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L2 PERFORMANCE IN ENGLISH AND GPA: A CORRELATION STUDY

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ABSTRACT: *The purpose of this correlational study was to investigate the relationship between various possible components of L2 skill GPA. In theoretical terms, the objective of the study was on examining the explanatory power of the g factor of general intelligence versus multiple intelligences theory through a correlation of five aspects of L2 competence with GPA among a sample of 94 Kuwaiti students of English as an L2. The study was guided by five research questions: (1) Is there a statistically significant effect of intelligence on GPA? (2) Is there a statistically significant effect of aptitude on GPA? (3) Is there a statistically significant effect of personality on GPA? (4) Is there a statistically significant effect of motivation and attitude on GPA? (5) Is there a statistically significant effect of beliefs on GPA? Utilizing an odds ratio approach in which the comparison groups were (a) students who failed and students who did not fail, (b) students who excelled and students who did not excel, and (c) students who achieved at least average performance and students who did not achieve at least average performance, no statistically significant relationships were found between GPA and any of these predictors. The results were discussed in terms of their support for multiple intelligences theory, and some recommendations for future research were made.*

KEYWORDS: L2, performance, English, GPA, correlation, study

INTRODUCTION

Second-language (L2) learners draw upon numerous sources of competence in order to become better at their chosen L2. Factors such as intelligence, motivation, personality characteristics, beliefs, preferences, and linguistic aptitude have all been discussed as possible determinants of L2 skill, particularly in the context of studies of English as L2 (Fan, 2009, Fathman et al., 1985, Hong-Nam and Leavell, 2006, Huang and Brown, 2009, Mokhtari and Sheorey, 2002, Padron and Waxman, 1988, Yoon and Hirvela, 2004). The objective of this study was to investigate the relationship between various possible components of L2 skill and grade point average (GPA).

As a construct, GPA represents performance in several fields. At the college level in the country of Kuwait, which was the setting for the study, GPA reflects performance not only in English but also in various elective and required courses at the college or university level, including mathematics. The current study was framed as a means of examining the possible applicability of *g* factor theory versus multiple intelligences theory as contending explanations for the observed significance or non-significance of relations between different components of L2 performance and GPA. The study was guided by the following research questions:

RQ1: Is there a statistically significant effect of intelligence on GPA?

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RQ2: Is there a statistically significant effect of aptitude on GPA?
RQ3: Is there a statistically significant effect of personality on GPA?
RQ4: Is there a statistically significant effect of motivation and attitude on GPA?
RQ5: Is there a statistically significant effect of beliefs on GPA?

The remainder of the study consists of a literature review, a discussion of methodology, the findings (in the form of answers to the enumerated research questions), and conclusion that contains a discussion of the findings with reference to past theories and empirical findings.

LITERATURE REVIEW

There are some theoretical reasons to believe that performance at an L2 might be positively and significant correlated with a general measure of performance such as GPA. The construct of general intelligence, or *g*, was first posited as an explanation of positive correlation between several areas of intellectual performance, including language use and mathematics (Colom et al., 2006, Norton, 1979, Spearman, 1927, Spearman, 1904). On the basis of the *g* factor, it is possible that, for a sample of non-native English speakers, performance in English as an L2 will correlate positively with overall academic performance as measured by GPA. On the other hand, multiple intelligences theory (Gardner, 2011) suggests that there are divergences in performance between different domains, including language, music, and mathematics. Multiple intelligences theory might therefore predict the absence of a significant correlation between performance in English as an L2 and overall GPA.

One seminal study (Light et al., 1987) on the relationship between L2 performance and GPA found the absence of any statistically significant correlation between these two variables. Light et al. operationalized L2 performance as the scores of non-Anglophone students on the Test of English as a Foreign Language (TOEFL). The students in Light et al.'s sample were undergraduates at the State University of New York (SUNY) at Albany. TOEFL scores and GPA were not significantly correlated among these non-Anglophone students at SUNY Albany; however, Light et al.'s findings are several years old, and TOEFL capture performance rather than the attitudes, skills, and affects that might underlie L2 performance.

Empirical studies similar to that of Light et al. (1987) possess the same gap, that is, the failure to test for correlations between the underlying components of L2 skill (in domains such as aptitude, motivation and attitude, personality, and intelligence) and GPA. In a more recent study (Martirosyan et al., 2015), Martirosyan et al. found that there was a positive and statistically significant relationship between non-Anglophone students' self-reported English proficiency and their GPAs. Self-reported proficiency can be considered either a measure of performance or an attitude; however, self-reported proficiency lacks both the reliability and validity of more formally measured L2 skill and the attitudinal dimension of variables such as aptitude, motivation and attitude, personality, and intelligence.

Another recent study (Ghenghesh, 2015) from Egypt reached the same conclusions as those of Martirosyan et al. (2015), namely that L2 performance in English is positively and significantly correlated with general academic performance. Ghenghesh operationalized English performance as level (including the categories of pre-intermediate, intermediate, upper intermediate, and advanced)

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and regressed the yearly GPA of 566 Egyptian university students on English level. Ghengesh found a small (r = .349) and statistically significant (p < .01) correlation between these variables, supporting the conclusion that English L2 performance and GPA were positively related. However, Ghengesh's study was limited by the use of ordinary least squares (OLS) regression instead of ordinal regression of an analysis of variance, both of which would have been more suited to the manner in which English level was operationalized.

In a study of the relationship between English L2 competence and subsequent GPA, Hernández et al. (2016) discovered that Mexican-origin students in the United States had a negative correlation between English L2 performance and subsequent GPA, but also that this correlation ceased to be significant when including the covariate of school belonging. On the basis of this finding, Hernández et al. concluded that English performance might not have any bearing on overall academic performance insofar as English performance could itself be a function of disconnectedness from school rather than of a general academic deficiency. Similar findings were obtained by Wong, Schweitzer, and Khawaja (2018), who found that the correlation between English L2 competence and subsequent academic performance for a sample of refugee youths ceased to be significant when controlling for factors related to school and social adjustment.

In studies that have utilized predictor variables such as aptitude, motivation and attitude, personality, and intelligence, the dependent variable has tended to be L2 performance rather than GPAs. For example, the results of an Iranian study (Alahdadi and Ghanizadeh, 2017) indicated that there was a positive and statistically significant correlation between (a) the dependent variable of L2 performance in English; and (b) the independent variables of adaptability and ambiguity tolerance. Another study from Iran (Varasteh et al., 2016) found that L2 performance in English is positively and significantly correlated with ambiguity tolerance, task value, and effort regulation.

While such studies are important for their explanatory power related to L2 performance in English, they do not address the possible relationship between the underlying components of L2 performance and GPA. This gap in the literature merits further empirical analysis.

METHODOLOGY

The methodology of the study has been structured as follows. First, the research questions and hypotheses of the study have been presented. Second, the variables of the study have been individually discussed. Third, the sample and sampling procedure have been discussed. Fourth, data analysis has been described in replicable detail for each of the research questions.

Research Questions and Hypotheses

The research questions and hypotheses of the study are as follows:
RQ1: Is there a statistically significant effect of intelligence on GPA?
$H1_0$: There is not a statistically significant effect of intelligence on GPA.
$H1_A$: There is a statistically significant effect of intelligence on GPA.
RQ2: Is there a statistically significant effect of aptitude on GPA?
$H2_0$: There is not a statistically significant effect of aptitude on GPA.
$H2_A$: There is a statistically significant effect of aptitude on GPA.

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RQ3: Is there a statistically significant effect of personality on GPA?
H3_0: There is not a statistically significant effect of personality on GPA.
H3_A: There is a statistically significant effect of personality on GPA.
RQ4: Is there a statistically significant effect of motivation and attitude on GPA?
H4_0: There is not a statistically significant effect of motivation and attitude on GPA.
H4_A: There is a statistically significant effect of motivation and attitude on GPA.
RQ5: Is there a statistically significant effect of beliefs on GPA?
H5_0: There is not a statistically significant effect of beliefs on GPA.
H5_A: There is a statistically significant effect of beliefs on GPA.

The Dependent Variable

The dependent variable of GPA was sorted polytomously, or ordinally, on the basis of the following designations:

Table 1
GPA Conversion

GPA Range	Designation	Number of students in category
Below 1.5	Failing	4
Between 1.5 and 2.0	Below average	26
Between 2.6 and 3.0	Average	39
Between 3.1 and 3.5	Good	16
Between 3.6 and 4.0	Very good	8

The treatment of GPA as a polytomous variable meant that neither ordinary least squares (OLS) regression nor an ordinal regression could be applied to the data. As the dependent variable of GPA was not a continuously defined variable, it was inappropriate for the application of the OLS model as described by Gauss (Gauss, 1995). In addition, as there were gaps in the GPA distribution—notably, there were no students who scored between 2.0 and 2.6—an ordinal regression would also have been an appropriate statistical model to apply to the data. Rather, the characteristics of the variable of GPA were suited to odds ratio (OR) analyses in which the following comparison groups were stipulated:

- Students who failed versus students who did not fail
- Students who performed excellently versus students who did not perform excellently
- Students who achieved at least average performance versus students who did not achieve at least average performance

OR calculations were carried out for each of these comparison groups.

The Independent Variables

The six independent variables of the study were factors of (a) intelligence, (b) aptitude, (c) personality, (d) motivation and attitude, (e) preferences, and (f) beliefs. The independent variable of intelligence was based on Likert-type (Likert, 1932) responses to five questions related to intelligence. The possible responses to the five questions about intelligence were disagree, neither agree nor disagree, and disagree. After correcting for reverse coding, and assuming the values disagree = 1, neither agree nor disagree = 2, and agree = 3, the possible range of scores on the

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independent variable of intelligence was from 5 to 15, with lower scores representing lower intelligence and higher scores representing intelligence.The possible responses to the five questions about aptitude were disagree, neither agree nor disagree, and disagree. After correcting for reverse coding, and assuming the values disagree = 1, neither agree nor disagree = 2, and agree = 3, the possible range of scores on the independent variable of aptitude was from 5 to 15, with lower scores representing lower aptitude and higher scores representing aptitude.

The possible responses to the five questions about personality were disagree, neither agree nor disagree, and disagree. After correcting for reverse coding, and assuming the values disagree = 1, neither agree nor disagree = 2, and agree = 3, the possible range of scores on the independent variable of personality was from 5 to 15, with lower scores representing lower personality and higher scores representing personality.

The possible responses to the five questions about motivation and attitude were disagree, neither agree nor disagree, and disagree. After correcting for reverse coding, and assuming the values disagree = 1, neither agree nor disagree = 2, and agree = 3, the possible range of scores on the independent variable of motivation and attitude was from 5 to 15, with lower scores representing lower motivation and worse attitude and higher scores representing higher motivation and better attitude.

The independent variable of preferences was not utilized for the purposes of statistical analysis, because this variable did not allow the derivation of worse or better preferences. Preferences were simply students' attitudes about how they went about second-language learning, and, as such, could not be sorted into better or worse or higher or lower in the same manner as the other predictors. Finally, the possible responses to the five questions about personality were disagree, neither agree nor disagree, and disagree. After correcting for reverse coding, and assuming the values disagree = 1, neither agree nor disagree = 2, and agree = 3, the possible range of scores on the independent variable of personality was from 5 to 15, with lower scores representing a less engaged language-learning personality and higher scores representing a more highly engaged language-learning personality.

The Covariates

The covariates of the study were as follows: Year of study, nationality, marital status, and age. Each of these variables was coded nominally.

Sample and Sampling Procedures

Convenience sampling procedures were utilized in the study. The study was conducted on the basis of data obtained from 94 students. Details on the sample have been presented in the findings section.

Data Analysis

The data analysis procedures of the study have been described in replicable detail for each of the research questions of the study. The chosen level of significance was $p = .05$.

RQ1 data analysis. The first research question of the study was as follows: Is there a statistically significant effect of intelligence on GPA? The first step in analyzing RQ1 was to ensure that reverse

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coding was properly utilized in the five scale questions that measured the intelligence of students. In the five questions that measured intelligence, only item #2 (IQ tests are not a good means of predicting how successful a learner I would be) required recoding. The second step in the data analysis of RQ1 was to calculate the OR for the likelihood of failing as a function of (a) intelligence, (b) year in school, (c) nationality, (d) age, and (e) marital status. The third step in the data analysis of RQ1 was to calculate the OR for the likelihood of achieving excellent performance as a function of (a) intelligence, (b) year in school, (c) nationality, (d) age, and (e) marital status. The fourth step in the data analysis of RQ1 was to calculate the OR for the likelihood of achieving at least average performance as a function of (a) intelligence, (b) year in school, (c) nationality, (d) age, and (e) marital status.

RQ2 data analysis. The second research question of the study was as follows: Is there a statistically significant effect of aptitude on GPA? The first step in analyzing RQ2 was to ensure that reverse coding was properly utilized. In the five scale questions that measured the aptitude of students. In the five questions that measured aptitude, only item #6 (Learning grammar from books is not very important) required recoding. The second step in the data analysis of RQ2 was to calculate the OR for the likelihood of failing as a function of (a) aptitude, (b) year in school, (c) nationality, (d) age, and (e) marital status. The third step in the data analysis of RQ2 was to calculate the OR for the likelihood of achieving excellent performance as a function of (a) aptitude, (b) year in school, (c) nationality, (d) age, and (e) marital status. The fourth step in the data analysis of RQ2 was to calculate the OR for the likelihood of achieving at least average performance as a function of (a) aptitude, (b) year in school, (c) nationality, (d) age, and (e) marital status.

RQ3 data analysis. The third research question of the study was as follows: Is there a statistically significant effect of personality on GPA? The first step in analyzing RQ3 was to ensure that reverse coding was properly utilized in the five scale questions that measured the aptitude of students. None of the personality items required recoding. The second step in the data analysis of RQ3 was to calculate the OR for the likelihood of failing as a function of (a) personality, (b) year in school, (c) nationality, (d) age, and (e) marital status. The third step in the data analysis of RQ3 was to calculate the OR for the likelihood of achieving excellent performance as a function of (a) personality, (b) year in school, (c) nationality, (d) age, and (e) marital status. The fourth step in the data analysis of RQ3 was to calculate the OR for the likelihood of achieving at least average performance as a function of (a) personality, (b) year in school, (c) nationality, (d) age, and (e) marital status.

RQ4 data analysis. The fourth research question of the study was as follows: Is there a statistically significant effect of motivation and attitude on GPA? The first step in analyzing RQ4 was to ensure that reverse coding was properly utilized in the five scale questions that measured the motivation and attitude of students. There were three items measuring motivation that required recoding:

- Item #16: I rely on other people to motivate me in acquiring my second language.
- Item #17: I worry a lot about making mistakes while talking in English.
- Item #18: Learning a language may be important to my goals, but I don't expect it to be much fun.

The second step in the data analysis of RQ4 was to calculate the OR for the likelihood of failing as a function of (a) motivation and attitude, (b) year in school, (c) nationality, (d) age, and (e) marital

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status. The third step in the data analysis of RQ4 was to calculate the OR for the likelihood of achieving excellent performance as a function of (a) motivation and attitude, (b) year in school, (c) nationality, (d) age, and (e) marital status. The fourth step in the data analysis of RQ4 was to calculate the OR for the likelihood of achieving at least average performance as a function of (a) motivation and attitude, (b) year in school, (c) nationality, (d) age, and (e) marital status.

RQ5 data analysis. The fifth research question of the study was as follows: Is there a statistically significant effect of beliefs on GPA? The first step in analyzing RQ5 was to ensure that reverse coding was properly utilized in the five scale questions that measured the beliefs of students. In the five questions that measured beliefs, only item #26 (Vocabulary errors made by Arab speakers in English will lead to a communication breakdown with native English speakers) required recoding. The second step in the data analysis of RQ5 was to calculate the OR for the likelihood of failing as a function of (a) beliefs, (b) year in school, (c) nationality, (d) age, and (e) marital status. The third step in the data analysis of RQ5 was to calculate the OR for the likelihood of achieving excellent performance as a function of (a) beliefs, (b) year in school, (c) nationality, (d) age, and (e) marital status. The fourth step in the data analysis of RQ5 was to calculate the OR for the likelihood of achieving at least average performance as a function of (a) beliefs, (b) year in school, (c) nationality, (d) age, and (e) marital status.

FINDINGS

After a discussion of the characteristics of the sample, the findings of the study have been presented in order of the research questions of the study. Each finding is accompanied by a formal hypothesis test of the relevant null hypothesis. All other relevant statistical details have also been provided.

Sample Characteristics

There were 94 students in the sample. Of these students, 22 were in their first year, 37 were in their second year, 21 were in their third year, 11 were in their fourth year, and no year data were available for the remaining three students. Age data were collected for 93 of the 94 students. Forty-one of the students in the sample were between the ages of 18 and 20, 32 of the students were between the ages of 21 and 25, nine students were between the ages of 26 and 30, and one student was over 30 years old. Sixty-seven of the sampled students were Kuwaiti, 25 of the students were not Kuwaiti, and no nationality data were collected for the remaining two students. Sixty-eight of the students were single, 24 of the students were married, and no marital status data were available for two of the students in the sample.

RQ1 Findings

The first research question of the study was as follows: Is there a statistically significant effect of intelligence on GPA? In the first OR model for RQ1, it was found that intelligence did not influence the chances of having a failing GPA, $OR = 1.275$, $p = .462$. In addition, none of the covariates included in the first OR model for RQ1 were significant. Table 2 below contains the results of the OR model in which the chances of failing were regressed on intelligence and the other covariates of the study. The overall model OR model in which the chances of failing were regressed on intelligence and the other covariates of the study was not significant, $p = .810$. Therefore, failing appears to be

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independent of the intelligence level of the student, after controlling for the covariates of marital status, age, nationality, and gender.

Table 2: *Logistic Regression of Failing Likelihood on Intelligence*

```
Logistic regression                               Number of obs     =         57
                                                  LR chi2(4)        =       1.59
                                                  Prob > chi2       =     0.8100
Log likelihood = -13.686732                       Pseudo R2         =     0.0550
```

fail	Odds Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]
intel	1.275039	.421591	0.73	0.462	.6669204	2.437658
ystudy						
first	1	(empty)				
second	2.897867	4.496511	0.69	0.493	.1384526	60.6535
third	1	(omitted)				
fourth	1	(empty)				
nat						
Non Kuwaiti	2.270226	2.516167	0.74	0.459	.2586152	19.92894
marital						
Married	2.508181	4.052939	0.57	0.569	.1056605	59.53949
_cons	.0010653	.004848	-1.50	0.133	1.43e-07	7.962166

In the second OR model for RQ1, it was found that intelligence did not influence the chances of having an excellent GPA, *OR* = 1.063, *p* = .787. In addition, none of the covariates included in the second OR model for RQ1 were significant. Table 3 below contains the results of the OR model in which the chances of excellent performance were regressed on intelligence and the other covariates of the study. The overall model OR model in which the chances of excellent performance were regressed on intelligence and the other covariates of the study was not significant, *p* = .178. Therefore, excellent performance appears to be independent of the intelligence level of the student, after controlling for the covariates of marital status, age, nationality, and gender.

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Table 3: *Logistic Regression of Excellent Performance Likelihood on Intelligence*

```
Logistic regression                             Number of obs     =         68
                                                LR chi2(5)        =       7.62
                                                Prob > chi2       =     0.1783
Log likelihood = -20.819339                     Pseudo R2         =     0.1547
```

excel	Odds Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]
intel	1.063364	.2423588	0.27	0.787	.6802653	1.662207
ystudy						
first	1	(empty)				
second	.1488925	.1549349	-1.83	0.067	.0193699	1.144507
third	.159448	.1623051	-1.80	0.071	.0216853	1.172393
fourth	1	(omitted)				
nat						
Non Kuwaiti	.4190159	.4174216	-0.87	0.383	.0594658	2.952524
marital						
Married	2.492606	2.364233	0.96	0.336	.38841	15.99621
_cons	.224596	.6620295	-0.51	0.612	.0006956	72.51757

Note: _cons estimates baseline odds.

In the third OR model for RQ1, it was found that intelligence did not influence the chances of having an above-average GPA, *OR* = 0.940, *p* = .649. In addition, none of the covariates included in the third OR model for RQ1 were significant. Table 4 below contains the results of the OR model in which the chances of above-average performance were regressed on intelligence and the other covariates of the study. The overall model OR model in which the chances of above-average performance were regressed on intelligence and the other covariates of the study was not significant, *p* = .359. Therefore, above-average performance appears to be independent of the intelligence level of the student, after controlling for the covariates of marital status, age, nationality, and gender.

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Table 4: *Logistic Regression of Above-Average Performance Likelihood on Intelligence*

```
Logistic regression                             Number of obs     =         90
                                                LR chi2(6)        =       6.61
                                                Prob > chi2       =     0.3585
Log likelihood = -53.263438                     Pseudo R2         =     0.0584
```

avg	Odds Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]
intel	.9402217	.1271956	-0.46	0.649	.7212363	1.225697
ystudy						
second	1.4635	.8767654	0.64	0.525	.4523221	4.73519
third	1.60974	1.089509	0.70	0.482	.4272111	6.065529
fourth	2.833039	2.614886	1.13	0.259	.4640838	17.29453
nat						
Non Kuwaiti	2.888272	1.819642	1.68	0.092	.8401799	9.928966
marital						
Married	1.331102	.8055995	0.47	0.637	.4064934	4.358821
_cons	2.218698	3.649736	0.48	0.628	.0882836	55.75915

Note: _cons estimates baseline odds.

Therefore, the null hypothesis for RQ1 could not be rejected. There appeared to be no relationship between intelligence and GPA.

RQ2 Data Analysis

The second research question of the study was as follows: Is there a statistically significant effect of aptitude on GPA? In the first OR model for RQ2, it was found that aptitude did not influence the chances of having a failing GPA, *OR* = 0.890, *p* = .642. In addition, none of the covariates included in the first OR model for RQ2 were significant. Table 5 below contains the results of the OR model in which the chances of failing were regressed on aptitude and the other covariates of the study. The overall model OR model in which the chances of failing were regressed on aptitude and the other covariates of the study was not significant, *p* = .872. Therefore, failing appears to be independent of the aptitude level of the student, after controlling for the covariates of marital status, age, nationality, and gender.

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Table 5: *Logistic Regression of Failing Likelihood on Aptitude*

```
Logistic regression                             Number of obs     =         57
                                                LR chi2(4)        =       1.23
                                                Prob > chi2       =     0.8724
Log likelihood = -13.866061                     Pseudo R2         =     0.0426
```

fail	Odds Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]
apt	.8898695	.2235361	-0.46	0.642	.5438807	1.455958
ystudy						
first	1	(empty)				
second	2.948442	4.535301	0.70	0.482	.1446346	60.10533
third	1	(omitted)				
fourth	1	(empty)				
nat						
Non Kuwaiti	1.876138	2.029076	0.58	0.561	.2252558	15.62622
marital						
Married	2.690338	4.244045	0.63	0.530	.1221869	59.23644
_cons	.0889613	.3063699	-0.70	0.482	.0001042	75.96534

Note: _cons estimates baseline odds.

In the second OR model for RQ2, it was found that aptitude did not influence the chances of having an excellent GPA, *OR* = 0.910, *p* = .637. In addition, none of the covariates included in the second OR model for RQ2 were significant. Table 6 below contains the results of the OR model in which the chances of excellent performance were regressed on aptitude and the other covariates of the study. The overall model OR model in which the chances of excellent performance were regressed on aptitude and the other covariates of the study was not significant, *p* = .170. Therefore, excellent performance appears to be independent of the aptitude level of the student, after controlling for the covariates of marital status, age, nationality, and gender.

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Table 6: *Logistic Regression of Excellent Performance Likelihood on Aptitude*

```
Logistic regression                               Number of obs     =         68
                                                  LR chi2(5)        =       7.77
                                                  Prob > chi2       =     0.1695
Log likelihood = -20.746187                       Pseudo R2         =     0.1577
```

excel	Odds Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]
apt	.9088532	.1840816	-0.47	0.637	.6110674	1.351756
ystudy						
first	1	(empty)				
second	.1549936	.1619419	-1.78	0.074	.0199964	1.201364
third	.1564849	.1596076	-1.82	0.069	.0211975	1.155208
fourth	1	(omitted)				
nat						
Non Kuwaiti	.3694513	.3812692	-0.96	0.335	.0488796	2.792458
marital						
Married	2.694976	2.627282	1.02	0.309	.3987809	18.21275
_cons	1.485562	3.740118	0.16	0.875	.0106873	206.4974

Note: _cons estimates baseline odds.

In the third OR model for RQ2, it was found that aptitude did not influence the chances of having an above-average GPA, *OR* = 0.842, *p* = .157. In addition, none of the covariates included in the third OR model for RQ2 were significant. Table 7 below contains the results of the OR model in which the chances of above-average performance were regressed on aptitude and the other covariates of the study. The overall model OR model in which the chances of above-average performance were regressed on aptitude and the other covariates of the study was not significant, *p* = .203. Therefore, above-average performance appears to be independent of the aptitude level of the student, after controlling for the covariates of marital status, age, nationality, and gender.

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Table 7: *Logistic Regression of Above-Average Performance Likelihood on Aptitude*

```
Logistic regression                             Number of obs     =         90
                                                LR chi2(6)        =       8.52
                                                Prob > chi2       =     0.2027
Log likelihood =  -52.31041                     Pseudo R2         =     0.0753
```

avg	Odds Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]
apt	.8416679	.1025342	-1.41	0.157	.6628955	1.068652
ystudy						
second	1.643399	1.003594	0.81	0.416	.4965121	5.439464
third	1.598872	1.08381	0.69	0.489	.423466	6.036826
fourth	2.854662	2.659813	1.13	0.260	.4596774	17.72786
nat						
Non Kuwaiti	2.877423	1.827416	1.66	0.096	.8287355	9.990595
marital						
Married	1.444693	.8851413	0.60	0.548	.4347678	4.80058
_cons	8.323272	12.6655	1.39	0.164	.4217184	164.2728

Note: _cons estimates baseline odds.

Therefore, the null hypothesis for RQ2 could not be rejected. There appeared to be no relationship between aptitude and GPA.

RQ3 Data Analysis

The third research question of the study was as follows: Is there a statistically significant effect of personality on GPA? In the first OR model for RQ3, it was found that personality did not influence the chances of having a failing GPA, *OR* = 1.290, *p* = .410. In addition, none of the covariates included in the first OR model for RQ3 were significant. Table 8 below contains the results of the OR model in which the chances of failing were regressed on personality and the other covariates of the study. The overall model OR model in which the chances of failing were regressed on personality and the other covariates of the study was not significant, *p* = .782. Therefore, failing appears to be independent of the personality level of the student, after controlling for the covariates of marital status, age, nationality, and gender.

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Table 8: *Logistic Regression of Failing Likelihood on Personality*

```
Logistic regression                             Number of obs     =         57
                                                LR chi2(4)        =       1.75
                                                Prob > chi2       =     0.7823
Log likelihood = -13.610258                     Pseudo R2         =     0.0603
```

fail	Odds Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]
pers	1.289353	.397484	0.82	0.410	.7046317	2.359293
ystudy						
first	1	(empty)				
second	3.552145	5.545186	0.81	0.417	.1666081	75.73303
third	1	(omitted)				
fourth	1	(empty)				
nat						
Non Kuwaiti	1.975124	2.130215	0.63	0.528	.2385365	16.35437
marital						
Married	2.988629	4.734529	0.69	0.490	.1339722	66.66981
_cons	.0008333	.0036877	-1.60	0.109	1.42e-07	4.873064

```
Note: _cons estimates baseline odds.
```

In the second OR model for RQ3, it was found that personality did not influence the chances of having an excellent GPA, *OR* = 0.650, *p* = .071. In addition, being in the second year (*OR* = 0.060 and third year (*OR* = .098) were significantly associated with lower chances of having an excellent GPA. Table 9 below contains the results of the OR model in which the chances of excellent performance were regressed on personality and the other covariates of the study. The overall model OR model in which the chances of excellent performance were regressed on personality and the other covariates of the study was significant, *p* = .046. However, excellent performance appears to be independent of the personality level of the student, after controlling for the covariates of marital status, age, nationality, and gender.

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Table 9: *Logistic Regression of Excellent Performance Likelihood on Personality*

Logistic regression — Number of obs = 68; LR chi2(5) = 11.26; Prob > chi2 = 0.0464; Log likelihood = -18.999386; Pseudo R2 = 0.2286

excel	Odds Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]
pers	.6496957	.1550244	-1.81	0.071	.4070091	1.037088
ystudy						
first	1	(empty)				
second	.0602129	.0766828	-2.21	0.027	.0049621	.730664
third	.0980184	.1107864	-2.05	0.040	.0106961	.8982308
fourth	1	(omitted)				
nat						
Non Kuwaiti	.5162097	.5518792	-0.62	0.536	.063505	4.196089
marital						
Married	2.010887	2.041855	0.69	0.491	.2748386	14.71288
_cons	121.1377	381.1444	1.52	0.127	.2541453	57739.99

Note: _cons estimates baseline odds.

In the third OR model for RQ3, it was found that personality did not influence the chances of having an above-average GPA, *OR* = 0.888, *p* = .357. In addition, none of the covariates included in the third OR model for RQ3 were significant. Table 10 below contains the results of the OR model in which the chances of above-average performance were regressed on personality and the other covariates of the study. The overall model OR model in which the chances of above-average performance were regressed on personality and the other covariates of the study was not significant, *p* = .250. Therefore, above-average performance appears to be independent of the personality level of the student, after controlling for the covariates of marital status, age, nationality, and gender.

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Table 10: *Logistic Regression of Above-Average Performance Likelihood on Personality*

```
Logistic regression                             Number of obs     =         89
                                                LR chi2(6)        =       7.84
                                                Prob > chi2       =     0.2499
Log likelihood =  -52.25544                     Pseudo R2         =     0.0698
```

avg	Odds Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]
pers	.8882204	.1142633	-0.92	0.357	.690271	1.142936
ystudy						
second	1.443661	.8881423	0.60	0.551	.4323192	4.820873
third	1.654229	1.127812	0.74	0.460	.434778	6.293956
fourth	3.234422	3.012303	1.26	0.208	.521255	20.06981
nat						
Non Kuwaiti	3.165499	2.016832	1.81	0.071	.908065	11.03488
marital						
Married	1.336123	.8124868	0.48	0.634	.4057301	4.400033
_cons	4.205253	6.957336	0.87	0.385	.1642596	107.6598

Note: _cons estimates baseline odds.

Therefore, the null hypothesis for RQ3 could not be rejected. There appeared to be no relationship between personality and GPA.

RQ4 Data Analysis

The fourth research question of the study was as follows: Is there a statistically significant effect of motivation and attitude on GPA? In the first OR model for RQ4, it was found that motivation and attitude did not influence the chances of having a failing GPA, *OR* = 0.690, *p* = .297. In addition, none of the covariates included in the first OR model for RQ4 were significant. Table 11 below contains the results of the OR model in which the chances of failing were regressed on motivation and attitude and the other covariates of the study. The overall model OR model in which the chances of failing were regressed on motivation and attitude and the other covariates of the study was not significant, *p* = .703. Therefore, failing appears to be independent of the motivation and attitude level of the student, after controlling for the covariates of marital status, age, nationality, and gender.

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Table 11: *Logistic Regression of Failing Likelihood on Motivation and Attitude*

```
Logistic regression                             Number of obs     =         57
                                                LR chi2(4)        =       2.18
                                                Prob > chi2       =     0.7029
Log likelihood = -13.393875                     Pseudo R2         =     0.0752
```

fail	Odds Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]
mot	.6903337	.2451116	-1.04	0.297	.3442146	1.384487
ystudy						
first	1	(empty)				
second	3.338245	5.159549	0.78	0.435	.1614031	69.04378
third	1	(omitted)				
fourth	1	(empty)				
nat						
Non Kuwaiti	2.191615	2.391901	0.72	0.472	.2580915	18.61037
marital						
Married	3.589675	5.800172	0.79	0.429	.151248	85.19629
_cons	.8191779	2.979062	-0.05	0.956	.0006574	1020.703

```
Note: _cons estimates baseline odds.
```

In the second OR model for RQ4, it was found that motivation and attitude did not influence the chances of having an excellent GPA, *OR* = 1.106, *p* = .663. In addition, none of the covariates included in the second OR model for RQ4 were significant. Table 12 below contains the results of the OR model in which the chances of excellent performance were regressed on motivation and attitude and the other covariates of the study. The overall model OR model in which the chances of excellent performance were regressed on motivation and attitude and the other covariates of the study was not significant, *p* = .171. Therefore, excellent performance appears to be independent of the motivation and attitude level of the student, after controlling for the covariates of marital status, age, nationality, and gender.

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Table 12: *Logistic Regression of Excellent Performance Likelihood on Motivation and Attitude*

```
Logistic regression                               Number of obs     =         68
                                                  LR chi2(5)        =       7.74
                                                  Prob > chi2       =     0.1711
Log likelihood = -20.759547                       Pseudo R2         =     0.1572
```

excel	Odds Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]
mot	1.106112	.256096	0.44	0.663	.702622	1.74131
ystudy						
first	1	(empty)				
second	.1349386	.1433802	-1.89	0.059	.0168145	1.082899
third	.1475672	.153142	-1.84	0.065	.0193033	1.128101
fourth	1	(omitted)				
nat						
Non Kuwaiti	.4341202	.4334697	-0.84	0.403	.0613315	3.072812
marital						
Married	2.470893	2.343923	0.95	0.340	.3849395	15.86044
_cons	.1708768	.4336202	-0.70	0.486	.0011821	24.70062

Note: _cons estimates baseline odds.

In the third OR model for RQ4, it was found that motivation and attitude did not influence the chances of having an above-average GPA, *OR* = 1.086, *p* = .527. In addition, none of the covariates included in the third OR model for RQ4 were significant. Table 13 below contains the results of the OR model in which the chances of above-average performance were regressed on motivation and attitude and the other covariates of the study. The overall model OR model in which the chances of above-average performance were regressed on motivation and attitude and the other covariates of the study was not significant, *p* = .340. Therefore, above-average performance appears to be independent of the motivation and attitude level of the student, after controlling for the covariates of marital status, age, nationality, and gender.

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Table 13: *Logistic Regression of Above-Average Performance Likelihood on Motivation and Attitude*

```
Logistic regression                             Number of obs     =         90
                                                LR chi2(6)        =       6.80
                                                Prob > chi2       =     0.3395
Log likelihood = -53.166754                     Pseudo R2         =     0.0601
```

avg	Odds Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]
mot	1.086164	.141938	0.63	0.527	.8407408	1.403231
ystudy						
second	1.352795	.8228211	0.50	0.619	.4106756	4.456203
third	1.483894	1.013876	0.58	0.564	.3888808	5.662253
fourth	2.721207	2.503374	1.09	0.277	.4484343	16.51294
nat						
Non Kuwaiti	2.97282	1.875973	1.73	0.084	.8630281	10.24029
marital						
Married	1.325159	.800999	0.47	0.641	.4052797	4.332923
_cons	.4713018	.6524926	-0.54	0.587	.0312504	7.107925

Note: _cons estimates baseline odds.

Therefore, the null hypothesis for RQ4 could not be rejected. There appeared to be no relationship between motivation and attitude and GPA.

RQ5 Data Analysis

The fifth research question of the study was as follows: Is there a statistically significant effect of beliefs on GPA? In the first OR model for RQ5, it was found that beliefs did not influence the chances of having a failing GPA, *OR* = 0.696, *p* = .310. In addition, none of the covariates included in the first OR model for RQ5 were significant. Table 14 below contains the results of the OR model in which the chances of failing were regressed on beliefs and the other covariates of the study. The overall model OR model in which the chances of failing were regressed on beliefs and the other covariates of the study was not significant, *p* = .705. Therefore, failing appears to be independent of the beliefs level of the student, after controlling for the covariates of marital status, age, nationality, and gender.

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Table 14: *Logistic Regression of Failing Likelihood on Beliefs*

```
Logistic regression                             Number of obs     =         57
                                                LR chi2(4)        =       2.17
                                                Prob > chi2       =     0.7049
Log likelihood = -13.399401                     Pseudo R2         =     0.0748
```

fail	Odds Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]
bel	.6963901	.248156	-1.02	0.310	.3463619	1.400152
ystudy						
first	1	(empty)				
second	3.136176	4.303478	0.83	0.405	.2129988	46.17679
third	1	(omitted)				
fourth	1	(empty)				
nat						
Non Kuwaiti	1.954189	2.140434	0.61	0.541	.2283708	16.72216
marital						
Married	2.813268	4.073284	0.71	0.475	.1647291	48.0454
_cons	1.061243	4.186208	0.02	0.988	.0004657	2418.168

Note: _cons estimates baseline odds.

In the second OR model for RQ5, it was found that beliefs did not influence the chances of having an excellent GPA, *OR* = 0.930, *p* = .793. In addition, none of the covariates included in the second OR model for RQ5 were significant. Table 15 below contains the results of the OR model in which the chances of excellent performance were regressed on beliefs and the other covariates of the study. The overall model OR model in which the chances of excellent performance were regressed on beliefs and the other covariates of the study was not significant, *p* = .179. Therefore, excellent performance appears to be independent of the beliefs level of the student, after controlling for the covariates of marital status, age, nationality, and gender.

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Table 15: *Logistic Regression of Excellent Performance Likelihood on Beliefs*

```
Logistic regression                               Number of obs     =         68
                                                  LR chi2(5)        =       7.62
                                                  Prob > chi2       =     0.1786
Log likelihood = -20.821493                       Pseudo R2         =     0.1546
```

excel	Odds Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]
bel	.9298491	.2574392	-0.26	0.793	.5404403	1.599842
ystudy						
first	1	(empty)				
second	.1412009	.1483923	-1.86	0.063	.0180005	1.107621
third	.1505965	.157897	-1.81	0.071	.0192908	1.175656
fourth	1	(omitted)				
nat						
Non Kuwaiti	.393047	.3958604	-0.93	0.354	.0545946	2.82969
marital						
Married	2.533087	2.393572	0.98	0.325	.3974938	16.14247
_cons	1.143992	3.889632	0.04	0.968	.0014598	896.5036

Note: _cons estimates baseline odds.

In the third OR model for RQ5, it was found that beliefs did not influence the chances of having an above-average GPA, *OR* = 0.894, *p* = .422. In addition, none of the covariates included in the third OR model for RQ5 were significant. Table 16 below contains the results of the OR model in which the chances of above-average performance were regressed on beliefs and the other covariates of the study. The overall model OR model in which the chances of above-average performance were regressed on beliefs and the other covariates of the study was not significant, *p* = .316. Therefore, above-average performance appears to be independent of the beliefs level of the student, after controlling for the covariates of marital status, age, nationality, and gender.

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Table 16: *Logistic Regression of Above-Average Performance Likelihood on Beliefs*

```
Logistic regression                               Number of obs     =         90
                                                  LR chi2(6)        =       7.05
                                                  Prob > chi2       =     0.3158
Log likelihood = -53.040601                       Pseudo R2         =     0.0624
```

avg	Odds Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]
bel	.8942656	.124354	-0.80	0.422	.6809275	1.174444
ystudy						
second	1.627666	1.009178	0.79	0.432	.4828445	5.486853
third	1.641211	1.116449	0.73	0.466	.4326397	6.225904
fourth	3.197198	3.005572	1.24	0.216	.506507	20.18151
nat						
Non Kuwaiti	2.790007	1.764533	1.62	0.105	.8077276	9.637082
marital						
Married	1.348382	.8224105	0.49	0.624	.4079857	4.456369
_cons	3.55222	5.514427	0.82	0.414	.1694744	74.45531

Note: _cons estimates baseline odds.

Therefore, the null hypothesis for RQ5 could not be rejected. There appeared to be no relationship between beliefs and GPA.

DISCUSSION AND CONCLUSION

English continues to be the most frequently studied L2 in the world (Alyousef, 2006, Chao and Mantero, 2014, Heo et al., 2012). As such, examining the performance of students approaching English as an L2 offers insights that might of use to many students, teachers, and educational leaders all over the world. Theoretically, the main focus of the current study was on examining the explanatory power of the *g* factor of general intelligence versus multiple intelligences theory through a correlation of five aspects of L2 competence with GPA among a sample of 94 Kuwaiti students of English as an L2. Although the study did not result in any statistically significant findings, the absence of such findings itself constitutes support for multiple intelligences theory as applied to L2 learning and performance at a post-secondary setting in a non-Anglophonic country. As noted in the review of literature, the cornerstone of multiple intelligences theory is the claim that performance in distinct domains of human intelligence (including, but not limited to, the domains of languages, music, and mathematics) are not necessarily correlated with each other. If multiple intelligences theory is correct with reference to the performance of non-Anglophone students at the postsecondary level in Kuwait, then the underlying competencies of English L2 skill will not necessarily be correlated with overall academic performance. The findings of the current study aligned with this particular prediction based on multiple intelligences theory.

The findings are of interest to educational practitioners and theorists, L2 pedagogy experts, and cognitive psychologists. While English L2 performance is a goal to be assiduously pursued in

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countries such as Kuwait—because of the global prestige as well as cultural and scientific importance of English—its attainment does not necessary mean that English L2 students are thereby deriving cognitive benefits that can be applied to other academic domains. Performance at English as an L2 does not necessarily predict success in the general curriculum; therefore, both educators and students have to continue to ensure that sufficient attention is paid to domain-specific academic development.

Future studies on this topic should be carried out. In such studies, scholars could consider (a) treating GPA as a continuous rather than polytomous variable and (b) adjusting overall GPA so as to remove the contribution of English as an L2 on GPA. Taking step (b) is a means of increasing the internal validity of inferences about the relationship, or absence of a relationship, between the components of English L2 skill and overall academic performance, as, otherwise, there is a possible problem of endogeneity. Taking step (a) allows the application of regression models as opposed to logistic models.

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