

Test-Related Characteristics of UAEU Students: Test-Anxiety, Test-Taking Skills, Guessing, Attitudes toward Tests, and Cheating

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Abstract

The goal of this research was to study test-related characteristics of the UAEU students. In particular, the research aimed at studying test-anxiety, test-taking skills, tendency to guess in objective tests, attitudes toward tests, and cheating behaviors. A total of 2244 students were randomly selected and responded to the five instruments which were used in this study. The results indicated that the UAEU students do not have high levels of test-anxiety but they have a high tendency to guess in objective tests when they are not sure about the correct answer. Also it was found that the University students, in general, have good skills in taking tests. While students showed moderate attitudes toward tests, the majority preferred objective tests as compared with open-ended format. Results also showed that more than one third of students admitted that they have cheated in high school tests, and that this percentage increased while at college. For each of the previously mentioned characteristic, gender differences were analyzed.

Introduction

Tests are the most common evaluating method in most of educational systems and academic institutions worldwide. Usually, tests carry the most weight of the student's total grade especially at the college level. The importance and use of tests have extended beyond schools as many critical decisions that affect people's lives are made based exclusively on specific tests. Whether the goal is certification, college admission, detection of specific behavior, or personal selection, a decision

about an individual's ability is usually made based on his or her score in specific tests. The term used to describe such tests is *high stakes* which means tests with very important consequences for students.

As long as tests are widely used to evaluate academic performance, it is important to make all efforts helping students do well in their tests. Hence, studying test-related factors or characteristics could be an initial step to achieve this goal. In tests, ability is not the only factor that affects students' performance. There are several cognitive and psychological factors which have influences on performances in tests (Hambleton, Swaminathan, & Rogers, 1991). As observed in the related literature, the most important factors are test anxiety, test-taking skills, tendency to guess, attitudes toward tests, and cheating. Each of these five factors has its own effect on performance in tests as well as affects some other factors.

Text anxiety negatively affects achievement in tests (Chang, 1986) through decreasing one's concentration, organizing of ideas and thoughts, managing test time, and understanding of questions and concepts. This negative feeling affects also attitudes toward learning in general and toward tests in particular. Test-taking skills such as predicting questions, managing time effectively, dealing with difficult questions, reviewing answers, underlying key words in questions, and dealing with multiple-choice items are useful skills in testing. These skills help students increase their scores on tests through the effective use of their knowledge, time, and efforts. At the same time, these skills reduce test anxiety, improve students' attitudes toward tests and toward learning in general, and motivate them

(Carraway, 1987; Taylor & Walton, 1997; Vattanapath & Jaiprayoon, 1999).

Guessing has been observed as an important source of error in tests which reduces test reliability and validity. Students should use some strategies or techniques based on their knowledge and skills when dealing with tests and not blindly select the answer. The other factor that affects performance in tests is attitudes toward tests which provide important information about students' behavior before and during tests. Seeing tests as useful learning experiences or as practical tools to evaluate learning and to organize studying for example, helps students developing positive attitudes toward tests. These attitudes will be reflected positively on their learning and achievement. The last factor that affects students' performance in tests is cheating. Cheating negatively affects the accuracy of the evaluation process by adding more sources of errors which decreases tests validity and reliability (Cizek, 1999). Cheating may cause an instability in a student's values, potentially resulting in serious psychological problems such as feelings of guilty and shame (Feleh, 1988; Livosky & Tauber, 1994). This, in turn, would have negative effects on a student's self-respect, self-esteem, level of motivation, and learning ability.

This research aimed at studying five test-related variables on university students. These variables are: test-anxiety, test-taking skills, guessing, attitudes toward tests, and cheating.

Review of Literature

Test anxiety

Test anxiety is the "feeling of tension and anxiety that interferes with the ability to communicate what one knows in a test situation" (Austin, Partridge, Bitner, & Wadlington, 1995, p. 10). Test anxiety is a fairly common problem in college students. According to Hembree (1988), more than 20% of college students experience this problem with tension or uneasiness occurring before, during, or after a test. Text anxiety has two major components: worry and emotionality. Worry is the cognitive concern about one's performance and the consequences of failure; emotionality is physiological arousal and unpleasant feelings (Chang, 1986). While a reasonable level of test anxiety is necessary and useful to motivate students to do their best, a high level of test-anxiety may interfere with their performance.

In an extensive meta-analysis of 562 studies, Hembree (1988) reported that test anxiety is negatively correlated with achievement. Highly anxious students are often weak academically, do poorly on essay questions and take-home tests, and they have difficulties with multiple-choice verbal items (Culler & Holahan, 1980). Additionally, test anxiety may negatively affect one's concentration, organizing of ideas and thoughts, understanding of questions, and retrieving of key words and concepts. In general, high test-anxious students do not perform as well as their counterparts in tests and other academic settings (McKeachie, 1984). They, for example, spend much more time in irrelevant thoughts rather than on the tasks, and they usually have poor study habits (Culler & Holahan, 1980).

Text-anxiety is a multi-dimensional issue that requires a treatment program which addresses the various factors that produce test-anxiety behavior (Carraway, 1987). Anxious students need to be treated well by their faculty, the university counseling center, and all other related departments in order to help them cope with the problem. First, anxious students should learn the psychology of their anxiety and how to physically relax. Second, anxiety management trainings could be an effective way of handling the problem (Collins, 1999), especially if they are offered for students during the academic year. Third, improving test-taking skills of university students in general and for those who experience some levels of test-anxiety is also a useful procedure. This could be done through conducting seminars or lessons for developing and improving skills of taking tests. In fact, such seminars were found to be effective in treating anxiety and improving students' academic performance and their attitudes toward tests (Carraway, 1987; Dodeen & Abdelmabood, 2004).

Test-taking skills

Test-taking skills are cognitive skills that strongly affect students' performance in tests. These skills allow students to undertake any testing situation in an appropriate manner and to know what to do before, during, and after the test. With the increasing use of tests in different academic and non-academic contexts, using appropriate test-taking skills becomes a significant factor to help students improve their test performance, and to better match their preparation and ability level. This results in another advantage which is improving test validity.

Testing skills help students do well in tests independent of the knowledge of the test content or materials (Sarnacki, 1979), and help students translate their knowledge from classroom learning (McLellan & Craige, 1989). Having good test-taking skills positively affects students' testing competency and, hence, their academic performance. This is particularly true for low ability students who should do well in tests but who lack testing skills or who use poor ones. In fact, some argue that test-taking skills are as equally important as having the basic knowledge and information to answer the test questions (Langerquist, 1982).

Researchers have observed that achievement tests evaluate two independent types of knowledge: knowledge of the subject matter and knowledge of how to take a test. Even students who are familiar with the subject matter may do poorly in tests because of the lack of test-taking skills (Sweetnam, 2003). Dreisbach and Keogh (1982) found that test-taking skills have an important influence on students' performance. Dolly and Williams (1986) investigated the effect of using test-taking skills on multiple-choice test scores. Those participants receiving test-taking strategy training for several weeks outperformed their counterparts on tests.

Guessing

Guessing has been observed as a problem that affects test scores in general and objective tests in particular. If guessing is used in answering test questions, some of the scores will be obtained only by chance. Consequently, an important source of error is introduced to the measuring process. Both test reliability and validity are reduced when examinees respond to test items by randomly selecting answers. Rogers (1999)

mentioned three types of guessing: random guessing which occurs when an examinee responds blindly to a test item, cued guessing where an examinee responds to a stimulus in a test item, and informed guessing where an examinee responds based on partial knowledge or misinformation. Although the three types involve some guessing, they are different from a psychometrical point of view. While cued and informed guessing are used to measure partial knowledge, and are usually encouraged by teachers and examiners, random guessing is undesirable.

Several proposals were suggested to solve the problem of random guessing or at least to correct for scores obtained by using it. However, no single solution is acknowledged as best (e.g. Rogers, 1999; Wang, 1995). With the situations where students tend to often use blind guessing in answering test questions, selecting alternative testing formatting (e.g. constructed responses) might be more appropriate to reduce the negative effect of guessing. As for gender differences in the tendency to guess blindly in tests, studies indicated that males have higher level of risk-taking behavior and guess more than females in objective tests (Beller, 2000; Ben-Shakhar & Sinai, 1991).

Attitudes toward tests

Attitudes are important components in people's lives. They affect all the decisions they make, the work they do, the food they eat, the news they hear, and all the things that they like or dislike doing (Lemon, 1973). Attitudes are conceptualized as having three components: a cognitive component, which is the idea used in thinking; an affective component, which is the emotional part included in an attitude; and a behavioral

component, which is the action (Triandis, 1971). Attitudes are formed by direct experience as well as by implicit learning and may reflect personality (Zimbardo & Leippe, 1991). Attitudes are functional in as much as they simplify complex subjects, express fundamental values and beliefs, and mediate or guide behavior (Brock & Shavitt, 1994). Students' attitudes toward tests provide important information about their behavior in tests.

In addition to attitudes toward tests in general, the preferred test format (open-ended vs. objective tests) will be determined in this part of the study. In open-ended items, an examinee has to generate an answer while in objective tests (e.g., multiple-choice and true-false) he/she selects one or more answers from a list of options. Several factors affect students' attitudes toward test format. One main factor is creativity. Objective tests do not allow students to express themselves nor to use their own language in answers while open-ended tests do. Thus, creative students are penalized when taking tests that permit only a single correct response (Horber & Geisinger, 1983). So creative persons like open-ended questions while uncreative students like objective tests. On the other hand, some students would favor objective tests since they reward conformity. Another factor that affects attitudes toward test-format is risk-taking. As objective tests involve an element of risk reflected in guessing behavior, students who enjoy taking risks would prefer objective tests while cautious students would not. The third factor is learning skills. Students who have good learning skills and who are confident about their academic ability tend to

prefer open-ended questions over choice type (Birenbaum & Feldman, 1998).

As for gender differences on test-format, several studies indicated that, when offered a choice, male students prefer objective items, while females prefer open-ended questions (Anderson, 1987; Bolger, 1984; Gelleman & Berkowitz, 1993; Murphy, 1989; Zeidner, 1987). These differences could be explained by the superiority of girls in verbal ability in open-ended questions and the high risk-taking tendency of males (Beller, 2000).

Cheating

Although cheating may occur in any coursework (e.g., homework, assignments, papers, and labs), cheating in exams is a more significant problem. This is, simply, because exams are the most common method of evaluation in most educational systems. Additionally, many critical decisions that affect people's lives are made based solely on specific exams. This makes cheating in exams more of a problem than cheating on other coursework and more of a problem than it was before. Cheating in tests is a widespread problem in higher education. Moreover, the prevalence of this problem is increasing (Cizek, 1999; Evans, Craig, & Mietzel, 1993; Nowell & Laufer, 1997; Schab, 1991).

Undergraduate student cheating has been the subject of many studies especially in the last two decades. Most of these studies have been conducted in North America (e.g., Collison, 1990; Davis, Grover, Becker, & McGregor, 1992; Eble, 1988; Genreux & McLeod, 1995; Roberts, Anderson, & Yanish, 1997; Houston, 1983; McCabe & Trevino, 1996;

Moffatt, 1990). Research in undergraduate students cheating in exams in North America revealed several common findings: cheating is widespread, it is a serious problem in schools and colleges, the percentage of students who admitted to having cheated in their exams during college ranges from 40% up to 80%, male students cheat more than females, and cheating occurs in multiple-choice tests more than constructed-questions.

In the Arabic literature of undergraduate student cheating, several studies have investigated this phenomenon (e.g., Abdelkaleq & Suliman, 1993; AbedRaboh, 1994; Ibraheem, 1994; Jaber, 1980). Jaber reported that 54% of male students have admitted cheating in at least one test, whereas this percentage was 47% for females. AbedRaboh (1994) found that cheating in tests is more widespread among male students than females (58% vs. 30%). It was found also that cheating occurred more in required courses than elective ones, and that cheating incidences occur more in the final exams than in the midterms. Using a signaling system to copy answers from another examinee was the most common cheating method in multiple-choice questions while the second was using written cheat cribs.

Methodology

Problem

There is a lack of accurate information about the United Arab Emirates University (UAEU) students' characteristics with respect to tests. Although the evaluation/grading system in the University depends heavily on tests, there is no information available about: how students deal with tests, if they use appropriate test-taking skills, if they experience test-anxiety, their attitudes toward tests, their tendency to guess, or their

cheating behavior. This is an explorative study that tried to offer such information about five variables strongly related to students' performance in tests. These variables are: test-anxiety, test-taking skills, guessing, attitudes toward tests, and cheating. The results of this study could be used as a base for further analysis of each of these variables and their effects on students' academic performance.

Importance of the study

As it has been mentioned above, tests are the most common evaluating method in most of higher education institutions including the UAEU. In most of undergraduate courses tests worth more than 50% of the student's total score. Additionally, besides examinee's ability, there are several variables affect students' performance in tests such as test-anxiety, test-taking skills, guessing, attitudes toward tests, and cheating. Therefore, studying and analyzing these variables on university students provides useful basic and accurate information for everyone who concerned about students' performance in tests and their academic achievement. This includes, but is not limited to, university administrators, curriculum and course developers, students' counselors, and faculty members. Studying students' test-related characteristics helps in understanding students' behavior in tests. This can be an initial step in understanding other related phenomena such as why some students do poorly in tests and how student performance could be improved. In addition to achieving these goals, recommendations can be provided based on the results and information offered by this study.

Objectives

The goal of this research was to study test-related characteristics of the UAEU students. In particular, the research aimed at achieving the following objectives:

1. To determine the prevalence of text-anxiety among students.
2. To determine students' tendency to guess in objective tests.
3. To assess students' test-taking skills.
4. To assess students attitudes' toward tests.
5. To determine the prevalence of cheating behavior in tests.

In addition, the research aimed at analyzing gender differences in each of the previously mentioned characteristic.

Population and Samples

This study was conducted on the students of UAEU, a mid-sized four-year public university which has an enrollment of approximately 15,000 students (78% females and 22% males) studying in 8 colleges. Five samples of students participated in this study. Four of these samples (Samples 1, 2, 3, and 4) were selected randomly to represent all the University students. Students in each sample responded to only one instrument or scale as shown in Table 1. Sample 5 consisted of a total of 158 students enrolled in 4 sections which were selected randomly from the 18 sections of one of the General Education (GE) courses (GE courses are offered to all University students). Sample 5 was selected differentially because a multiple-choice achievement test rather than a scale or questionnaire was applied on it. The test was developed based on the course materials to assess students' tendency to guess.

Although five different samples were selected to participate in this study, these samples are equivalent because they were randomly selected from the same population. Selecting several samples increases the total number of participants which fits more with the exploratory nature of this study. In addition, analyzing the interrelationships among the test-related variables was not one of the goals of this study. As illustrated in Table 1, participating students were representative of their respective University profiles on gender.

Table 1 Number and Percentage of Participants in each Sample by Gender

Sample	Instrument	Females	Males	Total
Sample 1	Test-Anxiety Inventory	440 (79.1%)	116 (20.1%)	556
Sample 2	Test-Taking Skills Scale	426 (79.3%)	111 (20.7%)	537
Sample 3	Attitude toward Tests Scale	357 (76.4%)	110 (23.6%)	467
Sample 4	Cheating Questionnaire	401 (76.2%)	125 (23.8%)	526
Sample 5	Guessing (Multiple-choice Test)	103 (65.2%)	55 (34.8%)	158
Total				2244

Percentages of students in the University in each college were as follows: Humanities and Social Sciences (30%), Sciences (14%), Education (17%), Business and Economy (12%), Sharia and Law (8%),

Food and Agriculture (1%), Engineering (6%), and Information Technology (5%). As illustrated in Table 2, participants in this study were also representative of their respective University profiles on college.

Table 2 Number and Percentage of Participants in each Sample by College

College \ Instrument	Test-Anxiety	Test-Taking Skills	Attitude toward Tests	Cheating	Guessing
Sample	Sample 1*	Sample 2*	Sample 3*	Sample 4*	Sample 5*
Humanities and Social Sciences	141 (25.3%)	150 (27.9%)	120 (25.7%)	142 (26.8%)	36 (22.8%)
Sciences	75 (13.4%)	67 (12.5%)	67 (14.4%)	76 (14.3%)	23 (14.1%)
Education	81 (14.5%)	71 (13.2%)	73 (15.6%)	70 (13.3%)	14 (8.9%)
Business and Administration	89 (15.9%)	93 (17.3%)	71 (15.2%)	81 (15.4%)	40 (25.3%)
Sharia & Law	58 (10.4%)	58 (10.8%)	46 (9.9%)	47 (8.9%)	8 (5.1%)
Food and Agriculture	21 (3.8%)	5 (.9%)	7 (1.5%)	6 (1.1%)	6 (4%)
Engineering	66 (11.8%)	55 (10.2%)	42 (9%)	51 (9.7%)	8 (5.1%)
Information Technology	24 (4.3%)	33 (6.1%)	31 (6.6%)	27 (5.1%)	7 (4.4%)

*: The summation on each column is less than the corresponding actual sample size in Table 1 because of missing data.

Instruments:

Test Anxiety: Test Anxiety was assessed using the Text Anxiety Inventory (TAI). This inventory has been widely used in measuring level of adult test-anxiety. It was originally developed by Spielberger (1980), then used and validated to fit several cultures. TAI consisted of 20 items

that were measured using a Likert-type scale that ranged from “Seldom” (1 point) to “Always” (4 points) (the first item which had direction different than that of the rest 19 items in the instrument was recoded first). Examples from the questions of TAI are: "While taking examination I have uneasy, upset feelings", "Thoughts of doing poorly interfere with my concentration on tests", and "During examinations, I get so nervous so that I forget facts I really know". A high score on this inventory indicates a high level of test-anxiety. The Arabic version of TAI, which was validated by Tayb (1984), was used in this study. The internal reliability of Arabic version of TAI was assessed in the same population and Cronbach's alpha was .93 (Dodeen, 2008).

Guessing: Students' tendency to guess was assessed using a short multiple-choice achievement test which is consisted of 10 multiple-choice items with four options. The test was designed such that the four alternatives for each item were *incorrect*. Students were instructed not to blindly guess if they were *not sure* about the correct answer. Multiple-choice formatting was selected because it is the most commonly used format in objective tests.

Test-taking Skills: Students' test-taking skills were assessed using the Test-taking Skills Scale developed by Dodeen (2008). The scale consisted of 29 Likert-type items that ranged from “Never” (1 point) to “Always” (5 points). All negatively stated items on the scale were recoded before any further analysis. The total score on the scale ranged from 29 to 145 with a theoretical mean equals to 87. The total score on the scale is used to assess students' skills in taking tests such that the higher the score,

the better the skills the student has. Examples of the items are: "I estimate how much time I have to answer each question", "I underline important words and phrases in a question", "If I do not know a question, I quickly leave it and move on to the next one", and "After tests, I identify the origin of each question". The scale psychometric features (e.g., reliability and validity) were assessed on the same population of the current study by Dodeen, (2008).

Attitudes toward Tests: Students' attitudes toward tests were assessed using the Attitudes toward Tests Scale. The scale developed by the author and consisted of 17 Likert- type items that ranged from "Strongly Disagree" (1 point) to "Strongly Agree" (5 points). All negatively stated items on the scale were recoded before any further analysis. The total score ranges from 17 to 85 and the theoretical mean equals 51. A high score on this scale means positive attitudes toward tests. Examples are: "Tests motivate me to study hard", "For me taking tests is a painful experience", and "I try my best to avoid any course that requires a lot of tests". In addition, the instrument collected information about the type of test-format (multiple-choice vs. open-ended) preferred by students. The internal reliability of the attitude scale was assessed in the same university population and Cronbach's alpha was .89 (Dodeen, 2008).

Cheating: A self-report questionnaire consisting of two parts was used to collect information about cheating behavior in tests. The first part focused on 10 different cheating behaviors commonly used by students in tests. Respondents were asked to indicate whether they have cheated using any of the listed behaviors while in the University. The last two items in

this part asked students to report whether or not they had cheated in high school and college. The second part investigated where students cheat often while at college. Several types of exams or courses were listed. Respondents were asked to indicate whether they had cheated in each.

All instruments and tests were administered in classroom context. Respondents were guaranteed confidentiality, and the instruments were filled anonymously with no identification information. In addition, demographic information such as age, gender, GPA, and academic college major were requested in each instrument.

Results and Discussion

Test-anxiety

The total score on the Text Anxiety Inventory (TAI) ranges from 20 to 80 and the theoretical mean equals 50. A high score on this instrument means a high level of test anxiety. The average age of the 556 students who responded to this scale was 21.3 years with a standard deviation of 1.47, and their GPA average was 3.2 with a standard deviation of .87. The scale was internally reliable. Cronbach's Alpha reliability was .91 while Guttman Split-Half Coefficient was .87.

The first goal of this study was to determine the prevalence of text-anxiety among University students. The average test-anxiety for all participants was 40.8 and the standard deviation was 10.8. This average was far less than the theoretical average of the scale which is 50. This result means that, in general, the UAEU students do not have high levels of test-anxiety. However, when calculating the frequencies of students on the total score, it was found that 138 students (24.8%) had a total score above

50. This result is consistent with what has been clearly indicated in the literature in that more than 20% of college students experience a problem of anxiety or tension occurring before, during, or after a test (Hembree, 1988).

To compare male and female students, the average total score on the instrument was broken down by gender. The average total score on test-anxiety for females was 40.5 while that for males was 42.25. This small difference in average (1.75) indicated that both genders have similar levels of test anxiety. This final result was also confirmed by conducting an independent t-test between the two groups. The result was statistically insignificant ($t = 1.54$, $p = .124$).

Guessing

The second test-related characteristic that this study tried to determine in the University students was their tendency to guess in multiple-choice tests. The test which is used to assess that consisted of 10 multiple-choice items with four alternatives but with no correct answer. Students were strongly and clearly instructed not to blindly guess any question but rather to leave it if they did not know the correct answer.

The results of students' responses to that test are summarized in Table 3. As can be observed from the table, only 10.8% of students followed the test instructions and did not answer any question. Also only around 30% of students answered 1-5 questions. On the other hand, more than 50% of students answered more than 5 questions, and around 20% answered all the 10 questions. These results indicate that students have a

high tendency to guess in tests when they are not sure about the correct answer.

When comparing the two genders, the results showed that 13.6% of female students followed instructions and did not answer any question while this percentage was only 5.5% for males. The results for more than 5 items were the opposite; females (60.7%) answered 5-10 items more than male students (56.3%). This indicated that there was no clear pattern about the difference in the tendency to guess between the two genders. This last result is different than that which is observed in the literature that males have higher level of risk-taking behavior and thus they guess more than females in objective tests (Beller, 2000; Ben-Shakhar & Sinai, 1991).

Table 3 Number and Percentage of Students Who Answered the 10 Multiple-choice Test

No. of answered items	No. and percentage of students	Females	Males
0 item	17 (10.8% of 158)	14 (13.6% of 103)	3 (5.5% of 55)
1-5 items	47 (29.7% of 158)	26 (25.3% of 103)	21 (38.2% of 55)
6-10 items	94 (59.5% of 158)	63 (60.7% of 103)	31 (56.3% of 55)
Total	158	103	55

Test-Taking Skills

The third goal of the study was to assess students' test-taking skills. The average age of the 537 students who responded to the Test-taking Scale was 21.20 years with a standard deviation of 1.65, while their average GPA was 2.65 with a standard deviation of .51. The scale was

internally reliable. Cronbach's Alpha reliability was .75 while Guttman Split-Half Coefficient was .70.

The average of all students on the Test-Taking Skills Scale was 105.40 with a standard deviation of 11.75. This value is far above the theoretical mean of the scale (87) which indicated that the university students, in general, have good skills in taking tests. Another way to see this result could be by calculating number and percentage of students whose total score was less than the scale average. It was found that only 26 students (4.8%) received a total score less than 87. Moreover, around 10% (52) of students received a total score of 130 or above which is equivalent to the 90% of the scale total score.

As for gender comparison, the average total score on the Test-Taking Skills Scale was calculated for each gender. It was found that the average total score for female students was 105.28 with a standard deviation of 11.82, while the average total score for males was 105.77 with a standard deviation of 10.12. This means that both genders are very similar in the test-taking skills that they have. Of course, the t-test result confirmed this ($t = .41$, $p = .68$).

Attitudes toward Tests

The fourth characteristic that this study tried to determine was students' attitudes toward tests. A total of 467 students responded to this scale. Their average GPA was 2.67 with a standard deviation of .55, while their average age was 20.87 years with a standard deviation of 1.71. The

scale was internally reliable. Cronbach's Alpha reliability was .91 while Guttman Split-Half Coefficient was .85.

The average total score of all respondents on the scale was 60.3 with a standard deviation of 11.45. This value is a little above the theoretical average of the scale. It seems that students, in general, have moderate attitudes toward tests. When using the theoretical mean as a cut-off point, it was found that 78 (17%) of students have a total score less than the theoretical average score. These students do not have positive attitudes toward tests.

To compare between female and male students, the average total score on the attitude scale was calculated for each gender. The results showed that the average for females was 60.99 with a standard deviation of 10.01, while the average for male students was 58.18 with a standard deviation of 14.81. From these results it can be concluded that female students have slightly more positive attitudes toward tests than males. However, this difference is practically unimportant. Statistically, the result of t-test between the two groups was not significant ($t = -1.84$, $p = .07$).

As for the preferred test format (open-ended vs. objective tests), results are shown in Table 4. The majority of the University students (76.2%) preferred objective tests while less than one quarter (23.8%) preferred open-ended tests. When comparing the two genders, results were almost the same for male and female students with a few more females preferring objective tests than males. This final result is not consistent with that which has been observed in the literature. That is,

Table 4 Number and Percentage of Students Preferred Test Format

Test format	Total	Males	Females
Objective	356 (76.2% of 467)	79 (71.8% of 110)	277 (77.6% of 357)
Open-ended	111 (23.8% of 467)	31 (28.2% of 110)	80 (22.4% of 357)
Total	467	110	357

when offered a choice, male students prefer objective items, while females prefer open-ended questions (Anderson, 1987; Bolger, 1984; Gelleman & Berkowitz, 1993; Murphy, 1989; Zeidner, 1987).

Cheating

Cheating behaviors in tests was the fifth test-related characteristic in this study. A total of 526 students (125 males and 401 females) responded to the cheating questionnaire. Respondents' average age was 20.70 years with a standard deviation of 2.08, while their average GPA was 2.92 with a standard deviation of .59. The scale was internally reliable. Cronbach's Alpha reliability was .85 while Guttman Split-Half Coefficient was .80.

Respondents were asked to admit if they have ever cheated in their high school tests or in the tests they have taken while at the University. The results for these two questions are summarized in Table 5. More than 37% of respondents admitted that they have cheated in high school tests. The percentage of cheating behavior increased at university to 51.3%. This percentage is within the range of cheating behavior at colleges (20-80%)

which is reported in the literature. However, it was unexpected that cheating in tests at university would be more than that at high school. When breaking down results by gender, male students appeared to cheat more than females in high school (65.5% for males vs. 46.6% for females). Similar results were observed for university tests. This last result is consistent with that observed in the literature about students' cheating behavior in tests.

The other part of the cheating instrument had 9 cheating methods commonly used by students in tests. Respondents were asked to answer whether or not they have used each of these methods in their tests while in the university. Results of this part were summarized in the second column of Table 6. It is clearly observed that all these methods of cheating were used by some students but with different percentages. The most commonly used method or behavior was "helping another student to cheat" (61.2%). The reason behind that is that many students do not consider this as "cheating" but rather as "helping" others which is much appreciated. In addition, students perceive cheating for others as more morally acceptable than cheating for oneself (Genereux and McLeod, 1995). The second common method is "looking at another's test paper" (44.7%). Students cheat from each other when the proctoring is poor in the test room. This also means that students did not plan to cheat because they can not count on this method, but they do so when there is a chance.

Table 5 Number and Percentage of Students Reporting Cheating in High School and University

Cheating behavior	No. and percentage of students said "Yes"	Gender	
		Males	Females
Have you ever cheated in your high school tests?	195 (37.1%)	82 (65.5% of 125 males)	187 (46.6% of 401 females)
Have you ever cheated in your university tests?	270 (51.3%)	78 (62.4% of 125 males)	117 (29.1% of 401 females)

In addition, this method is relatively easier than other methods, and students are rarely penalized when they caught. The third commonly used method was "using a system of signals" (36.5%) among students to transfer information or answers. As long as students look at others' tests and cheat from each other, they need some system of signals. The least commonly used method was "biasing instructor's grades" (11.8%). University restricted rules and regulations about conducting exams, especially keeping papers with instructors and then storing them in colleges for a period of time, may make using this method of cheating inefficient.

Table 6 Number and Percentage of Students Reporting Each Method of Cheating

Cheating method	No. and percentage of students	Gender	
		Males	Females
Using sheet cribs	116 (22.8%)	61 (51.2%)	55 (13.9%)
Writing on hands, desks, ...	111 (21.3%)	47 (37.6%)	64 (16.2%)
Looking at another's test paper	234 (44.7%)	82 (65.6%)	152 (38.4%)
Helping another student to cheat	321 (61.2%)	89 (71.2%)	232 (58.6%)
Using device (e.g., mobile, calculator...)	97 (18.4%)	52 (41.6%)	45 (11.4%)
Using system of signals	191 (36.5%)	75 (60.0%)	116 (29.3%)
Biasing instructor's grades	62 (11.8%)	27 (21.6%)	35 (8.8%)
Taking unauthorized materials to the test	88 (16.9%)	36 (28.8%)	52 (13.1%)
Lying about medical circumstances	113 (21.7%)	42 (33.6%)	71 (17.9%)

When comparing between males and females (last two columns in Table 6), results showed that in all 9 methods, male students cheated much more than females. In some methods, percentage of males was three times more than that of females. In the last part of the cheating questionnaire students were asked to determine tests where cheating occurs often. Five tests: Open-ended, objective, midterm, final, and quiz were listed. Results were summarized in Table 7.

Table 7 Percentage of Cheating Behavior by Test Type

Test type	No. and percentage of students
Open-ended	125 (23.8%)*
Objective	215 (40.95)*
Midterm	145 (27.6%)*
Final	139 (26.4%)*
Quiz	217 (41.3%)*

*Percentages of the total sample (526).

Students admitted that they have cheated more on objective tests than on open-ended ones. This result is consistent with other research findings as discussed earlier in the literature review. As it was reported before, *looking at another's test paper* and *using a system of signals* were found to be the most common types of cheating used by students and these methods fit more with objective questions. Quizzes were found to have a higher percentage of cheating than midterms and finals. Less restricted proctoring conditions during quizzes as compared with midterms and finals could be the reason for this difference.

Conclusion

The goal of this research was to study test-related characteristics or factors of the UAEU students. In particular, the research aimed at studying text-anxiety, test-taking skills, tendency to guess, attitudes toward tests, and cheating behavior of the University students. The results indicated that, in general, the UAEU students do not have high levels of test-anxiety. However, when calculating the frequencies of students on the total score of

the test-anxiety scale, it was found that more than 24% of students have experienced above average test-anxiety. This result could be partially interpreted because of the importance of tests results to University students. Tests worth most of the total grade in the majority of the University courses and academic requirements. Additionally, specific tests in English, Arabic, and mathematics are used to place admitted students in studying levels of basic education. Also major tests such as midterms and finals are usually organized within a specific period of time which forces some students to take two or three tests on the same day. All these factors cause tension and increase test-related anxiety.

Having this high percentage of students who experience test-anxiety requires the University to offer counseling programs or sessions around the year to help anxious students to cope with this problem. First, anxious students should learn the psychology of their anxiety and how to physically relax. Second, anxiety management trainings could be an effective way of handling the problem (Collins, 1999).

As for guessing in multiple-choice tests, the results indicated that the University students have a high tendency to randomly guess in tests when they are not sure about the correct answer. This result is consistent with students' preference of multiple choice questions over open-ended questions because random guessing is very limited in open-ended questions.

Random guessing in multiple-choice tests has been observed as a problem that affects test scores. Test reliability and validity are reduced when examinees respond to test items by randomly selecting answers and getting some scores only by chance. Unfortunately to date, no single solution is

acknowledged to this problem (Chevalier, 1998). However, what could be done in this case is to increase the use of another test formatting (e.g., open-ended questions) which reduces random guessing effect.

The results from analyzing the Taking-taking Skills Scale indicated that only few University students do not have appropriate skills to deal well with tests. However, this result is based only on a self report. In real tests, students may not exactly do or follow what they theoretically mentioned. Another observational tool may be needed to collect more data on how students deal with tests in real situations to validate this result. Anyways, what the University can do for students with low test-taking skills is to offer specific training programs. Taking many tests in life does not guarantee the achievement of skills or strategies to deal with any testing situation in appropriate manner. These skills can be achieved by teaching and training. The University should offer enough time and opportunities for students to learn and practice these skills.

The results of this study indicated that students, in general, have moderate attitudes toward tests while the majority (76.2%) preferred objective tests. One way to interpret this last result is by connecting it with the high percentage of cheating which is usually occurred more with multiple-choice formatting. Also this result is connected with the fact that high percentage of students have high tendency to randomly guess in tests as previously discussed.

The widespread use of the concept attitude may be due to an original assumption in attitudes and behaviors. According to this assumption there is causal relationship between the attitude toward something and a person's actual behavior (Mueller, 1986). Based on that, and on the light of the results of this

section, some efforts need to be done to improve students' attitudes toward exams. For example, evaluating all issues related to the grading/testing system in the University and enhancing practices related to tests enhances students' attitudes toward tests. In addition, alternative evaluating procedures could be considered and used. It is known that these alternative procedures such as homework, projects, papers, reports, assignments, presentations, etc are used by faculty members however; they usually do not weight much in the final grade as compared to tests. On the other hand, students' preference to the close-ended questions could be used to improve their attitudes and motivate them.

Cheating in tests appeared to be a prevalent phenomenon within University students. More than 50% of respondents admitted that they have cheated in tests during college. The most commonly used method of cheating was "helping another student to cheat". The reason behind that is that many students do not consider this as "cheating" but rather as "helping" others which is much appreciated. The second common method is "looking at another's test paper while the third was "using a system of signals" among students to transfer information or answers. Students admitted that they have cheated more on objective tests as compared with on open-ended ones, and more on quizzes as compared with midterms and final tests. Students need to be oriented when they start their school about the University policy regarding academic cheating in general and cheating in tests in particular. Students need to clearly understand that all cheating in tests are morally and by law forbidden. Proctoring conditions during quizzes should be strengthened to control and prohibit any cheating behaviors. More

concern should be considered to multiple-choice tests especially with male students.

The study tried to offer accurate information about five factors related to students' performance in tests in the UAEU. The study, however, did not try to study the relationships among these five variables nor the causes of each one. In other words, the study did not try to answer questions such as why some students experience test-anxiety and how this could be practically coped, why students tend to guess blindly and how to deal with that, why they cheat in tests, and why they prefer multiple-choice tests more than opened-ended questions. All these questions are important and related to students' academic performance in general and to their dealing with tests in particular. Therefore, it is highly recommended to study and analyze these issues in future research studies.

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