



Psychological Study on College Students' Simulated Pet Attachment: Social Anxiety and Emotional Needs Perspective

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Abstract. With the deep integration of digital technology into daily life, simulated pets represented by "cloud cat watching" and "electronic pets" have become an emerging phenomenon of emotional companionship and consumption among college students. This study aims to explore the psychological mechanism of college students' emotional attachment to simulated pets, especially its relationship with social anxiety, real-life pet-keeping experience and individual emotional needs. A questionnaire survey was conducted among 432 college students, and SPSS 27.0 was used for descriptive statistics, reliability and validity test, difference test and correlation analysis. The results show that: firstly, the usage rate of simulated pets among college students (8.6%) is still in the initial stage, but more than 70% of the group without continuous offline pet-keeping experience forms its potential user base; secondly, the overall social anxiety of college students is at a moderately low level, but the anxiety is prominent in unfamiliar and heterosexual social scenarios; thirdly, the perception of emotional value of simulated pets (such as relieving anxiety, loneliness and providing a sense of security) is significantly positively correlated with the level of individual social anxiety, indicating that simulated pets may act as an emotional compensation for real-life social discomfort; fourthly, there is no significant correlation between offline pet-keeping experience and simulated pet use behavior, and gender has no significant impact on their attachment level, revealing the uniqueness of simulated pets as a universal "low-stress companionship". This study confirms the changes in young people's emotional attachment patterns in the digital age, provides an empirical basis for understanding their emotional compensation behavior, and also provides a direction for the optimal design of relevant mental health products and digital companionship services.

Keywords: Simulated Pets; Emotional Attachment; Social Anxiety; College Students

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1 Introduction

1.1 Research Background and Problem Raising

In the highly media-oriented social context, young people's ways of emotional expression and satisfaction are undergoing profound reconstruction. A phenomenon known as "simulated pets" or "cloud pet-keeping" has quietly emerged among college students — they obtain emotional comfort and companionship by watching pet content on short video platforms and feeding electronic pets in social applications^[1]. This phenomenon goes beyond simple entertainment and reflects the psychological needs of the digital generation to seek new emotional connections under the pressure of real-life social interaction, spatial restrictions and economic constraints. Particularly, existing observations point out that young people's consumption of raising pets (real or virtual) is essentially a process of constructing "emotional simulacra", that is, simulating, obtaining and displaying a certain emotional state through consumption behavior^[2]. Against this background, this study focuses on college students and attempts to clarify several core questions: What is the internal psychological mechanism of college students' emotional attachment to simulated pets? To what extent is this attachment related to the widespread social anxiety in their real life? Is a simulated pet a simple substitute for offline pet-keeping, or a new form of "emotional compensation" with independent psychological value?

1.2 Literature Review

Academic research on the emotional relationship between pets and humans has a long history, but the academic discussion on its digital form — "simulated pets" is just emerging. Existing research is mainly carried out from the following three levels.

Firstly, at the level of phenomenon description and motivation, research generally regards "cloud pet-keeping" as a strategy for young people to cope with the pressure of modern life. A special study by Wuhan University regards "cloud pet-keeping" as an Internet-based behavioral practice, which can effectively meet participants' needs for companionship, pleasure and emotional projection, and initially outlines the behavioral pattern of simulated pet attachment^[3]. This provides a direct reference for defining core concepts and observation dimensions in this study.

Secondly, at the level of theoretical interpretation, scholars try to interpret this phenomenon with a deeper framework. Some studies include it in the category of "emotional consumption" and propose that young people raising pets (including virtual forms) are creating a kind of "emotional simulacra", that is, compensating or replacing unmet emotional needs in the real world through media-based or symbolic pet interaction, and completing the self-construction and performance of emotions^[4]. This theoretical perspective provides a powerful analytical tool for analyzing the psychosocial function of simulated pet attachment in this study.

Finally, at the level of psychological mechanism and influence, a small number of empirical studies have begun to pay attention to its potential psychological effects. For example, a quantitative study specifically explores the relationship between "cloud cat

watching" behavior and addiction tendency, and verifies the path that simulated pet attachment may lead to media dependence by meeting psychological needs through structural equation model. This study confirms that simulated pet attachment has measurable important psychological dimensions that may affect behavior, laying a methodological foundation for this study to explore its relationship with social anxiety and other variables.

However, the comprehensive review of existing literature reveals two obvious research gaps: first, most studies focus on phenomenon description or theoretical deduction, lacking empirical data analysis based on a large sample of college students, especially lacking the systematic correlation test of demographic variables, psychological characteristics and use behavior; second, most studies view the "simulated pet" phenomenon in isolation, failing to systematically investigate it in the context of college students' specific psychological development tasks (such as dealing with social anxiety and establishing intimate relationships). Does simulated pet aggravate social avoidance or provide a safe "emotional practice field"? Existing studies fail to give a data-based answer.

1.3 Research Purpose and Significance

Based on the above background and literature gaps, this study aims to achieve the following purposes: first, through questionnaire survey, depict a panoramic view of college students' simulated pet use behavior and their demographic characteristics; second, quantitatively analyze the correlation between college students' social anxiety level and their emotional perception and attachment degree to simulated pets; third, test whether offline pet-keeping experience, gender and other factors have a regulatory effect on simulated pet attachment.

The significance of this study lies in: theoretically, pushing the research of simulated pets from phenomenon description to empirical test of psychological mechanism, and deepening the understanding of young people's emotional compensation mechanism in the digital age by connecting the "emotional simulacra" theory with specific psychological variables (social anxiety). In practice, the research conclusions can provide a new perspective for college mental health education, and also provide accurate user insights and function optimization basis for enterprises committed to developing digital companionship products, guiding them to design products with more positive psychological intervention value.

2 Research Methods

2.1 Research Subjects

Questionnaires were distributed to college students through an online questionnaire platform, and a total of 608 questionnaires were collected. After eliminating invalid questionnaires such as duplicate IPs and too short answering time (less than 30 seconds), 432 valid questionnaires were finally obtained. The sample covers seven

variables including gender, age, grade, only child status, economic status, offline pet-keeping experience and simulated pet use, which is representative to a certain extent.

2.2 Research Tools

Basic Information and Behavior Questionnaire: including demographic variables such as gender, age, grade and economic level, as well as behavioral questions such as offline pet-keeping experience and simulated pet contact^[5].

Social Anxiety Scale: 8 items are used to measure unfamiliar social interaction, heterosexual interaction, group occasions and other aspects, with Likert 5-point scoring (1=completely inconsistent, 5=completely consistent). The internal consistency reliability (Cronbach's α) of the scale is 0.879, indicating good reliability (Table 3 for item-level statistics).

Simulated Pet Perception Scale: 7 self-compiled items, mainly evaluating emotional comfort, exclusive sense establishment, emotional interaction and other aspects, also with 5-point scoring. After KMO and Bartlett sphericity test (Table 4), it is suitable for factor analysis, and the cumulative variance contribution rate of the first factor is 65.375%, indicating good structural validity (Table 6)..

2.3 Data Analysis

SPSS 27.0 was used for data processing, including descriptive statistics (frequency, mean, standard deviation), reliability and validity analysis, independent sample t-test, chi-square test and Pearson correlation analysis.

3 Research Results

3.1 Analysis of Basic Sample Characteristics

In the gender composition of 321 females (74.3%) and 111 males (25.7%), the core group aged 18-25 accounts for 93.5% (404 people), consistent with the definition of college students' age; in terms of grade distribution, the total proportion of freshmen (38.7%) and sophomores (34.0%) reaches 72.7%; in terms of family structure, 332 are non-only children (76.9%) and 100 are only children (23.1%); the group with monthly disposable income of 1001-3000 yuan accounts for 75.2%, reflecting that the overall economic level is in the moderately low range; the proportion of people without continuous offline pet-keeping experience (including those who have raised pets but not continuously and those who have never raised pets) is 72.5%; the proportion of simulated pet use is only 8.6% (37 people), and the non-use rate is 91.4%, indicating low market awareness. The sample fits the typical characteristics of college students in core dimensions such as age and grade, and the distribution characteristics of economic status and pet-keeping experience are also consistent with the current general situation of college students, providing a representative research basis for the subsequent discussion on the psychological mechanism of simulated pet attachment.

3.2 Descriptive Results of College Students' Psychological Characteristics

The average scores of the 8 items of social anxiety range from 2.52 to 3.42, and the overall level is moderately low. Among them, "like to be alone" (3.42 ± 1.102) and "don't know how to get along with the opposite sex" (3.18 ± 1.199) have relatively high scores, and "loneliness in the group" (2.52 ± 1.178) has the lowest score. The average scores of the 7 items of simulated pet perception range from 2.78 to 3.22, and the overall recognition degree is at a medium level. "Worry about the pet getting sick or leaving" (3.22 ± 1.236) has the highest score, and "generate a sense of exclusivity" (2.78 ± 1.239) has the lowest score, reflecting the potential expectation of emotional healing needs. The results present the specific performance tendency of college students' social anxiety and the core concerns of their perception of simulated pet functions, providing an intuitive characteristic basis for further analyzing the internal relationship between social anxiety and simulated pet attachment.

3.3 Reliability and Validity Analysis Results

Table 1. Case Processing Summary

Case	Number of Cases	Number of Cases	Percentage
Valid	432	100.0%	
Excluded	0	0.0%	
Total	432	100.0%	
Note: a. Based on listwise deletion of all variables in the process			

Table 2. Reliability Statistics

Cronbach's Alpha	Number of Items
0.879	8

Table 3. Item Statistics

Item	Mean	Standard Deviation	Number of Cases
Dislike someone or be disliked by someone	2.87	1.113	432
Feel unnatural when meeting strangers	3.10	1.108	432

Item	Mean	Standard Deviation	Number of Cases
Feel lonely, lost and non-existent when staying with a group of friends	2.52	1.178	432
Don't know how to get along with the opposite sex	3.18	1.199	432
Often feel uneasy when staying with a group of people	2.73	1.123	432
Try to avoid formal social occasions	2.95	1.144	432
Like to be alone	3.42	1.102	432
Only communicate with very close friends	3.13	1.162	432

Table 4. KMO and Bartlett's Test

KMO Measure of Sampling Adequacy	0.885
Bartlett's Test of Sphericity	Approx. Chi-Square: 2151.962
	df: 21
	Sig.: 0.000

Table 5. Communalities

Item	Initial	Extraction
Know or have used applications related to electronic cute pets	1.000	0.492
Simulated pet content can relieve my anxiety and pressure	1.000	0.746
Watching simulated pet content can relieve my loneliness	1.000	0.756
I will have a "sense of exclusivity" towards simulated pets	1.000	0.760
The emotional feedback of pets will affect my mood	1.000	0.590
I worry that the pet will get sick or leave due to my negligence	1.000	0.470
Simulated pets make me feel emotionally safe and stable	1.000	0.761
Note: Extraction Method: Principal Component Analysis		

Table 6. Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.576	65.375	65.375	4.576	65.374	65.374
2	0.991	14.160	79.535	-	-	-
3	0.495	7.065	86.600	-	-	-
4	0.276	3.938	90.539	-	-	-
5	0.246	3.509	94.048	-	-	-
6	0.227	3.244	97.292	-	-	-
7	0.190	2.708	100.000	-	-	-
Note: Extraction Method: Principal Component Analysis						

The Cronbach's Alpha coefficient of the Social Anxiety Scale is 0.879 (Table 2), with no extreme abnormal data for each item, excellent internal consistency, and stable and reliable measurement results. The KMO value of the Simulated Pet Perception Scale is 0.885, and the Bartlett sphericity test $p<0.001$, which is suitable for factor analysis. The communalities extraction values range from 0.470 to 0.761, and the cumulative variance contribution rate of the first common factor is 65.375%, indicating good structural validity (Table 5). The reliability and validity indicators of both scales meet the stringent standards of social science research for measurement tools, ensuring the

scientificity and accuracy of data collection in this study, and providing a solid methodological support for the credibility of subsequent statistical analysis results (Tables 1–6).

3.4 Difference Test Results

Table 7. Independent Samples Test

Levene's Test for Equality of Variances			t-test for Equality of Means					95% Confidence Interval of the Difference	
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Equal variances assumed	7.937	0.005	-1.360	430	0.175	-1.648	1.212	-4.029	0.734
Equal variances not assumed	-	-	-1.210	159.283	0.228	-1.648	1.362	-4.337	1.041

Table 8. Chi-Square Test

	Value	df	Asymptotic Sig. (2-sided)
Pearson Chi-Square	7.562	4	0.109
Likelihood Ratio	7.092	4	0.131
N of Valid Cases	432	-	-

The independent sample t-test (Table 7) shows that there is no significant difference in the total score of simulated pet attachment between male and female college students ($t=-1.210$, $p=0.228>0.05$), and the core emotional needs are the same. The chi-square test (Table 8) shows that there is no significant correlation between offline pet-keeping experience and simulated pet use behavior ($\chi^2=7.562$, $p=0.109>0.05$), and simulated pets are not a simple substitute for offline pet-keeping. The formation of simulated pet attachment is less directly affected by demographic and past experience variables such as gender and offline pet-keeping experience, and its core attraction lies in the unique value of "stress-free companionship". [6]Regardless of offline pet-keeping experience,

college students' acceptance of simulated pets is not significantly affected, which provides the possibility for products to break through user circle restrictions, and provides evidence for the differential analysis level of the subsequent core research perspective focusing on social anxiety and emotional needs (Tables 7–8).

3.5 Correlation Analysis Results

There is a significant positive correlation among all indicators of social anxiety, and the correlation between "group unease" and "avoid formal social occasions" is the highest ($r=0.722$), indicating the holistic characteristics of social state; there is a moderate to high intensity significant positive correlation among all indicators of simulated pet perception, and the correlation between "relieve anxiety" and "relieve loneliness" is the highest ($r=0.805$), indicating the unity of emotional healing function; there is a weak to moderate significant positive correlation between the two, and the correlation between "group loneliness" and "emotional security" is the highest ($r=0.275$), indicating that the stronger the social discomfort, the more obvious the emotional demand for simulated pets. The results present the internal logical correlation within social anxiety, within simulated pet perception and between the two, confirming the integrity of social anxiety state and the unity of simulated pet emotional healing function, and providing key correlation evidence for revealing the psychological path of social anxiety affecting simulated pet attachment^[7].

4 Conclusion

This study shows that college students' emotional attachment to simulated pets is not significantly affected by gender and offline pet-keeping experience, but is related to the degree of social anxiety. The proportion of college students using simulated pets is low, but most people, especially students without long-term pet-keeping experience, have potential demand for their emotional companionship function, and economic factor is an important practical constraint affecting their choice.

The overall social anxiety of college students is at a moderately low level, and unfamiliar social interaction and heterosexual communication are common anxiety scenarios; simulated pets have potential auxiliary effects in relieving anxiety and loneliness^[8].

The core mechanism of simulated pet attachment is emotional connection and psychological healing, and users achieve psychological compensation through emotional projection and two-way interaction, which is more significant in individuals with high social anxiety.

Gender and offline pet-keeping experience have no significant impact on simulated pet attachment, while grade and family structure regulate the psychological effect of simulated pets by shaping different emotional demand patterns.

Simulated pets can meet the demand for emotional companionship to a certain extent, especially for people with social anxiety, but it is still necessary to pay attention to the balance between them and real social interaction to avoid the weakening of social function caused by excessive dependence. "Cloud pet-watching" also reflects the desire

to escape from reality. How to better use the comfort and filling effect of this virtual space and promote the high-quality development of young people should be the focus of social attention, so as to prevent young people from falling into a virtual "utopia" for a long time^[9].

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