Text Familiarity, Reading Tasks, and ESP Test Performance: a Study on Iranian LEP and Non-LEP University Students

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Abstract

In a study of the effects of text familiarity, task type, and language proficiency on university students' LSP test and task performances, 541 senior and junior university students majoring in electronics took the TBRT (Task-Based Reading Test). Variance analyses indicated that text familiarity, task type, and language proficiency, as well as the interaction between any given pair of these and among all of them resulted in significant differences in subjects' overall and differential test and task performances. In addition, regression analyses revealed that the greatest influence on subjects' overall and differential test and task performance was due to language proficiency. The implications of the study are discussed.

Key words: text familiarity, task, language proficiency, LSP, task performance, test.

INTRODUCTION

Over the past two decades, there have been several studies into the effect of background knowledge on LSP test performance. According to Caroline Clapham (1996), three articles by Alderson and Urquhart (1983, 1985a, and 1985b) aroused considerable interest and led to several follow-up studies. These articles described three studies carried out with students attending English classes in Britain in preparation for going to British universities. In each, Alderson and Urquhart compared students' scores on reading texts related to their

own field of study with those on texts in other subject areas. The students' scores on the modules were somewhat contradictory. On the one hand, for example, science and engineering students taking the technology module of ELTS did better than the business and economics students who took the same test, and as well as the liberal arts students, although their language proficiency was lower. On the other hand, the business and economics students did no better than the science and engineering group on the social studies module. Alderson and Urquhart concluded that background knowledge had some effect on test scores, but that this was not consistent, and that future studies should take account of linguistic proficiency and other factors as well.

Along the same lines, Clapham goes on, Shoham, Peretz, and Vorhaus (1987) concluded that, while students in the biological and physical sciences did better at the scientific texts, the humanities and social science students did not do better on the test in their own subject area. In a similar study, Peretz and Shoham (1990) had similar results. Their explanation for this was that the texts were only indirectly related to the students' specialized fields of study, and suggested that this might support Lipson's (1984) contention that 'a totally unfamiliar text is often easier to comprehend than a text with a partially familiar content'. Clapham believes that this contention of Lipson was indeed radical. "If supported by further research, it would be an almost unassailable reason for dropping ESP testing. If Lipson's idea were taken to its logical conclusion, of course, proficiency tests would have to contain materials outside any candidates experience. The JMB (Joint Matriculation Board) University Test in English for Speakers of Other Languages followed just such an approach, with passages in esoteric subjects such as silver markings and heraldic devices. As a result, item writers had difficulty finding suitable texts and the ensuing materials were often excessively dull" (Clapham, 1996: 8).

So we decided to determine if the picture was that simple. The main aims of our study can be categorized into four classes: (a) to illustrate if LSP reading test and task performance are related to language proficiency, to show if task type is related to LSP reading test performance, (c) to determine if text-familiarity (operationally defined

in this study to refer to prior knowledge of the propositional content of texts) affects LSP reading test and task performance, and (d) to determine which factor (text familiarity, task type, language proficiency) was responsible for a greater portion of students' score variance.

METHODOLOGY

Subjects

The population from which the subjects of the present study were drawn included the junior and senior students majoring in electronics at three Iranian universities: University of Shiraz, Shahid Bahonar University of Kerman, and Azad University of Bushehr. These students took the sample version of the IELTS (University of Cambridge Local Examinations Syndicate, 2000). They were then classified into four proficiency groups: proficient (93 people), fairly proficient (186 people), semi-proficient (164 people), and non-proficient (98 people). The mean and the standard deviation of the IELTS were used as the criterion for the classification of subjects. Subjects who had scored higher than 'mean-plus-one' standard deviation were assigned to the proficient group. Through the same procedure, subjects who stood within the 'mean-plus-one' standard deviation range were assigned to the fairly proficient group. The semi-proficient group included the subjects whose scores on the IELTS fell within the mean-minus-one standard deviation range. Finally, the subjects who had scored below the mean-minus-one standard deviation range were assigned to the non-proficient group. The total number of the subjects who took part in this study was 541 people.

Instruments

Three different instruments were used in the present study: (1) The sample version of the IELTS General Training Reading Module (UCLES, 2000), (2) a Self-report Questionnaire, and (3) the TBRT (AM, EM, and GM Modules).

One of the steps of the present study was to assess the subjects' level of proficiency. We had to decide to which proficiency group the

subjects belonged. A further problem was that the subjects' "reading comprehension" ability was in the focus of the study. In other words, our job was not only to identify the subjects' level of proficiency but to do so on the basis of their reading comprehension ability. It was, therefore, decided that the IELTS should be administered since it was considered to be the most suitable instrument due to its 'modularity' claims (UCLES, 2000). In addition to its importance in the classification of the subjects of the study into different proficiency levels, the IELTS was also used for the validation of the main instrument of our research, the TBRT. The correlation between each module within the TBRT test and the IELTS General Training Reading Module was used as the validity coefficient for that module.

As it was mentioned earlier, text familiarity was one of the "independent variables" of our study. We had to determine whether the subjects had any prior familiarity with the propositional content of the texts that appeared in the different modules (AM, EM, and GM) of the TBRT. To this end, two steps were taken: administration of a Self-report Questionnaire through which the subjects could indicate their degree of text familiarity with each text, and selection of the texts for inclusion in the TBRT on the basis of "text familiarity cline." We, therefore, developed and administered a Self-report Questionnaire to determine subjects' distribution over the text familiarity cline. This questionnaire was composed of 20 items through which the subjects indicated their degree of familiarity with the propositional content of each of the five passages that appeared in each of the TBRT modules. To ensure subjects' maximum understanding, the questionnaire was written in the subjects' native language, Farsi.

The major instrument used in the present study was a Task-Based Reading Test (TBRT) with three modules: (a) the electronics module (TBRT-EM), (b) the accounting module (TBRT-AM), and (c) the general module (TBRT-GM). Each module consisted of 40 items that measured subjects' performance of five reading tasks: true-false task, sentence-completion task, outlining task, writer's-view task, and skimming task. Each module consisted of five passages of varying lengths, textual complexity, and readability indexes. However, the texts that appeared in the different module where chosen in such a

way as to ensure maximum correspondence to the IELTS General Training Reading Module (UCLES, 2000) in terms of such textual features as readability, structural complexity, etc. In addition to readability analysis, nine university instructors who are experienced teachers of ESP courses at the University of Shiraz, Shahid Bahonar University of Kerman, and Azad University of Bushehr were asked to judge whether the texts were of the suitable level of difficulty for the prospective subjects.

The texts that appeared in the TBRT-EM were all taken from the content areas that junior and senior university students majoring in electronics had already studied as part of their academic courses. They included five topics: (a) magnetic flux, (b) vacuum tube diodes, (c) bridge circuits, (d) incandescent lamps, and (e) digital and analog computers. Since the subjects of the present study were all majoring in electronics, the passages within this module were chosen to be totally familiar for them. In the same vein, the TBRT-AM module included five texts. This time, the texts were selected from the materials that were part of the academic courses of university students majoring in accounting. They included the following five topics: (a) chain stores, (b) interest, (c) clearinghouses, (d) assets and liabilities, and (e) corporate finance. It is noteworthy that, since the subjects of the present study were all majoring in electronics, the texts within the TBRT-AM module were judged totally unfamiliar for them. The same procedures were used in the selection of the passages that appeared in the TBRT-GM module. Unlike the two other modules, the texts within this module were expected to contain propositional content with which the subjects of the present study reported partially familiar. Five passages were selected from the Encyclopedia Encarta computer package. These texts included such general-digest topics as (a) natural hazards, (b) national parks and sanctuaries, (c) the sensory system of sharks, (d) classification of airplanes, and (e) mission to moon. After the selection of the texts, each TBRT module was developed in such a way as to resemble the IELTS General Training Reading Module (UCLES, 2000).

We decided that each module within the TBRT should include no more than 40 items, the same number of items as appearing in the IELTS General Training Reading Module. Moreover, the items were supposed to measure the performance of the subjects on five different tasks. The first group that measured subjects' performance of true-false tasks included twelve items. Each item was followed by three answers: true, false, and not given. The subjects were expected to read the corresponding passages and to decide whether the propositions expressed in the true-false items were given in the passage or not, and if yes, to make their own choice whether the items were true or false. The second set of items in each module was aimed at measuring the subjects' performance of sentence completion tasks. The items in this set were eight open-ended sentences which could be completed in two ways. Following this set of items was a list of possible endings. The subjects' task was to read the corresponding passage and, on the basis of the information presented in the passage, to choose two possible endings from the list to complete each item. A third group of items measured the subjects' performance of outlining tasks. This category included six items. The subjects were expected to read a passage. Each paragraph within the passage was labeled with a letter from the English alphabet. The subjects were expected to choose from among a list of summaries the one that best represented the propositions expressed in each paragraph. They would then match the summary for each paragraph with the label that signified that paragraph. Subjects' performance of the task of "identifying the writer's views" was also measured. Five multiple-choice items followed a passage in each module. Each item had three choices: yes, no, not given. The subjects were expected to read the passage and to decide whether the propositions expressed in these five items were given in the passage or not, and if yes, whether they represented the views of the writer of the passage or not. The last set of items measured subjects' performance of skimming tasks. The nine items of this category asked the subjects to skim the reading passage for two types of information: dates and proper nouns. The former included five items while the latter included four items. The subjects' job was to skim the reading passage and to identify the date or the proper noun that was questioned in the item.

Procedures

In order to determine whether the items that appeared in the different modules of the TBRT were effective, malfunctioning or non-functioning, it was significant that the modules be administered in a trial administration session. Since the purpose of this process was to screen the items so that the most suitable ones would be included in the final version of the TBRT, more items were included in the trial version. We included 80 items in each module, twice as much as was necessary for the final version of the TBRT. The trial version was then administered to a group of 36 university students majoring in electronics. All of the subjects took the TBRT-GM trial module first. Then the subjects were randomly assigned to two half-groups. The first half-group took the TBRT-EM trial module followed by the TBRT-AM trial module while the second half-group took the TBRT-AM trial module followed by the TBRT-EM trial module. This procedure was necessary to control for probable practice effect. The results of the administration of the TBRT trial version were then used for item analysis. After item analysis, from among the 80 items that appeared in each trial module, the 40 items that had the best item facility and item discrimination indexes were chosen for inclusion in the final version of each corresponding TBRT module.

After the development of the final version of the TBRT, in order to determine whether the TBRT reading modules were suitable for data collection, it was vital that the modules be evaluated through a pilot administration. The modules, along with the IELTS General Training Reading module (UCLES, 2000) were, therefore, administered to a group of 20 senior university students majoring in electronics. All these students took the IELTS General Training Reading and the TBRT-GM modules in one administration session, and the TBRT-EM and TBRT-AM modules in another session. To control for any probable practice effect, a counter-balanced design was used in each administration. That is, ten subjects were randomly assigned to the first-half and the ten remaining subjects to the second-half groups. In the first session, the first-half group took the IELTS General Training Reading module first followed by the TBRT-GM module whereas the

second-half group took the TBRT-GM module first followed by the IELTS General Training Reading module. In the second administration, the first-half group took the TBRT-AM followed by the TBRT-EM modules while the second-half group took the TBRT-EM followed by the TBRT-AM modules. The smallest validity coefficient, found between the TBRT-AM module and the IELTS, was 00.873. The smallest reliability index also belonged to the TBRT-AM module (i.e., 00.898, Cronbach Alpha).

The final administration of the TBRT for purposes of data collection took place in May and June 2002. A total of 578 junior and senior university students majoring in electronics took the IELTS, TBRT-AM, TBRT-GM, and TBRT-EM over a four-week period (25th May to 19th June, 2002). These subjects took the tests in three different universities: University of Shiraz, Shahid Bahonar University of Kerman, and Azad University of Bushehr. The procedure for the final administration of the tests was similar to that of the pilot administration. Here again, for purposes of minimizing any probable practice effect, a counter-balanced design was used for test administration. In addition to these tests, the subjects also responded to the items that appeared in the Self-report Questionnaire. On the basis of their responses to the Self-report Questionnaire, and due to the text-familiarity assumptions of the study, 37 incongruous subjects were discarded from the data. The reliability and validity analyses revealed that the modules had satisfactory reliability and validity indexes. The validity coefficient for TBRT-EM was 0.9477, for TBRT-AM 0.9188, and for TBRT-GM 0.9397, the reliability indexes of these modules were 0.8527, 0.8527, and 0.8628 respectively.

RESULTS AND DISCUSSION

The data were then submitted to statistical analyses including (a) frequency analyses, (b) one-way, univariate and multi-variate analyses of variance, and (c) multiple regression analyses. The results of data analyses are reported in tables 1 through 12 in the Appendix.

The comparison of subjects' test performance on test of the same level of text familiarity across different levels of proficiency revealed that subjects at each proficiency level performed significantly differently from subjects at any other proficiency level. This finding

applied to test with totally familiar, partially familiar, and totally unfamiliar propositional content. Along the same lines, the comparison of subjects' performance of different task types at the same levels of text familiarity indicated the existence of a meaningful difference between any given pair of tasks. However, there were a few exceptions. Subjects' performance of the sentence-completion task differed from their performance of any other task in all the three test types. Moreover, their performance of the true-false versus outlining and also true-false versus writer's-view tasks on tests with totally unfamiliar propositional content signified the existence of a statistically significant difference (see Table 1 in the Appendix).

The comparison of subjects' performance of the same tasks across different levels of text familiarity revealed the existence of a significant difference between any given two points on the text-familiarity cline. In addition, the comparison of subjects' performance of the same task across different levels of language proficiency signified a meaningful difference between any given two proficiency levels. The exceptions, in this case, was the semi-proficient versus non-proficient subjects' performance of the writer's-view task (see Table 2 in the Appendix).

Subjects' overall test performance as well as their overall task performance was also studied. As for their overall test performance, the difference observed across different levels of text familiarity (i.e., in tests with totally familiar, partially familiar, and totally unfamiliar propositional content) was significant. Moreover, the overall test performance of subjects across different proficiency levels indicated the existence of a meaningful difference (see Table 3 in the Appendix). The difference observed in subjects' overall task performance across different levels of proficiency was also significant. Their overall task performance across different text familiarity levels also yielded a similar result. However, the effect of task type on their overall task performance was a bit different. No significant difference was found between their performance of outlining versus writer's-view, outlining versus skimming, and writer's-view versus skimming tasks (see Table 4 in the Appendix).

A number of somewhat different analyses were performed to determine the effects of the interactions between the independent variables of the study (i.e. text familiarity, task type, and language proficiency) on subjects' test and task performance. It was found that subjects' test performance across different levels of text familiarity was not only under the influence of the main effects of language proficiency and task type, but also under the influence of the interaction effect of these two variables (See table 5 in the Appendix). Furthermore, their overall test performance was found to be significantly influenced by text familiarity, language proficiency, and the interaction between text familiarity and language proficiency (see Table 7 in the Appendix).

Interaction analyses were also conducted in connection to subjects' task performance. A study of the five different tasks in question in our investigation revealed the significant impact of text familiarity and language proficiency on subjects' performance of each task. The interaction between text familiarity and language proficiency had a somewhat different impact on subjects' task performance. The influence of this interaction on true-false and outlining tasks was significant whereas it had no significant impact on the writer's-view, skimming, and sentence-completion tasks (see Table 6 in the Appendix). It was also found that subjects' overall task performance was under the significant influence of task type, text familiarity, language proficiency, the interaction between text familiarity and language proficiency, the interaction between task type and language proficiency, the interaction between task type and text familiarity, and also the interaction among task type, text familiarity, and language proficiency (see Table 8 in the Appendix).

All the analyses reported up to this point only reveal the existence of a meaningful difference in subjects' test and task performance due to the impact of the independent variables in question (i.e., task type, language proficiency, and text familiarity). A more important undertaking is, however, the determination of the relative impact of each of these independent variables. In other words, it is of greater importance to determine which independent variable contributes more to LSP students' task and test performance scores. To answer this

question, a few multiple regression analyses were performed. The model used for each analysis was the stepwise model. In each analysis, the independent variables were entered in a stepwise additive fashion to see if the inclusion of more and more independent variables affected the impact of the previously-entered variable(s) on the dependent variable. The first analysis compared the relative impact of text familiarity and language proficiency on subjects' overall test performance. In this case, language proficiency accounted for 79.5% of the variance whereas text familiarity only accounted for 18.6% of the variance. Moreover, the exclusion of text-familiarity did not affect the relative importance of language proficiency. In addition, the tolerances for proficiency and text familiarity were 01.00 and 01.00 respectively, suggesting that multi-collinearity is unlikely. In other words, the findings are not sample-specific (see Table 9 in the Appendix).

The second regression analysis took the subjects' performance on tests with different degrees of familiar propositional content as its dependent variable. In this case, too, language proficiency was shown to have by far the strongest relationship with the results. In the context of tests with totally familiar propositional content, it accounted for 61.2% of the variance in comparison to task type (another independent variable of the study) which accounted for only 18.3% of the variance. Here again, the exclusion of the 'task type variable' did not affect the impact of proficiency. Moreover, no evidence of multi-collinearity was observed. In the context of tests with partially familiar propositional content, language proficiency and task type were found to take care of 61.2% and 15.7% of the variance, respectively. No fluctuation in the impact of language proficiency was observed due to the exclusion of task type from analysis. Here again, the tolerances for language proficiency and task type were 01.00 and 01.00 respectively, indicating the lack of multi-collinearity. In the context of tests with totally unfamiliar propositional content, too, the greatest share of variance belonged to language proficiency. While task type accounted for only 16.5% of the variance, language proficiency was found to be in charge of 61.2% of the variance. In addition, the impact of language

proficiency did not fluctuate due to the exclusion of task type. No evidence of multi-collinearity was observed either (see Table 10 in the Appendix).

The relative impacts of text familiarity, task type, and language proficiency on subjects' task performance were also studied. The greatest share of variance belonged to language proficiency. It accounted for 58% of the variance. Task type and text familiarity accounted for 15.9% and 14.1% of the variance respectively. In this connection it is noteworthy that neither the exclusion of any of the task type and text familiarity variables nor the exclusion of both of them affected the relative importance of language proficiency on subjects' task performance. Even more interesting than this was the finding that task type had a greater share of variance than text familiarity. The results also indicated that there was no evidence of multi-collinearity. This is important since it shows that the results are not sample-specific. The tolerances for language proficiency, task type, and text familiarity were 01.00, 01.00, and 01.00 respectively (see Table 11 in the Appendix).

The relative impacts of text familiarity and language proficiency on subjects' performance of each task were also studied. Once more, it was found that language proficiency had by far the strongest relationship with the results. In relation to the true-false task, language proficiency accounted for 73.4% of the variance while the share of text familiarity was not bigger than 12.4% of the variance. In addition, in relation to the sentence-completion task, language proficiency was responsible for 57.8% of the variance while text familiarity accounted for only 20.9% of the variance. In connection to the outlining task, language proficiency was found to be in charge of 5% of the variance while text familiarity accounted for 12.5% of it. Along the same lines, language proficiency accounted for 54.8% of the variance in the context of the writer's-view task. The share of text familiarity in this context was 14.1%. Finally, language proficiency accounted for 68.6% of the variance in relation to the skimming task whereas text familiarity accounted for only 16.6% of the variance (see Table 12 in the Appendix). These findings indicated that language proficiency had the greatest share of variance when the true-false task was taken into

account as the dependent variable, and the smallest share with writer's-view as the dependent variable. Text familiarity, on the other hand, left its maximum influence on the sentence-completion task and its minimum influence on the true-false task. It should also be noted that the results of regression analyses for individual reading tasks indicated the lack of multi-collinearity. The tolerances for text familiarity and language proficiency in the context of each reading task were 01.00 and 01.00 respectively. This indicates that the findings were not specific to the sample under investigation.

CONCLUSION

A comparison of the results of regression analyses of this study with the findings of Caroline Clapham's (1996) study is illustrative. While Clapham attaches greater importance to text familiarity (accounting for 38% of the variance) in comparison to language proficiency (accounting for 26% of the variance), the present investigation steps in the opposite direction: in none of the comparisons made between any given pair of the independent variables under study in relation to subjects' overall as well as differential test and task performance did language proficiency account for less than 50% of the variance. Moreover, the very high tolerance indexes reported in the study reject any chance for multi-collinearity to occur. This indicates that the findings of the present study are far from being sample-dependent. A quick look at the tolerance indexes reported in the regression tables (See tables 9 through 12 in the Appendix) reveals that, in each case, the collinearity statistic was equal to 01.00 which signifies the lack of multi-collinearity. Moreover, the effect of text familiarity on task performance was found to be smaller than the effect of task type.

On these grounds, it can safely be argued that perhaps the development and use of LSP tests is out of consideration. This has to do with the degree of the specificity of the texts which are chosen for inclusion in LSP tests. On the one hand, when texts are highly subject-area-specific, they stop to be LSP tests and adopt a "knowledge test" identity for themselves. On the other hand, with texts of lower degrees of content specificity, language proficiency exerts such a great

influence on test performance that the impact of text familiarity is almost negligible. As such, the results of our study are somewhat close to the connotation of Lipson's (1984) study that LSP testing is not really justified. Language testers are, therefore, left with two choices: (a) to redefine LSP tests to include knowledge tests, or (b) to include EGAP tests in the category of LSP tests. No matter which direction they take, the "dilemma of language testing" (that language is both the object and medium of assessment) will not stop torturing LSP tests.

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Appendix

Table 1. ANOVA results for subjects' differential test performance

Independent Variables	Levels of Text Familiarity	Levels of Independent Variables		Mean Difference	Std. Error	Sig.
Proficiency	Partially Familiar	Proficient	fairly proficient	10.6613*	.9690	.000
			semi proficient	39.1665*	.9904	.000
			non proficient	44.4820*	1.1045	.000
		fairly proficient	semi proficient	28.5052*	.8173	.000
			non proficient	33.8208*	.9523	.000
		semi proficient	non proficient	5.3155*	.9741	.000
	Unfamiliar	Proficient	fairly proficient	13.0430*	.9802	.000
			semi proficient	37.7109*	1.0019	.000
			non proficient	42.5453*	1.1173	.000
		fairly proficient	semi proficient	24.6679*	.8267	.000
			non proficient	29.5023*	.9634	.000
		semi proficient	non proficient	4.8344*	.9854	.000
	Familiar	Proficient	fairly proficient	10.6992*	.9787	.000
			semi proficient	36.9564*	1.0003	.000
			non proficient	43.2283*	1.1156	.000
		fairly proficient	semi proficient	26.2572*	.8254	.000
			non proficient	32.5290*	.9619	.000
		semi proficient	non proficient	6.2718*	.9839	.000
Task type	Partially Familiar	true-false	sentence-completion	27.4646*	1.0373	.000
			Outlining	-.9088	1.0373	.943
			writer's-view	-.9458	1.0373	.934
			Skimming	-.7856	1.0373	.966
		sentence-completion	Outlining	-28.3734*	1.0373	.000
			writer's-view	-28.4104*	1.0373	.000
			Skimming	-28.2502*	1.0373	.000
		Outlining	writer's-view	-3.6969E-02	1.0373	1.000
			Skimming	.1232	1.0373	1.000
		writer's-view	Skimming	.1602	1.0373	1.000
	Unfamiliar	true-false	sentence-completion	18.6152*	1.0493	.000
			Outlining	-4.0049*	1.0493	.006
			writer's-view	-5.4652*	1.0493	.000
			Skimming	-2.7829	1.0493	.134
		sentence-completion	Outlining	-22.6201*	1.0493	.000
			writer's-view	-24.0804*	1.0493	.000
			Skimming	-21.3981*	1.0493	.000
		Outlining	writer's-view	-1.4603	1.0493	.747

			Skimming	1.2220	1.0493 .852
		writer's-view	Skimming	2.6823	1.0493 .163
	Familiar	true-false	sentence-completion	23.5136*	1.0477 .000
			Outlining	-1.0783	1.0477 .901
			writer's-view	-2.5632	1.0477 .201
			Skimming	-3.8817*	1.0477 .008
		sentence-completion	Outlining	-24.5918*	1.0477 .000
			writer's-view	-26.0767*	1.0477 .000
			Skimming	-27.3953*	1.0477 .000
		Outlining	writer's-view	-1.4849	1.0477 .734
			Skimming	-2.8035	1.0477 .128
		writer's-view	Skimming	-1.3185	1.0477 .812

Table 2. ANOVA results for subjects' differential task performance

Independent Variables	Types of Tasks	Levels of Independent Variables		Mean Difference	Std. Error	Sig.
Text Familiarity	True-False	Partially Familiar	Unfamiliar	16.3124*	.7895	.000
			Familiar	-7.8096*	.7895	.000
		Unfamiliar	Familiar	-24.1220*	.7895	.000
	Sentence-Completion	Partially Familiar	Unfamiliar	7.4630*	1.0131	.000
			Familiar	-11.7606*	1.0131	.000
		Unfamiliar	Familiar	-19.2237*	1.0131	.000
	Outlining	Partially Familiar	Unfamiliar	13.2163*	1.1616	.000
			Familiar	-7.9791*	1.1616	.000
		Unfamiliar	Familiar	-21.1953*	1.1616	.000
	Writer's view	Partially Familiar	Unfamiliar	11.7930*	1.2367	.000
			Familiar	-9.4270*	1.2367	.000
		Unfamiliar	Familiar	-21.2200*	1.2367	.000
	Skimming	Partially Familiar	Unfamiliar	14.3151*	.9642	.000
			Familiar	-10.9057*	.9642	.000
		Unfamiliar	Familiar	-25.2208*	.9642	.000
Proficiency	True-False	Proficient	fairly proficient	9.9761*	.9521	.000
			semi proficient	42.7372*	.9731	.000
			non proficient	49.8531*	1.0853	.000
		fairly proficient	semi proficient	32.7611*	.8030	.000
			non proficient	39.8770*	.9358	.000
		semi proficient	non proficient	7.1159*	.9572	.000
	Sentence-Completion	Proficient	fairly proficient	18.1676*	1.2217	.000

		semi proficient	35.3366*	1.2487	.000
		non proficient	39.1326*	1.3926	.000
	fairly proficient	semi proficient	17.1691*	1.0304	.000
		non proficient	20.9650*	1.2007	.000
	semi proficient	non proficient	3.7959*	1.2282	.023
Outlining	Proficient	fairly proficient	9.1995*	1.4008	.000
		semi proficient	34.5492*	1.4317	.000
		non proficient	39.6582*	1.5967	.000
	fairly proficient	semi proficient	25.3497*	1.1815	.000
		non proficient	30.4586*	1.3767	.000
	semi proficient	non proficient	5.1090*	1.4082	.004
Writer's view	Proficient	fairly proficient	9.6416*	1.4914	.000
		semi proficient	37.2388*	1.5244	.000
		non proficient	38.5919*	1.7001	.000
	fairly proficient	semi proficient	27.5973*	1.2579	.000
		non proficient	28.9503*	1.4659	.000
	semi proficient	non proficient	1.3531	1.4994	.846
Skimming	Proficient	fairly proficient	10.3544*	1.1628	.000
		semi proficient	39.8612*	1.1885	.000
		non proficient	49.8570*	1.3254	.000
	fairly proficient	semi proficient	29.5068*	.9807	.000
		non proficient	39.5025*	1.1428	.000
	semi proficient	non proficient	9.9958*	1.1690	.000

Table 3. ANOVA results for subjects' overall test performance

Independent Variables	Levels of Independent Variables		Mean Difference	Std. Error	Sig.
Text Familiarity	Partially Familiar	Unfamiliar	5.2255*	.1768	.000
		Familiar	-3.8096*	.1768	.000
	Unfamiliar	Familiar	-9.0351*	.1768	.000
Proficiency	Proficient	Fairly proficient	4.6165*	.2132	.000
		semi proficient	15.4778*	.2179	.000
		non proficient	17.9092*	.2430	.000
	fairly proficient	semi proficient	10.8613*	.1798	.000
		non proficient	13.2927*	.2096	.000
	semi proficient	non proficient	2.4314*	.2144	.000

Table 4. ANOVA results for subjects' overall task performance

Independent Variables	Levels of Independent Variables		Mean Difference	Std. Error	Sig.
Language Proficiency	Proficient	fairly proficient	11.4678*	.5635	.000
		semi proficient	37.9446*	.5759	.000
		Non proficient	43.4185*	.6423	.000
	fairly proficient	semi proficient	26.4768*	.4753	.000
		Non proficient	31.9507*	.5538	.000
	semi proficient	Non proficient	5.4739*	.5665	.000
Text Familiarity	Partially Familiar	Unfamiliar	12.6199*	.4672	.000
		Familiar	-9.5764*	.4672	.000
	Unfamiliar	Familiar	-22.1963*	.4672	.000
Task Type	true-false	Sentence-completion	23.1978*	.6032	.000
		Outlining	-1.9973*	.6032	.027
		writer's-view	-2.9914*	.6032	.000
		Skimming	-2.4834*	.6032	.002
	sentence-completion	Outlining	-25.1951*	.6032	.000
		writer's-view	-26.1892*	.6032	.000
		Skimming	-25.6812*	.6032	.000
	Outlining	writer's-view	-.9940	.6032	.607
		Skimming	.4861	.6032	.957
	writer's-view	Skimming	.5080	.6032	.950

Table 5. Interaction analysis for subjects differential test performance

Source	Dependent Variable	Mean Square	F	Sig.
Proficiency (1)	Partially Familiar	275682.262*	947.165	.000
	Unfamiliar	233927.448*	785.376	.000
	Familiar	248899.667*	838.271	.000
Task type (2)	Partially Familiar	73220.194*	251.564	.000
	Unfamiliar	44793.646*	150.388	.000
	Familiar	59341.536*	199.857	.000
Interaction (1) + (2)	Partially Familiar	2347.493*	8.065	.000
	Unfamiliar	2185.503*	7.337	.000
	Familiar	2170.546*	7.310	.000

Table 6. Interaction analysis for subjects' differential task performance

Source	Dependent Variable	Mean Square	F	Sig.
Text Familiarity (1)	True-False	69682.042*	413.288	.000
	Sentence-Completion	46153.976*	166.256	.000
	Outlining	54688.384*	149.847	.000
	Writer's view	55967.075*	135.271	.000
	Skimming	77264.363*	307.242	.000
Proficiency (2)	True-False	212142.852*	1258.229	.000
	Sentence-Completion	103412.604*	372.514	.000
	Outlining	131119.928*	359.272	.000
	Writer's view	138393.817*	334.493	.000
	Skimming	194734.759*	774.363	.000
Interaction (1) + (2)	True-False	800.066*	4.745	.000
	Sentence-Completion	248.732	.896	.497
	Outlining	860.249*	2.357	.029
	Writer's view	602.716	1.457	.189
	Skimming	248.031	.986	.433

Table 7. Interaction analysis for subjects' overall test performance

Source	Mean Square	F	Sig.
Text Familiarity (1)	9793.119*	1158.188	.000
Proficiency (2)	25619.209*	3029.868	.000
Interaction (1) + (2)	28.283*	3.345	.003

Table 8. Interaction analysis for subjects overall task performance

Source	Mean Square	F	Sig.
Task Type (1)	174022.647*	589.351	.000
Text Familiarity (2)	297090.383*	1006.137	.000
Language Proficiency (3)	756834.714*	2563.124	.000
Interaction (1) + (2)	1666.364*	5.643	.000
Interaction (1) + (3)	5742.312*	19.447	.000
Interaction (2) + (3)	837.332*	2.836	.009
Interaction (1) + (2) + (3)	480.615*	1.628	.027

Table 9. Regression analysis for overall test performance as the dependent variable

Independent Variables	Unstandardized Coefficients	Std. Error	Standardized Coefficients	t	Sig.	Tolerance
Proficiency	6.778	.129	.795	52.691	.000	1.000
Proficiency	6.778	.122	.795	55.349	.000	1.000
Text Familiarity	1.905	.147	.186	12.989	.000	1.000

Table 10. Regression analysis for differential test performance as the dependent variable

Text Familiarity	Independent Variables	Unstandardized Coefficients	Std. Error	Standardized Coefficients	T	Sig.	Tolerance
Familiar	Proficiency	16.375	.407	.612	40.191	.000	1.000
	Proficiency	16.375	.396	.612	41.301	.000	1.000
	Task Type	3.384	.274	.183	12.345	.000	1.000
Partially Familiar	Proficiency	17.094	.418	.618	40.857	.000	1.000
	Proficiency	17.094	.410	.618	41.686	.000	1.000
	Task Type	2.998	.284	.157	10.575	.000	1.000
Unfamiliar	Proficiency	15.885	.394	.612	40.277	.000	1.000
	Proficiency	15.885	.386	.612	41.180	.000	1.000
	Task Type	2.965	.267	.165	11.116	.000	1.000

Table 11. Regression analysis for overall task performance as the dependent variable

Independent Variables	Unstandardized Coefficients	Std. Error	Standardized Coefficients	T	Sig.	Tolerance
Proficiency	16.451	.257	.580	64.118	.000	1.000
Proficiency	16.451	.252	.580	65.369	.000	1.000
Task Type	3.116	.174	.159	17.905	.000	1.000
Proficiency	16.451	.248	.580	66.406	.000	1.000
Task Type	3.116	.171	.159	18.190	.000	1.000
Text Familiarity	4.788	.297	.141	16.140	.000	1.000

Table 12. Regression analysis for differential task performance as the dependent variable

Task Type	Independent Variables	Unstandardized Coefficients	Std. Error	Standardized Coefficients	t	Sig.	Tolerance
True-False	Proficiency	19.322	.445	.734	43.449	.000	1.000
	Proficiency	19.322	.437	.734	44.174	.000	1.000
	Text Familiarity	3.905	.524	.124	7.455	.000	1.000
Sentence-Completion	Proficiency	13.620	.477	.578	28.543	.000	1.000
	Proficiency	13.620	.461	.578	29.514	.000	1.000
	Text Familiarity	5.880	.553	.209	10.641	.000	1.000
Outlining	Proficiency	15.235	.546	.570	27.895	.000	1.000
	Proficiency	15.235	.540	.570	28.212	.000	1.000
	Text Familiarity	3.990	.647	.125	6.169	.000	1.000
Writer's-View	Proficiency	15.284	.580	.548	26.368	.000	1.000
	Proficiency	15.284	.572	.548	26.743	.000	1.000
	Text Familiarity	4.713	.684	.141	6.887	.000	1.000
Skimming	Proficiency	18.794	.495	.686	37.983	.000	1.000
	Proficiency	18.794	.482	.686	39.004	.000	1.000
	Text Familiarity	5.453	.577	.166	9.450	.000	1.000

Notice: All computations are based on the 95% degree of freedom.