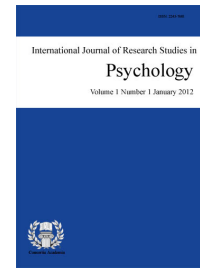# Loneliness, social support, and interpersonal trust among Chinese university students: Basis for educational implications and recommendations

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Abstract

This study conducted a survey of 2,546 Chinese university students to explore the relationships between loneliness, social support, and interpersonal trust, and to analyze the differences in these variables across demographic factors such as gender, academic discipline, and geographic origin. The findings revealed that female students reported significantly higher levels of social support compared to male students, and humanities students had higher social support levels than science students. In terms of interpersonal trust, science students scored slightly higher than humanities students. Additionally, students from rural areas exhibited significantly higher levels of loneliness compared to their urban counterparts, and their levels of social support were lower. Students from intact families reported lower levels of loneliness than those from non-intact families, and they also demonstrated higher levels of social support and interpersonal trust. The study further showed that both social support and interpersonal trust were significantly negatively correlated with loneliness, indicating that increasing social support and enhancing interpersonal trust can reduce feelings of loneliness. This finding underscores the importance of fostering social support and interpersonal trust in preventing and mitigating loneliness among university students. Moreover, the study found a positive correlation between social support and interpersonal trust, suggesting that these two factors may complement each other in maintaining mental health. Based on these results, the study offers specific educational recommendations aimed at improving social support and interpersonal trust among different groups of university students through targeted interventions and support strategies, thereby reducing their loneliness and promoting their psychological well-being.

Keywords: loneliness, social support, interpersonal trust

Loneliness, social support, and interpersonal trust among Chinese university students: Basis for educational implications and recommendations

1. Introduction

In recent years, with the rapid growth of China's social and economic landscape, changes in family structure, particularly the increase in multi-child families, and the government's strong emphasis on vocational education, university students are facing unprecedented pressures and challenges. Consequently, paying attention to the mental health of Chinese university students and assisting them in their healthy development has become a critical task for schools, government agencies, and other organizations.

This study focuses on current university students in China, using the Loneliness Scale, the Adolescent Social Support Scale, and the Interpersonal Trust Scale to conduct a survey of 1,170 male and 1,346 female students. These participants were randomly selected through stratified random sampling from several universities located in Anhui province. The students surveyed came from various majors and academic years, and the questionnaire investigated their academic disciplines, place of origin, grade level, status as an only child, and family background. In daily campus life, aside from academic studies, it is not uncommon to observe that a portion of students choose to spend extended periods in their dormitories. Male students often immerse themselves in the world of video games, while female students are more inclined to binge-watch TV shows. This phenomenon has almost become a norm on campus. They each linger in their respective virtual worlds, rarely having the opportunity to experience the reality and beauty of the outside world. Even when the sun shines brightly outside, many still choose to stay in their dorms, staring at their computer and phone screens, letting time quietly slip away. University students, who are at a crucial stage in their lives, are undergoing profound emotional and psychological changes, with considerable fluctuations. These changes lead them to have higher expectations for interpersonal relationships while pursuing academic achievements. They are gradually realizing that healthy interpersonal relationships are crucial for successfully navigating university life and achieving personal growth and development. However, the fast pace of society, increasing competition, and the constant evolution of electronic devices have led people to devote more and more energy to relationships constructed through these devices. Unfortunately, this mode of communication often lacks genuine emotional exchange and more frequently serves as a hollow means of passing time, leading to increasingly distant real-life relationships and rarer genuine emotional interactions between people. This state of interpersonal relationships inevitably affects university students, as it fails to meet their interpersonal needs and, under various pressures, can easily trigger a series of psychological issues, such as loneliness, low self-esteem, depression, and anxiety. If these issues are not effectively addressed over time, they may lead to varying degrees of loneliness among students.

Loneliness is an emotional experience that arises when an individual's social relationships are insufficient in quantity or quality, leading to this unpleasant feeling (Wu et al.,2024). This sensation can negatively impact an individual's physical and mental health, potentially resulting in various psychological issues, and in severe cases, may even lead to extreme behaviors such as self-harm or suicide. Such outcomes not only severely compromise the individual's health but also bring negative consequences to their family and society. Loneliness, as a complex concept, has three prominent core characteristics. First, it is closely related to interpersonal relationships and directly reflects abnormalities in these relationships. Second, loneliness is a subjective experience, meaning that this feeling may not fully align with the individual's objective social environment—an individual may not be truly isolated socially yet still experience loneliness. Loneliness is not synonymous with social isolation. While social isolation can lead to loneliness, loneliness can also occur even when the individual is surrounded by others. This is because loneliness is more closely related to internal emotional states rather than merely dependent on the external social environment. Third, loneliness is not a fixed state; it can change over time and with varying circumstances. Individuals may experience different degrees of loneliness at different life stages, in different

social settings, and in the context of different interpersonal relationships. Finally, loneliness often carries a negative connotation, making individuals prone to anxiety and distress. As a negative emotional experience, loneliness can further exacerbate psychological problems.

According to Erikson's psychosocial development theory, university students are at an age where they face the crisis of intimacy versus isolation. During this period, they need to establish friendships or intimate relationships with others to achieve a sense of social approval. If they fail to successfully build such relationships, they are likely to fall into feelings of loneliness. Therefore, it is crucial to closely monitor the issue of loneliness among university students and to actively seek effective methods to alleviate their loneliness. Positive coping strategies and robust social support play a significant role in alleviating loneliness. This not only provides an effective approach to addressing the problem of loneliness among university students but also contributes to their physical and mental health and social adaptation. We should take proactive measures to provide university students with ample social support and assist them in establishing healthy interpersonal relationships, thereby effectively reducing their loneliness. By doing so, we can not only improve the quality of life for university students but also contribute to social harmony and stability.

Social support, as a multifaceted and deeply layered concept, lacks a universally agreed-upon definition in the academic community, but its core essence is well understood. Specifically, social support manifests primarily as the provision of tangible assistance and emotional understanding and comfort when individuals encounter difficulties or have emotional needs (Kneavel, 2021). This support is not limited to the close care of family and friends but also extends to the helping hand offered by professionals and social support organizations. Furthermore, social support plays an indispensable role in the interaction between individuals and society. It not only helps individuals build harmonious and positive social networks but also greatly enhances their social adaptability and self-efficacy. This enhanced capability allows individuals to face challenges with greater confidence and composure. Simultaneously, social support is crucial to an individual's overall development. From health and happiness to life satisfaction, social support acts as a positive driving force, improving individuals' quality of life and enhancing their psychological well-being, thereby fostering self-esteem and self-confidence (Liu et al.,2022). This invisible force plays a pivotal role in individuals' daily lives. Naturally, we can delve further into the profound impact of social support on both individuals and society. Social support has far-reaching implications for individuals' mental health and emotional regulation. At various stages of life, we may face different pressures and challenges, and during these times, social support serves as a safe haven, providing emotional comfort and psychological support. By receiving care and assistance from others, we are better able to regulate our emotions, reduce anxiety and depression, and maintain a positive, healthy mindset. Moreover, social support is vital for individuals' career development and social integration. In the workplace, professional skills and knowledge are essential, but so are good interpersonal relationships and social skills. Social support can offer career guidance and advice, helping us better cope with challenges and difficulties at work. It also enhances our social skills, making it easier for us to integrate into society and build extensive networks. In summary, social support is a multidimensional concept with significant implications for individuals' mental health, emotional regulation, career development, social integration, and the harmonious stability of society. Therefore, we should actively build social support networks, strengthen mutual assistance and cooperation among individuals, and jointly create a society filled with care and support.

The sage Yang Quan of the Jin Dynasty once left a maxim: "Treat people with sincerity, and the world will trust you." This saying not only highlights the central role of trust in interpersonal relationships but also underscores its foundational importance in building and maintaining healthy social connections. Trust is undoubtedly an indispensable component in constructing a harmonious and stable social structure. In recent years, interpersonal trust, a crucial subset of trust, has emerged as a focal point of cross-disciplinary research.

Interpersonal trust refers to the deep assessment of the reliability of others' actions, promises, or statements. It not only reflects the emotional bonds between individuals but also signifies a high level of recognition of each other's morality and character. In the field of social psychology, there is a general consensus among experts and

scholars that interpersonal trust is a bidirectional, interactive concept. It exists in the interactions between individuals, embodying mutual support and trust as expressed through behaviors and beliefs. As Ben-Ner (2010) explained, interpersonal trust is an essential part of social interactions, forming bridges between people that contribute to a more harmonious and stable society. In the process of interpersonal interaction, trust, as a pervasive psychological and social phenomenon, forms the cornerstone of maintaining social order and harmonious functioning. Individuals constantly evaluate whether they have gained the trust of others while also hoping not to betray that trust. Trust not only guides individuals to form reasonable expectations of others' future responses or behaviors but also allows for the prediction of potential outcomes in social interactions, thereby significantly advancing the deepening and development of interpersonal relationships. Therefore, trust has a crucial impact on individual mental health and the overall harmony and stability of society. Interpersonal relationships are vital connections between social individuals, playing a key role in how people manage their relationships, experience life, and achieve harmonious interactions in work and study. Conversely, poor interpersonal relationships can become obstacles to individual survival and development. The university student population, as a critical force about to integrate into society, undergoes a growth trajectory that includes the initial stage of independent learning and living, deep exploration within the academic environment, and preparation for facing the complexities of the broader social environment in the future. In this process, university students' interpersonal communication skills are particularly important and require gradual enhancement and improvement. During their academic pursuits, university students generally face relatively straightforward interpersonal issues; however, once they enter society, they will encounter a more complex and dynamic interpersonal environment. Thus, it can be said that university students are at a critical juncture concerning interpersonal relationship issues. This approach not only helps alleviate their loneliness but also enhances their interpersonal communication skills, ultimately enabling them to build a healthy and stable network of relationships, laying a solid foundation for their future career development and social integration (Zheng et al., 2022).

In summary, under the impact of social transformation, the erosion of social trust, and the emergence of new social conflicts, the issue of loneliness has become particularly prominent, triggering a series of social problems. Loneliness not only exacerbates the psychological issues faced by university students but, in severe cases, may even lead to tendencies of self-harm or suicide, which not only seriously damages their health but also has adverse effects on their families and society.

The significance of this study lies first in its in-depth exploration and investigation of the current status of loneliness, social support, and interpersonal trust among university students. Such research helps this demographic gain a clearer understanding of their psychological state, which is crucial for their growth and development. Additionally, this type of study can draw the attention of more scholars and society at large, leading to increased research and discussion on these psychological issues, thereby providing more comprehensive help and support to university students. Secondly, by analyzing the differences in these three variables across demographic variables and identifying the related factors that may influence these differences, this study contributes to a deeper understanding of the causes of loneliness, social support, and interpersonal trust among university students. This not only aids in finding effective methods to reduce loneliness among university students but also provides valuable insights into enhancing social support and increasing levels of interpersonal trust. Finally, through the analysis and discussion of the relationships among the three variables, this study proposes targeted intervention strategies aimed at reducing the level of loneliness among university students. These strategies are designed to help students establish healthier interpersonal relationships, improve their social support levels, and strengthen their sense of interpersonal trust. This has significant practical implications for improving the psychological health of university students and enhancing their quality of life. Overall, this study not only deepens our understanding of the current status and causes of loneliness, social support, and interpersonal trust among university students but also provides effective strategies and methods for addressing these issues. This holds considerable theoretical and practical value for promoting the mental health of university students and improving their quality of life.

Objectives of the Study - This study aims to understand the levels of loneliness, social support, and interpersonal trust among Chinese university students by conducting a survey with over 2,500 participants. It seeks to analyze the differences in these three variables across demographic factors such as gender, major, academic year, place of origin, status as an only child, and family background. By conducting correlation and regression analyses on these three variables, the study aims to explore the relationships among them. Analyzing the overall status of the three variables, the demographic differences, and the relationships among them can provide educational guidance and recommendations to help university students alleviate loneliness, enhance their interpersonal communication skills, and promote the psychological well-being of Chinese university students.

2. Methods

Research Design - This study will employ a quantitative research method, which is designed to derive generalizable and objective conclusions through the use of statistical, mathematical, or computational tools to analyze data. The core of quantitative research lies in its reliance on numerical data and data analysis to verify hypotheses or answer research questions. Quantitative research systematically collects, quantifies, and analyzes data to explore relationships or patterns among phenomena. Researchers typically use tools such as surveys, experimental designs, databases, or other forms of data collection to ensure the measurability and reliability of the data. The characteristics of quantitative research include:(1)Objectivity: A significant feature of quantitative research is its objectivity, wherein researchers strive to minimize subjective interference during data collection and analysis, thereby ensuring the neutrality and reliability of the results. (2)Replicability: The design of quantitative research methods generally has high replicability, allowing other researchers to verify the original study's results by following the same step. (3)Wide Applicability: Quantitative research methods are applicable across various fields, including social sciences, natural sciences, economics, and psychology. The results can often be generalized to larger populations or contexts (Aithal et al.,2020). (4)Hypothesis Testing: Quantitative research is often based on hypothesis testing, where researchers propose hypotheses before the study begins and use data analysis to determine whether these hypotheses hold true.

Descriptive correlational research is a research method aimed at describing the relationships or correlations between variables without interpreting or speculating on the causal relationships between them. It combines the characteristics of descriptive research and correlational research, with the primary goal of identifying and quantifying the strength and direction of the relationships between two or more variables. Descriptive correlational research reveals associations between two or more variables by observing, recording, and analyzing data. This method typically uses statistical techniques, such as Pearson correlation coefficient or Spearman rank correlation coefficient, to quantitatively describe the relationships between variables. By systematically collecting and analyzing data, descriptive correlational research provides a simple and effective way to explore relationships between variables, and because it does not require causal relationships between variables, it can be widely applied in various research contexts.

This study employs the descriptive correlational research method to explore the relationships between loneliness, social support, and interpersonal trust among college students. The study collected quantitative data on loneliness, social support, and interpersonal trust through a survey of 2,546 Chinese college students. These data provided an overall description of these variables, such as the impact of gender, academic major, and regional origin on them. This process reflects the characteristics of descriptive research, which involves summarizing and describing the basic features of variables.

The study further utilized t-tests and analysis of variance (ANOVA) to examine the differences in loneliness, social support, and interpersonal trust across different demographic variables. Correlational analysis was used to explore the relationships between loneliness, social support, and interpersonal trust, analyzing the strength and direction of these relationships. This approach aligns with the characteristics of correlational research but does not attempt to infer causality. The study also explored differences in loneliness, social support, and interpersonal trust concerning demographic variables such as gender, academic major, and regional origin, highlighting the

varying levels of these variables. Although these analyses enhance the understanding of the characteristics of different groups, the focus remains on description and correlation rather than causal inference. The reasons for choosing the descriptive correlational research method in this study are as follows:(1) Exploring Relationships Between Variables: The study aims to investigate the relationships between loneliness, social support, and interpersonal trust, as well as how these variables are influenced by demographic factors. The descriptive correlational research method is well-suited for this type of research because it can reveal associations between variables without requiring assumptions or validations of causality. This approach provides an effective starting point for researchers and can lay the foundation for future in-depth studies.(2)Suitability for Large Sample Surveys: The descriptive correlational research method is suitable for analyzing large sample sizes, as in the case of the 2,546 college students involved in this study. This method allows researchers to collect and analyze large amounts of data in real-world settings and systematically describe the characteristics of the data and the relationships between variables.(3) Emphasis on Description and Summary: The goal of this study is to describe and summarize the relationships between different variables in the college student population, rather than to explore the causal mechanisms between these variables. Therefore, the descriptive correlational research method is an ideal choice, as it focuses on summarizing and describing existing data rather than testing hypotheses or making causal inferences.(4)Providing Practical Recommendations: By using descriptive correlational research, researchers can propose practical educational recommendations based on the correlations found, such as enhancing social support and interpersonal trust to reduce loneliness. These recommendations can be directly applied to educational and mental health interventions without requiring explicit proof of causal relationships. In summary, the descriptive correlational research method has been appropriately applied in this study, helping researchers gain valuable insights into the relationships between loneliness, social support, and interpersonal trust by revealing the correlations between variables. The choice of this method is justified by its suitability for descriptive analysis and relationship exploration in large-scale data, providing practical guidance for application without requiring explicit conclusions about causal relationships.

Participants of the Study - In this study, the target participants were randomly selected using simple random sampling from a population of 2,600 college students at general higher education institutions in Anhui Province, resulting in 2,546 valid questionnaires being collected. The primary advantages of simple random sampling include: (1) the elimination of bias, as each individual has an equal chance of being selected, which minimizes bias in the selection process and ensures the representativeness of the sample; (2) the generalizability of results, since the sample is randomly selected, conclusions drawn from the sample can be more accurately generalized to the entire population; (3) the simplicity of statistical analysis, as the independence and randomness of simple random sampling make the calculation and analysis of most statistical methods, such as mean and variance, simpler and more straightforward; (4) the ease of understanding and implementation, since the concept and process of simple random sampling are easy to understand and execute, making it suitable for various situations, particularly when the population size is relatively small; and (5) the reduction of systematic error, as randomization effectively reduces errors due to systematic biases, such as researcher subjectivity or external factors, making the sample more random and diverse. These advantages make simple random sampling a widely used sampling method, particularly when a highly representative sample is needed for the study.

Demographics - Among the 2,546 valid participants: (1) gender distribution was 1,170 male participants and 1,346 female participants; (2) academic major distribution was 1,242 participants from humanities and social sciences and 1,304 participants from science and engineering; (3) place of origin distribution was 1,189 participants from urban areas and 1,357 participants from rural areas; (4) grade distribution was 675 freshmen, 624 sophomores, 661 juniors, and 586 seniors (including fifth-year students); (5) only child status distribution was 607 only children and 1,939 non-only children; and (6) family integrity distribution was 2,319 participants from intact families and 227 participants from non-intact families. These details present the basic characteristics of the research sample in terms of gender, academic major, grade, place of origin, only child status, and family integrity, laying the foundation for subsequent data analysis and discussion of results.

Measures

Loneliness Scale

The College Student Loneliness Questionnaire uses the third edition of the "Loneliness Scale" developed by Russell (1987). This scale consists of 20 items, with 11 positively worded items and 9 negatively worded items, using a 4-point scoring system where 1 point indicates "never feel this way" and 4 points indicate "often feel this way." The items numbered 1, 5, 6, 9, 10, 15, 16, 19, and 20 are reverse-scored. For reverse-scored items, a response of 1 is scored as 4 points, 2 as 3 points, 3 as 2 points, and 4 as 1 point. For positively scored items, a response of 1 is scored as 1 point, 2 as 2 points, 3 as 3 points, and 4 as 4 points. The total score is obtained by summing the scores of all 20 items, resulting in a total score ranging from 20 to 80, with higher scores indicating a stronger experience of loneliness. In this study, reliability analysis showed that the Cronbach's alpha coefficient for the Loneliness Scale was 0.894, indicating high reliability of the scale. Validity analysis showed that the KMO value of the scale was 0.921, $p < 0.001$, indicating high validity of the scale.

The study aimed to explore the impact of interpersonal sensitivity on suicidal ideation among college students. The results showed that, in terms of demographic variables, there was no significant difference in loneliness based on gender; there were significant differences in loneliness scores among students from different academic disciplines, with humanities students scoring higher on loneliness than engineering students; there was no significant difference in loneliness based on hometown location; and there was no significant difference in loneliness between only children and non-only children. Relative to other variable relationships, there was a significant positive correlation between loneliness and suicidal ideation, and loneliness played a mediating role between interpersonal sensitivity and suicidal ideation; college students' loneliness acted as a chain mediating factor between interpersonal sensitivity and suicidal ideation.

The results of the comprehensive analysis of the research data are as follows: graduate students' loneliness scores were slightly below the theoretical average. In terms of demographic variables, the effect of gender on loneliness among graduate students was not significant; the effect of being an only child on loneliness was also not significant, indicating that there was no significant difference in loneliness between only children and non-only children. Different grades and academic disciplines significantly affected loneliness scores, suggesting that graduate students in different grades or academic disciplines may experience significant differences in loneliness due to factors such as academic pressure and course structure. Furthermore, relative to other variable relationships, there were significant correlations between emotional intelligence, social anxiety, loneliness, and subjective well-being among graduate students; social anxiety and loneliness played a chain mediating role between emotional intelligence and subjective well-being, with loneliness serving as a mediating variable between emotional intelligence and subjective well-being, indicating that emotional intelligence can indirectly influence an individual's subjective well-being through the sole mediating effect of loneliness.

Social Support Scale

The Adolescent Social Support Scale was developed by Ye Yuemei, Dai Xiaoyang, Cui Hanqing, and Wang E in 2008, based on Xiao Shuiyuan's social support theoretical model. The scale includes content related to the social support resources available to the respondent and their utilization of these resources. The former is further divided into two parts: the subjective perception of the resources they possess and the objective help they actually receive. The latter refers to the extent to which individuals utilize the social resources they have, with research indicating significant individual differences in the utilization of social resources. The overall homogeneity reliability of the Adolescent Social Support Scale reaches 0.91, with internal consistency for each dimension exceeding 0.80, meeting psychometric requirements. The homogeneity reliability between two samples is very close, both reaching high levels, further proving the good internal consistency of the questionnaire. Additionally, the test-retest reliability of the dimensions and the total score of the scale ranges between 0.63 and 0.82, indicating good stability of the scale.

The Adolescent Social Support Scale is a self-report measure that includes three dimensions: subjective support, objective support, and support utilization, with a total of 17 items. A five-point Likert scale is used, where "strongly agree" scores 5 points, "somewhat agree" scores 4 points, "uncertain" scores 3 points, "somewhat disagree" scores 2 points, and "strongly disagree" scores 1 point. The subjective support subscale includes 5 items (1, 4, 6, 7, 9) reflecting the respondent's perceived social support resources. The objective support subscale includes 6 items (8, 10, 11, 13, 15, 16) reflecting the respondent's actual received social support. The support utilization subscale includes 6 items (2, 3, 5, 12, 14, 17) reflecting the respondent's active utilization of social support. The total score, which is the sum of all 17 items, reflects the overall social support status of the respondent.

In this study, reliability analysis showed that the Cronbach's alpha coefficients for the subjective support dimension, objective support dimension, support utilization dimension, and the overall social support scale were 0.911, 0.937, 0.918, and 0.961, respectively, indicating high reliability of the scale. Validity analysis showed that the KMO value of the scale was 0.962, p < 0.001, indicating high validity of the scale.

Interpersonal Trust Scale

The Interpersonal Trust Scale used in this study is a revised version by Ding et al.,(2020), based on Rotter's Interpersonal Trust Scale (ITS). The scale was translated into Chinese, with content that does not align with Chinese culture and context being removed. The revised scale retains 10 items from the ITS. An exploratory factor analysis was conducted on the 10 items, with results showing KMO = 0.81, Bartlett's = 926.32, P = 0.000 < 0.001, indicating that the data were suitable for factor analysis. Principal component analysis with varimax rotation extracted two factors with eigenvalues greater than 1, which were named "Trust in Social Phenomena" and "Trust in Commitment Behaviors," collectively explaining 50.43% of the variance. The factor loadings for the items on these factors ranged from 0.47 to 0.82 and 0.54 to 0.78, respectively. The overall Cronbach's alpha for the scale was 0.69, with the alpha coefficients for the two subscales being 0.81 and 0.61. The revised Interpersonal Trust Scale consists of 10 items divided into two dimensions: Trust in Social Phenomena and Trust in Commitment Behaviors. The scale uses a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), with items 1, 2, 3, 4, 5, and 6 being reverse-scored. Higher scores indicate higher levels of interpersonal trust. The items corresponding to the Trust in Social Phenomena factor are 1, 2, 3, 4, 5, and 6, while the items corresponding to the Trust in Commitment Behaviors factor are 7, 8, 9, and 10.

In this study, reliability analysis showed that the Cronbach's alpha coefficients for the Trust in Social Phenomena dimension, Trust in Commitment Behaviors dimension, and the overall Interpersonal Trust Scale were 0.771, 0.709, and 0.679, respectively, indicating that the scale has good reliability. Validity analysis showed that the KMO value of the scale was 0.804, p < 0.001, indicating that the scale has high validity.

Data Analysis - The conception of this study stems from a broad concern for the mental health of university students, particularly as psychological issues among this population have become increasingly prominent in the context of rapid societal change. After an extensive review of the literature, the researchers identified loneliness, social support, and interpersonal trust as key factors influencing the mental health of university students. Loneliness, a common emotional experience, not only affects students' daily lives but can also lead to more severe psychological problems such as depression and anxiety. At the same time, social support and interpersonal trust are widely recognized as important factors in alleviating loneliness, but the specific relationships between them show complexity and variability across different cultural and demographic groups. Therefore, the researchers decided to conduct an in-depth investigation among Chinese university students to explore the relationships between loneliness, social support, and interpersonal trust, and to examine how these relationships vary across different demographic variables.

In determining the research topic, the researchers considered the following aspects: (1)Research background and practical significance: With the development of globalization and modernization, the social environment and interpersonal relationships of university students have undergone significant changes, making it crucial to

understand how these changes impact mental health; (2)Research objectives and questions: This study aims to reveal the interrelationships between loneliness, social support, and interpersonal trust, and how these relationships are influenced by demographic variables such as gender, academic major, and place of origin. This goal provided a clear direction for the topic selection; (3)Feasibility of research methods: By employing descriptive correlational research methods, the researchers can explore the associations between variables without assuming causal relationships, which is well-suited to the objectives of this study.

Based on these considerations, the final topic was determined: *"LONELINESS, SOCIAL SUPPORT, AND INTERPERSONAL TRUST AMONG CHINESE UNIVERSITY STUDENTS: BASIS FOR EDUCATIONAL IMPLICATIONS AND RECOMMENDATIONS." This topic encapsulates the core content of the research while emphasizing the potential application of the findings in educational practice.

To ensure the broad scope of the study and the representativeness of the data, the researchers used a simple random sampling method to select participants from universities in Anhui Province. After obtaining the consent of the participants, relevant questionnaires were distributed. The testing began after explaining the instructions to the participants, and the questionnaires were collected on-site after completion. The collected questionnaires were then systematically organized for data entry. After data entry, further cleaning and logical error checks were performed to ensure the accuracy of the data analysis. Finally, a total of 2,546 valid questionnaires were collected from a randomly selected sample of 2,600 students. The sample included various demographic variables such as gender, academic major, grade level, and place of origin, ensuring the diversity of the sample and the wide applicability of the research findings.

The specific sources of data include the following: (1)Questionnaire survey: The researchers designed and distributed a questionnaire that included three measurement dimensions: loneliness, social support, and interpersonal trust. These questionnaires underwent rigorous reliability and validity testing to ensure the accuracy and reliability of the measurement results; (2)Collection of demographic information: The questionnaires filled out by the participants also included demographic information such as gender, academic major, grade level, and place of origin, providing a basis for subsequent subgroup analysis; (3)Data cleaning and preprocessing: The collected data were carefully cleaned and preprocessed, removing invalid or incomplete responses, resulting in 2,546 valid data points. To ensure data accuracy, the researchers also reviewed the completion status of each questionnaire.

The data analysis is prepared to employ various statistical methods to uncover the relationships between variables and examine the influence of demographic variables: (1)Descriptive statistics: Initially, descriptive statistical analysis will be conducted on the collected data, including the overall levels of loneliness, social support, and interpersonal trust, as well as the distribution of these variables across demographic dimensions such as gender, academic major, grade level, and place of origin. These descriptive statistics provide a preliminary overview for subsequent analysis; (2)T-tests and ANOVA: To investigate the differences in loneliness, social support, and interpersonal trust across different demographic variables, the researchers plan to use T-tests and analysis of variance (ANOVA). These methods will help identify significant differences in the variables across different groups, revealing the impact of factors such as gender, academic major, and place of origin on these psychological variables; (3)Correlation analysis: The researchers also plan to use Pearson correlation coefficients to analyze the relationships between loneliness, social support, and interpersonal trust, focusing on examining their correlations, direction, and strength.

Ethical Consideration - After careful consideration, ethical issues were fully taken into account. Before distributing the survey questionnaires, the participants were explicitly informed that the survey would be conducted anonymously, and the collected data would be used solely for research purposes without causing any adverse effects on the participants. Therefore, the research team ensured that students could freely decide whether to participate in the study without any pressure or coercion during the research process. They had the right to withdraw from the study at any time without facing any form of penalty. Additionally, before agreeing to

participate in the research, participants were fully informed about the nature of the study, potential risks and benefits, and their rights as research participants. This information was communicated to the participants clearly and understandably. Furthermore, the identities of the students participating in the research were kept as confidential as possible, meaning that their names and other identifying information were not disclosed to anyone outside the research team without their consent. Researchers also considered any potential physical or psychological harm that could be caused to participating students and took appropriate measures to minimize such risks. Finally, to respect the time and effort of the participating students, they received appropriate compensation for their participation, which may have taken the form of course credits, monetary payment, or other forms of remuneration, depending on the specific circumstances.

3. Results and discussion

The collected questionnaire data will be entered into SPSS 27.0 for statistical analysis. The specific statistical methods that will be employed include descriptive statistical analysis, reliability and validity analysis, difference testing, correlation analysis, and regression analysis.

Table 1
Frequency Table for the Respondent's Demographic Profile

	f	%
Sex		
Male	1170	46.0
Female	1376	54.0
Major		
Humanities	1242	48.8
Sciences	1304	51.2
Place of Origin		
Rural	1357	53.3
Urban	1189	46.7
Grade		
Freshman	675	26.5
Sophomore	624	24.5
Junior	661	26.0
Senior or fifth year	586	23.0
Only child		
Yes	607	23.8
No	1939	76.2
Family Situation during childhood		
Complete Family	2319	91.1
Non Traditional Family Structure	227	8.9

Table 1 presents the demographic information of the participants. A total of 2,600 questionnaires were distributed and all were returned, among which 2,546 were valid. Among the participants, 1,170 were male, accounting for 46%, and 1,376 were female, accounting for 54%, indicating a relatively balanced gender distribution within an acceptable range. Regarding academic disciplines, 1,242 participants (48.8%) were from the humanities, and 1,304 participants (51.2%) were from the sciences, demonstrating a balanced representation between the two groups. In terms of place of origin, 1,189 participants (46.7%) were from urban areas, while 1,357 participants (53.3%) were from rural areas. The distribution across grade levels was as follows: 675 participants (26.5%) were first-year students, 624 participants (24.5%) were second-year students, 661 participants (26%) were third-year students, and 586 participants (23%) were in their fourth or fifth year. This relatively balanced distribution across grade levels facilitates comparisons between different academic years. Regarding the only-child status, 607 participants (23.8%) were only children, while 1,939 participants (76.2%) were non-only children, a distribution that may reflect the influence of China's two-child and three-child policies, as an increasing number of students born after 2000 come from non-only-child families. Finally, in terms of family structure, 2,319 participants (91.1%) were from intact families, and 227 participants (8.9%) were from non-intact families, indicating that the majority of participants come from intact families, which aligns with typical societal norms in China.

Table 2
Participants' Loneliness Scores (N=2546)

	Weighted Mean	Std Dev	Interpretation
Loneliness	44.42	8.13	High Loneliness

Table 2 shows the levels of loneliness among the participants. The minimum loneliness score in the participant group was 20, and the maximum was 78. The table reveals that the average loneliness score was 44.42±8.13. According to the established norms for this scale in China, a loneliness score exceeding 44 indicates a high level of loneliness. Therefore, the participants in this study exhibited relatively high levels of loneliness. From a psychological perspective, university students often face the transition from family to society upon entering university, which may lead to leaving a familiar home environment and confronting academic and life pressures on their own. Additionally, from a cultural and social perspective, China is a relatively more collectivist society, which may influence university students' experiences of loneliness. Collectivist cultures may lead individuals to prioritize group harmony over personal independence, causing them to feel a greater sense of responsibility and loneliness when facing interpersonal failures (Huo et al.,2021; Zhang et al.,2021). Studies suggest that individuals in collectivist cultures may be more cautious in forming relationships, which could exacerbate their feelings of loneliness in social interactions (Liu et al., 2019). Furthermore, interpersonal relationships in collectivist cultures emphasize long-term commitment and collective responsibility, making individuals feel a deeper sense of loss and loneliness when relationships break down (Heu et al., 2020).The results of this study are consistent with those of Xu (2023), who conducted a survey among 883 Chinese university students (432 males and 451 females). Using the UCLA Loneliness Scale, data analysis revealed that the average loneliness score among students was 42.90±14.26, with a minimum score of 24 and a maximum score of 78, indicating a moderate to high level of loneliness among the participants. Similarly, Xiao et al.,(2023) used the UCLA Loneliness Scale to survey 288 Chinese university students (93 males and 195 females). Data analysis showed that the average loneliness score among these participants was 44.97±9.36, indicating a high level of loneliness. These studies suggest that loneliness is prevalent among university students and has become a significant factor affecting their mental health.

Table 3
Participants' Social Support (N=2546)

	Weighted Mean	Std Dev	Interpretation
Subjective Social Support	18.72	3.82	High Subjective Social Support
Objective Social Support	24.33	4.43	High Objective Social Support
Support Utilization	22.70	4.74	High Support Utilization
Social Support	65.76	11.93	High Social Support

Table 3 displays the levels of social support among the participants. For the Subjective Support dimension, the minimum score was 5, the maximum was 25, with a mean of 18.72±3.82. Since the midpoint of this dimension on the scale is 15, the participants in this study are at a high level of Subjective Support, indicating that the respondents subjectively felt a certain degree of social support. For the Objective Support dimension, the minimum score was 6, the maximum was 30, with a mean of 24.33±4.43. Given that the midpoint of this dimension is 18, the participants are also at a high level of Objective Support, suggesting that they actually received a certain amount of social support. In the Support Utilization dimension, the minimum score was 6, the maximum was 30, with a mean of 22.70±4.74. With a midpoint of 18, the participants demonstrate a high level of Support Utilization, indicating their ability to effectively utilize the social support available to them. The total Social Support scores ranged from 17 to 85, with a mean of 65.76±11.93. Since the midpoint of the total Social Support score is 51, the participants are overall at a high level of Social Support. Overall, the participants in this survey exhibit high levels across all three dimensions of social support, as well as a high total score, suggesting that they generally receive strong social support. This may be related to the emphasis placed on children's education and upbringing within Chinese families. In China, most children receive various forms of care and support from their parents and family from an early age. The results of this study are consistent with those of Zhang (2019), who conducted a survey using the Adolescent Social Support Scale among 789 Chinese university

students. The results showed that the mean score for Subjective Support was 18.18±4.83, for Objective Support was 23.52±5.61, for Support Utilization was 21.74±5.97, and the overall social support mean score was 63.44±15.30, indicating that the participants had relatively high levels of social support across all dimensions. Similarly, Xiao (2019) surveyed 569 university students, finding that the mean score for Subjective Support was 18.43±4.60, for Objective Support was 23.52±5.02, for Support Utilization was 21.27±5.98, and the overall social support mean score was 63.22±14.03, demonstrating that the participants had high levels of social support both overall and across individual dimensions.

Table 4
Participants' Interpersonal Trust (N=2546)

	Weighted Mean	Std Dev	Interpretation
Social Phenomenon Trust	13.89	3.85	Below Average Social Phenomenon Trust
Commitment Behavior Trust	11.85	2.57	Below Average Commitment Behavior Trust
Interpersonal Trust	25.74	4.65	Below Average Interpersonal Trust

Table 4 shows the levels of interpersonal trust among the participants. For the Social Phenomenon Trust dimension, the minimum score was 6, the maximum was 30, with a mean of 13.89±3.85. Compared to the midpoint of 18 on the scale, the participants' Social Phenomenon Trust was below average, indicating that the participants held a certain level of skepticism and distrust towards social phenomena, behaviors, or events. In the Commitment Behavior Trust dimension, the minimum score was 4, the maximum was 20, with a mean of 11.85±2.57. Given the midpoint of 12, the participants' Commitment Behavior Trust was also below average, suggesting that the participants were somewhat hesitant when it came to trusting commitments, questioning the reliability and trustworthiness of promises made. The total score for Interpersonal Trust ranged from 10 to 50, with a mean of 25.74±4.65. Compared to the midpoint of 30 on the scale, this indicates that the overall level of interpersonal trust among the participants was below average. Based on the distribution of scores in both dimensions and the overall interpersonal trust score, it can be inferred that the participants in this study exhibited a below-average level of interpersonal trust, with a general atmosphere of distrust within the group. This level of distrust may be associated with the intensified competition faced by university students, which could strain interpersonal relationships and reduce interpersonal trust. Additionally, the development of the internet and the widespread use of virtual communication technologies have, to some extent, weakened the quality of face-to-face interactions, leading to a decrease in interpersonal trust (Becchetti et al., 2021; Stelmakh, 2022; Zhang et al., 2021). Research shows that while virtual communication technologies facilitate social interactions, they may also lead to an over-reliance on virtual relationships, which can negatively impact the quality of real-life interpersonal relationships (Bhatnagar et al.,2023; Pokhrel, 2023).

Table 5
Differences on the Respondent's Interpersonal Trust when compared according to Profile (N=2546)

	SocialTrust			Commitment Based Trust			INTERPERSONAL TRUST		
	t/F	p-value	Int	t/F	p-value	Int	t/F	p-value	Int
Sex	-.062	.951	NS	.456	.649	NS	.201	.841	NS
Major	-4.367	.000	S	.098	.922	NS	-3.55	.000	S
Origin	2.877	.004	S	-.977	.329	NS	1.839	.066	NS
Grade	12.464	.000	S	5.953	.000	S	3.099	.026	S
Only Child	-.918	.359	NS	-.053	.958	NS	-.789	.430	NS
Family Situation	3.992	.000	S	1.888	.059	NS	4.355	.000	S

Legend: Difference is significant at 0.05 alpha level,
S Significant, NS Not Significant

Based on Table 5, it can be seen that there are significant differences in social trust and the total score of interpersonal trust when the participants are grouped by major. When grouped by place of origin, significant differences are observed only in the dimension of social trust, while no significant differences are found in the dimensions of commitment behavior trust and the total score of interpersonal trust. When participants are grouped by grade, significant differences are observed in both dimensions of interpersonal trust and the total score. When participants are grouped by family background, significant differences are noted in social trust and

the total score of interpersonal trust. The specific details are as follows: (1) Gender Differences: There were no statistically significant differences in the total score of the Interpersonal Trust Scale, social trust, and commitment behavior trust dimensions between male and female university students (p>0.05). This indicates that gender did not lead to differences in social trust, commitment behavior trust, and the total score of interpersonal trust.

(2)Major Differences: Statistically significant differences were found in the total score of the Interpersonal Trust Scale and the dimension of social trust among university students of different majors (p<0.05); however, the differences in the dimension of commitment behavior trust were not statistically significant (p>0.05). Data show that in the dimension of social trust and the total score of interpersonal trust, students in the humanities had lower mean scores than those in the sciences (Social Trust: Humanities 13.55±3.78 < Sciences 14.21±3.89; Total Interpersonal Trust: Humanities 25.40±4.64 < Sciences 26.06±4.64). This may be related to the characteristics of humanities and sciences, where humanities students, who often engage more with social phenomena and humanistic qualities, may hold a more skeptical attitude towards social phenomena and interpersonal trust, leading to lower levels of social trust and overall trust compared to science students. Overall, humanities students have lower levels of interpersonal trust compared to science students, particularly in the dimension of social trust, where humanities students score significantly lower than science students

(3)Place of Origin Differences: Statistically significant differences were found in the dimension of social trust among university students from different places of origin (p<0.05); however, the differences in the dimension of commitment behavior trust and the total score of the Interpersonal Trust Scale were not statistically significant (p>0.05). Data show that in the dimension of social trust, the mean score of students from rural areas was higher than that of students from urban areas (Rural 14.09±3.83 > Urban 13.65±3.87). From a sociological perspective, this may be related to the relatively simpler social phenomena or interpersonal relationships in rural areas compared to urban areas, leading to a higher level of trust in social phenomena and social authorities among rural students compared to urban students. However, no statistically significant difference was found in the total score of interpersonal trust among students from different places of origin, indicating that the level of interpersonal trust does not significantly differ based on place of origin

(4)Grade Differences: Statistically significant differences were found in the dimensions of social trust, commitment behavior trust, and the total score of the Interpersonal Trust Scale among university students from different grades (p<0.05). Data show that in the dimension of social trust, the scores were as follows: Freshmen > Sophomores > Seniors or Fifth-year students > Juniors. In the dimension of commitment behavior trust, the scores were as follows: Juniors > Seniors or Fifth-year students > Sophomores > Freshmen. In the total score of interpersonal trust, the scores were as follows: Freshmen > Seniors or Fifth-year students > Sophomores > Juniors. This suggests that university students from different grades exhibit significant differences in the two dimensions and the total score due to varying degrees of social engagement and the complexity of social relationships.

(5)Differences Between Only Child and Non-Only Child Students: No statistically significant differences were found in the dimensions of social trust, commitment behavior trust, and the total score of the Interpersonal Trust Scale between only child and non-only child university students (p>0.05). This indicates that there are no significant differences in interpersonal trust and its dimensions between only children and non-only children. (6)Family Background Differences: Statistically significant differences were found in the dimensions of social trust and the total score of the Interpersonal Trust Scale between university students from intact families and non-intact families (p<0.05), while no statistically significant differences were found in the dimension of commitment behavior trust (p>0.05). Data show that in the dimension of social trust, the mean score was higher for students from intact families than for those from non-intact families (Intact Family 13.98±3.86 > Non-Intact Family 12.92±3.64), and in the total score of interpersonal trust, the mean score was higher for students from intact families than for those from non-intact families (Intact Family 25.86±4.62 > Non-Intact Family 24.46±4.78).

Table 6
Differences on the Respondent's Loneliness when compared according to Profile (n=2546)

	t/F	p-value	Int.
Sex	-1.449	.147	Not Significant
Major	.759	.448	Not Significant
Origin	2.437	.015	Significant
Grade	1.521	.207	Not Significant
Only Child	-1.937	.053	Not Significant
Family Situation	-4.998	.000	Significant

Legend: Difference is significant at 0.05 alpha level,

According to the results of Table 6, there are significant differences when the participants are grouped by place of origin and family situation. The specific details are as follows:

Gender Differences: The mean score differences in the Loneliness Scale among university students of different genders were not statistically significant (p>0.05), indicating that gender does not have a significant impact on loneliness levels. (2) Major Differences: The mean score differences among university students of different majors were not statistically significant (p>0.05), indicating that there is no significant difference in loneliness levels between students of different majors. (3) Place of Origin Differences: The mean score differences among university students from different places of origin were statistically significant (p<0.05), with students from rural areas scoring higher on the Loneliness Scale than those from urban areas (Rural 44.79±7.88 > Urban 44.00±8.39).

This suggests that there are differences in loneliness levels based on place of origin, with rural students experiencing more loneliness than their urban counterparts. This may be related to the challenges rural students face in adapting to urban life, as most universities in China are located in cities. The transition from rural to urban environments, along with factors such as fewer peers, may contribute to higher levels of loneliness among rural students. This finding is similar to that of Li (2023), who conducted a loneliness survey among 661 university students and found significant differences in loneliness levels based on place of origin, with urban students (43.98±9.17) scoring lower than rural students (46.12±8.79, t=-3.04, p＜0.001). This difference may be due to the varying upbringing, parental styles, life experiences, and adaptability of students from different origins.

These findings further confirm that the factors influencing loneliness are complex, with an individual's background and upbringing sometimes directly or indirectly affecting their experience of loneliness. (4)Grade Differences: The mean score differences among university students of different grades were not statistically significant (p>0.05), indicating that grade level does not influence university students' loneliness. (5)Only Child vs. Non-Only Child Differences: The mean score differences between only child and non-only child university students were not statistically significant (p>0.05), indicating no significant differences in loneliness levels between only children and non-only children. (6)Family Background Differences: The mean score differences between university students from intact and non-intact families were statistically significant (p<0.05). The data show that students from intact families scored lower on the Loneliness Scale than those from non-intact families (Intact Family 44.17±8.03 < Non-Intact Family 46.99±8.69).

This indicates significant differences in loneliness levels based on family background, with students from non-intact families experiencing higher levels of loneliness. This may be due to the lack of close family and friend relationships experienced by students from non-intact families, leading to unresolved feelings of loneliness. This finding is consistent with Yang Tao's (2022) study, which randomly selected 780 university students and measured their loneliness using the UCLA Loneliness Scale. The results showed that students from two-parent families had a mean loneliness score of 39.89±8.04, while those from single-parent families had a mean score of 43.57±7.96 (P=0.00<0.05), indicating that students from single-parent or reconstituted families experience more severe loneliness.

Table 7
Differences on the Respondent's Social Support when compared according to Profile (N=2546)

	Subjective Social Support		Objective Social Support		Support Utilization		SOCIAL SUPPORT	
	t/F	p-value	t/F	p-value	t/F	p-value	t/F	p-value
Sex	**-3.005**	**.003**	**-2.292**	**.022**	**-4.465**	**.000**	**-3.590**	**.000**
Major	1.834	.067	**2.686**	**.007**	**2.942**	**.003**	**2.755**	**.006**
Origin	-1.946	.052	**-2.184**	**.029**	-1.483	.138	**-2.025**	**.043**
Grade	2.217	.084	.911	.435	1.427	.233	1.590	.190
Only Child	.190	.849	.861	.389	.307	.759	.503	.615
Family Situation	**3.984**	**.000**	**5.852**	**.000**	**6.035**	**.000**	**5.854**	**.000**

Legend: Difference is significant at 0.05 alpha level
Those highlighted in green is considered significant

According to the results of Table 7, there are significant differences when participants are grouped by gender, major, place of origin, and family situation. The specific details are as follows:

(1)Gender Differences: There are statistically significant differences in the four dimensions of subjective support, objective support, utilization of support, and the total score of social support among university students of different genders (p<0.05). Specifically, the mean scores of female students are higher than those of male students in all four dimensions. Subjective Support (Male 18.47±4.02 < Female 18.93±3.64), Objective Support (Male 24.11±4.58 < Female 24.51±4.28), Utilization of Support (Male 22.25±4.93 < Female 23.09±4.55), and Total Social Support Score (Male 64.84±12.45 < Female 66.54±11.42). This indicates that there are significant differences in the dimensions of social support and overall social support levels between genders, with female students having a higher degree of social support than male students. Additionally, female students may perceive better social support from their families and are more likely to seek and utilize social support as a coping strategy, possibly due to cultural and societal expectations that encourage women to openly seek help and support when facing difficulties, whereas men may be less likely to seek support due to perceived social stigmas associated with seeking help (Liddon et al., 2018; Tifferet, 2020). (2)Major Differences: The differences in the subjective support dimension among university students of different majors are not statistically significant (p>0.05), but the differences in the objective support dimension, utilization of support dimension, and total social support score are statistically significant (p<0.05). Specifically, the mean scores of humanities students are higher than those of science students in the objective support dimension, utilization of support dimension, and total social support score. Objective Support (Humanities 24.57±4.42 > Science 24.10±4.43), Utilization of Support (Humanities 22.98±4.85 > Science 22.43±4.63), and Total Social Support Score (Humanities 66.43±12.06 > Science 65.12±11.79).

This indicates that there are significant differences in the levels of social support among students of different majors, with humanities students receiving more social support, utilizing it more, and having higher overall levels of social support than science students. This is consistent with the findings of Xu (2018) and Zhang (2019), who all found differences in social support levels among students of different majors, with science students having lower objective support than humanities and other students. This may be because humanities students are more directly involved with social sciences and management, which are more closely related to society and provide more access to social resources and support. (3)Place of Origin Differences: The differences in the subjective support dimension and utilization of support dimension among university students from different places of origin are not statistically significant (p>0.05), but the differences in the objective support dimension and total social support score are statistically significant (p<0.05). Specifically, students from rural areas scored lower than those from urban areas in the objective support dimension and total social support score. Objective Support (Rural 24.15±4.49 < Urban 24.53±4.35), Total Social Support Score (Rural 65.31±12.01 < Urban 66.27±11.83).

This indicates significant differences in the overall level of social support based on place of origin, with rural students having lower social support levels than urban students. Specifically, there is a significant difference in the objective support dimension, with rural students receiving less social support than urban

students, while there is no difference in the subjective support dimension and support utilization. The concentration of more social resources in urban areas leads to differences in the objective support dimension, although the subjective perception of social support and the utilization of support do not differ. The values for the two dimensions of social support and the total score are very close between rural and urban students, which could suggest that the gap between urban and rural areas is gradually narrowing due to the realization of a moderately prosperous society and the promotion of the rural revitalization strategy in China.

Overall, the different distribution and concentration of social resources may explain the differences in social support between rural and urban students. (4)Grade Differences: The differences in the four dimensions of subjective support, objective support, utilization of support, and the total social support score among university students of different grades are not statistically significant (p>0.05). This indicates that there are no significant differences in social support levels among students from different grades. (5)Only Child vs. Non-Only Child Differences: The differences in the four dimensions of subjective support, objective support, utilization of support, and the total social support score between only child and non-only child university students are not statistically significant (p>0.05). This indicates that there are no significant differences in social support based on whether a student is an only child or not. (6)Family Background Differences: The differences in the four dimensions of subjective support, objective support, utilization of support, and the total social support score between university students from intact and non-intact families are statistically significant (p<0.05). Specifically, the mean scores in all four dimensions are higher for students from intact families than for those from non-intact families. Subjective Support (Intact 18.81±3.77 > Non-intact 17.76±4.22), Objective Support (Intact 24.49±4.32 > Non-intact 22.70±5.11), Utilization of Support (Intact 22.88±4.63 > Non-intact 20.90±5.49), and Total Social Support Score (Intact 66.19±11.67 > Non-intact 61.36±13.64).

Table 8
Correlation Matrix of the Variables of the Study (N=2546)

	Loneliness			Social Support		
	r	p-value	Int	r	p-value	Int
Interpersonal Trust	-.321	.000	Highly Significant	.202	.000	Highly Significant
Loneliness	-	-	-	-.606	.000	Highly Significant
Social Support	-.606	.000	Highly Significant	-	-	-

Legend: Correlation is significant at 0.05 alpha level,

Table 8 reveals the following key relationships: (1)Negative Correlation Between Loneliness and Interpersonal Trust: There is a significant negative correlation between university students' loneliness scores and their total interpersonal trust scores (r=-0.321, p<0.05). This indicates that the lower an individual's level of loneliness, the higher their degree of interpersonal trust, and this relationship is statistically highly significant. This finding aligns with previous research by scholars (Zhang et al., 2022). Furthermore, students who perceive more social support or have higher levels of self-esteem are less likely to feel lonely. (2)Positive Correlation Between Social Support and Interpersonal Trust: There is a significant positive correlation between the total social support score and the total interpersonal trust score (r=0.202, p<0.05). This indicates that the more social support an individual receives, the higher their level of interpersonal trust, and this relationship is statistically highly significant.

This finding is consistent with other studies, which have shown that individuals who perceive more support, care, and help from society and others tend to have higher levels of interpersonal trust (Zhang et al., 2022). (3)Negative Correlation Between Loneliness and Social Support: There is a significant negative correlation between loneliness scores and total social support scores (r=-0.606, p<0.05). This indicates that the higher an individual's loneliness, the less social support they receive, and this relationship is statistically highly significant. This finding is consistent with the research by Zhang et al. (2022) and Zhang et al. (2021), who found a significant negative correlation between social support and loneliness among university students. Mao et al. (2022) also supported this conclusion in a study of 964 impoverished university students in a central province. Some studies have also reported correlations between various dimensions of the Social Support Rating Scale

(SSRS) and loneliness among university students. Zhu (2019) study, which only used the objective support and support utilization subscales of the SSRS, also found that social support in these two dimensions was significantly negatively correlated with university students' loneliness.

From Table 9, the following regression relationships can be observed: (1)Loneliness as the Dependent Variable, Interpersonal Trust as the Predictor: The regression coefficient is significant (p<0.05). The standardized regression equation can be written as: Loneliness=−0.207×Interpersonal Trust

Table 9
Regression Analysis of the Variables of the Study (n=2546)

Predictor	Dependent Variable	Std.error	Beta	Sig.	Interpretation
Interpersonal Trust	Loneliness	.027	-.207	.000	Predictor
Social Support	Loneliness	.011	-.564	.000	Predictor
Social Support	Interpersonal Trust	.009	.012	.606	Not a Predictor
Loneliness	Interpersonal Trust	.014	-.314	.000	Predictor
Loneliness	Social Support	.024	-.603	.000	Predictor
Interpersonal Trust	Social Support	.043	.009	.606	Not a Predictor

This means that for each unit increase in interpersonal trust, loneliness is likely to decrease by 0.207 units. (2)Loneliness as the Dependent Variable, Social Support as the Predictor: The regression coefficient is highly significant (p<0.05). The standardized regression equation can be written as:Loneliness=−0.564×Social Support This indicates that for each unit increase in social support, loneliness is likely to decrease by 0.564 units. (3)Interpersonal Trust as the Dependent Variable, Social Support as the Predictor: The regression coefficient is not significant (p>0.05), indicating that social support does not significantly predict interpersonal trust. (4)Interpersonal Trust as the Dependent Variable, Loneliness as the Predictor: The regression coefficient is highly significant (p<0.05). The standardized regression equation can be written as:Interpersonal Trust=−0.314×Loneliness This suggests that for each unit increase in loneliness, interpersonal trust is likely to decrease by 0.314 units. (5)Social Support as the Dependent Variable, Loneliness as the Predictor: The regression coefficient is highly significant (p<0.05). The standardized regression equation can be written as: Social Support=−0.632×Loneliness This means that for each unit increase in loneliness, social support is likely to decrease by 0.632 units. (6)Social Support as the Dependent Variable, Interpersonal Trust as the Predictor: The regression coefficient is not significant (p>0.05), indicating that interpersonal trust does not significantly predict social support.

Table 10
Proposed Guidance and Counseling Plan Enhancements to Alleviate Loneliness and Improve Interpersonal Trust Among University Students

Key Performance Indicators / Plans	Objectives	Strategies / Interventions	Participants	Success Indicators
Loneliness	Mindfulness Practice	Methods such as mindful breathing, emotional awareness, and meditation to help students increase their attention to the present moment and adopt a non-judgmental attitude. Specific activities include 10-20 minutes of mindful breathing practice daily and weekly group meditation sessions.	University students, counselors, psychologists	Students report a significant reduction in loneliness (assessed using the UCLA Loneliness Scale). - Students demonstrate better emotional awareness and regulation, and feel more inner peace (assessed using the Emotional Awareness Questionnaire).
	Confidence Training	Through group discussions and role-playing exercises, help students express confidence and positive emotions. Specific activities include weekly group discussions, simulated social scenarios, and practicing confident expression.	University students, counselors, psychologists	Students show more confidence and actively participate in interactions during group activities (assessed using the Confidence Scale). - Self-reports indicate an improvement in self-confidence (assessed using the Self-Efficacy Scale).

	Social Activities	Organize group social activities such as participating in community service and group games to enhance interaction among students. Specific activities include weekly social events decided and participated in by students.	University students, counselors, social workers	Increased frequency and enthusiasm of students' participation in social activities (assessed using the Social Participation Questionnaire). - Enhanced trust and closeness among students (assessed using the Interpersonal Trust Scale).
Interpersonal Trust	Communication Skills Training	Teach effective interpersonal communication skills such as mindful listening and non-violent communication. Specific activities include weekly communication skills training, practicing mindful listening, and feedback techniques.	University students, counselors, psychologists	Students report feeling more understood and supported in communication (assessed using the Communication Skills Evaluation Questionnaire). - Students show higher levels of interpersonal trust and satisfaction (assessed using the Interpersonal Trust Scale and Satisfaction Questionnaire).
	Relationship Maintenance Strategies	Discuss and practice how to establish and maintain trusting interpersonal relationships. Specific activities include weekly discussion sessions, sharing successful relationship maintenance strategies, and practical exercises.	University students, counselors, psychologists	Students can identify and apply effective relationship maintenance strategies (assessed using the Relationship Maintenance Strategies Questionnaire). - Students report a significant improvement in the quality of interpersonal relationships (assessed using the Interpersonal Relationship Quality Scale).
	Emotional Regulation Skills	Teach emotional regulation methods such as deep breathing and progressive muscle relaxation to help students better manage their emotions. Specific activities include weekly emotional regulation skills training and daily personal practice.	University students, counselors, psychologists	Students effectively use regulation techniques during emotional fluctuations (assessed using the Emotional Regulation Ability Questionnaire). - Self-reports indicate reduced levels of anxiety and stress (assessed using the Anxiety Self-Assessment Scale and Stress Self-Assessment Scale).

To help university students alleviate loneliness, improve interpersonal trust, and enhance overall mental health and social adaptation abilities through systematic psychological interventions. The program lasts for 8 weeks, with weekly group sessions of 1.5 hours each, supplemented by daily individual practice of 15-20 minutes. The sessions will integrate mindfulness practices, interpersonal communication skills training, emotional regulation methods, and social activities, and are designed based on cognitive behavioral theory and mindfulness theory.

Based on the analysis of loneliness and interpersonal trust, a psychological counseling program was planned, primarily targeting these two variables.

For students experiencing loneliness, the program focuses on three main aspects. The first aspect is mindfulness practice. Through methods such as mindful breathing, emotional awareness, and meditation, students are helped to improve their attention to the present moment and adopt a non-judgmental attitude. The expected outcome is that students report a significant reduction in loneliness and better awareness and regulation of their emotions, experiencing more inner peace. The second aspect is confidence training. Through group discussions and role-playing exercises, students are helped to express confidence and positive emotions. The goal is for students to show more confidence and actively participate in interactions during group activities, with self-reports indicating an improvement in self-confidence. The third aspect is social activities. By organizing group social activities, such as participating in community service and group games, student interaction is enhanced. The anticipated result is an increased frequency and enthusiasm in students' participation in social activities, along with strengthened trust and closeness among students.

For students with low levels of interpersonal trust, the program also focuses on three main aspects. The first aspect is communication skills training, teaching effective interpersonal communication skills such as mindful

listening and non-violent communication. The goal is for students to report feeling more understood and supported in communication, and to demonstrate higher levels of interpersonal trust and satisfaction. The second aspect is relationship maintenance strategies. Discussions and practice sessions on how to establish and maintain trusting interpersonal relationships are held. The expected outcome is that students will be able to identify and apply effective relationship maintenance strategies, with reports indicating a significant improvement in the quality of their interpersonal relationships. The third aspect is emotional regulation skills, teaching methods such as deep breathing and progressive muscle relaxation to help students better manage their emotions. The goal is for students to effectively use regulation techniques during emotional fluctuations, with self-reports indicating reduced levels of anxiety and stress.

Detailed Program Description

Based on the analysis of loneliness and interpersonal trust, a comprehensive psychological counseling program was developed. The program mainly targets these two variables, aiming to help university students alleviate loneliness and improve interpersonal trust through systematic interventions.

Loneliness Intervention

Mindfulness Practice: Course Content: Weekly group sessions to teach mindful breathing, emotional awareness, and meditation techniques. Mindful breathing focuses on breath to help students cultivate awareness of the present moment and a non-judgmental attitude. Through meditation and mindfulness practice, students can improve their attention to the present moment and adopt a non-judgmental attitude, reducing loneliness (Lindsay et al., 2019). Mindful Breathing: Focus on breathing to help students cultivate awareness of the present moment. This practice can help students stay focused when feeling lonely and avoid overthinking past or future negative events. Emotional Awareness: Through mindfulness practice, students can better recognize their emotional changes and learn to accept these emotions non-judgmentally, reducing the negative impact of loneliness. Meditation: Daily 15-20 minute meditation practice to help students reflect and regulate their emotions in a quiet environment, experiencing more inner peace. Personal Practice: Daily 15-20 minute mindfulness breathing and meditation practice, recommended using guided meditation audio. Expected Outcomes: Significant reduction in reported loneliness among students (assessed using the UCLA Loneliness Scale). Improved emotional awareness and regulation, with students experiencing more inner peace (assessed using the Emotional Awareness Questionnaire).

Confidence Training: Course Content: Weekly group discussions to simulate social scenarios, practicing confident and positive emotional expression. Role-playing and scenario simulations enhance students' confidence in social situations Group Discussions: Weekly group discussions where students share their experiences and feelings, practicing confident and positive emotional expression. Role-Playing: Simulate social scenarios through role-playing exercises, allowing students to practice expressing confidence in a safe environment. Personal Practice: Daily confidence-boosting exercises, such as positive self-talk and affirmations, to help students build and strengthen self-confidence in daily life. Expected Outcomes: Students demonstrate more confidence and actively participate in interactions during group activities (assessed using the Confidence Scale). Self-reports indicate an improvement in self-confidence (assessed using the Self-Efficacy Scale).

Social Activities: Course Content: Weekly social activities, such as participating in community service and group games, to enhance interaction and trust among students. These activities help students build and maintain interpersonal relationships. Community Service: Participate in community service activities together to enhance cooperation and trust among students. Group Games: Organize group games and activities to promote interaction and communication among students. Personal Practice: Record feelings and reflections after each social activity, identifying successes and areas for improvement to gradually enhance social skills. Expected Outcomes: Increased frequency and enthusiasm in students' participation in social activities (assessed using the Social Participation Questionnaire). Enhanced trust and closeness among students (assessed using the Interpersonal Trust Scale).

Interpersonal Trust Intervention

Communication Skills Training:

Course Content: Weekly communication skills training sessions to teach effective communication techniques such as mindful listening and non-violent communication. Practice and feedback help students apply these skills in social situations. Mindful Listening: Through mindful listening practice, students learn to focus on the speaker without judgment and provide constructive feedback. Non-Violent Communication: Teach students how to express their needs and feelings while respecting others' viewpoints and feelings, promoting positive interactions. Personal Practice: Daily practice of mindful listening and non-violent communication techniques, applying them in real conversations to improve communication quality. Expected Outcomes: Students report feeling more understood and supported in communication (assessed using the Communication Skills Evaluation Questionnaire). Students demonstrate higher levels of interpersonal trust and satisfaction (assessed using the Interpersonal Trust Scale and Satisfaction Questionnaire).

Relationship Maintenance Strategies: Course Content: Weekly discussion sessions to share and learn successful relationship maintenance strategies, with practical exercises. Case analysis and role-playing help students identify and apply effective strategies Relationship Maintenance Discussions: Weekly discussion sessions where students share and learn successful relationship maintenance strategies, with practical exercises to enhance these skills. Case Analysis and Role-Playing: Through case analysis and role-playing, students can better understand and apply relationship maintenance strategies. Personal Practice: Daily recording and reflection on the practical application of relationship maintenance strategies, adjusting strategies to enhance skills. Expected Outcomes: Students can identify and apply effective relationship maintenance strategies (assessed using the Relationship Maintenance Strategies Questionnaire). Students report a significant improvement in the quality of interpersonal relationships (assessed using the Interpersonal Relationship Quality Scale).

Emotional Regulation Skills:

Course Content: Weekly emotional regulation skills training to teach methods such as deep breathing and progressive muscle relaxation. Practical exercises help students effectively manage emotions during fluctuations. Deep Breathing Practice: Teach students how to use deep breathing to relieve tension and stay calm. Progressive Muscle Relaxation: Gradually relax all body muscles to help students relax in stressful situations. Personal Practice: Daily emotional regulation practice, recording emotional fluctuations and regulation effects to gradually improve emotional management skills. Expected Outcomes: Students effectively use regulation techniques during emotional fluctuations (assessed using the Emotional Regulation Ability Questionnaire). Self-reports indicate reduced levels of anxiety and stress (assessed using the Anxiety Self-Assessment Scale and Stress Self-Assessment Scale). Evaluation Methods: Loneliness Scale: Assess loneliness changes in the 1st and 8th weeks using the Loneliness Scale. Interpersonal Trust Scale: Evaluate the improvement in students' interpersonal trust levels using the Interpersonal Trust Scale. Communication Skills Evaluation Questionnaire: Assess improvements in students' communication skills. Emotional Regulation Ability Questionnaire: Assess the enhancement of students' emotional regulation abilities. Feedback Questionnaire: Collect student feedback on course content and effectiveness at the end of the course for improvement.

Through systematic interventions and support, this program aims to help university students alleviate loneliness, improve interpersonal trust levels, and enhance overall mental health and social adaptation abilities.

4. Conclusions and recommendations

(1)Among the 2,546 participants, 1,370 were male and 1,346 were female; 1,242 participants were from humanities majors, and 1,304 were from science majors; 1,189 participants were from urban areas, and 1,357 were from rural areas. In terms of academic year distribution, 675 participants were freshmen, 624 were

sophomores, 661 were juniors, and 586 were seniors or in their fifth year. There were 607 only children and 1,939 non-only children; 2,319 participants were from intact families, while 227 were from non-intact families, accounting for 8.9%. Overall, the distribution of participants was relatively balanced in terms of gender, academic background, place of origin, and academic year, with more non-only children than only children and more participants from intact families than non-intact families. (2)he participants in this study exhibited a high level of loneliness, a high level of social support, and a below-average level of interpersonal trust. (3)Regarding loneliness, there were differences between university students from different places of origin and between those from intact and non-intact families.

In terms of social support, there were differences based on gender, academic major, place of origin, and family status. For interpersonal trust, differences were observed among students of different academic majors, academic years, and family backgrounds. (4)There was a significant negative correlation between loneliness and both social support and interpersonal trust: Loneliness was a significant factor affecting social support and interpersonal trust. An increase in loneliness predicted a decrease in social support and interpersonal trust, reflecting a complex bidirectional or cyclical relationship among these variables. Social support and interpersonal trust were significant predictors of loneliness and were significantly negatively correlated with it. This means that within the participant group, increasing social support and interpersonal trust could effectively reduce loneliness. Social support, in particular, showed a strong predictive effect, with the absolute value of its β coefficient being the largest, indicating its especially significant impact on loneliness. The direct impact of social support on interpersonal trust, and vice versa, was not statistically significant in this study, suggesting that there was no simple direct relationship between them in the data and analysis model used in this study. (5)Based on the study's findings, a set of targeted intervention and support strategies was proposed. These strategies aimed to improve university students' levels of social support and interpersonal trust while reducing loneliness through multidimensional courses and practices such as mindfulness exercises, confidence training, social activities, and interpersonal trust interventions. The effectiveness of these interventions was validated using systematic evaluation methods, such as the Loneliness Scale, Interpersonal Trust Scale, and Communication Skills Questionnaire. The results provide empirical evidence for future educational guidance and psychological counseling work.

Based on the results of this survey, the following educational recommendations are provided: (1)Educators/Counselors: Enhance Mental Health Awareness: Educators and counselors should raise students' awareness of the impact of loneliness by organizing activities that promote social support and interpersonal trust, educating students on how to build and maintain relationships. Counselors can also have one-on-one conversations with students to understand their personal experiences and provide more personalized support. Implement Support Programs: Develop programs targeting students' emotional needs, especially those from rural areas or non-intact families. These programs could include counseling sessions, peer support groups, and mentoring opportunities where students with similar experiences can support each other. Personalized Counseling: Counselors should offer personalized services, using techniques such as cognitive-behavioral therapy to help students build trust, thereby improving their self-confidence and social skills. Counselors can also provide emotional support to help students cope with issues like anxiety and depression. (2)Teachers: Encourage Group Activities: Teachers should design classroom activities that promote student interaction and cooperation, such as group projects and collaborative learning. This not only encourages student interaction but also enhances their teamwork skills. Identify High-Risk Students: Teachers should be vigilant in identifying students who are isolated or socially withdrawn, intervening early, and referring them to counselors or encouraging participation in social activities. Teachers can also encourage these students to join various social activities in school, such as clubs and organizations, to improve their social skills. Create an Inclusive Environment: Teachers should foster an inclusive classroom environment by monitoring social dynamics and ensuring no student is excluded. They can also conduct team-building activities in class to help students appreciate each other's strengths and talents, thereby enhancing their sense of teamwork and inclusiveness. (3)Parents: Promote Open Communication: Parents should maintain open communication with their children,

paying attention to their social life and trust issues. They can also share their own experiences and feelings to help their children understand the importance of trust. Encourage Social Activities: Parents should encourage their children to participate in social activities and build social networks. They can also encourage their children to engage in community activities, such as volunteering, which not only helps them build social networks but also fosters a sense of social responsibility.

Model Trust and Support: Parents should model trust and support behaviors at home, helping their children develop these qualities. Sharing their own experiences and feelings can also help children understand the importance of trust and support. (4)Peers: Peer Support Networks: Encourage students to establish peer support networks through clubs, study groups, or online forums. Students can also share their experiences and feelings in online forums, gaining support and encouragement from their peers. Promote Inclusivity: Peers should include isolated classmates in social activities. By sharing their experiences and feelings, students can help isolated peers understand their value and importance. Mentorship Opportunities: Senior students should mentor junior students, fostering a sense of community and trust. Sharing experiences and insights can help junior students appreciate their worth and build confidence. (5)Future Researchers: Expand Research on Population Diversity: Investigate how different demographic factors influence loneliness, social support, and interpersonal trust. Researchers could also explore how these factors affect individuals' social behaviors and relationships. Longitudinal Research: Conduct longitudinal studies to understand the long-term effects of loneliness and the evolution of social support and interpersonal trust. Researchers could also study how these factors impact individuals' career development and quality of life. Evaluate Intervention Effectiveness: Assess the effectiveness of intervention programs aimed at reducing loneliness and increasing social support and trust. Researchers could also explore how these interventions affect students' mental health and social behaviors.

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