

## Research Article

### On Effect of English Competence on Food Security Knowledge of College Students

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**Abstract:** College students are considered as the core force for one nation's development, so their health conditions influence their nation's future. In order to make the research into the effect of English competence on food security knowledge of college students and by adopting cluster sampling and making use of a questionnaire on "Food Security Knowledge of College Students", the paper conducts an investigation into food security knowledge of 681 students of arts and science from 10 universities and analyzes the investigation data by employing such statistical methods as t-test and q-test. The paper ultimately draws a conclusion that English competence of college students has a great impact on how well they can master food security knowledge.

**Keywords:** College students, effect, food security

#### INTRODUCTION

Food security is regarded as a public health concern all over the world, which is not only directly related to human health and existence, but influential in social and economic development (Chen *et al.*, 2010). College students are considered as a nation's hope and future, furthermore, they are valuable human resources for their nation. How well college students can master food security knowledge influences their healthy development to some extent (Wu *et al.*, 2008). As a youth group with a high level knowledge background and a strong learning ability, college students are prior to ordinary people in food security knowledge mastery. However, with the rapid social and economic development, plenty of professional knowledge as well as new or modern words expressed in English comes into being in many major fields. Therefore, a new question arises whether English competence of college students has some influence on their food security knowledge mastery. Therefore, the paper takes 681 college students of arts and science for example, tests them on the basis of a questionnaire on "Food Security Knowledge of College Students" and makes the descriptive and inferential analysis. Lastly, the paper reaches a conclusion that English competence of college students has a great impact on how well they can master food security knowledge.

#### RESEARCH OBJECTS AND METHODS

**Research objects:** Some college students of arts and science from 10 universities of Anhui province including Anhui Polytechnic University, Hefei Normal University, Anhui JIANZHU University, Bengbu University, West Anhui University, Tongling

University, Chuzhou Vocational and Technical College and so on.

#### Research methods:

**Questionnaire:** By referring to the relevant researches on food security knowledge of college students home and abroad and by inviting relevant experts and managers to participate in the discussion, the paper makes a questionnaire on "Food Security Knowledge of College Students" (Table 1).

**Questionnaire score:** This questionnaire is composed of 40 questions, most of which deal with common sense knowledge on food security and some of which deal with professional knowledge on food security. In the questionnaire, question types cover single-choice questions and multiple-choice questions. For all the questions, 2.5 scores will be awarded for completely correct choice (s). For multiple-choice questions, if the respondent's choice (s) can be partly correct (the number of respondent's correct choice (s) can be over half of that of correct choices), 1.5 scores will be awarded; if no correct choice is made, no score will be awarded (Xu *et al.*, 2013).

**Statistical analysis:** This study adopts such statistical analysis methods as descriptive statistics, t-test and q-test (Liang *et al.*, 2008).

#### RESULTS AND ANALYSIS

**Detailed information of investigation objects:** The paper employs cluster sampling and takes college students of arts and science as investigation objects, then 705 questionnaires on food security knowledge are distributed in the following 10 universities including

Table 1: Items and scoring rate in questionnaire on “food security knowledge of college students”

Sequence number	Question	Scoring rate (%)	Sequence number	Question	Scoring rate (%)
1.	What’s the meaning of “QS” in food packing?	65.3	23	Which element can result in “minamata disease”?	35.5
2.	Is it necessary to heat up leftovers and cooked food from outdoors?	81.4	24.	What diseases may result from long-term use of aluminium product cookers?	68.4
3.	is the period of validity of health certificate?	65.6	25.	Whether moldy corn and peanut are inedible?	98.5
4.	What main toxic substances are contained in budded potatoes?	63.1	26.	Is “mad cow disease” a progressive central nervous system lesion?	71.5
5.	What channels can be used to know about food security knowledge?	81.4	27.	Whether the insufficiently cooked green bean can lead to food poisoning?	43.6
6.	Whether frozen foods should be put in the fridge for thawing?	58.2	28.	What foods own accumulation ability in organic chlorine and organic mercury?	42.3
7.	What main causes for food pollution?	76.1	29.	Which foods listed below are inedible?	74.1
8.	Which three key carcinogens in food?	51.6	30.	What O157:H7 means?	45.9
9.	Any idea what major domestic food security incidents listed as follows?	62.7	31.	What substance is commonly contained in moldy rice, corn and peanut?	43.2
10.	is the safest of organic food, green food and non-pollution food?	78.9	32.	Whether natural food additives are safe?	71.8
11.	Whether no synthetic chemical substance is added to green food?	56.2	33.	What substances can be used as food additives?	60.7
12.	What laws on food security are applied currently?	70.5	34.	Whether preservative belongs to food additives?	73.9
13.	Whether bulk quick-frozen rice dumpling can be directly sold in malls?	62.7	35.	Whether do you think genetically modified food is safe?	78.8
14.	In “Sanlu milk powder incident”, what substance did damage to health?	89.8	36.	What foods contain the high amount of trans fat?	28.3
15.	The reason why the oil temperature should not be too high during frying?	71.5	37.	What problems are caused by use of food additives?	54.7
16.	The reason why medium-well instant-boiled mutton is not proper to eat?	81.0	38.	What HACCP means?	41.4
17.	What is the creditworthiness of quantitative classification management of restaurant?	72.3	39.	What foodborne disease (food poisoning) means?	61.9
18.	When food safety law was promulgated?	53.4	40	What etiologies of foodborne diseases?	68.6
19.	When food hygiene law was promulgated?	50.9			
20.	What specific harms of cooking oil fume to health?	78.4			
21.	How to identify fresh meat?	72.7			
22.	Whether Dioxin is a kind of poisonous chlorine compound?	43.3			

Table 2: Detailed information and scores of investigation objects as to food security knowledge of college students

Signs	Indexes	Frequency	Percentage	Food security knowledge		
				$\bar{x}$	s	p
Ender	Male	332	48.8	73.2	3.45	0.595
	Female	349	51.2	75.5	3.01	
English competence	Below					0.022
	CET-4	243	35.7	64.5	3.37	
	CET-4	248	36.4	75.3	3.42	
Major	CET-6	190	27.9	85.8	2.53	0.411
	Arts	320	47.0	70.2	4.51	
	Science	341	53.0	82.7	5.63	

Anhui Polytechnic University, Hefei Normal University, Anhui JIANZHU University, Bengbu University, West Anhui University, Tongling University, Chuzhou Vocational and Technical College

and so on. 681 valid questionnaires are collected finally, with response rate of 96.6%, which meets the investigation requirement. Detailed information of investigation objects is shown in Table 2.

Table 3: Comparison in per pair average number of food security knowledge scores of three types of college students

	$\bar{X}_A$	$\bar{X}_B$
$\bar{X}_B$	75.3	64.5
$\bar{X}_C$	85.8	75.3
	1.88	5.31**
		2.34*

(\*means significant difference; \*\*means difference and significance)

Table 4: Critical value  $q$  of average number of food security knowledge scores of three types of college students

Degree of Freedom $df_w$	Class Number $a$	Critical value $q$	
		$q0.05$	$q0.01$
678	2	2.05	3.22
678	3	3.47	5.01

### Investigation and analysis of food security knowledge mastery:

**Descriptive result:** Average ( $\bar{x}$ ), standard deviation ( $s$ ) and t-test are employed to describe food security knowledge mastery of college students (Tian *et al.*, 2011). It is concluded that average scores of food security knowledge assessment of college students are  $74.38 \pm 3.27$ , so the overall condition is fine.

**Inferential result:** In order to find out whether there are score differences in food security knowledge of college students with three different English competence level and identify difference degree,  $q$ -test is employed here (Yin *et al.*, 2010).

Suppose that  $A$ ,  $B$  and  $C$  respectively represent college students with English competence “below-CET-4”, “CET-4” and “CET-6”. Then college students of  $A$  and  $B$  groups are taken for example and by means of  $q$ -test statistical quantity,  $q$  value, as average number difference between  $A$  and  $B$  groups, can be obtained:

$$q(A, B) = \frac{\bar{X}_A - \bar{X}_B}{\sqrt{\frac{MS_w}{2} \left( \frac{1}{n_A} + \frac{1}{n_B} \right)}} = \frac{64.5 - 75.3}{\sqrt{\frac{8072.23}{2} \left( \frac{1}{243} + \frac{1}{248} \right)}} = -1.88$$

And,  $\bar{X}_A$  represents  $A$  group average number;  $\bar{X}_B$  represents  $B$  group average number.

Likewise,  $q$  value, as whole average number difference among  $A$ ,  $B$  and  $C$  groups, can be shown in Table 3. Based on intra-class degree of freedom  $df_w = 678$ , significance level  $\alpha = 0.01$ ,  $\alpha = 0.05$  and  $a$ , the class number between per pair average number, critical value  $q$  in this research can be obtained in Table 4 by referring to  $q$  value table.

### CONCLUSION AND RELEVANT SUGGESTIONS

The paper draws the following two conclusions: t-test result (Table 2) indicates that average number differences of food security knowledge scores of

college students of different genders and majors are of no significance in statistics ( $p > 0.05$ ), meanwhile, average number differences of food security knowledge scores of college students with different English competence are of much significance in statistics ( $p < 0.05$ ). Calculated data shows the higher college students' English competence is, the higher their food security knowledge scores are. In terms of specific content of food security knowledge, college students show their mastery of common sense knowledge on food security, however, they perform poorly in somewhat professional and English-related content of food security knowledge. For instance, the scoring rates of the following questions are all below 50%: “whether Dioxin is a kind of poisonous chlorine compound?”, “which element result causes minamata disease?”, “whether the insufficiently cooked green bean can lead to food poisoning?”, “what foods own accumulation ability in organic chlorine and organic mercury?”, “what O157:H7 means?”, “what substance is commonly contained in moldy rice, corn and peanut?”, “what foods contain the high amount of trans fat?” and “what HACCP means?”.

$q$ -test result (Table 3) shows that there is no obvious difference in average number of food security knowledge scores between college students with English competence below CET-4 and those with CET-4; there is significant difference in average number of food security knowledge scores between college students with English competence CET-4 and those with CET-6 and there is very significant difference in average number of food security knowledge scores between college students with English competence below CET-4 and those with CET-6. Therefore, it can be concluded that English competence of college students greatly influences how well they can master food security Knowledge.

### ACKNOWLEDGMENT

**Funded projects:** Project on Supporting Outstanding Youth Talents at Colleges and Universities in Anhui Province in the Year of 2014.

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