Questionable Work Practices

The Views of Undergraduate Students in IT Courses (Part 2)

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March 2001

Introduction

This is Part 2 of a report on a study that aims to determine attitudes towards questionable work practices of undergraduate students within the School of Computer Science and Software Engineering (CSSE).

More details of the study and the research method used may be found in Part 1 of this report at http://cerg.csse.monash.edu.au/reports/TechReports.html

Determining underlying variable structures of acceptability of questionable work practices, cheating reasons and cheating prevention responses

Factor analyses were performed on the acceptability of questionable work practice responses, the cheating reasons and cheating prevention responses in an attempt to find any underlying latent variable structures within these variable grouping.

Questionable work practice scenarios

The ratings of acceptability of the scenarios variables were analysed using a factor analysis. This is a method used to determine a latent variable structure that can account for intercorrelations of an observed set of variables. The factor analysis method performed used a Principal Axis Factoring extraction and a Varimax rotation with Kaiser normalization.

The initial factor analysis yielded three factors with eigenvalues greater than 1.0. Examination of the eigenvalues showed the fourth eigenvalue had a value of 0.957, just below 1.0. To determine if it was reasonable to extract a fourth factor from these results a scree test was used. A scree test is performed by plotting a graph of eingenvalues against the factor numbers. The point at which the curve of the graph levels out indicates the number of true factors which are present in the data. The scree test graph produced in this case shows a levelling out occuring after the third factor indicating a fourth factor is not reasonable.

Comparison of the rotated factor matrices produced for the three and four factor solutions show clearer results for the four factor solution. Examination of the variable loadings for this solution using a minimum variable loading of |0.4|, indicate interpretable results for each factor. Four scenarios (6, 12, 13 and 18) did not show clear loadings on one factor and have been included in two factor structures. The variable loadings are shown in Table 1and the scenarios within each factor structure are shown in Table 2.

Scenario	Factor		
	1	2	3
1	.093	.188	**.536**
2	-.127	-.044	**.553**
3	-.104	.105	**.531**
4	.043	.115	**.529**
5	.302	.166	**.577**
6	**.454**	**.449**	.149
7	**.692**	.184	.016
8	**.637**	.313	.070
9	.147	.338	.271
10	**.760**	.084	-.055
11	.285	**.691**	.133
12	.100	**.498**	**.447**
13	**.616**	**.420**	.073
14	**.760**	.109	-.018
15	**.722**	.147	-.063
16	**.443**	.276	.118
17	.273	**.751**	.152
18	**.543**	**.492**	.142

Table 1 Rotated Factor Matrix (rotation converged in 6 iterations)

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Factor	Description	Scenarios
1	Criminal behaviour: stealing, fraud, misrepresentation, cheating	6, 7, 8, 10, 13, 14, 15, 16, 18
2	Plagiarism (copying from a book or Website)	6, 11, 12, 13, 17, 18
3	Assignment cheating, recycling	1, 2, 3, 4, 5, 12

Table 2 Factors underlying student ratings of acceptability of scenarios

Reasons for cheating

The ratings of the likelihood of each reason causing cheating variables were analysed using a factor analysis. The factor analysis method performed used a Principal Axis Factoring extraction and a Varimax rotation with Kaiser normalization.

The factor analysis yielded three factors with eigenvalues greater than 1.0. The factor analysis yielded three factors with eigenvalues greater than 1.0. Examination of the variable loadings within the rotated factor matrix produced indicate interpretable results for each factor. Five

reasonss (22c, 22g, 22i, 22k and 22l) did not show clear loadings on one factor and have been included in two factor structures. The variable loadings are shown in Table 3 and the reasons within each factor structure are shown in Table 4.

Reason		Factor		
		1	2	3
q22a	Not enough time	.167	.186	**.814**
q22b	Too great a workload at university	.232	.229	**.844**
q22c	Will fail otherwise	.186	**.400**	**.451**
q22d	Lazy	**.625**	.067	.255
q22e	Everyone does it	**.653**	.207	.125
q22f	Need to get better marks	**.597**	**.415**	.176
q22g	Parental pressure	**.501**	**.507**	.098
q22h	Can't afford to fail	.169	**.745**	.253
q22i	Assignments are too hard	.368	**.421**	**.475**
q22j	To help a friend	**.455**	.197	.312
q22k	Missed classes due to ill health	**.402**	.370	.280
q22l	Exams for the subject are too hard	**.465**	**.530**	.370
q22m	Afraid of failing	.348	**.734**	.278
q22n	For a monetary or other reward	**.545**	.235	.100

Table 3 Rotated Factor Matrix (rotation converged in 6 iterations)

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Factor	Description	Reasons
1	Need to do well, external pressures: friend, money, society	22d, 22e, 22f, 22g, 22j, 22k, 22l, 22n
2	Concern about failure, pressure to do well	22c, 22f, 22g, 22h, 22i, 22l, 22m
3	Workload pressure and difficulty	22a, 22b, 22c, 22I

Table 4 Factors underlying students' ratings of reasons for cheating

Reasons for not cheating

The ratings of the likelihood of each reason preventing cheating were analysed using a factor analysis. The factor analysis method performed used a Principal Axis Factoring extraction and a Varimax rotation with Kaiser normalisation.

The factor analysis yielded three factors with eigenvalues greater than 1.0. Examination of the variable loadings within the rotated factor matrix produced indicate interpretable results for each factor. One reason (23d) did not show clear loadings on one factor and have been included in

two factor structures. The variable loadings are shown in Table 5 and the reasons within each factor structure are shown in Table 6.

Reason		Factor		
		1	2	3
q23a	Want to know what your work is worth	**.749**	.194	.134
q23b	Pride in your work	**.880**	.160	.081
q23c	Can get good marks without cheating	**.673**	.189	.195
q23d	Against your moral values	**.453**	**.464**	.192
q23e	Against your religious beliefs	.220	**.552**	.181
q23f	Fear of being found out	.140	.306	**.653**
q23g	Never thought about it	.204	**.666**	.132
q23h	Don't know how to	.070	**.739**	.212
q23i	Fairness to other students	.252	**.475**	.382
q23j	Penalties if caught are too high	.173	.189	**.885**

Table 5 Rotated Factor Matrix (rotation converged in 6 iterations)

Factor	Description	Reasons
1	Self worth, pride	23a, 23b, 23c, 23d
2	Unaware, moral values, religious beliefs	23d, 23e, 23g, 23h, 23i
3	Fear of punishment, consequences	23f, 23j

Table 6 Factors underlying students' ratings of reasons preventing cheating

Cluster analyses to classify students according to acceptability of cheating and cheating practise

A comparison of student groups classified according to cheating acceptability

The students were classified into groups according to their ratings of acceptability of cheating practices. This was done using a cluster analysis which is a method used to classify cases into groups based on a specified set of variables. The cluster analysis method performed was K-Means Cluster using the scenario ratings as variables and specifying three clusters.

The three groups produced by the cluster analysis will be referred to as low (n=227), medium (n=165) and high acceptability of cheating (n=65) groups.

An ANOVA was used to compare the differences between the groups on the acceptability of the cheating practices. There were significant differences for each scenario.

An ANOVA was used to compare the differences between the groups on the likelihood of the reasons causing cheating (Question 22). There were significant differences for each reason. For the high acceptability of cheating group all reasons except not enough time or too great a workload were more likely to cause cheating than the for the other groups.

An ANOVA was used to compare the differences between the groups on the likelihood of the reasons preventing cheating (Question 23). There were significant differences for five reasons:

- want to know what your work is worth
- pride in your work
- can get good marks without cheating
- against your moral values
- fairness to other students

For the high acceptability of cheating group all reasons were less likely to cause cheating than the for the other groups.

Cross tabulations were performed on the cluster groups against students classified according to campus of study, year level, study mode (full or part time), fee status (full fee paying or HECS), gender, age group (younger or older), or average course performance to date (low or high).

These showed that there are significantly more full fee paying students and Caulfield campus students in the high cheating acceptability group.

A comparison of student groups classified according to cheating practise

The students were classified into groups according to their admissions of cheating practises. The cluster analysis method performed was K-Means Cluster using the scenario ratings as variables and specifying three clusters.

The three groups produced by the cluster analysis will be referred to low (n=86), medium (n=268) and high cheating practise (n=95) groups.

An ANOVA was used to compare the differences between the groups on the acceptability of the cheating practices. There were significant differences for each scenario, except for the practice of posting to the Internet for assistance.

An ANOVA was used to compare the differences between the groups on the likelihood of the reasons causing cheating (Question 22). There were significant differences for each reason. For the high cheating practise group all reasons except not enough time or too great a workload were more likely to cause cheating than the for the other groups.

An ANOVA was used to compare the differences between the groups on the likelihood of the reasons preventing cheating (Question 23). There were significant differences for six reasons:

- want to know what your work is worth
- pride in your work
- can get good marks without cheating
- against your moral values

- never thought about it
- fairness to other students

For the high cheating practise group all reasons were less likely to prevent cheating than for the other groups.

Cross tabulations were performed on the cluster groups against students classified according to campus of study, year level, study mode (full or part time), fee status (full fee paying or HECS), gender, age group (younger or older), or average course performance to date (low or high).

These showed that there are significantly more full fee paying students and Caulfield campus students in the high cheating practise group.

Frequency of student cheating practise

The frequency of cheating practise is shown in Table 7. The numbers and percentages of students who have practised each scenario are shown. Scenarios 2 and 3, which are not considered cheating practises, have not been included in these totals.

Number of scenarios practised	Number of students	Percentage of students
0	102	20.8
1	115	23.4
2	77	15.7
3	65	13.2
4	45	9.2
5	34	6.9
6	16	3.3
7	11	2.2
8	7	1.4
>8	15	3.0

Table 7 Frequency of cheating practises

Cross tabulations were performed on the number of scenarios practised against students classified according to campus of study, year level, study mode (full or part time), fee status (full fee paying or HECS), gender, age group (younger or older), or average course performance to date (low or high).

These showed no significant differences between any groups.

What is the relationship between the students' practise of a scenario and their ratings of the acceptability of a scenario?

The relationship between the students' practise of a scenario and their ratings of the acceptability of a scenario were determined using Pearson's correlations. These were performed for each scenario. A strong relationship (significant at the 0.01 level) was shown for each scenario. The strongest relationships were shown for scenarios involving assignment work. These were as follows:

- Scenario 10 ($r = 0.50$) This involved taking an assignment from a lecturer's pigeon and copying it. The students also rated this the most unacceptable practice.
- Scenarios 11 ($r = 0.41$) and 17 ($r = 0.45$). These involved plagiarism from a Web site or a book without and not from the work of other students.
- Scenarios 1 ($r = 0.45$) and 5 ($r = 0.40$). These involved submitting part or all of a friend's assignment work.

For students who admitted to practising a scenario, what reasons are most likely to cause them to cheat?

The means of the ratings of the likelihood of each reason causing cheating were calculated for students who had practised a scenario and also rated it as unacceptable (> 3 on the Likert scale). This was calculated for each scenario.

The strongest reasons most commonly stated were:

- Not enough time
- Too great a workload at university
- Will fail otherwise

These reasons also comprised the third factor in the factor analysis of the cheating reasons.

What percentage of students who have practised a scenario also know someone else who has practised the scenario?

Table 8 shows the percentages of students who practised each scenario and the percentages of those students who knew someone who had also practised the scenario. For most of the scenarios a high percentage of students who admitted to practising the scenario knew someone else who had also practised the same scenario. The lowest percentages are for the scenarios that were also rated the most unacceptable.

Scenario	Practised personally %	Know someone who has also practised this %
1	46.8	89.9
2	23.2	79.6
3	35.2	84.4
4	28.2	82.0
5	28.7	82.7
6	10.6	86.5
7	3.1	73.3
8	6.9	76.5
9	17.5	79.1
10	2.9	35.7
11	18.9	71.0
12	30.5	81.2
13	8.6	64.3
14	2.9	42.9
15	3.7	38.9
16	10.6	75.0
17	19.6	74.2
18	8.1	75.0

Table 8 Knowledge of others who also have practised the same scenario