What causes the academic stress suffered by students at universities and colleges of technology?

Ying Ming Lin†, Shu Chuan Lin‡, Ming Yu Wang* & Farn Shing Chen*

Nan Kai University of Technology, Nantou, Taiwan†
Chaoyang University of Technology, Wufend, Taiwan‡
National Changhua University of Education, Changhua, Taiwan*

ABSTRACT: This research used stratified random sampling to identify students from ten universities and colleges of technology to participate in in-depth interviews. The researchers identified the causes of students' academic stress. These conformed to the reliability and validity levels required in qualitative research. Based on the coding and punctuation of the above peer encoders and after categorising and generalising these data, experts and learners were requested to assist in the discussion and the data coding was converted into the elements of this research. Subsequently, the researchers arranged for five experts to examine the validity of the methods used. Based on the various causes identified, the list was revised and after modification, 37 items were selected.

INTRODUCTION

Along with the improvements during the scientific era and the rapid development of information, competitiveness among people has become increasingly intense. As a consequence, people have become busier and, therefore, stress is a natural consequence. Even though appropriate stress is a juncture for self-growth, it is also a motivation for people to progress actively. It not only affects our thoughts and feelings but our behavioural models, as well. However, overstress causes problems and discomfort, and can have serious effects on people. Specifically, students, who are accustomed to senior high school environments, enter a completely new world once they go to university.

In addition, most students who need to leave their homes to study for the first time not only have to readjust to the new environment, but they also need to familiarise themselves with new people, situations and methods. After senior high school and vocational high school, students enter universities and colleges of technology. They immediately face many daily and campus life situations that are different from those they faced at high school. Do these situations really cause problems and academic stress? Do the differences in learning methods and teachers' teaching methods, in addition to the homework, tests and course selection methods, cause academic stress in university students?

These new adjustments create situations in which a student's lifestyle is naturally not the same as before. This highlights the need for research to examine the academic stress faced by students at universities and colleges of technology. With such knowledge, educationists will be able to pay more attention to the sources of academic stress of students and the use of counselling measures to assist students in the sound development of their bodies and mind.

LITERATURE REVIEW

Piekarska pointed out that the essential factors for the formation of stress are frequent and strong. There is a related connection between the results of stress and psychological and personality characteristics [1]. Gaab et al considered that the interference of individual stress management is affected by recognition and behaviour and this is the reason for the relation between stress and physiological factors [2]. Shepard et al pointed out that stress produces physiological illnesses, and considered that there is a connection between stress and illnesses. If there is no substitute for adjusting methods, stress is increased [3]. Robbins and Coulter considered that stress itself is not necessarily bad. Even though stress is often discussed from its negative point of view, when it can specially provide the benefits of its potential, then its positive value definitely exists [4]. O'Connor also considered that stress is a normal and common experience of people. Good stress is beneficial to our body and health, and good stress-handling methods can increase motivation and improvement [5].

Teachers often emphasise the acquisition of knowledge, so they often neglect the emotional feelings of students during the teaching process, which can cause emotional stress and learning problems for students. In addition, students may feel unfamiliar situations like nervousness, worry, frustration, abasement, depression, etc. The instability of these emotions easily initiates unusual behaviour, which then affects the learning achievements and adjustment ability of students if appropriate timely counselling is not given by the schools, teachers and parents, or if they cannot obtain appropriate concern from their peers or siblings [6].

This research used relevant literature as the basis of identifying the causes of stress from different angles, to assist teachers in understanding the related problems of stress faced by students in modern-day universities and colleges of technology, thereby proceeding to provide assistance and preventive measures. Consequently, the research is of great value and importance.

RESEARCH METHOD

This research used the basic theory of academic stress and its related research literature to construct an academic stress context of students of universities and colleges of technology. An interview programme concerning the academic stress of these students was drafted and stratified random sampling was used to carry out in-depth interview of students from ten universities and colleges of technology. The handling of these situations had to conform to the reliability and validity of qualitative research.

RESEARCH TARGETS

This research used stratified random sampling as its main method of random sampling. Due to the limitations of human power and time, the target population was set according to the nation-wide universities of science and technology, colleges of technology, community colleges or junior colleges announced by Taiwan's Ministry of Education in 2008, and the research targets included all-day school students.

RESEARCH PROCESS

The research process and explanations of this research are as follows:

Preparing the Interview Programme

The researchers used the basic theory and research literature related to academic stress to construct a semi-model interview programme. Its validity was confirmed after being investigated by five experts/scholars. This research required a number of individual, in-depth interviews to be carried out and the content of the interview programme was as follows:

- Can you talk about the biggest academic problem or stress you faced this semester? Answer specifically and give examples.
- How are your school grades? What goals do you wish to achieve? What are your parents' expectations? Answer specifically and give examples.
- Can you please talk about whether the teaching situation of the professors is inappropriate or causes stress? Answer specifically and give examples.
- Can you please talk about whether the learning situation of selecting courses is inappropriate or causes stress? Answer specifically and give examples.
- Can you please talk about how you arrange your schedule between academic and social organisations or student association activities? Answer specifically and give examples.
- Can you please talk about whether the learning situation between you and your classmates is inappropriate or causes stress? Answer specifically and give examples.
- Can you please think again whether you still have stress or problems in your academic life? Answer specifically and give examples.

Formal Interview Process

During the research process, a digital recorder, notebook and pen were used to assist in collecting raw data, after obtaining consent from sampling participants. Quality research tools included a formal interview programme involving the researcher, an interviewee, a copier and an encoder. The interview process was as follows:

Contacting Participants

Before the interview, the researcher first contacted the participants via letter or telephone, and explained the objectives of the interview beforehand and suggested the probable direction and content of the interview questions. Formal invitations were then sent to the participants, officially asking for their agreement to participate in the research.

Participants were advised that they could stop or leave the interview at any time. Participants were also given the opportunity to correct or delete interview content after the interview process. At the same time, the researchers and the participants agreed on a convenient interview time and an appropriate venue. Participants also knew beforehand that interviews would take approximately 100 minutes. Participating students' real names were not to be disclosed by the research. Code names or pseudonyms were used.

Interview Samples

Stratified random sampling was used to select and invite respondents for the in-depth interview section of this research. It was hoped that the sample selected would be representative of the overall population by taking account of variables such as gender, level, school classification, administrative division, as well as of type of school, etc. Based on the above selection principles, this research first decided on nine interview targets. However, a female student from the senior year of a private university of science and technology was added, to improve coverage. But after the interview, the script was coded but nothing was found that was related to academic stress. This demonstrated that a sample of 10 students (coded as a to j) was enough to be used as interview targets. The background of the participants is shown in Table 1.

Table 1: Participants' background data.

School Style	(University of Science and Technology)				(Colleges of Technology)				Community College (Junior College)
Code name	d	c	h	i(j)	g	a	f	e	b
Gender	F	M	M	F	M	F	M	M	F
Level	1st	2nd	3rd	4th	1st	2nd	3rd	4th	二
School classification	N	N	N	N (P)	P	N	P	P	N
Administrative division	south	south	north	north midst	north	midst	north	south	midst

Note: F is female; M is male; N is national; P is private.

Analysis of Interview Data Coding

In view of qualitative research, reliability can be ensured by replication, stability and consistency. Validity requires dependability, predictability and accuracy. In order to increase the reliability and validity of this research, the recorded data from interviews was arranged and the information was generalised based on topic analysis, and after continuous comparison and interpretation, triangulation was used to increase the survey of the important meaning of the data so as to facilitate its explanation. Therefore, the methods in this research are:

1. After the encoding system was discussed and amended with the help of two experts, differentiation and denomination were commonly agreed.
2. Establishing the validity of data coding: In order to be able to handle the interview data to be more impersonal and exact, this research required two encoders to assist in the impersonal data analysis of the interview content. They assisted in establishing a framework of a written script and ascertaining the message of the analysis of the script. During the coding process, the researcher and the two encoders first discussed the determination of the sentences, coding and differentiation concepts, and after solving differences in the concepts, a common consensus was obtained. Finally, individual coding work of the script data of every interview was carried out, so as to be able to increase the validity of the script coding.

Table 2: The scorer coding table of the various factors analysed in the contents of three encoders.

Various factors and researcher Participators	Stress from test scores	Stress from teachers	Stress from myself	Stress from classmates	Analysis and frequency of overall academic stress
X researcher	37	43	58	30	168
Y peer encoder	35	36	44	30	145
Z peer encoder	33	39	39	27	138

Table 3: The coefficient of reliability (CR) of three scorers of academic stress.

Reliability of X and Y		Reliability of X and Z		Reliability of Z and Y	
Equivalence	290	Equivalence	276	Equivalence	276
Code	313	Code	306	Code	283
CR	.927	CR	.902	CR	.975

Table 4: Item contents of the academic stress.

Factors	Item contents
I. Stress from test scores: including tests, results and parents' expectations	
tests	1. I do not get enough sleep at night because I worry about school tests.
	2. I stay up late before all the big and small school tests.
	3. I feel that the tests and class content of some subjects are variable, which causes me to be unable to prepare adequately.
results	4. I worry that I will have to redo the compulsory courses I might fail.
	5. I feel that there is vast difference between my current results and high school results.
	6. I feel that the results of my recent tests are imperfect and have regressed.
parents' expectations	7. I have conflicts with my parents due to my academic results.
	8. I feel that my parents think that I am not serious about my studies.
	9. I worry that my academic results will not meet my parents' expectations.
II. Stress from teachers: including courses materials, teaching methods and homework	
courses materials	10. Some teachers provide too much data; this causes me to be unable to finish studying and to assimilate the knowledge.
	11. In some courses, I have to spend a lot of time looking for data and information.
	12. I feel a lot of pressure because some subjects use foreign language books.
teaching methods	13. I feel that I do not understand a lot about some teachers' teaching content.
	14. I feel that I am not able to adapt to some teachers' teaching methods.
	15. I feel that once I got into university, I could not keep up with the speed of the teachers' instruction.
homework	16. I feel that the exercises and reports of some teachers are excessive.
	17. I feel that the exercises and reports of some teachers are too difficult.
	18. I feel that the forms and content of exercises and reports of some teachers are too strict.
III. Stress from myself: including own expectations, choice of subjects and time management	
own expectation	19. I hope that my homework or reports will improve.
	20. I feel that after I entered university, my performance was not as good as I had expected.
	21. I feel that my learning level is not as good as that of my classmates.
	22. I feel nervous when I need to make a speech or give a presentation.
choice of subjects	23. I feel that I have so many courses that I am out of breath.
	24. I feel that I have no interest in some subjects or academics.
time management	25. I feel that it is very difficult for me to find a balance between my academic and social activities.
	26. I feel that I am not able to adjust and schedule the time between academic and social activities effectively.
	27. I feel that I spend a lot of time participating in societies and activities.
	28. I feel that the social activities and student association affect my academic work.
IV. Stress from classmates: including group reports, academic competition and disturbances from classmates	
group report	29. I often face problems as to how to share work with my classmates when some exercises or reports require group work.
	30. When group work is required to complete an exercise or report, I worry that I will not be able to find a suitable group member.
	31. When I give a speech or presentation, I worry that my classmates will laugh at my inability to perform well.
academics competition	32. I feel that there is open strife and veiled struggles among classmates due to academic performance.
	33. I could feel a keen competitive atmosphere between students on academic matters.
	34. I am very worried that my academic results are not as good as those of my classmates are.
classmates disturb	35. I feel that my classmates are very noisy during class and this influences my class situations.
	36. When I want to study on my own, I am often affected by my classmates chatting.
	37. Sometimes, the words used by my classmates easily hurt my self-esteem or cause harm.

3. Establishing the reliability of data coding: In order to increase the reliability of the coded script used in this research, Holsti's coefficient of reliability (CR) discussed by Miles and Huberman was used to carry out the reliability test of the scorer [7]. This method can ascertain the certainty, transferability, and reliability of research data analysis, and can be used to ensure the reliability and validity of the research. Garrison et al consider that the

coefficient of reliability (CR) of the scorer represents a consistency of the percent-agreement and the coefficient of reliability range of the content analysis of the research was usually between .80 and .90 [8].

4. The coefficient of reliability of script coding and scorer: After data coding and analysis by the researcher and the two encoders, the coding of the scorer of the various factors in the questionnaires was shown in Table 2. It can be seen in Table 3 that the coefficient of the scorer of the pre-test of the contents of this research was above .90. This showed the acceptability of the index. Therefore, based on the data coding and analysis of the above-mentioned, it was shown that a good validity and reliability exists and the coefficient of reliability of the scorer was good and consistent.

Establishing the Causes of Academic Stress

Based on the coding and punctuation of the above peer encoders, and after categorising and generalising these data, experts and learners were requested to assist through discussions and the data coding was converted into the items related the causes of stress. Later, five experts examined the content validity of the methods. Based on the various items of the content, retouching and modification was carried out and after modification, 37 items were decided upon. These are shown in Table 4.

This research was further refined and the research of Goetz and LeCompte was used to establish reliability and validity indices, so as to ascertain whether the survey analyses conformed to the standards of reliability and validity appropriate for the methods used in completing in-depth interviews [9]. The estimation results on the aspect of reliability included external reliability and internal reliability, both of which were good. The estimation results on the aspect of validity included external validity and internal validity, both of which were good. Integrating the above-mentioned, the list of items that cause academic stress was finalised.

CONCLUSIONS

The academic stress content of the students from universities and colleges of technology used in this research points to the following: when related academic problems, frustrations or problems are faced in the schools, students might suffer from an inability to adjust, leading to unhappy or problematic phenomena occurring to the body and mind. The academic stress content of this research has been divided into four factors, with a total of 37 items. The possible causes of stress that can be faced in academic situations identified by this research have been divided into four groups:

- Stress from test scores: including tests, results and parents' expectations.
- Stress from teachers: including courses materials, teaching methods and homework.
- Stress from myself: including own expectations, choice of subjects and time management.
- Stress from peers: including group reports, academic competition and disturbances from classmates.

REFERENCES

1. Piekarska, A., School stress, teachers' abusive behaviors, and children's coping strategies. *Child Abuse and Neglect,* 24, **11**, 1443-1449 (2000).
2. Gaab, J., Blattler, N., Menzi, T., Pabst, B., Stoyer, S. and Ehlert, U., Randomized controlled evaluation of the effects of cognitive-behavioral stress management on cortisol responses to acute stress in healthy subjects. *Psychoneuroendocrinology,* 28, **6**, 767-779 (2003).
3. Shepard, J.D., Absi, M., Whitselt, T.L., Passey, R.B. and Lovallo, W.R., Additive pressor effects of caffeine and stress in male medical students at risk for hypertension. *American J. of Hypertension,* 13, **5**, 475-481 (2000).
4. Robbins, S.P. and Coulter, M., *Management.* Prentice Hall Inc. a Pearson Education Company (2001).
5. O'Connor, T., *Stress management module* (2003). Retrieved: 20 March 2005, from University of Dublin, Trinity College, Web site: http://www.tcd.ie/Stadent_Counslling/documents/Stress_Exercises.pdf.
6. Chen, F.S., Lin, Y.M. and Tu, C.A., A study of the emotional intelligence and life adjustment of senior high school students. *World Transactions on Engng and Technology Educ.,* 5, **3**, 473-476 (2006).
7. Miles, M.B. and Huberman, M., *Qualitative data analysis.* 2nd Ed. Thousand Oaks, CA: Sage Publications Inc (1994).
8. Garrison, R., Anderson, T. and Archer, W., Critical thinking, cognitive presence, and computer conferencing in distance education. *American J. of Distance Educ.,* 15, **1**, 7-23 (2001).
9. Goetz, J.P. and LeCompte, M.D., *Ethnography and qualitative design in educational research.* New York: Academic (1984).