Temperament as an indicator of language achievement

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Language learning is a complex process that is controlled or influenced by a host of linguistic and non-linguistic factors. Some of these factors are the main concerns of psychologists rather than linguists. Ever since psychology began to develop in the 20th century, more and more individual characteristics were identified and defined. Eysenck's introduction of a way to measure temperament interested (applied) linguists, and some of them tried to investigate the influence of temperament on language learning. The present study, too, set out to investigate the probable effects of temperament on EFL speaking achievement. 139 Iranian intermediate-proficiency university students took the U-test, an IELTS-based structured interview, and the Eysenck Personality Test. They then took a speaking course. Another structured interview was conducted at the end of the course as the post-test. The results of a Mixed between-within Subjects Analysis of Variance (SPANOVA) indicated that introverts were advantaged in speaking achievement. The sanguine participants in the study outperformed the choleric ones who in turn outperformed the melancholic participants. The weakest results belonged to the phlegmatic participant group.

Keywords: EFL Speaking; Personality; Eysenck; Phlegmatic; Sanguine; Choleric; Melancholic

1. Introduction

Being motivated to understand the true nature of the complex job of second/foreign language learning and use, researchers have lately been involved in the study of a repertoire of factors, both linguistic and non-linguistic, which were supposed to somehow relate to language. Among the factors studied to date, learner variables—cognitive, affective, and biological—have attracted more attention. The main aim of most of the works done on learner variables was to explain why some learners were more successful than others in second language acquisition (Ellis, 2008).

From among the factors studied by researchers, personality is a learner variable that has been associated with success in language learning and use. There are claims that a learner's personality is a determinant of his language use or success (Pennebaker & King, 1999). Recent studies have identified systematic associations between personality and language use in many

different situations and contexts. These studies focused on a variety of language use contexts including directed writing assignments (Hirsh & Peterson, 2009), structured interviews (Fast & Funder, 2008), naturalistic speech (Mehl, Gosling, & Pennebaker, 2006). Other similar studies have concluded that language use (and especially word use) correlates with such dimensions of personality as extraversion and neuroticism (Lee, Kim, Seo, & Chung, 2007).

Unfortunately, the number of research works done in this connection in Iran is not that promising. Although a few studies have been conducted on the different aspects of the reading skill, an area of second/foreign language acquisition which has not received much attention in Iran is the skill of speaking. The current study was, therefore, conducted to see if temperament, as explained by Eysenck's (1947) temperament theory, has any influence on Iranian learners' speaking achievement. The study set out to answer whether equally-proficient Iranian EFL learners with different temperaments (i.e., phlegmatic, sanguine, melancholic, or choleric) also differ in their level of achievement in EFL speaking classes.

2. Background

The developments of psychology in the 20th century were amazing. Behaviorists, cognitivists, constructivists and others got involved in the study of the nature of human beings. For one thing, their attempts resulted in several theories of personality which tried to explain (1) why people with similar heredity, experience, and motivation may react differently in the same situation, and (2) why people with different heredity, past experiences, and/or motivation may nevertheless react similarly in the same situation (Kasschau, 1985). As a result of their attempts several theories of personality were developed. These theories included trait theory, psychoanalytic theory, (social-) learning theories, self-growth theories, etc. Most of these theories tried to answer the question whether human personality is determined by nature (i.e., heredity) or nurture (i.e., environment or learning).

Theories that claimed human personality is a function of nature (or heredity) are called temperament theories. Temperament is that aspect of our personalities that is genetically based, inborn, there from birth or even before (Kasschau, 1985). That does not mean that a temperament theory rules out the role of environment; rather, a temperament theory does not focus on environment. It should also be noted that the issue of temperament is much older than psychology itself. It has a history of at least 5000 years.

People's involvement with the notion of "temperament" can be traced back to the ancient times and especially to the traditions of ancient Egypt and Mesopotamia where the health of the human body was considered to be

connected with the four basic elements of nature—fire, water, soil, and air. The four elements, in turn, were related to body fluids (also called humors), body organs, and treatments of the body (Montgomery, 2002). The origins of the four temperaments (or four humors) can be found in the *Old Testament* (in the *Book of Ezekiel*). In ancient Greek medicine, Hippocrates (who lived around 370 BC) was the first to classify people according to their dominant body fluids or humors. For him, people could be classified as "calm," "cheerful," "enthusiastic," or "somber." Table 1 compares Hippocrates and Ezekiel's temperaments:

Table 1.
Temperaments as Perceived by Hippocrates and Ezekiel

Ezekiel c. 590 BC		Hippocrates c. 370 BC	
lion	bold	blood	cheerful
ox	sturdy	black bile	somber
man	humane	yellow bile	enthusiastic
eagle	far-seeing	phlegm	calm

Hippocrates talked about individuals' possession of certain "fluids" (also called humors); the fluids included: blood, yellow bile, black bile, and phlegm. The density of the fluids within individuals was claimed to determine their personality. In other words, for the Greeks, a given individual's temperament was determined by the kind of fluids which the individual possessed too much or too little (Kagan, 1998).

In his quest for physiological determinants of human temperament, Galen (AD 131-200) mapped Hippocrates' classification of human behavior on to a matrix of hot/cold and dry/wet based on the four basic elements of nature. Where all the four elements were balanced, the individual was said to possess a balanced personality. Another possibility was that one element dominated the rest. This resulted in four less-balanced personality types. The last possibility was the dominance of pairs of elements over other pairs. This, too, resulted in four less-balanced personality types which Galen called Sanguine, melancholic, choleric, and phlegmatic (Kagan, 1998). These four types are actually the corners of two dissecting lines: temperature and humidity (Boeree, 1997). As such, Galen's taxonomy identified nine personality types. Table 2 illustrates Galen's conception of temperaments.

Table 2.
Galen's Conception of Temperaments

	moist	dry
hot	sanguine	choleric
cold	phlegmatic	melancholic

The term sanguine was taken from the Latin word "sanguis" which means blood. According to ancient Greek thought, the sanguine type is an individual who has an excess of blood in his body. The sanguine individual is claimed to be cheerful and optimistic, pleasant to be with, and comfortable with his or her work. He has a particularly abundant supply of blood, is characterized by a healthful look, and has rosy cheeks (Boeree, 1997). The choleric type is said to have an excess of bile (i.e., the chemical excreted by the gall bladder). A choleric type is quick, hot tempered, and often an aggressive. He possesses a yellowish complexion and tense muscles. The phlegmatic type is most often slow, lazy, and dull. Phlegm is the mucus brought up from the lungs when the individual has a cold or lung infection. Phlegmatic people are thought to be cold, and shaking hands with them has been described as shaking hands with a fish (Boeree, 1997). Finally, the melancholic type is sad, depressed, and pessimistic. The name comes from the Greek words for black bile. Modern medicine does not accept the existence of any fluid in human body known as black bile. It is not clearly known what the ancient Greeks used the term to refer to.

Table 3.
*Summary of Views on the Four Temperaments in Ancient Times**

	Temperaments			
Ezekiel (590 BC)	Lion	Ox	Man	Eagle
Empedocles (450 BC)	Goea (air)	Hera (earth)	Zeus (fire)	Poseidon (water)
Hippocrates (370 BC)	Blood	Black bile	Yellow bile	Phlegm
Hippocrates (370 BC) Four Qualities	Hot and moist	Cold and dry	Hot and dry	Cold and moist
Plato (340 BC)	Artistic	Sensible	Intuitive	Reasoning
Aristotle (325 BC): contribution to social order	Iconic: artistic and art-making	Pistic: common-sense and care-taking	Noetic: intuitive sensibility and morality	Dianoetic: reasoning and logical investigator
Aristotle (325 BC): Four Sources of Happiness	Hedone: sensual pleasure	propraieteri: acquiring assets	Ethikos: moral virtue	Dialogike: logical investigation
Galen (190 AD): Four Temperaments or Four Humors	Sanguine	Melancholic	Choleric	Phlegmatic
Paracelsus (1550): Four Totem Spirits	Salamanders: impulsive and changeable	Gnomes: industrious and guarded	Nymph: inspiring and passionate	Sylphs: curious and calm

* Based on information from Montgomery (2002)

In his *The Canon of Medicine*, the Persian doctor Avicenna (980-1037 AD) extended the "theory of temperaments to encompass emotional aspects, mental capacity, moral attitudes, self-awareness, movements and dreams" (Lutz, 2002, P. 60). It should be noted that Avicenna, Galen, Hippocrates, and Ezekiel are not the only people who studied the human temperaments. The four temperaments have attracted the attention of many more people. Table 3 (above) presents a summary of the ancient literature on this topic.

More interestingly, these ancient claims survived even until the twentieth century when they found their way to modern psychology. Throughout the 20th century, different psychologists proposed their own views of the four temperaments and coined different terms to refer to them. Although the terms used by each psychologist may differ from the ones used by others, they present essentially the same ideas. Adickes (1905), for example, talks about the "Four World Views" namely "innovative," "traditional," "doctrinaire," and "sceptical" (Cited in Montgomery, 2002). Spranger (1914), on the other, prefers the "Four Value Attitudes" of "artistic," "economic," "religious," and "theoretic" (*Ibid*). These and other classifications are presented in Table 4.

Table 4.
*Summary of Views on the Four Temperaments in the 20th Century**

	Temperaments			
Eric Adickes, 1905: Four World Views	Innovative	Traditional	Doctrinaire	Sceptical
Eduard Spranger, 1914: Four Value Attitudes	Artistic	Economic	Religious	Theoretic
Ernst Kretschmer, 1920	Manic	Depressive	Oversensitive	Insensitive
Eric Fromm, 1947	Exploitative	Hoarding	Receptive	Marketing
Myers, 1958	Perceiving	Judging	Feeling	Thinking
Myers, 1958	Probing	Scheduling	Friendly	Tough-minded
Keirsey/MBTI, 1998	Artisan/SP: sensing-perceiving	Guardian/SJ: sensing-judging	Idealist/NF: intuitive-feeling	Rationalist/NT: intuitive-thinking
Montgomery, 2002	SP: spontaneous and playful	SJ: sensible and judicious	NF: intuitive and fervent	NT: ingenious and theoretical

* Based on information from Montgomery (2002)

In addition to the people named in the taxonomies presented in Table 4, temperaments have also been studied by Pavlov, Eysenck, and others. Pavlov,

of classical conditioning fame, for example, used the humors to describe his dogs' personalities (Boeree, 1997). In his experiments, Pavlov used conflicting conditions (e.g., ringing a bell that signaled food at the same time as another bell that signaled the end of the meal) and noticed that different dogs behaved differently. While some dogs maintained their cheerfulness, others got angry, fell asleep, or seemed to have a nervous breakdown. Pavlov explained these differences in dog behavior on the two dimensions of arousal or excitation (i.e., food signal) and inhibition (i.e., end-of-meal signal):

Sanguine:	Lots of arousal + good inhibition
Choleric:	Lots of arousal + poor inhibition
Phlegmatic:	Not much arousal + good inhibition
Melancholy:	Not much arousal + poor inhibition

For Pavlov, arousal was analogous to warmth, but inhibition was analogous to moisture. These observations by Pavlov became the inspiration for Eysenck's theory of human temperament (Boeree, 1997). Eysenck was perhaps the first psychologist to use a psycho-statistical method (i.e., factor analysis) to analyze personality differences.

Eysenck (1947) claimed, based on his own research, that temperament is biologically based (i.e., controlled by heredity). In his book entitled *Dimensions of Personality*, Eysenck identified two major dimensions of human personality: (1) Neuroticism (N) or the tendency to experience negative emotions, and (2) Extraversion (E) or the tendency to enjoy positive events—especially social ones (Eysenck, 1947). Upon pairing these two dimensions, he noted that the results were very much similar to the four ancient temperaments (Boeree, 1997).

What makes Eysenck's concepts particularly interesting is his focusing on the exploration and analysis of "emotional stability" as a dimension of personality. His theory measures personality using two scales: (a) the Introversion-Extraversion scale, and (b) the Stability-Instability (or Unemotional-Emotional) scale. The latter is sometimes called the "neuroticism" scale. In a later revision, Eysenck added a third dimension to his theory to include abnormal individuals as well; this later third dimension is called the "psychotic" scale (Montgomery, 2002). The Eysenck theory classifies each individual as belonging to any of the four major types of personality: melancholic, choleric, phlegmatic, or sanguine. Figure 1 (below) is a representation of Eysenck's personality types:

The striking difference between Eysenck's model and older ones (e.g., that of Galen) is that Eysenck measures personality according to two scalable

dimensions whereas other models define personality according to one of the four temperaments (Boeree, 1997).

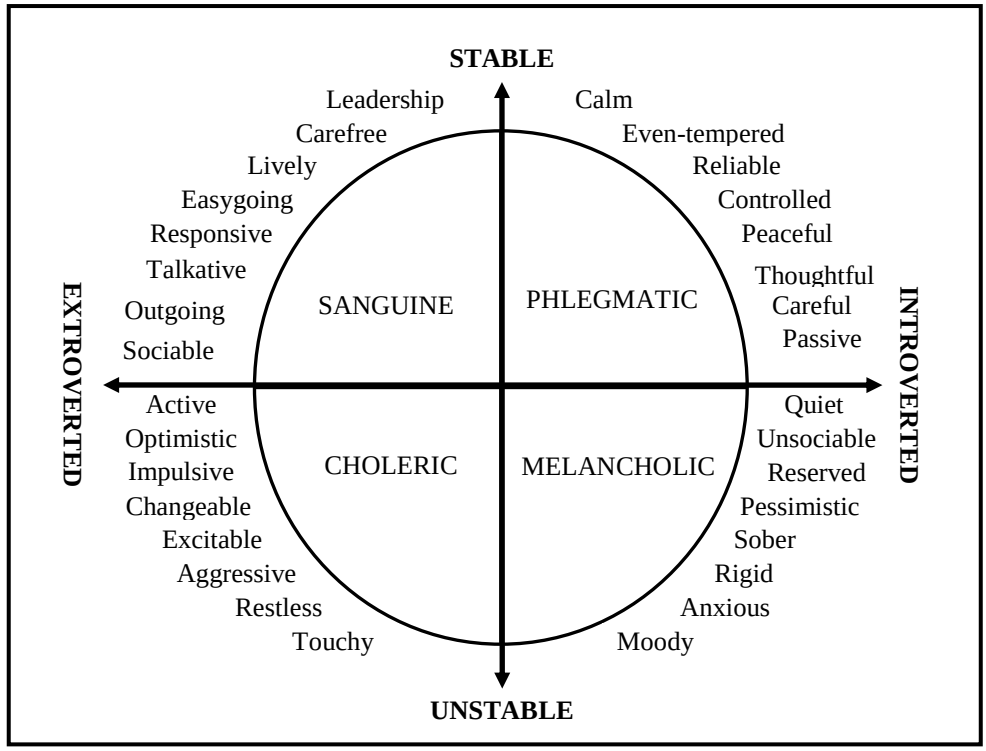

Figure 1. Eysenck's personality types.

Ever since Eysenck proposed his theory of temperament, scholars in different fields of science ardently implemented his theory in research in their fields of study. In (applied) linguistics, a number of scholars from around the world began to investigate the probable role of extraversion and neuroticism in language acquisition, learning, achievement, and use. As early as the 1980s, Stern (1983) noticed that extroverts are dominant in obtaining communication skills so they can achieve more talk opportunities whereas introverts are better language learners because of their analytic and systematic orientation. This claim was further supported in a study by Opt and Loffredo (2003). Earlier in 1952, Pritchard had found a correlation between extroverts' sociability and their oral fluency in French. Tucker, Hamayan, and Genesee (1976) stated that outgoing personality or extroversion has a significant effect on students of late immersion French program. It means that these students, when compared to their introvert counterparts, could comprehend the speeches they listened to more easily; they could also speak the second language more systematically.

Along the same lines, Ellis (2008) noticed that extroverts were advantaged at acquiring basic interpersonal communicative skills (BICS). He also found that introverts were better at improving their cognitive academic language ability (CALP). Kezwer (1987) investigated the relation between introversion-extroversion and second language learning, and found that such variables as language assessment instrument, class environment and child's tendency towards peers or adults go hand in hand with extroversion-introversion to determine the outcome of learning a second language. Zhang (2008), too, concluded that extroverts learn a second language more easily because they are more risk-taking; they are not afraid of embarrassing themselves by speaking incorrectly, or by not being able to speak at all, so they do not miss the opportunities that can help their learning.

These and many other studies indicate that personality could be correlated with language learning and use. The current study, too, was conducted with the aim of finding the probable impact of temperament on speaking achievement.

3. METHOD

3.1. Participants

The sample under study in this research consisted of 139 (N = 139) students from the Kish International Campus of the University of Tehran in Iran. They had been selected from a population of 552 students, all from the Kish International Campus; they all belonged to the "intermediate" level of English language proficiency based on their scores on the standard *UT Proficiency Test*.

The participants were classified into four temperament groups based on their Percentile ranks on the *Eysenck Personality Test* (Eysenck, 1947). The Sanguine group included 32 participants (n = 32), the Choleric group included 30 participants (n = 30), the Melancholic group 35 (n = 35), and the Phlegmatic group 42 (n = 42). Table 5 displays group statistics for the sample under study.

Table 5.
Subject Group Statistics Based on Temperament

	Frequency	Percent	Valid Percent	Cumulative Percent
Sanguine	32	23.0	23.0	23.0
Choleric	30	21.6	21.6	44.6
Melancholic	35	25.2	25.2	69.8
Phlegmatic	42	30.2	30.2	100.0
Total	139	100.0	100.0	

3.2. Instruments

For purposes of the current study, three main instruments were used: (1) the standard *UT Proficiency Test* (also known as *U-Test*), (2) *IELTS Speaking Cards*, and (3) the *Eysenck Personality Test.*

The *U-Test* is a standard proficiency test developed by the Language center of the University of Tehran. The *U-Test* is a TOEFL-like proficiency test which consists of 100 items:

- 20 written expression items
- 15 structure and
- 15 word study items
- 15 word recognition vocabulary items
- 15 word production vocabulary items
- 10 short-context-passage items
- 10 reading comprehension items

Item 15 is an example of the written expression items:

15. No sooner has he moved to Yazd than his father passed out in Honolulu.
A B C D

Items 22 and 42 are examples of structure and word study items respectively:

22. When _____ the conference?

A. the doctor attended
B. did the doctor attend
C. the doctor will attend
D. the doctor's attendance

42. The child was _____ close to getting hit by the car.

A. dangerously
B. dangerous
C. endanger
D. danger

Item 51 is an example of the word recognition vocabulary items:

51. The pain in his shoulder suddenly abated.

A. lessened
B. increased
C. fluctuated
D. suspended

Item 61 is an example of the word production vocabulary items:

61. It is _____ that no one is at home. The lights are off.

A. purposeful
B. abundant
C. irregular
D. obvious

Short-context-passage items provide a very short reading passage followed by one multiple-choice item. Item 83 is an example of short-context-passage items:

83. "Mrs. Durrel?" he enquired, fixing mother with large and child-like eyes." I am enchanted to meet you." The sentence indicates that _____.

A. his eyes were fixed on mother
B. his child-like eyes fixed mother
C. mother's child-like eyes fixed him
D. mother was tired by his child-like eyes

Finally, authentic and genuine passages are also part of the test and are followed by multiple-choice items that tap students various reading skills and strategies. The following is an example:

01	Last week I went to the theatre. I had a very good seat. The play was
02	very interesting, yet I did not enjoy it. A young man and a young woman
03	were sitting behind me. They were talking loudly. I got very angry since
04	I could not hear the actors. I turned round and looked at the man and
05	the woman angrily. They did not pay attention. In the end, I could not
06	bear it and turned round again. "I can't hear a word," I said angrily. "It is
07	none of your business," the young man said rudely. "This is a private
08	conversation.

97. The writer did not enjoy the play because _____.

A. it was boring
B. he was angry
C. the actors spoke slowly
D. he couldn't hear the actors

Examples of the *U-Test* Items are presented because the researcher was not officially allowed by the language center to reproduce the whole of the *U-Test* in an appendix. For estimating the reliability of the *U-Test*, Cronbach's alpha

coefficients for both the whole test and the test sections were estimated. Table 6 displays the results of reliability estimation:

Table 6.
Reliability Coefficients for Whole Test and Test Sections of the U-Test

Test Component	Number of Items	Cronbach's Alpha
whole test	100	.886
written expression	20	.885
structure	15	.952
word study	15	.918
word recognition	15	.936
word production	15	.932
short context passage	10	.926
reading comprehension	10	.906

The second instrument in this study was the *Eysenck Personality Test* (Eysenck, 1947). The version of the test used in this study consisted of 57 Yes-No questions. The test includes three types of items: (1) items that detect Neuroticism, (2) those that detect Extraversion, and (3) those that detect respondent sincerity. The test also includes some reverse-scored items (Items #5, #12, #15, #18, #20, #29, #30, #32, #34, #36, #37, #42, #48, #51, #54). Table 7 describes the Structure of the *Eysenck Personality Test.*

Table 7.
Structure of the Eysenck Personality Test

Scale	Item Numbers	Totals
Neuroticism	2, 4, 7, 9, 11, 14, 16, 19, 21, 23, 26, 28, 31, 33, 35, 38, 40, 43, 45, 47, 50, 52, 55, 57	24
Extraversion	1, 3, 5, 8, 10, 13, 15, 17, 20, 22, 25, 27, 29, 32, 34, 37, 39, 41, 44, 46, 49, 51, 53, 56	24
Lie Detection	6, 12, 18, 24, 30, 36, 42, 48, 54	09

The reliability of the instrument, using Cronbach's alpha, was estimated at an alpha level of 0.837. The instrument had previously been normalized in Iran and had proven to be a valid test of temperament (Dadsetan, Agha Yousefi, Ejei & Mansour, 2000).

The last instrument used in this study included 100 genuine *IELTS* speaking test cards. Each card asks the participants to describe or talk about a topic based on a set of questions. *IELTS* is a standardized test with a high enough reliability index. Since each participant was interviewed by two trained examiners, the inter-rater reliability of the interview was estimated through a Pearson Product-Moment correlation coefficient analysis. The inter-rater

reliability was estimated at an alpha level of .827. The convergent validity of the structured interview was estimated at .924 through another Pearson Product-Moment correlation coefficient analysis which employed the average of the scores raters assigned to the participants and the participants' paper-based *U-Test* scores. An example of the cards used in the structured interview is presented here:

> Describe a classmate or colleague you often meet.
>
> **You should say:**
>
> - Where you usually meet
> - When you first met
> - What topics you usually talk about
>
> And say why you often meet

3.3. Procedures

The participants in this study had taken the paper-based *U-Test* a couple of weeks before the study began in September 2010, and the researcher was given access to their test performance results. The researcher, therefore, decided to use this pool of data which was already available. The participants had also been interviewed by two trained examiners who used genuine *IELTS* interview cards. Each examinee had been allowed 1 minute for his/her own introduction, 1 minute to draw an IELTS card at random from among 100 cards hidden in 100 envelops, to read the card, and to think about it, and 3 minutes to answer the questions on the card. The examiners had rated the oral performance of the test-takers on this structured interview, and the researcher had access to this pool of data too. So he decided to use this data set as well.

The researcher only selected the "intermediate" subjects for his sample group. To this end, he used the standard-deviation-from-the-mean strategy. Based on their paper-based *U-Test* scores, the participants were classified into three proficiency groups: (1) Beginners, (b) Intermediate, and (c) Advanced. The participants whose scores on the *U-Test* clustered between -.5 SD and +.5 SD were placed in the intermediate proficiency group, those with scores that clustered in the $-.5^{minus}$ SD were classified as beginners, and those with $+.5^{plus}$ SD as advanced. This resulted in the selection of 139 people to go into the "intermediate" group.

The next step was to access their structured-interview scores. These scores were also available. The scores each individual had received by the two

scorers were totaled and averaged. The results of this procedure were recorded as the participants' pre-test "speaking" skill scores.

All the participants then received the *Eysenck Personality Test,* which was used to classify them into four temperament groups based on their percentile scores on the "Neuroticism" and "Extraversion" scales. After their raw scores on each scale were assigned, the scores were converted to percentile ranks (based on the scoring scheme presented in Appendix A). The maximum score each participant could make on each scale (i.e., Neuroticism or Extraversion) was 24. However, the raw scores, when converted to percentile scores, ranged from zero to 100.

Participants with percentiles less than 50 on the extraversion scale were classified as introverts, and participants with percentiles less than 50 on the neuroticism scale as stable. Their percentiles on both scales were then paired to identify their temperaments. A participant with 50^{plus} percentiles on both scales was classified as "Choleric" whereas one with 50^{minus} percentiles on both was identified as "Phlegmatic." By the same token, a participant with a 50^{plus} percentile score on the neuroticism scale and a 50^{minus} percentile on the extraversion scale was placed in the "Melancholic" group. Finally, a participant with a 50^{plus} percentile score on the extraversion scale and a 50^{minus} percentile on the neuroticism scale was placed in the "Sanguine" group.

4. Results and Discussion

The participants in this study had taken a pre-test and a post-test with an academic semester of treatment. As such, the data collected were suitable for a Mixed between-within Subjects Analysis of Variance (SPANOVA) (See Pallant, 2007). The SPANOVA was conducted to analyze the effect of treatment (i.e., speaking course) on the spoken performance of the participants in the study. This was done to see if there were main effects for each of the independent variables (i.e., main effect for participants' temperament groupings and main effect for treatment), and also for the interaction between the variables—to tell if the change in spoken performance over time was different for the temperament groups.

As the first step in this process, it was necessary to check for 'homogeneity of intercorrelations'—to see if for each of the levels of the between-subjects variable (i.e., treatment) the pattern of intercorrelations among the levels of within-subjects variable (i.e., time) were the same. To test this assumption, Box's M statistic with the more conservative *alpha* level of .01 was used with the hope that the statistic would not be significant (i.e., that the *p* level would be greater than 0.01). In other words, Box's M statistic tests the null hypothesis that the observed covariance matrices of the dependent variables

are equal across groups. Table 8 displays the result and indicates that this assumption was violated (*Sig.*=0.000). However, this is not a big issue; the reason why this happened is that the study did not include any control (i.e., no-treatment) groups. In fact, SPANOVA works best when a control group (one with no treatment) is compared with an experimental group (one with treatment). In the current research, all the four groups of the study received a semester of the same treatment. The study did not follow a true experimental design; as such, the violation of the assumption of the homogeneity of intercorrelations was expected.

Table 8.
Box's Test of Equality of Covariance Matrices

Box's M	30.624
F	3.310
df1	9
df2	166927.468
Sig.	.000

Design: Intercept+Treatment

Within Subjects Design: Time

A look at the 'Multivariate Tests' table also indicated that there was a change in spoken performance across time. The main effect for time was significant. There was also an indication that the temperament groups were also different in terms of spoken performance across time. The main effect for the interaction between time and treatment was also significant. These findings are indicated by Wilks' Lambda values and the associated probability values given in the column labeled *Sig.* in Table 9.

Table 9.
Multivariate Tests

Effect		Value	F	Sig.	Partial Eta^2
Time	Pillai's Trace	.990	13608.462[a]	.000	.990
	Wilks' Lambda	.010	13608.462[a]	.000	.990
	Hotelling's Trace	100.803	13608.462[a]	.000	.990
	Roy's Largest Root	100.803	13608.462[a]	.000	.990
Time * Treatment	Pillai's Trace	.879	327.259[a]	.000	.879
	Wilks' Lambda	.121	327.259[a]	.000	.879
	Hotelling's Trace	7.272	327.259[a]	.000	.879
	Roy's Largest Root	7.272	327.259[a]	.000	.879

Computed using alpha = .01 (Exact statistic, Design: Intercept+Treatment, Within Subjects Design: Time)

Based on the values in the Wilks' Lambda's part of the "Multivariate Tests" table (See table 9 above) it was found that there was a statistically significant

change in spoken performance as a result of treatment. The value for Wilks' Lambda for time was 0.010, with a *Sig.* value of .000 (which means $p<.0001$). Because the p value was less than .01, it was concluded that there was a statistically significant effect for time. This suggested that there was a change in spoken performance across time; technically speaking, it showed the effect of treatment on spoken ability. The value for partial Eta squared for time was 0.99. Using the commonly used guidelines proposed by Cohen's (1988) (i.e., 0.01=small effect, 0.06=moderate effect, and 0.14=large effect), this result suggested a very large effect size for time.

Furthermore, the value for Wilks' Lambda for time-treatment interaction was 0.121, with a *Sig.* value of .000 (which means $p<.0001$). Because the p value was less than .01, it was concluded that there was a statistically significant effect for time-treatment interaction. The partial Eta squared value for the interaction effect was 0.879. This suggests a very large effect for time-treatment interaction. This means that there was not the same change in spoken performance over time for the temperament groups. In other words, gain in spoken performance for the any of the temperament groups was not statistically the same as that for any other temperament group. Figure 2 visualizes these differences in gains in spoken performance across temperament groups.

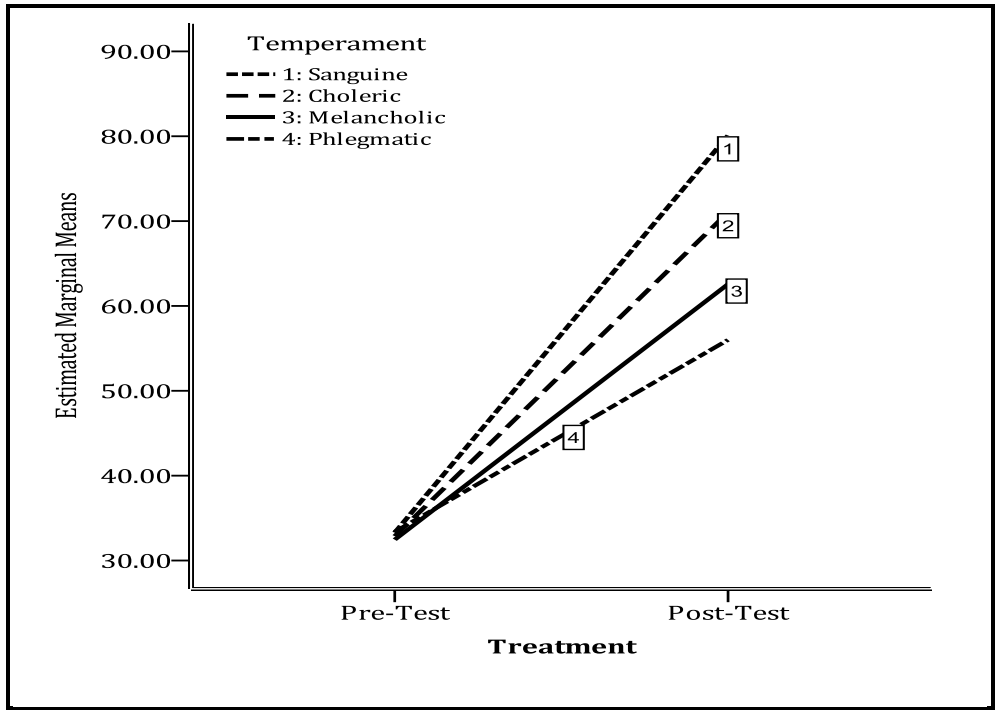

Figure 2. Comparison of gains in mean performance across subject groups.

As figure 2 indicates, the sanguine group showed a greater gain in spoken performance than any of the other groups. Table 10 presents the descriptive statistics for the temperament groups across time.

Table 10.
Descriptive Statistics for Treatment Groups across Time

	Type of Treatment	Mean	Std. Deviation	N
Pre-test Score	Sanguine	33.2813	2.41279	32
	Choleric	32.8667	2.41737	30
	Melancholic	32.4571	2.21416	35
	Phlegmatic	33.3810	2.51776	42
Post-test Score	Sanguine	80.0938	3.60429	32
	Choleric	71.0333	1.47352	30
	Melancholic	62.5714	2.41668	35
	Phlegmatic	56.0000	2.20863	42

As table 10 indicates, the pre-test mean for sanguine was 33.28 while the post test mean was 80.09; the pre-test mean for choleric group was 32.86 whereas the post test mean was 71.03; the pre-test mean for melancholic group was 32.45 whereas the post test mean was 62.57; the pre-test mean for phlegmatic group was 33.38 whereas the post test mean was 56.00. The mean changes for the temperament groups were mathematically large, but it was necessary to check them for statistical significance; to this end, it was necessary for the researcher to look at the values displayed in Table 11.

Table 11.
Tests of Between-Subjects Effects

Source	Type II Sum of Squares	df	Mean Square	F	Sig.	Partial Eta^2
Intercept	689742.410	1	689742.410	111310.203	.000	.999
Treatment	5870.728	3	1956.909	315.805	.000	.875
Error	836.538	135	6.197			

Transformed Variable: Average--Computed using alpha = .01

As table 11 indicates, the *Sig*. value for treatment was statistically significant (*Sig.*=0.000). The *Sig*. value was less than the *alpha* level (of 0.01); therefore, it was concluded that the main effect for group was significant. That is, there was a statistically significant difference in gains in spoken performance for the temperament groups although they had received the same treatment. The effect size of the between-subject effect also supported this finding; the partial *eta*^{2} value for groups was 0.875. This indicates a very large effect for groupings.

5. Discussion

The results clearly show that the sanguine and the choleric groups outperformed the other groups. The sanguine group had the best results; the choleric group was the second in rank. The melancholic group followed the choleric group. Finally, the phlegmatic group had the lowest achievement. As such, the results of this study lend support to that of Zhang (2008); in this study, too, extroverts appeared to be better language learners than introverts. The results also support Stern's (1983) claims about the advantage that extroverts have in obtaining communication skills and achieving more talk opportunities. This study also lends support to the study conducted by Opt and Loffredo (2003) in which they concluded that extroverts are better at language learning.

It seems as if introversion functions as an inhibitor in the process of language learning. Phlegmatic language learners, being both unemotional (i.e., stable) and introverted, seem to be less open to language achievement. They are resistant to change. If language learning is taken to mean a change in individual's current mental states, then the results of this study can be justified. It seems that such individual characteristics as being carefree, talkative, easygoing, sociable, etc. are conducive to language learning. This conclusion had earlier been made by other research studies (Ellis, 2008; Kezwer, 1987; Pritchard, 1952; Tucker, Hamayan, & Genesee, 1976). Sanguine and choleric individuals are perhaps more able to create conditions from which they can benefit in the process of language learning.

6. Conclusion

This study supported the claim that extroverts are better at interpersonal communicative skills. The study found that extroverts had an advantage over introverts in their achievement in speaking classes. The study also found that within the extrovert groups, the sanguine outperformed the choleric. This indicates that being emotional and unstable can exert a counter-balancing pressure on the language learner which will lead to a lower level of speaking-skill achievement.

One point of caution, however, is that the results of this study cannot be taken too far. They cannot be generalized due to the fact that the number of participants in this study is not that promising. Moreover, the people studied in this research belonged to the intermediate-proficiency group, and the researcher cannot be sure if the same results will be found in a study that involves beginners or advanced learners of English. The results of this study can, at best, be taken as an indication of the role of extraversion in language achievement.

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APPENDIX A: Normalized Scores for the Scales on the *Eysenck Personality Test* in Iran

Raw Score	PR on N Scale	PR on E Scale	PR on L Scale
0	1		1
1	1		7
2	3	1	18
3	6	2	32
4	9	3	48
5	13	4	67
6	16	6	88
7	25	10	92
8	32	13	98
9	41	18	99
10	49	25	
11	56	32	
12	64	42	
13	72	53	
14	76	63	
15	81	74	
16	85	83	
17	90	90	
18	92	95	
19	95	97	
20	96	98	
21	97	99	
22	98	99	
23	99		
24	99		

PR = Percentile Score; N = Neuroticism Scale; E = Extraversion Scale; L = Lie Detection Scale

Scoring Scheme:

		N Scale	
		PR > 50	PR < 50
E Scale	PR > 50	Choleric	Sanguine
	PR < 50	Melancholic	Phlegmatic