*Original Paper*

# An Empirical Study on Information Seeking Anxiety and Influence Factors of the Chinese Residents

Chao Li[1*]

[1] Tiangong University, Tianjin 300387, China

[*] Chao Li, Tiangong University, Tianjin 300387, China

*Abstract*

*With the development of technology and the exponential growth of information, information seeking anxiety has been demonstrated as a fundamental, ubiquitous and persistent psychological characteristic. This feeling has caused different cognitive, affective and behavioral effects in information users, which has been identified as one of the biggest impediments to successful completion of information tasks. This paper aims at assessing individual's emotional experience and its causes in the information seeking process and evaluate the relationship between information seeking anxiety and information task. Additionally, the paper also provides empirical support for public information services and information literacy education.*

*Keywords*

*information seeking anxiety, information seeking behavior, questionnaire survey*

## 1. Introduction

The development of the Internet has provided us with unprecedented amounts of information. Nevertheless, most Internet information is not reliable, and the amount of information far exceeds our cognitive abilities. Assessment departments of traditional knowledge or new institutions of information management cannot solve the dilemma of information overload and information overflow perfectly. Prior studies have represented that information users experience anxiety and fear when searching for information (Yang & Asad, 2023). This anxiety has proved to be a fundamental, persistent, and ubiquitous characteristic of information seeking process. Anxious information users often use less or poorer information resources, and even give up information search tasks. Information seeking anxiety has become one of the biggest obstacles in the process of information search (Pan & Wang, 2023). Information seeking anxiety also has an impact on people's cognition, emotion and behavior. In

extreme cases, information seeking anxiety can harm people's physical health. Therefore, a deep understanding of information seeking anxiety and its causes is helpful to support people to cope with information overload, improve the efficiency of information search tasks, and reduce people's anxiety.

"Information anxiety" is a term first proposed by Wurman (1989) in his book "Information Anxiety". Wurman defined information anxiety as "a black hole between data and knowledge". The main cause of information anxiety can be attributed to "information uncertainty". It refers to the phenomenon of "information overload" or "information scarcity" caused by bad information, invalid information organization, lack of awareness of the information environment, etc. When the uncertainty of information or people's anxiety increase, information seekers either express "satisfaction" with fewer or poorer information resources, or give up information search tasks directly. In fact, anxiety has been regarded as one of the biggest obstacles to completing information tasks.

Reviewing the research related to information seeking anxiety, we have found that questionnaire survey was the main research method (Song, Ye, Song, Zhang, Xu, & Shen, 2023), and college students were the main population (Shahnaz Hadavi Mohammad Reza Farhadpoor, 2021; Sana & Mumtaz, 2021). Researchers developed the Information Seeking Anxiety Scale (ISAS) to measure feelings of anxiety in relation to information seeking tasks (Muhammad Asif Naveed Kanwal Ameen, 2017). This scale divides ISA into six dimensions: barriers associated with library, barriers with information resources, technological barriers, affective barriers, access barriers, Internet & electronic resources barriers. They conducted a questionnaire survey on postgraduate students in Malaysia. The survey found that 96.5% of the students had information seeking anxiety. Postgraduates' gender, learning stage, frequency of using the library were related to information seeking anxiety. Researchers used ISAS to assess the information seeking anxiety of Pakistani postgraduate students (Muhammad Asif Naveed, 2016). Their research found that the vast majority of respondents were dissatisfied during the information seeking process. Students' gender, learning stage, subject background, computer proficiency and research experience had a significant impact on information anxiety. Cao & Wang compiled the Information Anxiety Scale (IAS) for Chinese residents (Cao, Wang, Mei, & He, 2011). The study found that Chinese college students' information anxiety and its sub dimensions had significant differences in gender, education, discipline and place of origin.

In the above-mentioned context, this study aims at assessing the psychological aspect of anxiety during the information search process. This survey aims at laying the foundation for further research on information seeking anxiety and provide theoretical support for information services and information literacy education.

## 2. Research Method

This study used a questionnaire survey to measure the level of information seeking anxiety of Chinese residents, and discussed the psychological barriers they faced when seeking for information. This paper aims at solving the following problems: (1) What is the actual situation of the respondents' information

seeking anxiety? (2) Do respondents exhibit varying degrees of information seeking anxiety? (3) Is there a correlation between information seeking anxiety and demographic variables?

*2.1 Population and Sample*

**Table 1. Participants**

| Gender | Male | | | Female | | | Total |
|---|---|---|---|---|---|---|---|
| | 440 | | | 655 | | | 1095 |
| **Age** | Under 18 | 18-30 | 31-40 | 41-50 | 51-60 | Over 60 | Total |
| | 13 | 491 | 339 | 156 | 60 | 36 | 1095 |

The target population of this study was Chinese residents regularly using online information. In this study, 1,095 Chinese residents were surveyed by questionnaire. The sample data showed that the distribution of the respondents in different demographic and sociological characteristics was relatively uniform. In terms of gender, 40.2% were male and 59.8% were female. In terms of age, the group aged 18-30 accounted for 44.8%, the group aged 31-40 accounted for 31.0%, the group aged 51-60 accounted for 5.5%, the group over 60 accounted for 3.3%, and the group under 18 accounted for 1.2%. Table 1 shows the details of the sample.

*2.2 Instruments*

The "information seeking anxiety" scale compiled by Cheng (2014) was used in this study (Cheng, Cao, & Lu, 2014). The development of the scale strictly followed the psychometric standards. The test results of the scale showed that the scale had good reliability and validity. All the items were measured by 5-point Likert 5 scale, and were self-assessed by respondents. The answers represented the matching degree between items and respondents' psychological description. A score of 1 indicated completely inconsistent with the feelings of respondents, and a score of 5 indicated full compliance with their feelings. The higher the respondent scored, the higher so was his level of information anxiety. The demographic variables such as sex, age, residence and education were also measured. The above variables were included as control variables. 1095 questionnaires were entered in SPSS for analysis.

*2.3 Statistical Analysis*

Table 2 showed the results of KMO and Bartlett's Test. The value of Kaiser-Meyer-Olkin was 0.907. The significance level of Bartlett Test of Sphericity was 0.000. The above results showed that the data were suitable for the factor analysis. Five effective factors were extracted by principal component analysis. The factors were: (1) cognitive characteristics and the knowledge structure; (2) information retrieval ability; (3) information utilization ability; (4) quality of retrieval systems; (5) ability to process foreign language information. The variance contribution rate of the five factors was 51.785%. The internal consistency of total scale and its factors was respectively 0.753, 0.831, 0.763, 0.753, 0.753, 0.772. The results of the reliability test indicated that the Cronbach's α coefficients of the factors

exceeded 0.7. The Cronbach's α coefficient of the scale exceeded 0.9, indicating a high level of internal consistency.

**Table 2. The Results of KMO and Bartlett's Test**

| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .907 |
|---|---|---|
| Bartlett's Test of Sphericity | Approx. Chi-Square | 9314.720 |
| | df | 378 |
| | Sig. | 0.000 |

## 3. Information Anxiety Prevalence

Averages were calculated for overall ISAS as well as its sub-dimensions to examine prevalence. Higher average scores suggested higher anxiety levels seen in Table 3 which exhibited descriptive statistics such as mean, median, mode, standard deviation, variance, minimum and maximum for over all ISAS and its sub-dimensions.

**Table 3. Descriptive Statistical Analysis of Information Seeking Anxiety and Its Sub-Dimensions**

| Dimensions | Mean | Median | Mode | S.D. | Variance | Min. | Max. |
|---|---|---|---|---|---|---|---|
| Cognitive characteristics and knowledge structure | 3.308 | 3.333 | 3.111 | 0.763 | 0.582 | 1.000 | 5.000 |
| Information query ability | 2.384 | 2.333 | 2.167 | 0.661 | 0.436 | 1.000 | 5.000 |
| Information utilization ability | 3.220 | 3.250 | 3.000 | 0.850 | 0.723 | 1.000 | 5.000 |
| Ability to process foreign language information | 3.191 | 3.000 | 3.000 | 0.990 | 0.979 | 1.000 | 5.000 |
| Retrieval system quality | 3.639 | 3.667 | 3.500 | 0.680 | 0.462 | 1.000 | 5.000 |
| Information anxiety | 3.148 | 3.139 | 3.067 | 0.448 | 0.200 | 1.544 | 4.733 |

Figure 1 displayed the mean score for the overall ISAS was 3.148, which was very close to the median of 3.139, the standard deviation 0.448 with the minimum score 1.544 and maximum 4.733. The distribution of the mean closely resembled a normal curve.
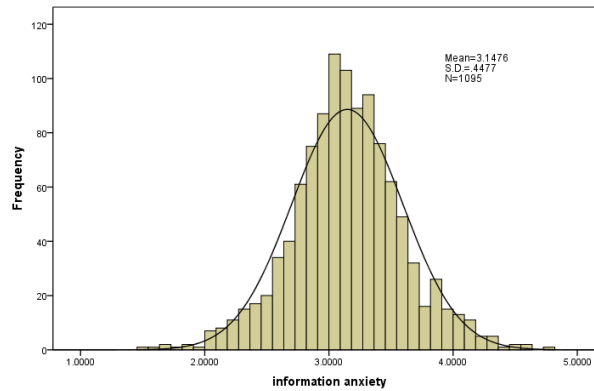
**Figure 1. Histogram of Mean Value of Information Seeking Anxiety**

**Information retrieval system quality:** As depicted in Table 2, the average score for the dimension "retrieval system quality" was the highest, accompanied by the highest level of anxiety. Numerous issues arose in aspects such as the specialization of search engines, the updating speed of databases, the quality and quantity of information, access restrictions, and so on. These problems directly impacted users' information retrieval and utilization, causing them emotional anxiety.

**Cognitive characteristics and the knowledge structure:** Participants exhibited anxiety concerning the dimension of "cognitive characteristics and knowledge structure". The mean value of this dimension was 3.308, which was higher than the median value of "3 points". This suggested that individuals had inadequate information literacy and insufficient awareness during the information utilization process. Their unbalanced knowledge structure also had a negative impact on information retrieval. More specifically, individuals might encounter challenges in expressing their information needs, judging the availability of information, identifying the quality of information, and evaluating their abilities. These challenges could lead to psychological imbalance and increased anxiety.

**Information utilization ability:** The mean value of the "information utilization ability" dimension was 3.220. A slight information seeking anxiety was also observed among individuals in this regard. The statistical results revealed that people's ability to judge, distinguish, and utilize information was relatively weak. It was found that individuals struggled to handle the outcomes of information retrieval effectively and lacked the competence to summarize and obtain accurate information.

**Foreign language information processing ability:** The ability to process foreign language information is usually considered as one of the specific manifestations of the information retrieval ability. However, in this study, after exploratory factor analysis, this dimension was separated from the "information retrieval ability" and formed a new one. The average score of this dimension was 3.191, slightly higher than the middle value. Most of the respondents had a low evaluation of their foreign language proficiency and lacked self-confidence. In the process of information retrieval, they couldn't fully grasp the use of foreign language databases, nor could they accurately determine the relevant foreign language search terms.

28

**Information query ability:** The participants had a high self-evaluation of their "information query ability" and low anxiety. The mean value for this dimension was 2.384, which was lower than the middle value. The standard deviation was 0.661, which was relatively small, indicating a low degree of dispersion. The participants exhibited a high degree of homogeneity and possessed a proactive mindset. They demonstrated strong abilities in selecting retrieval paths, formulating retrieval strategies, and understanding information content. They were able to clearly express their information needs and conduct effective information retrieval.

## 4. Influencing Factors of Information Seeking Anxiety

Previous studies suggested that information users might exhibit varying levels of information seeking anxiety by demographic factors such as age, gender, and education. This study further explored the influence of these variables on information seeking anxiety through the use of independent sample T-tests and ANOVA.

*4.1 Sex and Information Seeking Anxiety*

An independent sample t-test (two-tailed) was utilized for examining the mean differences in the index of overall "Information Seeking Anxiety" Scale (ISAS) and its sub-dimensions with regard to male (n=440) and female (n=655) participants. The running of a series of t-tests indicated that there was no significant difference in means scores of males and females for the sub-dimensions. The result aligned with Girard's findings, which also confirmed that gender had no significant influence on information anxiety.

*4.2 Age and Information Seeking Anxiety*

An ANOVA test was employed to examine the mean differences in the Index of the overall scale (ISAS) and its sub-dimensions across different age groups. The data revealed significant disparities in three dimensions: "cognitive characteristics and knowledge structure" (F=2.774, P=0.017<0.05), "information utilization ability" (F=6.381, P=0.000<0.05), "retrieval system quality" (F=3.342, P=0.005<0.05) and IAS within these age groups. The post-test results showed that the anxiety levels of individuals aged 60 and above were higher than those of other age groups. Older people exhibited more anxiety concerning their ability to utilize information, their awareness of information, their knowledge structure, and the quality of retrieval systems. On the other hand, individuals aged 18-30 appeared to have a better experience during the process of information retrieval and utilization.

*4.3 Educational Level and Information Seeking Anxiety*

The education level was employed as the independent variable in one-way ANOVA. Significant differences were observed in "cognitive characteristics and knowledge structure" (F=3.458, P=0.008<0.05), "information utilization ability" (F=4.509, P=0.001<0.05), and "foreign language information processing ability" (F=9.499, P=0.000<0.05) among the participants with varying education levels. It was found that as the education level increased, the level of information seeking anxiety gradually decreased. The post-test results revealed that the anxiety level among the "graduate

29

degree and above" group was the lowest, displaying significant differences compared to the "high school and below" and "college degree" groups.

*4.4 Income Level and Information Seeking Anxiety*

The One-way ANOVA was performed to test differences in averages of ISA scores of participants for overall ISA and its sub-dimensions in accordance with their level of income. Since students have no income, 138 students samples were removed from the statistical analysis. The results indicated that the income level had a significant influence on the overall ISAS (F=3.567, P=0.003<0.05), "cognitive characteristics and knowledge structure" (F=3.285, P=0.006<0.05), and "foreign language information processing ability" (F=4.451, P=0.001<0.05). Most low-income individuals experienced information anxiety, which was primarily focused on cognitive characteristics, the knowledge structure, and foreign language proficiency. There was no significant difference in information utilization, retrieval system quality compared to other income groups.

## 5. Discussions

This paper discussed the emotional experience of Chinese residents during the process of information activities and the factors that influenced them. Authors employed the ISAS scale to conduct a questionnaire survey, yielding the following findings.

The descriptive statistical analysis of the mean value revealed that the respondents generally experienced anxiety. The average scores for the overall level and its sub-dimensions (except information query ability) exceeded the median value of "3". The main sources of severe anxiety were identified as "information utilization ability", "retrieval system quality", and "foreign language information processing ability".

The inferential statistical analysis of T-test and ANOVA revealed that age, the education level, and the income level were the predictors of ISA. Demographic characteristics such as being aged 18-30, holding a Bachelor's degree or higher, and having a monthly income of over 5000 yuan significantly mitigated participants' information anxiety. Gender, however, had no significant impact on information anxiety.

Previous studies have primarily focused on the ISA experienced by students, particularly graduate students. This study, however, shifts its attention to the general public's ISA during various information activities. Due to the varying occupations and living habits of the respondents, the professional level and other requirements for the information searching task also differs. This makes it more challenging to conduct extensive investigations. Future research should aim at increasing the diversity of samples in terms of demographic characteristics, which will allow for more reliable conclusions and ensure that the measurement effects of the ISAS are applicable to a broader population.

**References**

Cao, J. D., Wang, C., Mei, S. L., & He, W. (2011). Information Anxiety Scale Compilation and Its Raliability and Validity Test. *Library and Information Service*, (2), 29.

Cheng, W. Y., Cao, J. D., & Lu, S. Y. (2014). Revision of the Information Anxiety Scale. *Intelligence Science*, (1), 64-67.

Muhammad Asif Naveed Kanwal Ameen. (2017). A cross-cultural evaluation of the psychometric properties of information seeking anxiety scale in Pakistani environment. *Malaysian Journal of Library Information Science*, (3), 35-51. https://doi.org/10.22452/mjlis.vol22no3.3

Muhammad Asif Naveed. (2016). Exploring Information Seeking Anxiety among Research Students in Pakistan. *Libri*, (1), 73-82.

Pan, L. Y., & Wang, S. Y. (2023). A Study on the Effect of Information Anxiety on Online Learning Effectiveness of College Students: The Mediating Role of Self-efficacy and Academic Emotions. *World Journal of Innovation and Modern Technology*, (2), 16-20.

Sana, K., & Mumtaz, A. A. M. A. N. (2021). Prevalence and Levels of Information Seeking Anxiety among Business Students. *Library Philosophy and Practice*, 1-13.

Shahnaz, H., & Mohammad, R. F. (2021). Relationship Between Information Processing Styles and Information Seeking Behavior, with Information Anxiety as a Moderator Variable. *LIBRES: Library and Information Science Research Electronic Journal*, (2), 119-129.

Song, Z. M., Ye, J. Y., Song, X. D., Zhang, Z., Xu, P. Y., & Shen, H. M. (2023). Development and Psychometric Properties of Work Information Anxiety Questionnaire. *Psychology research and behavior management*, 4629-4646. https://doi.org/10.2147/PRBM.S435356

Xia, Y., & Khan, A. U. (2023). Validity and reliability of factors causing information-seeking anxiety during information-seeking behaviors. *Collection and Curation*, (4), 128-136. https://doi.org/10.1108/CC-11-2022-0040

31