Effects of MOBA-type online games on college students' self-esteem and interpersonal trust--Take League of Legends as an example

Li Jiaqi[1,a,*], Li Ruomeng[1,b], Chen Tingwei[1,c], Su Weilin[1,d]

[1]*Institute of Analytical Psychology, City University of Macao, Macao, China*
[a]*986744823@qq.com,* [b]*919170755@qq.com,* [c]*892195583@qq.com,* [d]*568115341@qq.com*
Corresponding author

Abstract: MOBA-type online games, as the most popular online games, have features such as cooperation and competition. In order to investigate the influence of MOBA-type online games on interpersonal trust and self-esteem of college students, this paper takes League of Legends as an example and uses questionnaires to combine the influence of demographic variables such as gender and educational stages, and finds that the level of self-esteem and interpersonal trust of League of Legends players are significantly different from non-League of Legends players. This provides ideas for future exploration of the effects of different game types on college students.

Keywords: MOBA-type online games; college student groups; self-esteem; interpersonal trust

1. Research background:

In recent years, online games have been developing rapidly in China, and the online game players of college students have been maintained at a high level. As one of the most popular online games, MOBA games are rapidly rising among young users. This type of game requires both teamwork and mutual trust, as well as the individual skills to improve their combat power. Tencent's game "League of Legends" has more than 20 million daily active users and is a very classic MOBA online game. After IG team and EDG team won the global finals in 2018 and 2021, "League of Legends" has become a hot topic among college students in China. As a classic MOBA online game, League of Legends, with its own characteristics and rich game mechanics, has a wide and far-reaching impact on the interpersonal trust and self-esteem of college students.

2. Literature review

MOBA (Multiplayer Online Battle Arena), that is, multiplayer online tactical games, is also called ARTS (Action Real-Time Strategy), action real-time strategy games. MOBA-type games in combat players are usually divided into two teams which compete against each other in a scattered game map, and each player controls the selected role player through an interface, while the player needs to buy a certain amount of equipment. For the study of MOBA-type online games, [1]Sun Mingxin et al. (2020) used the interview method and concluded that MOBA-type handheld games can strengthen college students' self-identity, maintain offline social interaction and broaden social interaction to a certain extent. [2]Tu et al. (2019) used interviews and questionnaires to find that mobile MOBA games can have an impact on college students' emotion management. It can be seen that MOBA-type games affect college students from different perspectives, so this paper explores the effects of MOBA-type online games on them from the perspectives of self-esteem and interpersonal trust.

Self-esteem refers to an individual's emotional experience of self-worth and self-efficacy, which is an emotional component of the self-system and has certain evaluative significance. For example,[3] Peng Lou et al. (2018) used a questionnaire to explore the differences between self-esteem of Chinese and American e-sports players across game formats, genders of players, and countries, and found that computer gamers had lower self-esteem than mobile and console gamers. Through his study, [4]Luo Zengrang (2005) found a negative correlation between male self-esteem and frequency of computer games. Based on this, this paper proposes Hypothesis I and Hypothesis III. H1: There are differences in self-esteem levels between League of Legends college players and non-gaming college players. H3:

There are differences in self-esteem and interpersonal trust between League of Legends college players in terms of gender and educational stages.

Interpersonal trust is a core component of an individual's interpersonal relationships and refers to an expectation or belief that indicates the degree to which people can trust and rely on the words, promises, verbal or written statements of another person or group. Research has shown that a harmonious and accepting environment is conducive to interpersonal trust, and that social support gives individuals the psychological and social resources needed to construct trusting cognitions and implement trusting behaviors [5](Zeng Benjun, 2021). In an earlier study, [6]Cao Zhiliang (2007) examined the effects of play activities on interpersonal trust and interpersonal relationship building among elementary school students through an experimental method and found that students' interpersonal trust scores and interpersonal relationship building scores were significantly higher after the play activities than before the play activities. Based on this, this paper proposes Hypothesis II. H2: There is a difference in the level of interpersonal trust between League of Legends college players and non-gaming college players.

For self-esteem and interpersonal trust behaviors, sociometric theory states that self-esteem is an internal reflection of how well an individual does in interpersonal relationships, and it motivates individuals to adopt certain behaviors to restore interpersonal harmony. It was found that individuals with high levels of self-esteem tend to be more accepting of each other and show higher levels of trust in others in groups. And in the process of encountering difficulties, if others show a higher level of trust in the individual, it can both increase the confidence in overcoming difficulties and form a positive evaluation of self. It also provides emotional support for the individual, making the individual feel more "loved", enhancing self-acceptance and self-identity, and thus raising self-esteem levels. [7]Yang Zhaoning (2007) investigated the relationship between high school students' self-esteem and interpersonal trust, and the results showed that there was a significant correlation between high school students' self-esteem and interpersonal trust, and that self-esteem could effectively predict high school students' interpersonal trust. [8]Liu et al (2016) investigated the relationship between interpersonal relationships, interpersonal trust, and self-esteem among secondary school students. The results showed that there was a significant correlation between self-esteem, interpersonal trust and interpersonal relationships among secondary school students,and interpersonal trust played a significant mediating role between self-esteem and interpersonal relationships.

At present, the domestic research on online games has been relatively mature, and at the same time, many scholars have started to explore the relationship between games and psychology from the perspective of the types of online games. However, fewer studies have been conducted on the association of games with interpersonal trust and self-esteem among college students. Most studies in China have explored the relationship between self-esteem level and online game addiction from the perspective of self-esteem, for example, [9]Chen Hailong et al. (2012) found that self-esteem level had a significant predictive effect on online game addiction among college students. [10]Sun Chongyong et al. (2020) found that secondary school students' self-esteem levels can directly influence the level of addiction to mobile games, but few scholars have looked at game genre as a research point. Studies have shown that gaming activities can enhance students' trust in others and promote the development of their self-esteem; online games tend to be mentally enjoyable and contribute to the enhancement of their self-esteem.

Therefore, this paper analyzes and studies the effects of MOBA-type online games on interpersonal trust and self-esteem of college students by means of questionnaires, and explores whether they have problems of interpersonal trust and self-esteem due to the games, which are instructive for the self-concept of this group.

3. Research methodology

3.1. Research subjects:

A total of 350 university students, including undergraduate and postgraduate students, aged 18-28 years old, were selected to participate in the questionnaire. 350 questionnaires were distributed, 306 questionnaires were collected, and 293 valid questionnaires were returned, including 160 male and 132 female students. The effective rate was 83.71%.

3.2. Research tools and methods:

The Self-Esteem Scale developed by Rosenberg in 1956 was used. This scale is the most widely used

self-esteem scale, with a split-half reliability coefficient of 0.959 and a retest reliability coefficient of 0.782. The scale has a total of 10 items, including 5 positive and 5 negative scoring questions. Each question has four rating scales: highly related, related, unrelated, and highly unrelated, on a scale of 1 to 4. The higher the score, the higher the level of self-esteem of the subjects. The internal consistency coefficient in this survey was 0.79.

The Interpersonal Trust Scale was developed in 1976 by Rotter J.B., a professor in the Department of Psychology at the University of Connecticut, USA. The scale is used to assess the degree of reliability of subjects' commitments and behaviors toward others, and is widely used in China. The scale has a total of 25 items and is scored on a 5-point scale, with 1 point for full agreement and 5 points for full disagreement. Items 1, 2, 3, 4, 5, 7, 9, 10, 11, 13, 15, 19, 24, etc. are scored inversely. The higher the score, the higher the level of interpersonal trust. The internal consistency coefficient in this survey was 0.84.

In this study, the data collected were analyzed by descriptive statistical analysis, ANOVA, independent samples t-test, and one-way ANOVA for data processing using SPSS 19.0 statistical software.

4. Research results

4.1. Self-esteem statistics analysis:

The results of the survey on self-esteem are shown in Table 1: the mean value of the total self-esteem score of non-Hero League players was 28.79, and the standard deviation was 4.76; the mean value of the total self-esteem score of Hero League players was 31.13, and the standard deviation was 5.96.

Table 1: Descriptive statistics of self-esteem.

Whether is a League of Legends player	N	Mean	Standard deviation
Yes	234	31.13	5.96
No	58	28.79	4.76

4.2. Is the difference in self-esteem for League of Legends players

To investigate the difference in self-esteem between subjects who were League of Legends players or not, the total self-esteem score was used as the dependent variable and whether they were League of Legends players or not was used as the independent variable, and the results are shown in Table 2. The results found that the level of self-esteem of League of Legends players (M=31.13, SD=5.96) was significantly higher than that of non-Legends players (M=28.79, SD=4.76),t (290) = 2.78, p < 0.01, Cohen's d = 0.33, 95% CI [0.682, 3.996].

Table 2: Independent sample t-test for self-esteem.

	MD	SD	σ	t	Sig.
League of Legends players	31.13	5.96	.389	2.78	.006**
Non-Hero League of Legends players	28.79	4.76	.626		

Note: * p＜0.05, **p＜0.01,***p＜0.001

4.3. Analysis of differences in League of Legends players' self-esteem on demographic variables:

To further investigate whether there are differences between League of Legends players and non-Legends players in terms of gender and school band, univariate analysis was conducted with the total self-esteem score as the dependent variable and gender and school band as the independent variables, and the detailed results are as follows.

4.3.1. League of Legends players' self-esteem in terms of gender differences

As can be seen from Table 3: There is no significant difference between the level of self-esteem of male League of Legends players (M=31.40, SD=5.96) and female League of Legends players (M=30.66, SD=5.95) $F_{(1,233)}=0.92$, p = 0.34,$\eta 2$ p = 0.004.

Table 3: League of Legends players' self-esteem in terms of gender differences.

Gender	MD	SD	F	Sig.
Male	31.40	5.96	0.92	.339
Female	30.66	5.95		

Note: * p＜0.05, **p＜0.01, ***p＜0.001

4.3.2. Differences in self-esteem of League of Legends players in educational phase

As can be seen from Table 4, there was no significant difference in the level of self-esteem of League of Legends players among Freshman (M=30.14,SD=1.31), Sophomore(M=31.19,SD=1.00), Junior (M=30.50,SD=1.13), Senior (M=30.60,SD=0.79), 1st year of graduation school (M=32.53,SD=0.95), 2nd year of graduation school (M=31.20,SD=0.94), 3rd year of graduation school (M=32.00,SD=1.89). F (6,228)=0.68,p = 0.67,η 2 p = 0.018.

Table 4: Differences in self-esteem of League of Legends players in educational phase.

Educational phase	MD	SD	F	Sig.
Freshman	30.14	1.31		
Sophomore	31.19	1.00		
Junior	30.50	1.13		
Senior	30.60	0.79	0.68	.668
1st year of graduation school	32.53	0.95		
2nd year of graduation school	31.20	0.94		
3rd year of graduation school	32.00	1.89		

Note: *p＜0.05, **p＜0.01, ***p＜0.001

4.4. Statistical analysis of interpersonal

The results of this study on self-esteem are shown in Table 5: the mean value of interpersonal trust score of college students who were not League of Legends players was 77.24, and the standard deviation was 11.17; the mean value of interpersonal trust score of college students who were League of Legends players was 68.21, and the standard deviation was 9.19.

Table 5: Statistical analysis of interpersonal trust.

Whether is a League of Legends player	N	Mean	Standard deviation
Yes	234	77.24	11.17
No	58	68.21	9.19

4.5. Is the difference in interpersonal trust for League of Legends players

To investigate the difference in self-esteem between subjects who were League of Legends players or not, the total self-esteem score was used as the dependent variable and whether they were League of Legends players or not was used as the independent variable, and the results are shown in Table 6. The results found that the interpersonal trust level of League of Legends players (M=77.24, SD=11.17) was significantly higher than that of non-Legends players (M=68.21,SD=9.19),t (290) = 5.69, p < 0.001, Cohen's d = 0.42,95% CI [2.152, 7.313].

Table 6: Independent sample t-test for interpersonal trust.

	MD	SD	σ	t	Sig.
League of Legends players	77.24	11.17	.730	5.69	.000***
Non-Hero League of Legends players	68.21	9.19	1.207		

Note: * p＜0.05, **p＜0.01, ***p＜0.001

4.6. Analysis of interpersonal trust of League of Legends players differing on demographic variables:

To further investigate whether there are differences between League of Legends players and non-Legends players in terms of gender and educational stages, univariate analysis was conducted with the total interpersonal trust score as the dependent variable and gender and school band as the independent variables, respectively, and the detailed results are as follows.

4.6.1. Differences of interpersonal trust of League of Legends players in terms of gender

As can be seen from Table 7: There is no significant difference between the level of interpersonal trust of male League of Legends players (M=78.04, SD=12.63) and female League of Legends players (M=75.99, SD=7.94), F(1,233)=1.83, p = 0.18,η 2 p = 0.008.

Table 7: Differences of interpersonal trust of League of Legends players in terms of gender.

Gender	MD	SD	F	Sig.
Male	78.04	12.63	1.83	.177
Female	75.99	7.94		

Note: * p＜0.05, **p＜0.01, ***p＜0.001

4.6.2. Differences in the interpersonal trust of League of Legends players in terms of educational phase

As can be seen from Table 8, there is no significant difference in the level of self-esteem of League of Legends players among Freshman(M=75.28,SD=2.42), Sophomore (M=78.61,SD=1.85), Junior (M=75.14,SD=2.09), Senior (M=74.47,SD=1.45), 1st year of graduation (M=78.78,SD=1.73), 2nd year of graduation school (M=80.15,SD=1.73), 3rd year of graduation school (M=81.50,SD=3.50), F(6,228)=1.82,p = 0.095,η 2 p = 0.046.

Table 8: League of Legends players and self-esteem in gender differences.

Educational phase	MD	SD	F	Sig.
Freshman	75.28	2.42		
Sophomore	78.61	1.85		
Junior	75.14	2.09		
Senior	74.47	1.45	1.82	.095
1st year of graduation school	78.78	1.73		
2nd year of graduation school	80.15	1.73		
3rd year of graduation school	81.50	3.50		

Note: * p＜0.05, **p＜0.01, ***p＜0.001

5. Conclusion and discussion

5.1. Whether there is a significant difference in self-esteem between college players who play MOBA-type online games:

From the descriptive statistics in Table 1 and the single independent sample t-test in Table 2, it is concluded that there is a significant difference in the level of self-esteem (p < 0.01) between League of Legends players and non-League of Legends players in this online MOBA game with League of Legends as an example. Due to the confrontational and competitive characteristics of MOBA games, it is easy to make players feel a certain degree of role substitution. Although studies have shown that online game players are mainly interested in satisfying the needs of "seeking excitement and challenge, regulating emotions, leisure and entertainment, and escaping from reality", some scholars believe that winning in such games with clear rules, clear goals, experiences that bring action, results and feedback can bring people self-satisfaction. Therefore, the self-esteem level of college players of MOBA-type online games is higher than that of non-game players.

5.2. Whether there is a significant difference in interpersonal trust between college students who play MOBA-type online games:

From the descriptive statistics in Table 5 and the independent sample t-test in Table 6, it is concluded that there is a significant difference between League of Legends players and non-League of Legends players (p < 0.001) in this online MOBA game, taking League of Legends as an example. MOBA games require cooperation and collaboration with each other. They can communicate and cooperate with other players in real-time using voice or text to complete tasks, and they need to trust each other for perfect group combat. So the interpersonal level of college players in MOBA-type online games is higher than that of non-game players.

5.3. Differences in MOBA players' self-esteem and interpersonal trust on demographic variables:

One-way ANOVAs from Tables 3, 4, 7, and 8 revealed that there were no significant differences in the levels of self-esteem and interpersonal trust among League of Legends players by gender and educational stage. Most MOBA online game players have strong motivation to play and want to win the game and be recognized by their teammates, so gender and educational stage do not have much influence on self-esteem level. And in order to win the game, it is necessary to have teammates who cooperate with each other and trust their teammates, so there is also no significant difference between gender and educational stage in the level of interpersonal trust.

Among the many studies on online games, there is very limited research specifically on the effects of MOBA-type online games on college students' self-esteem and interpersonal trust. In this paper, we found through questionnaires that MOBA-type online games do have an impact on the self-esteem and interpersonal trust levels of college student groups. Although it can help college students relax emotionally, increase motivation, enhance their self-esteem levels, and strengthen interpersonal trust levels, inappropriate use can also lead to negative emotions and verbal abuse of teammates. It is foreseeable that the influence of MOBA-type online games on college students will grow, therefore, it is more and more urgent and important to provide proper guidance to college students.

References

[1] Sun M.X.,Guo H.L. & Jin Z.H.. (2020).The influence of MOBA-type hand games on college students' offline social interaction--Taking "Glory of Kings" as an example. Journalism Research Guide,(24),18-19.

[2] Tu, Jia-Bao & Fan, YuanChen. (2019). A study on the influence of mobile MOBA games on college students' emotional management: the example of "King of Glory". Journal of Heilongjiang Ecological Engineering Vocational College, (04), 106-107.

[3] Peng Luo & Guo Qing. (2018). A comparative study on motivation and self-esteem of Chinese and American e-sports players. Journal of Chengdu Institute of Sports, (04), 16-23.

[4] Luo Zengrang. (2005). The effects of computer games on adolescents' friendship and self-esteem. Chinese School Health, (06), 449-450.

[5] Zeng, Benjun & Wei, Ning. (2021). A study on the relationship between social support, self-esteem and interpersonal trust among college students. Journal of Guangdong Transportation Vocational Technology College, (04), 108-113.

[6] Cao Zhiliang. (2007). A study on the influence of game activities on interpersonal relationship and interpersonal trust of 6th grade students in elementary school (Master's thesis, South China Normal University).

[7] Yang Zhaoning, Jia Rui & Chen Xiangli. (2007). A study on the relationship between self-esteem and interpersonal trust in high school students. Chinese Journal of Health Psychology, (01), 61-62.

[8] Liu GZ, Hu TQ & Zhang DJ. (2016). Interpersonal relationships and their relationship with self-esteem and interpersonal trust among secondary school students. Chinese Journal of Clinical Psychology, (02), 349-351.

[9] Chen, H. L. & Fu, C. L. (2012). The relationship between loneliness, self-esteem level and online game addiction among college students. Campus Psychology, (06), 374-376.

[10] Sun, Chong-Yong, Li, Shu-Lian, Xu, Hua-Hua, Eddie, J. & Li, Ling-Can. (2020). Relationship between self-esteem, social support and mobile game addiction among secondary school students. Sichuan Mental Health (06), 546-550.