

Exploring the types and reasons of Internet-triggered academic dishonesty among Turkish undergraduate students: Development of Internet-Triggered Academic Dishonesty Scale (ITADS)

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Abstract

Internet contributes to the development of science and facilitates scientific demeanors while it also serves as a ground for academic misdemeanors. Recent studies indicate that Internet facilitates and spreads academic dishonesty. The purpose of the current study is to investigate the extent of involvement of Turkish university students in academic dishonesty practices facilitated through Internet (i.e. e-dishonesty) and to question the conditions which lead to e-dishonesty. Three hundred and forty nine education faculty students from the most populated state university in Turkey were administered two Likert-Scale questionnaires developed by the researchers. After the reliability and validity conditions were met, two exploratory factor analyses were conducted. The first one revealed the factors constituting common types of e-dishonesty among undergraduate students which were fraudulence, plagiarism, falsification, delinquency, and unauthorized help. The second factor analysis exhibited individual and contextual factors triggering e-dishonesty which were named as individual factors, institutional policies and peer pressure. Results of both analyses are discussed and suggestions for further research are provided.

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1. Introduction

There are a lot of definitions addressing academic dishonesty most of which focus on the notion of plagiarism. Dictionaries can be considered mere sources that reached a consensus on the definition of plagiarism.

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American heritage dictionary (2000) defines plagiarizing as ‘to use and pass off the ideas or writings of another as one’s own’. Random House Webster’s Unabridged Dictionary (2006) defines plagiarism as ‘the unauthorized use or close imitation of the language and thoughts of another author and the representation of them as one’s own original work’. The definition provided by William L. Kibler is more comprehensive as he not only talks about receiving unauthorized and unacknowledged assistance, but also mentions giving assistance in academic endeavors (Kibler, 1993). Claxton (2005) lists the examples of well-known academic dishonesty as fabricated and falsified research findings, lack of proper data handling and record-keeping, fraudulent data, fabricated data, and not sharing credit. Throughout the current study, the term ‘academic dishonesty’ will be used rather than plagiarism, as we specifically focus on students’ misdemeanors conducted within academic settings or during academic endeavors. Anadolu University Scientific Ethics Committee (henceforth, BEK) (2003) includes ‘any attempt or negligence which deteriorate the replicability, validity and reliability of a study’ within the scope of academic dishonesty. The scientific and technological research council of Turkey (TUBITAK) and BEK list the items given in Table 1 within the scope of academic dishonesty instances. These terms are considered as basic constructs of academic dishonesty in Turkey while preparing the measurement tools of the present study.

In Turkey, the relation between academic dishonesty and information and communication technologies has not been investigated adequately yet. In a related research, Namlu and Odabasi (2007) carried out a survey with 216 undergraduate students of computer technology. The study developed a scale to determine unethical computer behaviors and classified unethical behaviors under five titles, namely, intellectual property (e.g. using unlicensed software), social impact (e.g. disturbing others through computers), safety and quality (e.g. hacking), net integrity (e.g. sending advertisement and chain mails) and information integrity (e.g. unauthorized use of other’s materials without acknowledgement). The current study particularly focuses on unethical behaviors of students, and tries to develop a tool to investigate the influence of Internet on dishonesty.

Several reasons might explain why students plagiarize. Students may think that using several sources, quotes and citations is the primary goal of writing while their original ideas are secondary (Whitaker, 1993). They may fail to cite the source since they cannot differentiate between common knowledge and information that merits citation (Whitaker, 1993). They may be confused about the nature and legitimate way of paraphrasing (Warnken, 2004). They may plagiarize because of time pressure (DeVoss & Rosati, 2002). They may plagiarize since their teachers urge them to come up with original ideas, that is, they find their ideas invaluable (Warnken, 2004). Finally, they may not critically analyze all the information, particularly web-based sources, which leads them to think that all information is equal, truthful and what is more, free and accessible (Warnken, 2004).

Findings of recent studies reveal that the use of computers and Internet facilitates and spreads academic dishonesty (Ross, 2005; Underwood & Szabo, 2003). If computer ethics is one of the issues that emerged with computer technology (Namlu & Odabasi, 2007), Internet ethics might be considered as either a sub-component of computer ethics or a new area of ethics that emerged with the advance of Internet. In fact, the use of information and communication technologies and particularly that of WWW have made unethical behaviors easier in several ways. First, students’ use of Internet information which is unavailable in traditional documents makes documenting academic dishonesty difficult for instructors (Austin & Brown, 1999). Second, word processing programs make it easier for students to cut and paste information from electronic resources

Table 1
Types of academic dishonesty

a. Fabrication: inventing and reporting data or information which is not produced through scientific endeavors
b. <i>Falsification</i> : manipulating the instruments, treatments, procedures and analyses in a way that will lead to incorrect but favored results
c. <i>Finagling</i> : avoiding to report some of the findings which are not in line with the hypotheses of a specific study
d. <i>Plagiarism</i> : unauthorized use of ideas, methods, data, language and figures of another author without acknowledging the source
e. <i>Duplication</i> : reporting the same research findings in different academic resources
f. <i>Least publishable units</i> : slicing the results of a study to publish in several places in a way that deteriorates the integrity of the study
g. <i>Neglecting support</i> : not acknowledging the source of funding while publishing a study conducted through a specific funding
h. <i>Misusing credit</i> : discarding the name of an author, changing the order of author names without an ethical and written consensus reached by all authors and editors, adding the name of people as authors who have not contributed to the study

into their papers without attributing the work (Benning, 1998). McCabe's (2005) comprehensive study supports this claim revealing that unfortunately 77% of undergraduate students in the US do not believe that 'cut-and-paste' plagiarism is a serious issue. Third, students can easily get access to term paper databases where they can download or purchase original research papers (Hickman, 1998). Forth, they can participate in online discussion forums, ask for assistance from more proficient learners, cut and paste those learners' responses to their assignments without acknowledging that they received assistance (Benning, 1998; Berls, 1998). Finally, more proficient computer users can download completed research papers of their peers from hard drives of campus computers (Austin & Brown, 1999).

As above claims suggest, a correlation between the ease of access to information resources through Internet and the instances of plagiarism is expected. Since computer technology is a dynamic phenomenon, ethical issues regarding this technology should be within a dynamic research field that constantly investigates the relationships among facts, concepts, conceptualizations and policies regarding this technology (Moor, 1985). Particularly in an emerging country like Turkey, where ethical issues regarding computer technology have not been comprehensively investigated yet, studies investigating the nature and extent of unethical behaviors regarding this technology are needed.

As mentioned above, Internet serves as a ground which facilitates and spreads academic dishonesty. Even though Internet seems to be the reason of several academic dishonesty instances, the solution lies within the faculties of education, which has the power to reshape the society. Unfortunately, academic ethics courses are not integrated into the curriculum to an ideal extent yet. There are faculties proposing ethics courses as electives. Some institutions integrate ethics issues within the scope of other courses such as research methods. Developing instruments to investigate ethical problems at universities and administering these tools to see the extent of the problem will help researchers demonstrate the seriousness of problems. Besides, developing and administering such tools are aimed to help policy-makers, program developers and administrators in considering the extent of ethical problems during the educational decision-making process. The current study first investigates the instances of academic dishonesty and classifies these instances under basic categories. Then, it investigates the reasons that lead students to academic misdemeanors. The following research questions are addressed.

1. What are the factors that constitute Internet-triggered academic dishonesty behaviors of Turkish undergraduate students?
2. What are the factors influencing Internet-triggered academic dishonesty?

2. Method

2.1. Participants

In order to reflect the proper distribution of departments at an education faculty in Turkey, the reference population of the study consisted of all education faculty students at one of the most populated state universities in Turkey, Anadolu University. Besides, the Faculty of Education has all departments that are available in Turkey. A sample of 500 students (20% of all students) representing all available department and grade clusters was randomly selected. Of 500 students, 349 responded to the questionnaire. The response rate was approximately 70%. Demographic information regarding participants is provided in Table 2.

2.2. Instruments

A personal information form was used to collect the independent variables needed for further analyses. Students' age, gender, department, class, family income, and PC and Internet experience were elaborated through questions given on this part.

Internet-Triggered Academic Dishonesty Scale (ITADS): after a review of literature on academic dishonesty (Austin & Brown, 1999; Claxton, 2005; Hickman, 1998; Kibler, 1993; McCabe, 2005; Stebelman, 1998; Underwood & Szabo, 2003), and after an investigation of academic dishonesty instances suggested by BEK (2003) and TUBITAK (2006), statements were created and collected in an item pool. Instances of academic

Table 2
Profile of the participants

		Frequency	Percent (%)
Gender	Male	122	34.96
	Female	227	64.04
	Total	349	
Grade	Freshman	53	15.19
	Sophomore	127	36.39
	Junior	100	28.65
	Senior	69	19.77
	Total	349	
PC at home	Yes	241	69.05
	No	108	30.95
	Total	349	
Internet at home	Yes	130	37.25
	No	219	62.75
	Total	349	
Department	Computer education	103	29.51
	Fine arts education	42	12.03
	Mathematics education	52	14.9
	Preschool education	38	10.89
	Primary school education	32	9.17
	Social studies education	21	6.02
	Foreign language education	61	17.48
	Total	349	

dishonesty given in Table 1 were selected as fundamental dishonesty issues. Forty statements addressing these issues were prepared and revised by eight Ph.D. students and two instructors at the Department of Computer Education and Instructional Technologies at Anadolu University. After the item pool was ready, students rated the statements in terms of importance on a 3-item Likert-Scale, 3 referring to very important and 1 referring to not important at all. Forty items with a mean of 2.5 or higher were selected for inclusion. Two instructors at the same department evaluated the scale and provided expert opinion. After the process was complete, a total of 32 items were selected for inclusion in the questionnaire.

The very same procedure was followed for the second part of the questionnaire which investigated the reasons of academic dishonesty. Items of this part were based on the suggestions of previous studies (Crown & Spiller, 1998; DeVoss & Rosati, 2002; Gerdeman, 2000; McCabe & Trevino, 1997; Underwood & Szabo, 2003; Warnken, 2004; Whitaker, 1993). After the evaluation provided by Ph.D. students and the expert opinion procedure, a total of 34 items were selected for inclusion in this part.

Both sub-scales of the entire tool were prepared as Likert Scales. The frequency of academic dishonesty behaviors and reasons to conduct such behaviors were evaluated on 5-item scales: never, rarely, sometimes, very often and always referred to 1, 2, 3, 4, and 5 respectively.

2.3. Procedure

The survey was administered to undergraduate students of Anadolu University, Faculty of Education who responded to questionnaires on a voluntary basis. The scale was administered in the spring semester of 2006 during students' normal class periods. The students were given the same directions in all classes by the researchers as well as a two-paragraph written instruction.

Two exploratory factor analyses for sub-scales of the measurement tool were conducted. The following procedure was followed for each: after the suitability of data for factor analysis was checked, item-total correlation indices less than 0.30 were suppressed. After suppressing these items, remaining items were examined through principal component analyses using SPSS 15.0 for Windows. Items with loadings less than 0.40 were suppressed in the output as suggested by Field (2000). In order to determine the number of components during rotation, the number of components with eigenvalues exceeding 1 was taken as the criterion. The variability

explained by components was expected to be between 40% and 60% for further analyses as suggested by Duntman (1989). Finally, Varimax Rotation was carried out to interpret the results.

3. Results

3.1. What are the factors that constitute Internet-triggered academic dishonesty behaviors of undergraduate students?

Thirty two items that constitute the first scale were examined through principal component analysis using SPSS 15.0 for Windows. First of all, the suitability of data for factor analysis was assessed. The first concern was the sample size. Kass and Tinsley (1979) suggest that researchers should have between 5 and 10 subjects per items of the scale up to a total of 300 respondents. If the number reaches up to 300, test parameters tend to be stable regardless of the subject to variable ratio. Field (2000) and Tabachnick and Fidell (1996) agree that it is plausible to have at least 300 cases for factor analysis. Finally, Comrey and Lee (1992) defines sample sizes of 100 as poor, 200 as fair, 300 as good, 500 as very good, and 1000 as excellent. Based on this information, we could say that our data is suitable for factor analysis as it includes 349 cases.

The next step is to check the Kaiser–Meyer–Oklin Measure of Sampling Adequacy. This statistic is calculated for individual and multiple variables and represents the ratio of the squared correlation between variables to the squared partial correlation between variables (Field, 2000). The KMO value varies between 0 and 1. A value of 0 indicates that the sum of partial correlations is large relative to the sum of correlations, whilst a value close to 1 indicates that patterns of correlations are compact, and so factor analysis will yield reliable factors. Kaiser (1974) suggests that values greater than 0.5 should be accepted. Pallant (2001) suggests that the KMO statistic should be larger than 0.6. Hutcheson and Sofroniou (1999) suggest that values between 0.5 and 0.7 are normal, values between 0.7 and 0.8 are good, values between 0.8 and 0.9 are great, and values above 0.9 are superb. The initial solution of our factor analysis revealed a KMO value of 0.916. Moreover, inspection of the correlation matrix revealed the presence of many coefficients of 0.3 and above, which was an ideal condition met in our case (Pallant, 2001). Finally, Bartlett's Test of Sphericity should reach a significance value to support the factorability of the correlation matrix obtained from the items. Bartlett's Test of Sphericity revealed an Approx. Chi-Square value of 4825.622 with a significance value of .0005, which meant that the factorability of our correlation matrix was proper. The principal component analysis revealed the presence of six components with eigenvalues exceeding 1, which explained 58.826% of the total variance. Field (2000) suggests that loadings less than 0.4 be suppressed in the output. Besides, Pallant (2001) claims that if an item loading is above 0.4, this is a strong loading which should not be deleted. Most items had loadings above 0.4, and variables with lesser values have been deleted from the analysis. One item with an item total correlation value of 0.13 was suppressed since it had a value below our criterion (i.e. 0.20). Five items were suppressed because of inappropriate factor loadings (i.e. below 0.40). After inappropriate items were suppressed, further analysis was conducted with remaining 26 items. The factor analysis was repeated revealing 5 factors which explained 59.100% of the total variance. The new analysis revealed a better KMO value (.917) as shown in Table 3 along with an ideal Bartlett value ($p < .0005$) again. The Cronbach's Alpha for the whole part was 0.917 after the problematic items were suppressed.

More specifically, first component had an eigenvalue of 9.190 and explained 35.344% of the total variance, the second one had an eigenvalue of 2.267 and explained 8.718% of the total variance, the third one had an eigenvalue of 1.444 and explained 5.555% of the total variance, the fourth one had an eigenvalues of 1.307 and

Table 3
KMO and Bartlett's Test

Kaiser–Meyer–Oklin measure of sampling adequacy	.917
Bartlett's Test of Sphericity	
Approximate χ^2	3866.937
Df	325
Sig.	.000

explained 5.026% of the total variance, and the final component had an eigenvalue of 1.159 and explained 4.457% of the total variance. Details regarding the total variance explained are provided in Table 4.

As suggested above, the number of factors was determined as five. The next step was to interpret them. To assist the process, the factors should be ‘rotated’ (Pallant, 2001). Five components were extracted and rotated. There are a number of different rotation techniques. In our example, Varimax rotation was chosen since it tends to be easier and clearer to interpret (Pallant, 2001). The items in each component along with their means, standard deviations, item total values, component and Varimax rotation loads are provided in Table 5. According to the results of the first factor analysis, types of Internet-triggered academic dishonesty were summarized under five titles. Based on the literature, the titles of the factors were determined as fraudulence, plagiarism, falsification, delinquency and unauthorized help.

After the analyses were over, the minimum score of this part of the questionnaire was determined as 26 and the maximum score was determined as 130. Thus, the range is expected to be 104 between the lowest and the highest scores. The mean of the sample was 39.077 and the standard deviation was 11.202. The statement with the highest mean (2.456) was “Doing an individual assignment with a group using several Internet resources such as forums, chat rooms, blog, etc. (item 1)” while the lowest mean (1.138) was that of “selling an individual project on the Internet (item 31)”.

3.2. What are the factors influencing Internet-triggered academic dishonesty?

Items of the second scale were examined through principal component analysis again. The suitability of data for factor analysis was assessed following above procedures. The initial solution of the factor analysis revealed a KMO value of 0.938. Inspection of the correlation matrix revealed the presence of many coefficients of 0.3 and above. Finally, Bartlett’s Test of Sphericity reached a significance value to support the factorability of the correlation matrix obtained from the items. Bartlett’s Test of Sphericity revealed an Approx. Chi-Square value 6788.432 with a significance value of .0005 supporting the factorability of the correlation matrix.

Table 4
Results of the first factor analysis: total variance explained

Component	Initial eigenvalues			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	9.190	35.344	35.344	9.190	35.344	35.344	5.504	21.167	21.167
2	2.267	8.718	44.062	2.267	8.718	44.062	3.518	13.529	34.696
3	1.444	5.555	49.617	1.444	5.555	49.617	2.463	9.473	44.169
4	1.307	5.026	54.643	1.307	5.026	54.643	2.364	9.092	53.261
5	1.159	4.457	59.100	1.159	4.457	59.100	1.518	5.839	59.100
6	.956	3.677	62.777						
7	.885	3.403	66.179						
8	.808	3.107	69.286						
9	.729	2.802	72.089						
10	.683	2.625	74.714						
11	.647	2.489	77.203						
12	.623	2.394	79.597						
13	.581	2.233	81.831						
14	.551	2.121	83.951						
15	.545	2.095	86.046						
16	.493	1.895	87.941						
17	.458	1.760	89.701						
18	.421	1.617	91.318						
19	.396	1.523	92.841						
20	.369	1.421	94.262						
21	.342	1.315	95.577						
22	.285	1.096	96.673						
23	.278	1.068	97.740						
24	.226	.871	98.611						
25	.210	.808	99.419						
26	.151	.581	100.000						

Table 5
Means, standard deviations, item total, component and rotation loadings

Items and factors	Mean	SD	Item total	Component factor load	Varimax factor load
<i>Factor 1: fraudulence ($\alpha = 0.905$)</i>					
30 Sabotaging other people's academic works through Internet	1.164	.520	.734	.707	.805
31 Selling an individual project on the Internet	1.138	.435	.620	.561	.712
23 Publishing other people's studies on the Internet without the permission of the author	1.175	.475	.664	.666	.705
17 Adding the names of non-contributing people as authors	1.199	.552	.634	.607	.693
26 Claiming to have used materials and references that were not actually used	1.291	.626	.712	.707	.692
25 Claiming to have conducted a research that was not conducted	1.259	.600	.693	.702	.689
28 Translating Internet resources and claiming personal authorship	1.259	.585	.663	.671	.663
19 Fabricating information	1.277	.639	.649	.682	.583
13 Deliberately providing wrong references	1.161	.484	.618	.635	.583
27 Providing references at the wrong place of the assignment	1.310	.623	.586	.596	.564
29 Slicing an Internet resource in a way that opposes the original document and favors personal point of view	1.369	.698	.608	.614	.540
<i>Factor 2: plagiarism ($\alpha = 0.876$)</i>					
6 Using other people's complete works on Internet for personal assignments without acknowledging the author	1.621	.877	.810	.692	.833
5 Using the important parts of other people's works on Internet without acknowledging the author	1.769	.937	.827	.721	.831
7 Combining several resources found on the Internet and using in an assignment without acknowledging the authors	1.778	.923	.783	.687	.797
3 Using Internet to copy others' work without permission	1.904	1.070	.561	.491	.705
8 Using Internet quotations in personal assignments without a quotation mark as one's own	1.424	.715	.605	.586	.638
<i>Factor 3: falsification ($\alpha = 0.756$)</i>					
12 Changing the contents of Internet resources while citing, and attributing the ideas to the author	1.384	.726	.633	.588	.761
11 Manipulating the scientific information on the Internet through personal comments	1.358	.754	.651	.670	.716
16 Paraphrasing an Internet resource in a way that deteriorates the integrity of the original idea	1.650	.856	.493	.529	.669
<i>Factor 4: delinquency ($\alpha = 0.706$)</i>					
18 Using the same assignment in different courses	1.917	.946	.559	.494	.727
20 Citing from an Internet resource to an unacceptable extent	1.994	.975	.522	.535	.668
22 Making spelling mistakes	1.945	.907	.447	.460	.636
32 Doing friends' assignments using Internet	1.647	.894	.440	.487	.568
<i>Factor 5: unauthorized help ($\alpha = 0.692$)</i>					
9 Renting or buying a previously completed assignment through Internet	1.365	.722	.324	.498	.682
1 Doing an individual assignment with a group using several Internet resources such as forums, chat rooms, blog, etc.	2.456	1.12	.281	.453	.621
4 Having others do individual assignments	1.531	.794	.233	.387	.507

Items with loadings less than .40 and item-total values less than .30 were removed from the item pool. The analysis was conducted with remaining 16 items revealing 3 factors which explained 61.076% of the total variance. This analysis revealed a KMO value of 0.902 along with an ideal Bartlett value ($p < .0005$). The Cronbach's Alpha was 0.925 after the problematic items were suppressed Table 6.

The details of the total variance explained and eigenvalues are provided in Table 7. To interpret the factors, components were extracted and rotated through Varimax rotation. The items in each component along with their eigenvalues are provided in Table 8. Reasons of Internet-triggered academic dishonesty were summarized under three factors and named in accordance with the literature as follows: individual factors, institutional policies and peer pressure.

Table 6
KMO and Bartlett's Test

Kaiser–Meyer–Oklin measure of sampling adequacy	.902
Bartlett's Test of Sphericity	
Approximate χ^2	2642.693
Df	120
Sig.	.000

Table 7
Results of the second factor analysis: total variance explained

Component	Initial eigenvalues			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	6.867	42.919	42.919	6.867	42.919	42.919	4.921	30.758	30.758
2	1.892	11.828	54.747	1.892	11.828	54.747	3.080	19.251	50.009
3	1.013	6.329	61.076	1.013	6.329	61.076	1.771	11.067	61.076
4	.971	6.069	67.144						
5	.750	4.686	71.830						
6	.649	4.057	75.887						
7	.593	3.703	79.590						
8	.569	3.556	83.146						
9	.472	2.948	86.093						
10	.432	2.698	88.791						
11	.415	2.594	91.386						
12	.344	2.153	93.539						
13	.318	1.985	95.524						
14	.272	1.701	97.225						
15	.242	1.510	98.735						
16	.202	1.265	100.000						

Table 8
Means, standard deviations, item total, component and rotation loadings

Items and Factors	Mean	SD	Item total	component factor load	Varimax factor load
<i>Factor 1: individual factors ($\alpha = 0.895$)</i>					
3 Boring assignments	2.35	1.190	.724	.703	.818
4 Teachers' inclination to give a lot of assignments	2.576	1.251	.684	.678	.771
22 Doing assignments in a hurry	2.137	1.163	.709	.736	.745
23 Thinking that assignments will not help me personally and professionally	1.81	1.084	.698	.744	.716
7 Being very busy and having no time	2.224	1.150	.637	.647	.710
24 Uninteresting assignments	1.959	1.070	.672	.706	.697
16 Getting higher grades	2.11	1.164	.639	.714	.627
17 Having a very loaded social life	1.919	1.101	.605	.679	.622
10 Feeling incompetent on the subject matter	2.067	1.042	.525	.594	.520
1 Not appreciating the quality of personal works	1.596	.855	.484	.542	.504
<i>Factor 2: institutional policies ($\alpha = 0.869$)</i>					
30 Non-existence of sanctions regarding academic misconduct	1.621	.974	.787	.689	.843
28 Internet's encouraging and facilitating misconduct	1.720	1.067	.727	.679	.795
29 Teachers' turning a blind eye towards academic misconduct	1.716	1.046	.791	.765	.795
20 Insufficient penalties	1.38	.813	.600	.624	.685
<i>Factor 3: peer pressure ($\alpha = 0.710$)</i>					
18 Trying to show off towards the opposite sex	1.217	.621	.552	.403	.846
33 Trying to impress friends	1.264	.68	.552	.457	.821

After the analyses on the second part of the questionnaire were over, the minimum score was determined as 16 and the maximum score was determined as 80. The range is expected to be 64 between the lowest and the highest scores. The mean of the sample was 29.483 and the standard deviation was 10.722 on this part. The statement with the highest mean (2.576) was “teachers give a lot of assignments (item 4)” while the lowest mean (1.217) was that of “trying to show off towards the opposite sex (item 18)”.

4. Discussion

The current study aimed to develop a measurement tool with two sub-scales to investigate the instances of e-dishonesty along with the reasons of conducting instances of e-dishonesty. Some instances that were prepared through literature search and supported with expert opinion were removed from the questionnaire, which might suggest that unethical behaviors regarding Internet and reasons of engaging in such dishonesty have a unique pattern and nature at a Turkish state university.

The first factor analysis which was carried out to investigate the types of e-dishonesty at a Turkish state university revealed five components which were named as fraudulence, plagiarism, falsification, delinquency, and unauthorized help. Fraudulence was the most important factor explaining 35% of the total variance of the whole questionnaire. Instances of fabrication, lack of proper data handling and not sharing credit or misusing credit (BEK, 2003) were gathered under the first factor supporting Claxton (2005) claim that these instances constitute the majority of academic misdemeanors. Thus, instructors should be trained on concepts related to fraudulence. Such training will help instructors reshape their teaching/learning activities in line with proper value education strategies to prevent fraudulence.

Plagiarism instances were gathered under the second factor. This factor reflected the instances of plagiarism defined by Stebelman (1998), that is, taking someone else’s ideas and claiming personal authorship. When items of plagiarism are examined, it is observed that external control of such behaviors is extremely difficult. Strong sanctions might be necessary to prevent instances of plagiarism. Besides, it is important to create an educational atmosphere where students can establish empathy with the owners of the academic works. Such an attitude might lead students to develop an internal control mechanism which is supposed to be better and more effective than the external one.

Under the third factor which was named as falsification, behaviors mentioned by BEK (2003) and TUBITAK (2006) were gathered. Students might conduct such misdemeanors because they are not aware of the seriousness of these instances. Besides, they might not be aware of the scope of falsification. Teachers should equip students with necessary skills to enable them to differentiate between paraphrasing and falsifying. To develop an awareness of what falsification is, teachers can make use of sample cases to demonstrate instances of academic dishonesty better.

The fourth factor involved instances of delinquency including negligence and carelessness. This factor also involves an instance of least publishable units mentioned by BEK (2003) and an instance of providing help as suggested by Kibler (1993). Except for the item regarding spelling mistakes, most items constituted behaviors which are conducted deliberately. Creating an honor-code with the students at the inception of a program and signing contracts at the inception of each course regarding Internet-triggered delinquency instances can be quite useful to increase student awareness and prevent delinquency. Scope of delinquency along with sanctions should be clarified in these contracts.

Finally, the last factor was named as unauthorized help, which involved instances of both providing and receiving unauthorized help as suggested by Kibler (1993). In order to prevent instances of unauthorized help, teachers should describe the requirements of their courses clearly. In this respect, preparing certain protocols between teachers and students to determine the extent of external help might be useful.

The second factor analysis which was carried out to investigate the reasons of e-dishonesty revealed three components which were named as individual factors, institutional policies and peer pressure. The first and most significant factor involved individual factors. These factors involve psychological and social factors that lead students to conduct academic dishonesty instances. As suggested in the literature, feeling incompetent or not appreciating the quality of personal works (Whitaker, 1993; Warnken, 2004), time pressure (DeVoss & Rosati, 2002), having a busy social life (McCabe & Trevino, 1997; Crown & Spiller, 1998) and the desire to get higher grades (Antion & Michael, 1983; Crown & Spiller, 1998) were gathered within this factor.

Students' responses to items of this factor can help teachers diagnose overall attitudes of the student body regarding the most influential individual factors leading to academic dishonesty. For instance, a teacher can identify whether students tend to conduct academic misdemeanors because of boring assignments, the need to get higher grades or having insufficient time for assignments.

The second factor was named as institutional policies. The factor includes statements which were prepared based on previous literature on institutional policies (Crowne & Spiller, 1998; Gerdeman, 2000; McCabe & Trevino, 1997) and literature on attitudes of instructors towards academically improper behaviors (Gerdeman, 2000; Satterlee, 2002). Responses to these items can reflect the institutional policies regarding academic dishonesty. If the institution does not take necessary precautions to prevent academic dishonesty, this constitutes a flaw in the institutional policy and a handicap regarding the prestige of the institution.

Finally, the last factor named peer pressure involved statements previously implied by McCabe and Trevino (1997), Gerdeman (2000) and Underwood and Szabo (2003). The factor seems less powerful in comparison to previous ones. However items reveal that students are still affected by their peers although university students are considered to have more freedom. It should also be noted that peer pressure is something that vary according to the culture.

Fortunately, the present sample had quite low means on most of the unethical behaviors mentioned in the scales. However, the same instruments could lead to more serious results in student bodies with a higher level experience regarding Internet and information and communication technologies. In further research endeavors, the measurement tool should be administered to different student bodies across different faculties and universities to investigate the current situation in Turkey in terms of Internet-triggered academic dishonesty.

5. Conclusion

The first part of the instrument can be used to diagnose the instances of academic dishonesty in Turkish higher education institutions. More specifically, administering the scale to students at a higher education institution might lead policy-makers, program developers and administrators to determine most serious types of academic dishonesty instances and take necessary actions accordingly. The second part of the instrument can be used to investigate the reasons of academic dishonesty which can help administrators to diagnose the most influential reasons behind academic dishonesty instances. For instance, if an institution has serious results in terms of institutional policies, that might lead administrators to take precautions regarding the policy of the institution.

Each part of the scale can be used along with other attitude and ability scales addressing technology anxiety, technophobia, attitudes towards technology, individual learning styles and critical learning skills to understand interrelationships among several personal variables and sub-components of the ITADS. Both the current study and Namlu and Odabasi (2007) study should be extended with follow-up studies with suggested instruments across multiple campuses in Turkey to get a picture of undergraduate students in Turkey in terms of the instances of unethical behaviors. Furthermore, qualitative studies should be conducted in order to examine instances of academic dishonesty along with contextual clues leading to such behaviors.

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