($n = 54$)	20.07 ± 4.32	19.44 ± 3.89
Countryside($n = 47$)	19.45 ± 4.79	19.74 ± 3.65
F	0.478	0.158
p	0.491	0.692

$*p < 0.05 **p < 0.01$

Table 2. The difference of communication fear in whether it is an only child

Analysis of variance results			
Q1	Total fear score	Subgroup	Both get credits
YES (n = 48)	79.65 ± 16.46	20.02 ± 4.73	18.90 ± 5.00
NO (n = 53)	74.00 ± 13.20	18.04 ± 3.95	17.83 ± 3.83
F	3.647	5.264	1.461
p	0.059	0.024*	0.230

Analysis of variance results		
Q1	Meeting score	Public points
YES(n = 48)	20.75 ± 4.86	19.98 ± 4.20
NO(n = 53)	18.91 ± 4.07	19.23 ± 3.33
F	4.302	1.006
p	0.041*	0.318

$*p < 0.05 **p < 0.01$

Table 3. Correlation analysis of communication fear and social support and its dimensions

Pearson correlation		Objective support	Subjective support
Subgroup		-0.041	-0.417**
	p	0.684	0.000
Meeting score		-0.028	-0.448**
	p	0.780	0.000
Both get credits		-0.096	-0.237*
	p	0.337	0.017
Public points		-0.083	-0.318**
	p	0.407	0.001
Total fear score		-0.070	-0.408**
	p	0.487	0.000
Pearson correlation		Utilization of support	Total score of social support
Subgroup		-0.333**	-0.235*
	p	0.001	0.018
Meeting score		-0.279**	-0.224*
	p	0.005	0.025
Both get credits		-0.244*	-0.205*
	p	0.014	0.040
Public points		-0.205*	-0.212*
	p	0.040	0.033
Total fear score		-0.306**	-0.250*
	p	0.002	0.012

*$p < 0.05$ **$p < 0.01$

3   Analysis of Results from the Perspective of Big Data

3.1   Overview of the Study Results

The purpose of this study was to explore the relationship between communication fear and social support among college students. The results of this study are as follows:

There are significant gender differences in the total score of college students' communication fear, meeting communication fear and public communication fear. Girls scored higher than boys.

There is no difference in the source of students of college students' communication fear and its dimensions.

Except for objective support, all dimensions of social support were negatively correlated with all dimensions of communication fear.

3.2   Gender Difference Analysis of Each Dimension of Communication Fear

There are significant gender differences in the total score of college students' communication fear, meeting communication fear and public communication fear, and the score of girls is higher than that of boys. This may be due to the influence of traditional gender role concepts. The traditional concept of gender roles believes that because men have more initiative and independence in competing for social resources, men often show competitiveness, aggressiveness, and aggressiveness, and dare to innovate and develop in the face of new things, so they are in the midst of communication. In Confucian culture, the requirement for women to "marry with the father at home and follow the husband" places great emphasis on women's subordination to men, so women's own nature, ideas, will, interests, needs, etc. must be restrained and compromised. As a result, women's interpersonal communication is limited and social communication is also limited, and they often show a tendency to be uneasy, nervous and fearful in public communication. Secondly, men's workplace and job opportunities are also higher than women's, which forces women to concentrate more in family units, passively makes women lose the opportunity to actively communicate, and limits women's social activities, which may lead to women's Communication fear levels were higher than in men.

3.3   There is no Difference in the Source of Students for Each Dimension of Communication Fear

The analysis results show that there is no significant difference in communication fear and its dimensions when students come from urban or rural areas, which may reflect that with the acceleration of urbanization in my country, the gap between rural areas and urban areas is gradually narrowing. The permanent population rate has been greatly increased, and the new towns will also be committed to promoting the integration of urban and rural areas. There was no difference in the source of students leading to fear of communication.

4   The Important Manifestation of Big Data Analysis in Psychological Work

With the rapid development of digital technology, big data has been used to analyze students' social anxiety, identify groups with potential psychological crisis and develop psychological support plans which can promote psychological resources to more groups in need. It is of great guiding significance to improve the timeliness of psychological counseling work, and to enhance the directionality of psychological support and psychological construction.

Based on the results of big data analysis, establishing a sound psychological crisis intervention system is of great significance for preventing and reducing social risks. Colleges and universities can from a four-level crisis prevention and intervention system

with the help of student leaders and counselors. The mechanism includes psychology centers, college counselors, and class psychology committees. It can be used to monitor students' psychological dynamics in time, conduct mental health counseling programs, improve groups' response rate in the face of psychological crises, and effectively help students deal with the psychological crises triggered by major emergencies. And enterprise, enterprises can develop wearable devices and supporting APP that can measure users' physiological functions in real time, and upload the detection data to the cloud for further management and analysis. What's more, university researchers further analyze the users' psychological state by digging in big data. According to users' short-term mood changes, suitable decompression adjustment plans will be pushed to the user's APP. When the user's long-term mood fluctuation is too large and exceeds the threshold range, the system will remind the user to seek timely psychological counseling and treatment from psychological consultation agencies.

Besides, the above system can also be combined with smart home products to expand more functions. For example, a psychological warning smart light connected to the APP, which aim at relaxing and adjusting the user's mood, can be placed in the user's living room. The APP can control the device to change various lights according to the user's mood. In summary, digging in big data plays a regulating and auxiliary role for psychological intervention for users.

5   Conclusions

5.1   Analysis Conclusion

There are significant gender differences in the total score of college students' communication fear, meeting communication fear and public communication fear. Girls score higher than boys.

There is no difference in the source of students of college students' communication fear and its dimensions.

There is no difference between college students' communication fear and its dimensions whether it is an only child or not.

The total score of social support was negatively correlated with the total score of communication fear, public fear, two-person fear, meeting fear, and group fear.

5.2   Understudied

Due to various reasons, the paper questionnaire survey could not be conducted offline, and the volume of data collection questionnaires was not enough, which may have an impact on data analysis.

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