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Cognitive and Psychological Characteristics and EFL Learners' Test Performance: A Validity Study

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Abstract: Language learners' test performance is affected by individual attributes that are not part of test takers' language ability (Bachman, 1990). The identification of such factors and the study of their association/impact with/on EFL learners' test performance has been a real test validity concern for language testing researchers (Bachman, 1990, 2004). This study was designed to explore the relationship of a number of cognitive and psychological attributes and English as a Foreign Language (EFL) learners' test performance. To this end, two hundred male (100) and female (100) Iranian intermediate EFL learners selected through convenience sampling procedure took the Goal-orientation Scale, Test Preparation and Test-taking Strategy Scale, and Examination Stress Scale and a sample Test of English as a Foreign Language Junior Standard (TOEFL Junior). Regression analyses of the questionnaires and the TOEFL test results demonstrated that mastery goal orientation, performance goal orientation, test-taking strategy, and test anxiety were all correlated with EFL learners' test performance; however, the test-taking strategy was the strongest cognitive predictor and performance goal orientation was the strongest psychological predictor of the EFL learners' test performance. The results indicated that in addition to previously identified factors like test anxiety and test-taking strategies, some factors like performance and mastery goal orientations which were once deemed as construct-irrelevant factors in EFL learners' test performance need to be added to the battery of personal attributes that are influential factors in this regard.

Keywords: Mastery Goal-orientation, Performance Goal-orientation, Test-taking Strategy, Test Anxiety and EFL Learners' Test Performance.

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Introduction

A continued upsurge of interest in psychological testing has been evident since the 1980s, and it has brought about an increasing focus of the researchers' attention on test takers' different psychological and cognitive characteristics (Kunnan, 2009; Anastasi & Urbina, 2007). This reorientation simply indicates that test givers are both theoretically and empirically encouraged to look for the different psychological and/or cognitive factors that might affect their test takers' performances in any test situation. Kunnan (2009) maintains that a major theoretical manifestation of such a zeal to identify the most influential factors in test takers' test performance might be evident in Bachman's (1990) comprehensive model of language test performance. Bachman (1990) postulates that four major categories of factors affect the test scores of individual test-takers. These major factors are named communicative language ability, test method facets, personal attributes or test-taker characteristics, and random measurement errors.

Ever since the time the model was presented, the absolute, comparative, and/or combinatorial effects of each one of the named factors on test takers' performance have been amply studied (e.g. among others, Fouly, Bachman, & Cziko, 1990; Kunnan, 2009; Purpura, 1997); however, the identification and characterization of the individual characteristics that affect English as a foreign language (EFL) or English as a second language (ESL) learners' test-taking performance has been a rather new preoccupation for language testing researchers (Kunnan, 2009). This might be partially due to the fact that personal attributes or test-taker characteristics (TTCs) have for long been considered as "irrelevant to the test takers' language ability" (Bachman, 1990, p. 164), the systematic effects of which might adversely affect the validity of a test used in certain test situations.

Kunnan (2009, p. 1) maintains that "from the perspective of language testing, the influence of these characteristics has not been given sufficient attention, although research in these areas could contribute directly to the construction of the theory of construct validity of EFL test performance". With this objective in mind and in a partial attempt to characterize some major personal attributes as sources of test performance variation, the current study focuses on the possible influence of test takers' goal orientations (mastery and performance), and test anxiety on the one hand and test-taking strategies as a cognitive personal characteristic on the other hand on the EFL learners' test performance.

On the basis of the above-mentioned rationale, psychological characteristics like goal orientations (i.e. mastery and performance), test anxiety, and cognitive features like test-taking

strategies might be among the prominent factors to affect EFL learners' test performance. Such a claim is rooted in the findings of studies that have verified that for a test taker to achieve success in a test, it is crucial for him/her to reduce test anxiety (Roick & Ringeisen, 2017), and apply test-taking strategies maximally (Bicak, 2013; Hong, Sas, & Sas, 2006; Phakiti, 2003; Stenlund, Lyrén, & Eklöf, 2018). However, further study of test takers' psychological and cognitive characteristics and contextual behaviors and the identification of the factors that seem correlated with successful or unsuccessful test-taking performance in high-stakes test situations augments the depth and breadth of knowledge in this domain (Stenlund et al., 2018). Rooted in this theoretical rationale, the current study aims at investigating the correlation of a number of psychological and cognitive individual characteristics and test performance of Iranian EFL learners.

Besides the theoretical dispositions, empirical evidence has substantiated that EFL learners' test performance is subject to the influence of psychological and cognitive individual characteristics and differences (Bachman, 1990, 2004; Kunnan, 2009; Stenlund et al., 2018) a brief review of which appears in the following section. On the basis of the same theoretical backbone and literature review, it is evident that the simultaneous study of associations among mastery goal-orientation, performance goal-orientation, test-taking strategies' use, test anxiety, and test performance of EFL learners might be both theoretically justified and empirically revealing. Against this backdrop, the researchers set out to first, explore the interrelationship among the variables and second, to see which one of the variables more strongly predicts EFL learners' test performance. Therefore, the following research questions were formulated:

RQ1. Is there any statistically significant correlation between EFL learners' performance goal-orientation and language test performance?

RQ2. Is there any statistically significant correlation between EFL learners' mastery goal orientation and language test performance?

RQ3. Is there any statistically significant correlation between EFL learners' test-taking strategy and language test performance?

RQ4. Is there any statistically significant correlation between EFL learners' test anxiety and language test performance?

RQ5. Among performance goal-orientation, mastery goal-orientation, test-taking strategy, and test anxiety, which one is a stronger predictor of EFL learners' language test performance?

Prior to the description of the methodology of the project and in an attempt to situate the study in the body of existing literature of the field, the following section presents a brief review of

the most relevant literature of the study variables from both theoretical and empirical perspectives.

Literature Review

Goal Orientation

Goal orientation is considered a crucial factor in academic achievement (Kaplan & Maehr, 2007). Hulleman, Schrager, Bodmann, and Harackiewicz (2010) define it as "a future-focused cognitive representation that guides behavior to a competence-related end state that the individual is committed to either approach or avoid" (p. 423). A dichotomous classification of goal orientations distinguishes mastery and performance goals. Mastery goal refers to people's desire to develop new skills; and performance goal refers to people's demonstration of higher competence in relation to others (Ames & Ames, 1984). Additionally, mastery and performance goals are further distinguished in terms of two dimensions: approach and avoidance. Therefore, a mastery-avoidance goal hinders the possibility of a decrease in skill, and a performance-avoidance goal impedes poor performance (Elliot, 1999; Elliot & McGregor, 2001). In general, goal theory assumes that the two avoidance goals have negative results and the two approach goals bring about completely positive outcomes.

Goal orientations contribute to individuals' new skills development, mastering new situations, and competence growth (Ames, 1992; VandeWalle, 1997; Meece, Anderman, & Anderman, 2006). It is reported that students who adopt a mastery goal orientation strive for learning and mastery of the materials which in turn leads to their sense of mastery, success and self-efficacy judgments (Ames, 1992), and to lessen their anxiety under the influence of mastery goal orientation (Pintrich & Schunk, 1996). On the other hand, students who adopt a performance orientation appear to focus on demonstrating their ability in relation to others leading ultimately to their sense of self-worth (Ames, 1992).

Researchers have explored the correlation between goal orientation and quite numerous individual cognitive and psychological traits. For example, Dupeyrat and Mariné (2005) focused on examining the relationship among implicit theories of intelligence, goal orientation, cognitive engagement, and achievement of 76 French students and revealed that mastery-intrinsic orientation had a positive relationship with students' learning outcome, but not with performance goal orientation. It was also found that effort expenditure has a mediating role between mastery goals and academic achievement.

Kolić-Vehovec, Rončević, and Bajšanski (2008) as another instance explored dominant goal orientation patterns (Mastery, mastery-performance, performance-work-avoidance, and

work-avoidance goal orientation groups) among university students and their associations with motivational profiles and reading strategy use. The findings revealed that not all students adopt a single dominant goal orientation. In general, the study showed that the mastery–performance group utilized more adaptive motivational profiles than the other groups. Furthermore, mastery and mastery-performance groups used more reading strategies than the avoidance group. Similarly, Bernacki, Byrnes, and Cromley (2012) showed a positive relationship between mastery goals and learning behaviors and a negative relationship between performance goals and learning behaviors.

Moreover, Paulick, Watermann, and Nückles (2013) investigated the students' changes in goal orientations (mastery-approach, performance-approach, and performance-avoidance goals) during their transition stage from elementary to secondary school and explored the correlation between achievement goals and school achievement. In general, the results verified that mastery-approach goals positively influenced school grades, whereas performance-approach goals negatively affected school achievement. Relatively similar results were reported in Pulkka and Niemivirta (2013) that examined the correlation among students' goal orientations, course evaluations, and the performance of 88 Finnish students. The findings verified a positive correlation between mastery-intrinsic orientation and course evaluations, and a negative association between performance-approach orientation and students' course evaluations.

Test-taking Strategies

Test-taking strategies are "selected processes that the respondents use for dealing with both language issues and item-response demands in test-taking task at hand" (Cohen, 2006, p. 303). They are also believed to be selective and consciously utilized by the test-takers (Phakiti, 2003) to enhance test performance (Purpura, 1997, Cohen, 2006) or to deal with the negative affective states like test anxiety (Huang & Hung, 2013). Since the late 1970s, researchers have intensively explored the strategies that test-takers adopt in their test-taking performance (Cohen & Aphek, 1979; Homburg & Spaan, 1981) and many researchers believe that test-taking strategies undeniably play an important role in test performance (Hong et al., 2006) and higher achievement or success (Bicak, 2013; Dodeen, 2008).

Cohen (1998) classified test-taking strategies into language use and test-wiseness strategies. Language learner strategies refer to the ones that the individuals consciously apply

to enhance the use of a second/foreign language in order to accomplish language tasks and test-wiseness strategies are concerned with the individual test takers' knowledge of how to take tests. More recently, Cohen (2006) updated his earlier classification of test-taking strategies and proposed three largely distinct strategy types: language-learner, test-management, and test-wiseness strategies. Language-learner strategies refer to the ways that respondents utilize their basic skills of listening, speaking, reading, and writing as well as the related skills of vocabulary learning, grammar, and translation. Test-management strategies are defined as strategies adopted for responding meaningfully to the test items and tasks, and test-wiseness strategies refer to the use of knowledge of test formats and other peripheral information to answer test items.

The studies of test-taking strategies have focused on different aspects including strategy training and the effects of test-taking strategies on the test takers' ultimate test performance. Katalin (2000) for example investigated the test-taking strategies of 7th and 11th-grade Hungarian students and reported that the successful learners applied more test-taking strategies. Phakiti (2003) focused on the relationship between test takers' use of cognitive and metacognitive strategies and reading test performance and verified a positive association between test takers' use of cognitive and metacognitive strategies and reading comprehension test performance. Moreover, Dollinger and Clark (2012) investigated the mediating role of test-taking strategy between race and academic performance and showed that test-taking strategies partially mediate between ethnicity and academic performance.

The impact of test-taking strategies on intermediate EFL learners' listening proficiency gains was the focus of a study by Ostovar-Namaghi (2016). To this end, the experimental group received specific and general test-taking strategies and the control group received comprehension-based training. The results of the study demonstrated that the learners who received strategy training significantly outperformed those who did not in their listening proficiency gain. More recently, Al-Khasawneh (2020) investigated the correlation between test-taking strategies use and EFL learners' reading comprehension achievement and documented no statistically significant correlation between them. Similarly, Yeom and Jun (2020) explored reading and test-taking strategies in paper and computer-based reading comprehension tests among 84 Korean middle school EFL learners. Generally, the results of the study indicated no statistically significant difference between EFL learners' scores on the reading tests delivered on paper and computer-based formats, however, slight significant differences were found in the strategy use of the two modes. Moreover, the results verified

significant differences in the types of strategies employed by learners with different levels of reading proficiency.

Test Anxiety

Researchers have identified test anxiety as another significant psychological source of test takers' performance variation (e.g., Roick & Ringeisen, 2017; Sarason, 1984; Sung, Chao, & Tseng, 2016). Some believe that test anxiety is a multidimensional construct including cognitive manifestations (e.g., disruption of the test-takers' concentration on the task at hand), bodily-affective manifestations (e.g., physiological hyperarousal person may produce symptoms such as sweaty palms, thirst, and fast heartbeat), and behavioral manifestations (e.g., skipping items) which all influence test takers' test performance (Lowe et al., 2008; Zeidner, 1998, 2007). Sarason (1984) states that test anxiety brings about anxiousness, worry, and self-doubt feelings in assessment situations and such feelings could adversely affect their test performance and capability level.

Studies have focused on different aspects of test anxiety. Chapell et al. (2005), for example, explored the relationship between test anxiety and academic performance. A sample of 4,000 undergraduate and 1,414 graduate students took part in their study. The researchers could show that text anxiety had a negative relationship with grade point average (GPA) in both groups. It was also found that female students had higher test anxiety levels than male undergraduate students.

Sung et al. (2016) investigated the correlation between test anxiety and learning achievement of Taiwanese higher-achiever and lower-achiever student groups. The findings revealed a positive correlation between test anxiety and achievement in the lower-achievement group but a negative association was reported between the two variables in the higher-achievement group. Finally, Roick and Ringeisen (2017) investigated the relationship among self-efficacy, test-related cognitions, test anxiety, and academic performance and verified a positive interrelationship among self-efficacy, test-related cognitions, test anxiety, and academic performance. It was also found that lesser test anxiety leads to improved academic performance.

Method

Participants

The participants in this study were 200 EFL learners from English language institutes in Hamadan (a western province of Iran) and Kerman (a central province). In general, 86 participants (40 males and 46 females) from Hamadan and 114 participants (60 males and 54 females) from Kerman province private language institutes took part in this study. The participants were at intermediate proficiency levels and ranged in age from 11 to 19. Gender was not considered as a moderator variable and hence the participants were both male (100) and female (100). The participants were selected based on a convenience sampling procedure.

Instruments

The following questionnaires and tests were administered to the participants to collect the required data.

Goal Orientations Scale: The first instrument was Goal Orientations Scale adopted from the Motivated Strategies for Learning Questionnaire (MSLQ) (Pintrich, Smith, Garcia, & McKeachie, 1991). This questionnaire includes Intrinsic (4 items) and Extrinsic (4 items) goal orientations scales and is structured in a seven-point Likert scale ranging from 1 for *'Not at all true of me'* to 7, for *'Very true of me'*. The score for each goal orientation scale is calculated by summing up the chosen Likert level of the relevant items of each orientation. Regarding the reliability and validity of this questionnaire, Pintrich et al. (1991) validated the scale and the reported reliability index was α= 0. 90. Moreover, Kwan and Wong (2015) re-estimated the reliability of the scale (α=.80 for intrinsic and α=.76 for extrinsic goal orientations). Also, the internal consistency reliability of the questionnaire turned out to be α=0.79 (Pintrich et al., 1991).

To make sure of the psychometric properties of the scale including the reliability and construct validity, Cronbach's alpha measure of internal consistency and Confirmatory Factor Analyses (CFA) were applied to the obtained data. The re-estimated reliability coefficient of the scale in this study turned out to be α=.75. Confirmatory factor analysis verified the construct validity of the scale and the obtained KMO Measure of Sampling Adequacy turned out to be 0.78. Moreover, Bartlett's Test of Sphericity was found to be statistically significant (X^2 (28) = 406.78, $P < 0.05$). Additionally, the communalities were all above 0.4. The analyses yielded two factors explaining a total of 55.35 percent variance for the entire set of variables. In other words, the two factors explained 40.12 and 15.23 percent of the total variance, respectively.

The results of the KMO Measure of Sampling Adequacy, communalities, and factor loadings of this instrument are presented in the appendix (Tables A & B).

Test Preparation and Test-taking Strategy Scale (TPTTS): This scale is developed by Bicak (2013) for the identification of the EFL learners' test preparation and test-taking strategies. The questionnaire consists of 37 items with two dimensions of 'test preparation strategies' and 'test-taking strategies. Test preparation strategies are classified into three subscales of cognitive strategies (7 items), social strategies (3 items), and metacognitive strategies (7 items), and test-taking strategies are categorized into four subscales including item analysis strategies (7 items), time management strategies (4 items), choice prediction strategies (3 items), and after test strategies (3 items). The scale is in a 5-digit Likert-scale structure ranging from '(1) *Never or almost never true of me'* to '(5) *Always or almost true of me'*. Bicak (2013) employed Exploratory Factor Analysis (EFA) to verify the construct validity of the scale and the reported Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett test of sphericity for the first dimension of the scale were KMO=0.793, Bartlett's Test=.000 $p<0.05$ and for the second dimension, KMO = 0.764, and Barlett's Test $p<0.05$. In addition, the reported internal consistency score of this instrument was $\alpha= 0.7$.

The internal consistency reliability coefficient of the questionnaire in this study turned out to be $\alpha= .84$. Moreover, Confirmatory Factor Analyses presented the KMO Measure of Sampling Adequacy of 0.77, above the recommended value of 0.60, a significant result for Bartlett's Test of Sphericity (X^2 (666) = 2567.22, $P < 0.05$), and the communalities were all above 0.4. Also, the analyses yielded eight factors explaining a total of 54.70 percent variance for the entire set of variables. In other words, the first four factors explained 17.15, 11.73, 5.55, and 4.90 percent of the total variance. The results of the KMO Measure of Sampling Adequacy, communalities, and factor loadings of this instrument are presented in the appendix (Tables C & D).

Examination Stress Scale (Exam SS): In order to measure the participants' test anxiety level, the Exam SS questionnaire (Sung & Chao, 2015) was administered to the participants. The questionnaire comprises of three dimensions of test anxiety: 1) Physiological anxiety responses (PA, 10 items), 2) cognitive and behavior responses (CB, 8 items), and 3) perceived social expectations and social comparisons (SS, 9 items). It is structured in a 5-digit Likert scale ranging from (1) *totally disagree*, (2) *slightly disagree*, (3) *partially agree*, (4) *agree*, to (5) *totally agree*, respectively. According to the scale manual, higher scores indicate a greater

level of test anxiety for both the subscales and the whole questionnaire. To validate the scale, confirmatory factor analysis (CFA) of the three-dimensional model and measurement invariance analysis were carried out in the original study (Sung et al., 2016). The internal consistency index of Exam SS as reported by Sung et al. (2016) for the three subscales were α=0.90 for PA, α= 0.87 for CB, and α= 0.88 for SS; the total measure for the entire scale was α=0.92. Moreover, the re-estimated reliability coefficient of the scale was found to be α=0.80.

However, the re-estimated reliability coefficient of the questionnaire in this study was found to be α=89. Meanwhile, Confirmatory Factor Analyses yielded the KMO Measure of Sampling Adequacy of 0.86 and a significant result for Bartlett's Test of Sphericity (X^2 (351) = 1618.71, $P < 0.05$). Also, the analyses yielded eight factors explaining a total of 60.30 percent variance for the entire set of variables. The results of the KMO Measure of Sampling Adequacy, Bartlett's Test of Sphericity and communalities, and factor loadings of this instrument are presented in the appendix (Tables E & F).

Test Performance: As a measure of the participants' test performance, a sample Test of English as a Foreign Language (TOEFL; Educational Testing Service, 2016) Junior Standard test was utilized. The TOEFL Junior Standard test is designed for the eleven and above age range of EFL learners (Ahmadi Safa & Rozati, 2016). It is a paper-and-pencil test comprising of 126 multiple-choice question items. It consists of three sections: listening comprehension, language form and meaning, and reading comprehension. Each section includes 42 items with a total testing time of 1 hour 55 minutes. The internal consistency of the test is reported to be (α= 0.92). However, the internal consistency reliability coefficient of the test in this study turned out to be α= 0.94.

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Procedure

At the outset of the data collection phase of the study, the researchers obtained the informed consent of both the authorities of the institutions and the participants prior to the start of the project. The administration of the questionnaires took place during two complete consecutive sessions in each one of the selected institutional classes. In the first session, Goal Orientations Scale, Test Preparation and Test-taking Strategy Scale, and Examination Stress Scale (Exam SS) were administered, and in the second session, the sample TOEFL Junior test was given to the participants. The procedures for taking the questionnaires and answering the test were clarified by the researchers for the participants. The questionnaires were administered in original English language as the participants were all intermediate-level EFL learners and

language-related problems were least expected, however, in case any participant encountered any language-related problem, the researchers were ready to help resolve the problem.

Data Analysis

After the data collection, the obtained raw data were subjected to both descriptive and inferential statistical analyses including one Sample-Kolmogorov-Smirnov Test, Cronbach's alpha internal consistency reliability coefficient, Confirmatory Factorial Analyses, Pearson correlation coefficient, and Regression analyses to answer the research questions. The results of statistical analyses addressing each research question, in turn, are presented in the following part.

Results

Prior to the conduct of the main inferential statistical analyses, some preliminary analyses including Cronbach's alpha internal consistency estimate, Confirmatory factor analyses (CFA), and one Sample-Kolmogorov-Smirnov Test were run on the data to estimate the reliability of the instruments, make sure of their construct validity, and to check the normality of data distribution for each variable respectively, the results of which are presented in Tables 1 and 2. Table 1 summarizes the information obtained from Cronbach alpha analyses.

Table 1. *Cronbach Alpha Reliability Indexes*

Scale	Number of items	Cronbach alpha
1. Goal orientation	8	.793
2. Test-taking strategy	37	.816
3. Test anxiety	27	.805
4.TOEFL (junior)	126	.92

As it is evident above, the utilized questionnaires and the TOEFL Junior Standard test all enjoyed acceptable indexes of internal consistency and hence their results could be considered as reliable ones.

Table 2. *The Results of One-Sample Kolmogorov- Smirnov Test*

		M Goal	P Goal	Strategy	Test Anxiety	Test Performance
N		200	200	200	200	200
Normal Parameters [a,b]	Mean	19.16	18.70	47.92	82.80	17.12
	SD	5.145	4.877	19.347	31.842	5.295
Kolmogorov-Smirnov Z		1.070	1.145	1.299	1.182	.940
Asymp. Sig. (2-tailed)		.203	.145	.062	.123	.340

a: Test distribution is Normal.

b: Calculated from data.

As it is shown in Table 2, the observed significance value for all variables was higher than the critical .05. level indicating that the data for all the variables were normally distributed.

In order to answer research questions one to four which addressed the correlation pattern among EFL learners' mastery goal orientation, performance goal orientation, test-taking strategy, test anxiety, and their test performance, four Pearson product-moment correlation analyses were conducted, the results of which are summarized in Table 3.

Table 3. *The Relationships among EFL Learners' Mastery Goal Orientation, Performance Goal Orientation, Test-taking Strategy, Test Anxiety and their Test Performance*

	M. Goal orientation	P. Goal orientation	Test-taking strategy	Test anxiety	Test performance
1. M. Goal orientation	1				
2. P. Goal orientation	.019	1			
3. Test-taking strategy	.076	.168*	1		
4. Test anxiety	.113	-.092	-.061	1	
5. Test performance	.202**	-.244**	.357**	-.274**	1

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

As is evident in Table 3, there was a statistically significant positive relationship between EFL learners' mastery goal orientation and their test performance ($r = 0.20$, $p = 0.01 < .05$). That is, students who were more mastery-oriented in their goal orientation performed better on the

TOEFL Junior test. Also, EFL learners' performance goal orientation significantly correlated with their test performance (r = -0.24, p = 0.01<.05). The negative significant correlation coefficient value indicates that students who were less performance-oriented in their goal orientations performed better in the test.

The correlation between test-taking strategy and test performance was also in the expected direction as they were positively correlated (r = 0.35, p = 0.01<.05) which indicates that the application of test preparation and test-taking strategies was probably conducive to EFL learners' improved test performance.

The obtained correlation coefficient between test anxiety and test performance was also significant but in the negative direction (r = -0.27, p = 0.01<.05) indicating that higher levels of test anxiety were not helpful to the EFL learners' optimum TOEFL test performance.

In order to answer the last research question which aimed at identifying the stronger predictors of the EFL learners' test performance from among the study predictor variables, a standard multiple regression analysis was carried out and all predictor variables, that is, mastery goal-orientation, performance goal-orientation, test-taking strategy, and test anxiety were simultaneously entered into the equation. The results of multiple regression analysis are presented in Tables 4, 5, and 6.

Table 4 presents the regression model summary in which and the R square and adjusted R square statistic values are reported.

Table 4. *Regression Model Summary*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.63a	.41	.39	1.90

a: Dependent variable: Test performance

As shown above, the adjusted R square indicates that the total variance of the dependent variable explained by the model was 0.39. In other words, 39 percent of the variance in test performance was explained by the model which included all studied independent variables (i.e. mastery goal-orientation, performance goal-orientation, test anxiety, and test-taking strategy use). In order to assess the statistical significance of the prediction strength of the model, standard multiple regression runs an ANOVA analysis which investigates whether the

combination of the predictors significantly predicts the criterion or the dependent variable. Table 5 summarizes the ANOVA results.

Table 5. *ANOVA Results for the Statistical Significance of Regression Model*

Model	Sum of squares	Df	Mean square	F	Sig.
Regression	75.87	3	37.09	12.96	.000b
Residual	519.45	119	5.47		
Total	699.46	121			

a: Predictors (Constant): MGO, PGO, TTS, TA

b: Dependent variable: Test performance

As indicated in Table 5, the statistical significance of the results was verified through and the combination of independent variables could strongly predict test performance of the participants (F = 12.96, p = .00 < .05). In order to check the unique contribution level of each one of the predicting variables to the total variance of the dependent variable explained by the regression model, the coefficients table (Table 6) was checked.

Table 6. *Coefficients for Each Individual Predicting Variables*

	Unstandardized Coefficients		Standardized Coefficient		
Models	**B**	**Std. error**	**Beta**	**T**	**Sig**
Constant	25.45	2.18		14.13	.00
1. M. Goal orientation	.20	.22	.65	3.30	.25
2. P. Goal orientation	-.166	.05	-.21	-2.64	.00
3. Test-taking strategy	.29	.03	.14	4.74	.00
4. Test anxiety	-.26	.01	-.26	-4.22	.37

As presented in Table 6, results from the regression analysis coefficients table verify that the unique contribution of test-taking strategy and performance goal orientation to the regression equation was significant. This meant that from among the four individual characteristics which were considered as the potential predictors of the EFL learners' test performance, test-taking strategy (Beta = .14, p=.00 < 0.05) and performance goal-orientation (Beta = -.21, p=.00 < 0.05) were stronger predictors of the dependent variable. However, in the

case of mastery goal orientation and test anxiety, the Beta weights were not significant indicating that the two variables' unique contribution to the total variance of the dependent variable explained by the regression model was not statistically significant. Furthermore, as shown in Table 6, the Beta weight for performance goal orientation was negative indicating that students who were less performance-oriented in their goal orientation performed better on the TOEFL Junior test.

Discussion

The statistical analyses conducted to answer the research questions revealed that a) the psychological and cognitive attributes investigated in this study, that is, mastery goal-orientation, performance goal-orientation, test anxiety, and test-taking strategy, all correlated with test performance, b) performance goal-orientation and test anxiety negatively correlated with EFL learners' test performance, c) the correlation coefficient for test-taking strategy was the strongest in magnitude and the coefficients for test anxiety, performance goal-orientation, and mastery goal-orientation were in the second to fourth ranks of strength respectively, d) from among the four studied potential predictors, only test-taking strategy and performance goal-orientation could predict the EFL learners' test performance, and e) test-taking strategy was found as a significant cognitive determiner of EFL learners' test performance, and performance goal-orientation was found as the most significant psychological attribute to explain the EFL learners' test performance in negative direction though.

The attested positive relationship between mastery goal orientation and test performance has been previously documented in the literature (e.g., Ames, 1992; Meece et al., 2006). Furthermore, it has been found correlated with learning outcomes (for example, Dupeyrat and Mariné, 2005). On the basis of such findings, it can be inferred that mastery goal orientation of the learners both psychologically and cognitively renders the course of their educational development and behavior (Bernacki et al., 2012) and this, in turn, helps to their improved test performance. Bernacki et al. (2012) revealed that achievement goals predicted learning behaviors and there were positive relationships between mastery goals and learning behaviors. On such biases, it seems justified to conclude that mastery goal orientation tends to positively associate with the learners' improved performance in their educational testing situations.

This piece of finding might also indicate that the learners who adopt mastery goal orientation strive harder for the learning and mastery of the materials partly due to their self-

efficacy judgments (Ames, 1992). Furthermore, mastery goal-oriented learners attribute their harder efforts to their self-efficacy judgments on the grounds that they believe that their effort will lead to their success (Ames, 1992) and the reduction of their anxiety (Pintrich & Schunk, 1996).

Contrary to the positive correlation coefficient of mastery goal orientation and test performance, and confirming some previous studies' results (for example, Ames, 1992; Bernacki et al., 2012; Huang, Hung, & Hong, 2016; Kunnan 2009; Meece et al., 2006; Paulick et al., 2013), the analyses revealed that performance goal orientation was negatively associated with test performance and whereas test-taking strategy was found as a strong cognitive determiner of EFL learners' test performance, performance goal-orientation was found as the most significant psychological factor to negatively determine the EFL learners' test performance in this study.

Ames (1992) maintains that the learners who adopt performance goal orientation appear to focus on demonstrating their ability in relation to others which leads to their self-worth feelings. When the negative correlation coefficient between performance goal orientation and test performance of the learners is juxtaposed with Ames above mentioned description of performance goal-oriented learners, one feels compelled to think that as the test situation does not let such learners be demonstrating their ability to others and increase their self-worth feelings in such situations, they do not feel it worth them to do their best in test situations and hence their test performance falls far short of their true ability level.

The negative correlation between performance goal orientation and test performance or other educational outcomes has been reported in other studies as well. Dupeyrat and Mariné (2005) for example, similarly demonstrated that mastery-intrinsic orientation had a positive relationship with students' learning outcomes, while the correlation coefficient was negative for performance goal orientation and the dependent variable. Bernacki et al. (2012) also explored the correlation among achievement goals, strategy use, and comprehension, and reported a positive relationship between mastery goals and learning behaviors and a negative relationship between performance goals and learning behaviors. Similarly, Paulick et al. (2013) found that performance-approach goals negatively correlated with school grades.

EFL learners' test performance was also found correlated with the test-taking strategy; moreover, test-taking strategy was found as a strong cognitive determinant of EFL learners' test-taking performance. The findings of this study in this regard give support to Phakiti's (2003) study, which revealed positive associations between test takers' use of cognitive and

metacognitive strategies and reading test performance and those of Huang (2016) that verified the significant contribution of L2 strategy use on the test takers' performance on speaking tests. On the basis of such results, it seems that the positive contribution of the foreign or second language learners' effective use of strategies in test situations to their test performance is well documented.

In addition to the attested positive contribution of test-taking strategies to the learners' test performance, as Hong et al. (2006) concluded, test-taking strategies training can help students to enhance their academic performances. Some justifying reasons for the attested contribution might be found in Purpura (1997) remarks where he stated that L2 test performance could be enhanced if the test-takers utilize more strategies to manipulate the provided input or, as Huang and Hung (2013) attested to, to deal with the negative affective variables such as anxiety. Finally, it might be tenable to argue that strong chances are that the learners' success on language tests could be as a result of not only higher language ability but also higher strategic awareness and strategies use (Bicak, 2013; Dodeen, 2008; Hong et al., 2006; Katalin, 2000; Lau, 2006; Zhang, 2010).

The observed strong negative correlation between test anxiety and test performance of the EFL learners was both priorly documented in the literature and expected by the researchers. Sarason (1984) argues that test anxiety causes anxiousness and brings about self-doubt feelings in assessment situations and that such feelings could decrease test takers' performance levels. Furthermore, Zeidner (1998) maintains that "test-anxious students tend to be easily distracted on an exam, experience difficulty in comprehending relatively simple instructions, and also have difficulty organizing or recalling relevant information during the test" (p. 4).

The attested negative correlation between test anxiety and test performance has been documented in other studies as well. Among others, Chapell et al. (2005), for example, reported that the increases in both cognitive test anxiety and emotion-focused coping strategies were correlated with decreases in students' achievement. Similarly, Sung et al. (2016), as another, verified the negative association between test anxiety and the learners' achievement. In conclusion, results from this study revealed that among the studied cognitive and psychological test takers' attributes, that is, mastery goal orientation, performance goal orientation, test-taking strategy, and test anxiety, test-taking strategy and performance goal orientation were the strong cognitive and psychological predictors of test performance respectively.

Conclusion and Implications

This study was designed to explore the relation pattern of a number of individual cognitive and psychological attributes and test performance of EFL learners. The findings revealed that the studied attributes (i.e. test-taking strategy, test anxiety, performance goal orientation and mastery goal orientation), all correlated with EFL learners' test performance. The unique contribution of this piece of finding might be the justification it provides for the inclusion of mastery and performance goal orientations in the list of significant psychological test taker attributes that are considered as influential factors in EFL learners' test performance. Furthermore, test-taking strategy and performance goal orientation are respectively endorsed as strong cognitive and affective personal attributes to predict EFL test takers' test performance. Both categories of findings further support Bachman (1990) who states that language learners' test performance is under the influence of the individual attributes that are not part of test takers' language ability. This seems to question the validity of the EFL tests scores' uses for the kind of decisions about them which need to be totally dependent on the EFL learners' language ability and skills.

Furthermore, as a theoretical implication, the findings might indicate that the subject matter knowledge and skills are not the only factors to constitute the test construct in question. In educational settings, the unidimensional definition of the constructs so that only core components are included in the definition needs to be redefined to incorporate more psychological and cognitive factors which were deemed construct irrelevant factors before. In the case of the present study findings, goal orientations either mastery or performance, and anxiety as psychological factors are found to contaminate the test results in one way or another. One may interpret the contamination in terms of construct irrelevance and maximally try to estimate the magnitude of the resulting test score error variance in order to more accurately estimate the true score variance.

Such a classic effort has led to endless statistical procedures which have been both tedious, complicated, and unproductive. On the other hand, an alternative interpretation of the psychological and cognitive factors' positive or negative correlation with the test performance might be the recognition of the significance of such factors for the given test construct definition. In other words, it might be productive to think of a multilayered redefinition of the test construct so that in addition to the core components of the constructs, other psychological and/or cognitive factors which are empirically found to be correlated with the given test construct to make the outer peripheral layers of the given construct.

Some practical and or pedagogic implications might be also conceivable for the findings of the present study. Firstly, to reduce the influence of psychological and cognitive variables other than language ability and skills on test performance, stakeholders including test designers, teachers, administrators, and EFL learners need to be cognizant of the significant role of such individual attributes in test performances and ameliorate the test design and administration conditions to maximally address the necessities of each factor. Secondly, concerning the debilitative role of test anxiety, teachers may find it worthwhile enough to devote some time and energy to train the test takers to cope with their debilitative psychological attributes like test anxiety as such practice will ultimately lead to test takers' improved performance in test situations and a more reliable representation of their true level of ability and skills. Chapell et al. (2005) hold that teachers must be aware that they are responsible for informing learners how to apply appropriate strategies in order to achieve higher success in the test and reduce their anxiety.

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