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The Effectiveness and Development of Game Interaction Mechanism Based on User Psychology

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Abstract. With the increasing importance of the social functions of games and the emotional needs of players, the design of in-game communication mechanisms has been widely studied, but the systematic research on the collaborative optimization of multimodal communication is still insufficient. This paper focuses on three main communication methods: voice, text and system feedback, and analyzes their roles and practical problems in emotional connection, teamwork and motivation. Research shows that voice can improve immersion and empathy, but it is prone to harassment; Words are conducive to rational expression and rhythm control, but the efficiency is low. System feedback can stimulate achievement motivation, but may interfere with the game experience. If these contradictions are not properly resolved, it will restrict the depth of players' participation and the quality of experience. Based on this, this paper proposes to build an intelligent voice monitoring and user autonomy mechanism, develop efficient text input and structured expression auxiliary functions, and promote situational adaptive system feedback design, so as to build a more inclusive, efficient and immersive interactive environment while ensuring freedom of communication.

Keywords: Game interaction mechanism, user psychology, interactive environment

1. Introduction

With the rapid development of digital technology, electronic games are not only limited to the traditional entertainment category, but have become a new cultural carrier with broad social influence and far-reaching cultural significance, and are gradually becoming a new generation of leisure mode for the public. With the continuous expansion of the functions of the game, it is not only limited to the level of entertainment, but has been gradually applied in various practical fields such as education, mental health, social interaction and so on. Based on the relevant research of Ekaterina Arshavskaya and Irinamclaughlin, it is also shown that the game-based teaching method can not only create a relaxed learning environment for students, but also effectively improve students' learning participation and learning effectiveness [1]. It can not only bring the passionate competition and joyful sense of achievement, but also effectively alleviate the spiritual distress suffered by modern people through the profound psychological impact on users, cultivate the ability of teamwork, and solve complex problems.

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Therefore, this study aims to systematically sort out the corresponding relationship between game communication mode and users' psychological needs, improve the theoretical system, provide practical reference for developers, promote the wider application of game communication in the fields of education, psychology and social care, and finally realize the unification of its entertainment value and social value.

2. Classification and psychological basis of game communication mode

2.1. Classification of communication modes based on psychological needs

Based on the psychological needs of players, the different modes of communication behavior can be generally divided into the following three categories, and each mode corresponds to different typical scenes and different psychological mechanisms.

The voice communication mode takes real-time audio transmission as the core, which is often seen in high-intensity collaboration scenes such as team replica and competitive matches. Its advantage lies in its high instantaneity and rich emotional transmission, which not only meets the needs of rapid coordination of the team, but also meets the "needs of belonging and love" in Maslow's hierarchy of needs. For example, the guild voice in World of Warcraft supports real-time communication between 10-25 people. Tactical command and emotional sharing significantly enhance the cohesion among members, and many players even develop into friends in reality. The research of Wulan Nurharanti et al. Also confirmed that in Garena Free Fire, teenagers with a high level of peer interaction also had higher participation in game behavior, further indicating that voice communication has a deepening effect on meeting the "needs of belonging and love" [2].

The text communication mode is mainly text interaction, covering asynchronous scenes such as private chat, plot options, and message boards. Its biggest advantage is that it allows players to control the rhythm independently, supports in-depth expression and emotional reflection, and meets the "independent needs" in the self-determination theory. For example, Wizard 3 guides players to make moral choices through multiple plot options, which directly affect the ending of the story and stimulate the motivation of a multi-week experience.

Syakilahazzahra and others' research on Roblox pointed out that the text interaction in the game helps to build an inclusive online community, and this virtual social behavior has potential migration value for real social ability [3].

The system communication mode refers to the information push automatically generated by the game program, including achievement tips, task guidance, and health reminders. The core of its design lies in the accuracy and timeliness of information, which not only helps players to establish a cognitive framework but also strengthens achievement motivation through instant feedback, echoing the "reinforcement theory" in behaviorist psychology. For example, "glory of the king" prompts for rank promotion through a pop-up window and sound effect combination. It should be noted that the system communication needs to consider the personality differences of players: extrovert players may prefer frequent and eye-catching prompts, while introvert players tend to be more low-key and less intrusive. Therefore, most games allow users to customize notification settings. Based on Computer Supported Cooperative Work (CSCW) and activity theory, this study classifies the interactions in multiplayer games, identifies three core forms of interaction: "player player", "player game system" and "player in game object", and points out that these forms of interaction are interrelated through verbal, nonverbal symbols and other communicative behaviors [4].

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2.2. Analysis of existing problems of communication mode

Although many optimization attempts have been made, the following three types of problems still exist in the current game communication design.

First, the negative behavior of voice communication and ethical disputes. The voice function of competitive games is often forced to open, but it is lack of effective supervision, and abuse, harassment and other behaviors occur frequently; This kind of design is criticized as "using psychological weakness to damage players' autonomy", and the actual effect is often counterproductive: many female sex players dare not turn on the microphone due to harassment, while other players use the non disturbance mode for a long time to avoid interference, which weakens the social function of the game.

Second, the low efficiency of written communication and experience defects. The input box size of the mobile terminal is narrow, and the operation error rate of elderly players is high; The pure text lacks the support of tone and expression, which is easy to cause misunderstanding (for example, "this can lose" may be interpreted as provocation); The world channel and other public information areas refresh too fast, and the effective information is flooded, resulting in many players finally giving up text social networking.

Third, the homogeneity and interference of system communication. Most game notifications still use the single form of "pop-up+prompt tone", which lacks innovation, leading to aesthetic fatigue of players; Too high push frequency also causes disgust. Many users chose to turn off the global notification, but missed the key information. This phenomenon reflects that some developers blindly follow suit to save costs, ignoring the coordination between the notification mechanism and the overall game experience.

Moreover, recently, hendrikushirang and other scholars have also made a more in-depth study on the relationship between online game addiction and individual social interaction, which shows that there is an obvious positive correlation between online game addiction and individual social interaction among friends, but there is no obvious positive correlation between online game addiction and individual social interaction in school environment, and there is a positive correlation between social interaction between friends and school [5].

3. Effectiveness analysis of communication mode

3.1. Emotional resonance mechanism

The game communication mode plays a core role in establishing the emotional dependence of players, and its effectiveness stems from the multi-level activation of the psychological mechanism of emotional resonance.

First of all, the game communication mode uses its high fidelity and real-time transmission means. Voice communication can not only effectively transmit rich audio features such as intonation, rhythm, intensity, etc., but also convey the speaker's emotions, so that the listener can better feel the passive "emotional infection" and deeper "situational substitution". An encouraging dialogue can significantly improve the cohesion of the team, and a negative expression can quickly destroy the team's collaboration experience.

Secondly, with the asynchronous interaction with players in the form of symbols, the communication of words opens a space for users' in-depth emotional reflection and rich expression. With its unique text information that can be re-read and aftertaste, it can not only prolong the

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emotional experience in time, but also more easily form a deep, lasting, and indelible emotional memory. Formed a more in-depth, more real feeling of the inner world of the game.

Finally, through carefully programmed emotional design, the system can affect the player's emotions at the most appropriate time. With the presentation of a series of information, such as customized birthday greetings and seasonal reminders to players, it not only meets the "relationship needs" and "independent needs" in the self-determination theory, but also makes players feel the pleasure of being paid attention to by others in the game. Through two large-scale surveys (sample size 1150 and 3035 players respectively), the study found that positive social interaction (such as collaboration and emotional support) in online games was positively correlated with bridging social capital (cross-group connection) and combining social capital (close group ties) in real life, and could significantly reduce loneliness [6].

3.2. Maintenance mechanism of cardiac flow experience

As a highly engaged psychological state, flow experience urgently needs a high degree of coordination between the communication mode and game content.

Voice communication in real-time cooperative games creates conditions for the generation of flow state by reducing cognitive load and accelerating information transmission. Real-time voice enables players to quickly respond to changes in the environment and focus on the task itself rather than the interface operation, which meets the requirements of "challenge skill balance" and "clear goal" in the flow theory.

It can be seen that different communication modes have their own uniqueness in the experience of flow. For example, the high social presence and timely instantaneity of voice are more likely to draw people into the experience of the same flow, while the communication of words is more suitable for the deep immersion experience of individuals. The research of Albinagiliazova and others extended the conclusion of "characteristics of social participation" in such collaboration scenarios to other fields, and also provided theoretical support for further revealing the rules of communication behavior of medium professional individuals in collaboration [7].

3.3. Technical support and communication experience optimization

The communication mode not only has a deep understanding of users and continuously meets their needs, but also constantly promotes the development of the system's push mechanism from single, passive and disorderly to intelligent, active and orderly. With an in-depth understanding of the player's behavior, preferences and context, it can not only transmit the most appropriate information in the most appropriate form at the most appropriate time, but also ensure the effectiveness of the information and the minimum interference. Emmanuelj. genot pointed out that the existing content sharing models often ignore the strategic interaction between users, while the game model based on decision theory can explore the optimization direction through the ideal parameter setting, which provides a new idea for in-game notification push and text content distribution, and helps to more accurately simulate the real social behavior and improve the adaptability of communication [8].

At the same time, the communication of VR/AR has also ushered in a qualitative leap. It is not only the upgrading of the image and sound effects of the game, but also the complete immersion of players in the game world and the real fun of the game. Based on the transcendence of traditional text, voice, etc., the more detailed transmission of non-verbal information to users, such as richer expressions, more flexible gestures, more subtle posture, etc., makes the virtual communication not only closer to the real face-to-face communication, but also better convey the users' real feelings,

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inner feelings, etc., which greatly improves the social presence and emotional depth of virtual communication.

4. Development suggestions and optimization direction

With the continuous progress of technology, it not only makes the user's communication experience more and more convenient, but also pushes more and more new ethical issues to us, such as how to better protect the privacy of players while improving efficiency. How to make full use of personalized recommendations while avoiding players falling into the so-called "cocoon room of information" is worth serious thinking and exploration, and seeking a balance between the development of technology and humanistic care.

4.1. Communication mode design concept innovation

The design should be based on "player comfort", rather than one-sided pursuit of interactive frequency. The game communication mode can implement the design principle of "positive communication". Introduce the "friendly behavior reward" mechanism and uncivilized language filtering function in the voice channel; Add emotion recognition and mild expression suggestions to the text channel. Rest reminders and positive feedback are added to the system information. Emotional design should run through the whole development process, including early research and communication boundary, mid-term prototype test, and late iteration optimization.

4.2. Communication mode technology innovation path

The evolution of game communication technology should focus on building an accurate, safe and adaptive support system. By further optimizing the input mode of text, it should not only constantly put forward the requirements of real-time and inclusiveness, but also actively explore some new input modes such as new brain computer interfaces, and greatly enhance the support for voice to text. At the same time, it should be able to understand those non-standard expressions, and better connect the linkage mechanism of the text environment, so as to greatly enhance the sense of immersion. With the further optimization of the input box and the efficient management of the channel information, it can better provide users with a more friendly operation experience.

The future technology development should systematically integrate voice, text and system mechanisms, highlight security, adaptability and emotional design, and build a truly player-centric communication system.

4.3. Communication mode and industrial synergy strategy

Relying on the continuous close cooperation with the industry, the continuous deepening of education and cross-border cooperation, it can gradually improve a set of communication ecological systems with industry characteristics and can effectively provide high-quality communication services for the majority of educators.

First, it can establish a hierarchical supervision mechanism, strengthen the supervision of in-game communication content, and implement gradient punishment for violations. Introduce third-party age grading standards (for example, 3+games only open text communication, and 7+restrict voice to preset phrases). Develop parents' supervision tools to reduce the risk of Internet harassment for minors. Jefryadi et al. Pointed out that parenting styles, online game use, and peer interaction

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jointly affect pupils' academic performance, and parenting styles do not affect their academic performance through the mediation of peer interaction [9].

Secondly, pay attention to the popularization of communication psychological knowledge and positive guidance. Embed "civilized communication" tips in the game to encourage public welfare institutions to make short videos to popularize how to deal with online harassment and express their emotions effectively. The research of Arinibungafirdaus and others provides empirical support for this strategy. The chi-square test showed that online game addiction was not significantly associated with adolescents' self-identity, and 53% of the respondents showed a sense of responsibility, mutual assistance and other positive social attitudes in the game [10].

Relying on the continuous improvement of players' metacognitive ability in the psychological mechanism, it can fundamentally optimize the communication ecology.

5. Conclusion

Based on the in-depth analysis and Research on the communication mode of games, this paper not only has a deeper understanding of its classification and psychological basis, but also has a preliminary grasp of its effectiveness in reality. By means of real-time voice interaction and in-depth text expression, game mode communication can not only meet the deep needs of real-time collaboration and emotional resonance, but also better meet the higher psychological needs of in-depth expression and self-control, so as to better realize the clear grasp of information and continuous feedback on achievements. Although the game dialogue system has made significant progress in dynamic adaptation, intelligent push and AI interaction, it still faces a series of problems, such as the ethical problems of voice, the efficiency of text and the interference caused by the logic of the system itself. More importantly, it still needs to further explore and study the special needs of highly alienated players, teenagers in remote areas and other groups, as well as the influence of external factors such as their upbringing and peer interaction.

Not only does the commercial value of the game depend on its sophisticated communication design, but even more importantly, it will directly have a profound impact on the psychological health of players and the cultural construction of society. Only continuous innovation with the player as the core and the unremitting pursuit of the ethical bottom line of the game, through the full integration of multidisciplinary knowledge and the continuous optimization of the game design, promotes the healthy development of the game, and makes the game truly become a digital bridge that can convey emotion and create social value. This also returns to the essence of the game design: the game is the emotional connector between people, and the communication mode plays a decisive role in the stable operation of this connector.

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