The Relationship between Translation Trainees' Thinking Styles and Their Translation Quality

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Abstract—**Translating is not just a single activity that is done by measure of knowing SL and TL; it is a complex work in which many factors are involved. Among all factors that affect translators' renderings, Thinking Styles are those that make more challenge for the translators. Therefore, the researcher of this quantitative correlational study tried to find out whether there was any relationship between thinking styles and translation quality of thirty B.A. Translation students at Islamic Azad University Eslamshahr Branch based on Sternberg's (1999) theory of Thinking Styles and Waddington's (2001) model D of translation quality assessment. To this end, the Thinking Styles Inventory (TSI) as a self-report twenty four-item Likert scale questionnaire and four paragraphs as the Translation Product Test (TPT) were administered consecutively to evaluate the research question. To analyze the obtained data, Pearson product-moment correlational analysis and multiple regression analysis were accomplished. Based on the results, a null hypothesis was set stating that there is not any relationship between thinking styles and Translation quality of the undergraduate Translation students. As the results of the correlation analyses conducted, this null hypothesis was rejected, because the three thinking styles targeted had a positive correlation with the participants' scores on translation quality. In addition, the results of multiple regression analysis indicated that the three thinking styles could cumulatively predict a significant amount of the variance in the participants' scores on translation quality. The findings of the present study have important implications for translation theories, assessment, and training.**

Index Terms—**translation quality, thinking styles, translation students**

I. INTRODUCTION

What is a good translation?" should be "one of the most important questions to be asked in connection with translation"(House, 1981, p. 127), "it is notoriously difficult to say why or even whether, something is a good translation". (Halliday, 2001, p. 14)

"Translation is a complex activity, involving expertise in a number of areas and skills" (Waddington, 2001, p. 2). To exchange ideas and information, translation plays a significant role in the development of knowledge from one end of the world to the other. Accordingly, it is needed to investigate and examine different facets of translation in order to improve both theory and practice in the field of Translation like other scientific fields. According to Schaffner (1998, p. 1), in discussion about translation (as product), "the question of quality has always been one of top priority".

"Translators and interpreters have long been trained informally, basically through trial and error, unstructured apprenticeship arrangements, or any of the various translating activities that accompany the study of a foreign language and culture within the Liberal Art traditions" (Baker, 2004, p. 280). Therefore, different Translation Studies (TS) scholars have investigated translator training as a route to new professional opportunities in modern language.

Mostafavi, Akbari, and Masoominezhad (2012) and Sharkas (2009) are among the most related pieces of research in this aspect of Translation field. Mostafavi, et al. (2012) in their work entitled "The Relationship between Interpersonal, Visual-Spatial Intelligences and Technical Translation Quality", published by *Journal of Research in Peace, Gender and Development*, concluded that there was a significant relationship between students' interpersonal, visual-spatial intelligence level and the quality of technical translation.

II. PURPOSE OF THE STUDY

It is obvious that translation is a complex activity and many factors are involved when a translator is translating a text. Assume, the translation trainees are of the same proficiency level in source language (SL) and almost the same in target language (TL), their translations are highly different on the part of quality.

In assessing the quality of translation, the target text (TT) is compared to the source text (ST) in order to see whether the TT is an accurate, correct, precise, faithful, or true reproduction of the ST. This comparison involves both quantitative (i.e. completeness of message transfer) and qualitative aspects (i.e. Accurate in "denotation and connotation, referentially and pragmatically". (Newmark, 1991, p.111)

During translation classes both undergraduate and graduate ones, many theories, and concepts about translation are discussed. It is emphasized by translation professors that translating is not just a single activity that is done by measure of knowing SL and TL, it is a complex work in which many factors are involved, for example, it can be true that extrovert students are better language learners than introvert. This also can prove true in the field of Translation.

We all know that psychological behaviors of people have direct effect on their educational activities and on their life styles. Consequently, these facts create questions in the mind of present researcher like, What psychological aspect of a translation may have influences on his/her translation quality or is there any relationship between thinking style of a translator and his\her translation quality that in fact, this question makes the problem of my study that is under investigation.

Among all factors that affect translators' renderings, thinking styles are those that may make more challenge for the translators. Therefore, the researchers of this study tried to find out whether there was any relationship between such factors as thinking styles and translation quality of Translation trainees. The present research made an attempt to see whether there was any relationship between thinking styles as the psychological factor and translation quality of B.A. Translation students at Islamic Azad University Eslamshahr Branch based on Sternberg's (1999) theory of Thinking Styles and Waddington's (2001) model of translation quality assessment.

According to Sternberg's thinking styles principles (1999), there is a match between styles and abilities that creates a synergy that is more than the sum of its parts. He believed that thinking styles are teachable. Therefore, the finding of this research may benefit translation trainers whose teaching translation and thinking styles will improve the quality of translations by trainees. Teachers may find the results of this research useful to get to new attitudes in teaching translation literature and procedures.

To achieve the objectives of the present study, the following question was posed:

Is there any relationship between thinking styles and translation quality of the undergraduate Translation students?

Based on the research question, the following null hypothesis was formulated:

There is not any relationship between thinking styles and Translation quality of the undergraduate Translation students.

Like all studies, this research had a number of limitations, the major one being that of gender. Since female students outnumbered males in almost all faculties of foreign languages in Iran, the researchers could not possibly select an equal number of male and female students for their study. Hence, the gender variable that might be of significance in this study was not controlled. In addition, the age of the participants was not considered as a variable, either, because the most students are within a limited age cohort.

This study intended to investigate the relationship between thinking style of translation trainees and their translation quality. Therefore, the present researcher should eliminate other factors, affecting the translating quality. In the present study, convenience sampling was adopted. Hence, the generalizability of this study to larger population might be questioned.

The first delimitation posed by the researcher in this study was that she chose a general text as the translation text that required no specific background knowledge or cultural orientation in order to minimize the effect of unfamiliarity of some students with a specific literary genre, tone, or technique. The second delimitation was that the researcher conducted both tests in one setting in order to keep the physical condition of the administration of both tests identical and remove certain intervening variables affecting the responses of the participants if they were to sit two different times for the tests.

III. METHODOLOGY

A. Participants

The total number of participants consisted of thirty male and female senior students of English Translation at B.A level who voluntarily took part in this study. It is noteworthy that the participants of this study were undergraduate Translation students of Islamic Azad University Eslamshahr Branch.

B. Instrumentation

In order to assess the relationship between Thinking Styles and Translation Quality two data collection instruments were administered consecutively. These instruments were the Thinking Styles Inventory (TSI) and a translation production Test (TPT).

Thinking Styles Inventory (TSI) was developed based on Sternberg's (1999) theory of mental self-government; the TSI is a self-report Likert scale questionnaire in which respondents rate themselves on a 7-point scale, ranging from 1 (not at all well) to 7 (extremely well), describing the way they normally carry out their tasks. The twenty-four items represent these three thinking styles completely. There are eight items, constituting one scale, which assess each style. The present study employed Persian version of the inventory.

Translation Production Test (TPT) consisted of The Snows of Kilimanjaro (Ernest Hemingway) -- Editor's Note and two first paragraphs of The Snows of Kilimanjaro's chapter one. In Fact, 4 paragraphs and 394 words in length by Stefan Pollklas (1900) was selected as the TPT. The participants were asked to translate the text into Persian in sixty

minutes and they were allowed to use dictionary, if needed. Translation production Test was administered for evaluating the participant's translation quality.

The model used in this study was a mixture of the two methods for scoring translation quality proposed by Waddington (2001) titled as Method D. According to Waddington (2001), "method D consists of combining error analysis Method B and holistic Method C in a proportion of 70/30; that is to say, Method B accounts for 70% of the total result and Method C for the remaining 30%" (p. 315). Further, before assessing the participants' translation quality, it was necessary to predetermine the score range based on which the participants' translation assignments were to be scored. Waddington himself suggested that for short texts (which was the case in the present study), a range of 80 would be more suitable, because it would let for distinguishing among the translators' performance. Therefore, a range of 80 was also adopted in the study as the score base.

The scoring process was as the following. The rater subtracted 1 score for each language error and 2 scores for each translation error from the score base of 80. The decision whether each error was a language error or a translation error was based on the recognition that the error would damage the transfer of the meaning from the SL into the TL. If the error damaged the transfer of the meaning, it was considered as translation error; otherwise, it was counted as a language error. Further, the effect of each translation error on the quality of translation was counted and the score for the effect was subtracted from the participant's whole score. The participant's score of 80 accounted for 70% of his/her final score. Then, the rater scored each participant's translation assignment again, this time holistically. The rater gave each piece of assignment a score out of 80. This second score accounted for 30% of the participant's final score. To score the participants' translation production test, both the researcher and another independent rater used the above scoring guidelines. The independent rater was asked to score the participants' translation assignments so that the inter-rater reliability of the scores could be obtained.

C. Procedure

As the first stage, the TSI was administered to the participants, and afterwards the participants were asked to answer the TPT. The time allocated to the first and the second tests was fifteen and sixty minutes. The participants filled out the Thinking Styles Inventory (TSI) that is based on Sternberg's theory of mental self-government. The TSI was a twenty-four item self-report test in which respondents rated themselves on a seven-point scale, with 1 indicating that the statement does not describe them at all and 7 indicating that the statement characterizes them extremely well. For the translation production Test (TPT), the participants were allowed to make use of the dictionary if they needed.

D. Design

The current study strived to investigate the relationship between thinking styles and translation quality. In order to evaluate the research question in the most general manner, Pearson product-moment correlational analysis and multiple regression analysis were accomplished.

Correlation coefficient is a measure of association between two variables, and it ranges between -1 and +1. If the two variables are in perfect linear relationship, the correlation coefficient will be either + 1 or -1. The sign depends on whether the variables are positively or negatively related. The correlation coefficient is 0 if there is no linear relationship between the variables. Two different types of correlation coefficients are in use. One is called the Pearson product moment correlation coefficient, and the other is called the Spearman rank correlation coefficient, which is based on the rank relationship between variables. The Pearson product-moment correlation coefficient (Pearson's r) is more widely used in measuring the association between two variables.

There were two variables in the study; thinking styles were considered as the independent variables and translation quality as the dependent variable. In this investigation, X shows for Thinking Style Questionnaire score and Y shows for Translation production test score.

E. Interrater Reliability

To make sure about the reliability of the participants' scores on translation quality, the participants' translation tests were also scored by another independent rater who was an M.A. graduate in Translation Studies. This second rater was a native speaker of the target language (Persian) and had an advanced level of the source language (English).

The two sets of the scores on translation quality (i.e., those by the researcher herself and those by the independent rater) were then submitted to Pearson correlation coefficient analysis to determine the degree of consistency between the two sets of scores. The results of the analysis indicated that these two sets of scores enjoyed a Cronbach alpha of 0.84 ($r = 0.84$). This amount was higher than the minimum cut-off point suggested which is 0.70 (Dörnyei, 2007). Therefore, it can be inferred that the participants' scores used for further analysis are a reliable measure of their translation abilities.

F. Ethical Considerations

The participants were informed about the purposes of the study and their consent was obtained, before starting the data collection procedure. To observe the ethical considerations suggested in research on Humanities and Social Sciences (e.g., Loue, 2000; Oliver, 2010), the participants were informed that their responses on the Thinking Styles

Inventory would be kept confidential. They were also told that their translation production tests would be scored anonymously and the obtained scores would be kept to the researchers alone.

IV. RESULTS OF THE STUDY

As it was mentioned before, the purpose of this study was to investigate the relationship between thinking styles and translation quality of the undergraduate students. The data collected which consisted of two series of scores, that is, scores of thinking styles and scores of translation production test were analyzed based on the related statistical computation of Pearson correlation and multiple regression. Further, the results of statistical analyses conducted to investigate the research question are reported as follows.

A. Results of Study

a. Descriptive Statistics of the Dependent and Independent Variables

In this section, the descriptive statistics for both the dependent and the independent variables are reported. For each variable, the mean score and the standard deviation of the participants' scores on that variable are presented. Table 1 indicates the descriptive statistics for the participants' translation quality. As you can see from Table 1, the participants gained a mean score of 58.44 and a standard deviation of 5.37 on the measure of translation quality.

TABLE 1
DESCRIPTIVE STATISTICS FOR THE DEPENDENT VARIABLE

Variable	Mean	Standard Deviation
Translation Quality	58.44	5.37

Table 2 indicates the participants' scores on the Thinking Styles Inventory (TSI). As the TSI consists of three subscales in term of function (i.e., Legislative, Executive, and Judicial thinking styles), Table 2 also includes the mean and the standard deviation of the participants' scores on the single subscales. As you can see from Table 2, the participants gained a mean score of 118.33 and a standard deviation of 4.27 in the whole TSI. Further, their mean scores and standard deviations on the subscales of the TSI were as the following; a mean score of 40.83 and a standard deviation of 2.91 on the Legislative Thinking Style, a mean score of 37.61 and a standard deviation of 3.16 on the Executive Thinking Style, and a mean score of 39.88 and a standard deviation of 3.04 on Judicial Thinking Style.

TABLE 2
DESCRIPTIVE STATISTICS FOR THE INDEPENDENT VARIABLES

Variable	Mean	Standard Deviation
Thinking Styles Inventory	118.33	4.27
Legislative Thinking Style	40.83	2.91
Executive Thinking Style	37.61	3.16
Judicial Thinking Style	39.88	3.04

b. Correlation between the Translation Quality and the Thinking Styles

The first statistical test used to analyze the obtained data in the present study was Pearson product-moment correlation coefficient. The participants' scores on translation quality were correlated with their scores on the Thinking Styles Inventory. Further, to see whether the participants' translation quality had any relationship with each of the thinking styles, their scores on translation quality were correlated with their scores on the Legislative Thinking Style, Executive Thinking Style, and Judicial Thinking Style. Table 3 indicates the results of correlation analyses conducted.

TABLE 3
CORRELATION COEFFICIENTS BETWEEN THE DEPENDENT AND INDEPENDENT VARIABLES

Variable	Thinking Styles Inventory	Legislative Thinking Style	Executive Thinking Style	Judicial Thinking Style
Translation Quality	0.53**	0.41**	0.47**	0.23*

*Sig. at 0.05
**Sig at 0.01

As you can see from Table 3, the participants' scores on translation quality had a positive correlation with their scores on the Thinking Styles Inventory ($r = 0.53$, $p < 0.01$). In addition, their scores on translation quality had a positive correlation with the three thinking styles of interest; i.e., the Legislative Thinking Style ($r = 0.41$, $p < 0.01$), the Executive Thinking Style ($r = 0.47$, $p < 0.01$), and the Judicial Thinking Style ($r = 0.23$, $p < 0.05$). To sum up, these results show that the participants' scores on translation quality had a positive relationship with the Thinking Styles Inventory and its subscales.

As previously mentioned, a null hypothesis was set stating that there is not any relationship between thinking styles and Translation quality of the undergraduate Translation students. As the results of the correlation analyses conducted, this null hypothesis was rejected, because the three thinking styles targeted had a positive correlation with the participants' scores on translation quality.

However, in literature on statistics in Humanities and Social Sciences, correlation analysis is usually considered as a weak tool for examining the relationship between variables. That is so, because correlation analysis only shows that

there is a relationship between two variables, but it does not tell us whether, and how much, changes in the depended variable is caused by the independent variable(s).

The above limitation in the correlation analysis was the reason why the current study has also made use of multiple regression analysis to examine the potential associations between Iranian Translation students' translation quality and their thinking styles. Multiple regression analysis is a statistical test more robust than correlation analysis, because its results show that how much variance in a dependent variable can be predicted by the presence of particular independent variables. In fact, in running multiple regression analysis, correlation analysis is usually done as a preliminary analysis to see whether the independent variables of interest deserve to be included in multiple regression analysis.

c. Results of the Multiple Regression Analysis

After all requirements for multiple regression analysis were checked, it was time to run multiple regression analysis on the obtained data to find an answer to the research question. Of different types of regression analysis in the statistics literature, Standard Multiple Regression Analysis was chosen to analyze the obtained data. Standard Multiple Regression Analysis was chosen over other types of regression analysis, because of two reasons; first, in contrast to other types of regression analysis (i.e., Stepwise Regression Analysis and Hierarchical Regression Analysis), it makes no beforehand assumptions about the relative influence of the independent variables on the dependent variable. This is particularly important, when we do not have a comprehensive theory, or previous research literature, as to which of the independent variable(s) would have the strongest effects on the dependent variable. Second, it is the most commonly-used type of regression analysis in social sciences. (Larson-Hall, 2009)

Table 4 indicates that results of the multiple regression analysis conducted on the data obtained in the present study. In the table, the symbol R^2 shows how much of the variance in the dependent could be predicted by the cumulative effects of the three independent variables in the analysis (i.e., Legislative, Executive, and Judicial thinking styles). In addition, the table also reports Adjusted R^2. In fact, Adjusted R^2 would comprise the base of the discussion of the findings in the next section. Adjusted R^2 is considered as a more appropriate index of variance prediction in multiple regression analysis, when the size of the sample studied is small (Pallant, 2001), as was the case in the present study. In discussion of multiple regression analysis, Adjusted R^2 is considered as a more conservative index of variance prediction.

TABLE 4
RESULTS OF THE MULTIPLE REGRESSION ANALYSIS

Independent Variables	Regression analysis		Std. Error of Estimate
	R^2	Adjusted R^2	
Legislative, Executive, and Judicial thinking styles	0.21	0.18	12.61532

As you can see from Table 4, the three independent variables could predict 18 percent of the variance in the participants' translation quality (Adjusted R^2 = 0.18). However, to see whether this amount of variance prediction could reach the level of statistical significance ($p < 0.05$); it was necessary to conduct analysis of variance (ANOVA) on the obtained data as a test of statistical significance. Table 5 indicates the results of ANOVA run on the obtained data.

TABLE 5
RESULTS OF ANOVA

ANOVA	
F	Sig.
5.32	.003

*Sig. at 0.05

As you can see from Table 5, the amount of variance prediction obtained in the multiple regression analysis conducted could get to the point of statistical significance ($F(3, 26) = 5.32$, $p = 0.003$). Therefore, the three independent variables in the multiple regression analysis could cumulatively predict. Besides, investigating the amount of variance that the three independent variables could predict in the dependent variable, the present study intended to see how much of the variance prediction was contributed by each of the independent variables included in the analysis. Table 6 shows that amount of such contribution that each independent variable has made to the dependent variable. The table also shows whether the contribution of each independent variable to the total variance prediction could get to the point of statistical significance ($p < 0.05$).

TABLE 6
THE CONTRIBUTION OF EACH OF THE INDEPENDENT VARIABLES TO THE DEPENDENT VARIABLE

Independent Variable	T	r^2	Sig.
Legislative Thinking Style	2.21	0.08	0.02
Executive Thinking Style	2.69	0.11	0.009
Judicial Thinking Style	0.78	0.02	0.72

*Sig. at 0.05

As you can see from Table 6, the Legislative Thinking Style could contribute eight percent to the total variance in the dependent variable (i.e., translation quality). This amount of contribution of the Legislative Thinking Style to the dependent variable was found to be statistically significant ($p = 0.02$). The Executive Thinking Style contributed eleven

percent to the total variance in the dependent variable. This amount of contribution of the Executive Thinking Style was statistically significant ($p = 0.009$). Finally, the Judicial Thinking Style contributed only two percent to the total variance in the dependent variable and its contribution was not statistically significant ($p = 0.72$).

B. Discussion

The correlation analyses conducted in the present study clearly indicated that there was a relationship between the participants' scores on translation quality with their scores on the Thinking Styles Inventory ($r = 0.53$, $p < 0.01$). Further, their scores on translation quality had a positive correlation with the Legislative Thinking Style ($r = 0.41$, $p < 0.01$), the Executive Thinking Style ($r = 0.47$, $p < 0.01$), and the Judicial Thinking Style ($r = 0.23$, $p < 0.05$), as well. These relationships should not surprise use.

As Fan and He (2012) stated, performance on complex cognitive tasks highly depends on learners' mental structures that, in turn, determine the strategies by means of which learners approach the task. Researchers have found an important role for thinking styles in a wide variety of academic subject matters such as mathematics and language learning and use (e.g., Riding & Caine, 1993). As the process of translation is usually considered as one of cognitive tasks (Gutt, 2014; Shreve & Angelone, 2010), it would be expected that these thinking strategies highly influence the way that translators approach the process of translating from a language to the other.

However, as mentioned in the previous section, correlation analysis only tells us that there is, or there is not, a relationship between two single variables, but it does not determine whether one variable (dependent variable) could be predicted by the presence of other variables (independent variables). Therefore, a further statistical step (i.e., standard multiple regression analysis) was undertaken to serve this purpose in the present study. The results of the multiple regression analysis conducted indicated that the independent variables (i.e., Legislative, Executive, and Judicial thinking styles) could cumulatively predict the participants' scores on the dependent variable (translation quality). Together, these three thinking styles could significantly predict eighteen percent of the variance in the participants' translation quality. Given that thinking styles "characterize how one prefers to think about material as one is learning or after one already knows it" (Zhang, Sternberg, & Rayner, 2012, p. 5), it would certainly affect mental processes, especially those involving deep thinking such as translation. Further, these results are not surprising, because the regression analysis conducted involved three of the most impotent thinking styles (i.e., Legislative, Executive, and Judicial thinking styles). Therefore, it would be expected that these three thinking styles when they come together, could significantly predict the quality of the participants' translation outcomes as was the case in the present study.

Of the three thinking styles targeted, the Executive Thinking Style could contribute most to the variance in the participants' scores on translation quality. As you remember, individuals with higher levels of this thinking style are more successful in following rules (Sternberg, 1999, p.35). Therefore, it can be discussed that, in the present study, the participants with higher Executive Thinking Style could implement translation rules to improve the quality of their translation assignments. These rules consisted of translation strategies that these students have been taught in the translation classrooms. In other words, these students have been more successful in implementing translation strategies that would improve translation quality.

The superiority mentioned above can be ascribed to the proposition that the Executive Thinking Style has a managerial role in cognitive processes (Balkis & Isiker-Bayezid, 2005; Sternberg, 1999) which makes the best decision, when it comes to choose from among the available options. With respect to the translation process, these options consist of translation strategies translators employ, when tackling a text from the source language. Further, the participants with higher levels of the Executive Thinking Style are more successful in managing their time resources, when performing a task (Cano-Garcia, & Hughes, 2000; Lee & Tsai, 2004). Therefore, it is hypothesized here that the participants with higher levels of Executive Thinking Style had managed the time, allowed to complete the translation assignment better than other participants at the stages of translating, revising, and editing.

The Legislative Thinking Style was the second independent variable that could predict a significant amount of the total variance in the participants' scores on translation quality. As you remember, individuals with this thinking style are more creative, when performing cognitive tasks (e.g., Sternberg, 1999). As Wright (2015) stated, such creativity is an essential tool for translators. According to Wright (2015), translators should have the ability to come up with their own ideas, when translating a text so that they could convey the message intended in the source-language text through the target language. The researchers of the present study believe that the participants with higher levels of the Legislative Thinking Style enjoyed such creativity through a good command of their mother tongue (i.e., the Persian language). In other words, these participants were creative users of the Persian language and, thus, used their creative proficiency in the Persian language to translate the message intended by the source language at the best way possible. This, in return, helped to the improvement in the quality of the translation assignment accomplished by them.

Finally, the results of the regression analysis conducted indicated that the last targeted thinking style (i.e., Judicial Thinking Style) could not predict a significant amount of the total variance in the participants' scores on translation quality. This finding is surprising, as many studies have gathered evidence that the Judicial Thinking Style is an important determinant of success in academic achievements (e.g., Cano-Garcia & Hughes, 2000; Lee & Tsai, 2004; Zhang, 2002). However, the inability of the Judicial Thinking Style to predict a significant amount of the total variance can be rationalized. As you remember, the Judicial Thinking Style has the function of evaluating rules, products, and procedure (Sternberg, 1999). In other words, this thinking style functions as a monitor to evaluate outcomes of

performance on cognitive tasks. On the other hand, the monitoring function of the Judicial Thinking Style is believed to be in interaction with the time allowed to perform the task. That is, effects of the Judicial Thinking Style would be better manifested, when performing a cognitive task, if individuals are allowed enough to monitor and evaluate their own task performance. (Lee & Tsai, 2004; Sternberg & Grigorenko, 1995)

As far as the present study is concerned, this means that learners are allowed enough time to monitor what they have translated from the source language into the target language. However, the participants in the present study were only allowed sixty minutes to undertake the translation test. Therefore, it is hypothesized here that the time-limited nature of the translation assignment has prevented the participants with higher level of the Judicial Thinking Style from showing their superiority over other participants. Therefore, it is hypothesized that if the participants were allowed more time to complete their translation assignments, those with higher levels of the Judicial Thinking Style would have the chance to improve the quality of their translation assignments. To see if this hypothesis has traces of truth in itself, it needs to be experimented.

The findings of the present study of the relationship between translation quality and thinking styles could have important implications for translation theorizing, assessing, and training. Further, since the present study has been the first of its own type that targeted the Legislative, Executive, and Judicial thinking styles, it would be fruitful if this research trend be followed to give us more clear insights into the relationship between translation processes and thinking styles. In the next section, the implications of the present study, along with some suggestions for future research in this area are presented.

V. CONCLUSION, IMPLICATIONS, AND SUGGESTIONS FOR FURTHER RESEARCH

In this section, short explanation of the answer to the research question is presented. Further, pedagogical implication and suggestion for further research make the final elements of the research as follows:

A. Conclusion

The present study was conducted with the purpose of determining whether translation students' mental structures would influence the way they would approach the process of translation. The study was triggered by the proposition that performance on cognitive tasks is highly dependent on individuals' preferences to process input in particular ways (e.g., Evans & Waring, 2012; Fan & He, 2012) and, since translation is usually considered as a cognitive task (Gutt, 2014; Shreve & Angelone, 2010), it was thought fruitful to investigate whether the translation process is also affected by these preferences. In the literature on Psychology and Education, these preferences are known as *thinking styles*. (Sternberg, 1999; Sternberg & Zhang, 2001)

In fact, the findings of the study indicated there was such a relationship between translation quality and thinking styles. The findings indicated that the participants' scores on translation quality (i.e., the dependent variable) were influenced by their scores on the measures of thinking styles (i.e., the independent variables). The participants' scores on translation quality had a significant, positive correlation with the scores on the Thinking Styles Inventory and its subscales.

Further, the results of multiple regression analysis indicated that the three thinking styles targeted (i.e., Legislative, Executive, and Judicial thinking styles) could cumulatively predict a significant amount of the variance in the participants' scores on translation quality. Further, of the three thinking styles, Legislative and Executive thinking styles could contribute significant amounts to the variance in the participants' scores on translation quality. The Executive Thinking Style contributed the most to the total variance. It could predict eleven percent of the total variance. Next, the Legislative Thinking Style could predict eight percent of the total variance. Finally, the Judicial Thinking Style only contributed two percent to the total variance. The contribution of the Judicial Thinking Style to the total variance in the participants' scores on translation quality could not get to the point of statistical significance ($p < 0.05$).

As mentioned before, the finding that the targeted thinking styles could cumulatively predict the participants' scores on translation quality was not surprising, because the targeted thinking styles are among the most important determinants of success in academic achievements (Cano-Garcia & Hughes, 2000; Zhang & Sternberg, 2000). These thinking styles would determine the way that people/students would go to tackle a cognitive task (e.g., translation) and have significant influences on the final product of the task performance (e.g., translation quality).

Of the three thinking styles targeted, the Executive Thinking Style could contribute most to the participants' scores on translation quality. This was ascribed to the hypothetical proposition that translators with higher levels of the Executive Thinking Style are more successful in choosing the efficient translation strategies and implementing them. Further, such translators are more able to manage their own time resources, when translating a text so that the best can be achieved from the stages of translating, revising, and editing.

The Legislative Thinking Style was the next thinking style that could significantly contribute to the participants' scores on translation quality. It was proposed that translators with higher levels of the Legislative Thinking Style are more creative in using the target language. This can help them to translate from the source language into the target language more efficiently. In other words, they can make creative uses of the target language, when translating a text and this improves the quality of the final product of the translation process.

Finally, it was found that the Judicial Thinking Style could not predict a significant amount of the total variance in the participants' scores on translation quality, even though it was expected that this thinking style could do so. A rather reasonable hypothesis was proposed to explain these findings. The Judicial Thinking Style is most useful for monitoring and evaluating cognitive products and procedures and has an interaction with the time allowed performing a cognitive task (e.g., translation). However, the participants in the present study were allowed a limited time (i.e., 60 minutes) to accomplish the translation task. Therefore, it was proposed that this time limit had prevented the participants with higher levels of the Judicial Thinking Style to demonstrate their superiority over other participants as far as translation quality was concerned.

B. Implications of the Study

The findings of the present study have important implications for translation theories, assessment, and training. Translation theoreticians have tried for years, to determine what factors would influence the quality of a translation work (e.g., House, 2001; Lauscher, 2000; Schäffner, 1998). Based on the recent findings (e.g., Mostafavi et al, 2012; Sharkas, 2009), and the findings of the current study, it is the time that researchers take translator-internal factors (i.e., thinking styles) into consideration, when intending to propose coherent theories of translation quality.

Another important implication would be for translation assessment. Translation examiners at academic levels should become aware of the possibility that students' translation abilities may be highly influenced by their preferences to analyze data in particular ways (i.e., by their thinking styles). Therefore, when assessing the quality of a translation assignment completed by a translation student, the examiner should know that any observed weakness in the translated work could not be necessarily ascribed to weaknesses in the students' translation competence, as a student may possess particular thinking styles, guiding him/her insufficiently though the process of translation.

The findings of the study have some implication for translation training, as well. Once it has been made clear that translation students' thinking styles have some influence on the quality of their translation assignments, translation instructors can make use of translation training practices that match these individual differences among the students. As a guideline, a series of teaching practices that match different thinking styles has been mentioned in Zhang, Sternberg, and Rayner (2012). Though these teaching practices have not been proposed for teaching translation, translation instructors could get an insightful view for designing teaching practices for their own translation classrooms.

C. Suggestions for Further Research

All research in Humanities, including Translation Studies, is open-ended particularly, because conclusive answers cannot be guaranteed based upon single studies in research on Humanities. Similarly, the present study suggests that research on thinking styles on translation quality be followed in several directions so that our understanding of the relationship can be improved. First, the present study only targeted the effects of three thinking styles on translation quality; the list of thinking styles (i.e., Legislative, Executive, and Judicial thinking styles); however, is not limited to these three and, in fact, includes a larger number of thinking styles (for a rather complete list of thinking styles, see Sternberg & Zhang, 2014). Therefore, it is suggested that other thinking styles be targeted as the focus of investigation in future studies.

Second, it is well-documented in the literature that translators make use of different strategies, when translating texts of different genres. It would be helpful to see whether the selection of these translation strategies is influenced by the individual differences that exist among translators. These individual skills not only include the thinking styles, but also such categories as personality types, creativity, intelligence, etc.

Finally, the present study was carried out on senior students of English Translation at the B.A level. These students have not been experienced or professional translators; therefore, it may be that their thinking styles, and not their translation abilities, were the main sources of variance in translation quality. The researcher of the present study hypothesizes that, in the case of experienced and professional translators, the importance of these thinking styles, or other individual differences, diminishes in the process of translation. In other words, in the case of such translators, they are their translation abilities, not their thinking styles, that would make a distinction among translation assignments of different degrees of quality. This hypothesis needs to be experimented in the future studies.

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