



Effects of Virtual Instruction on the Speaking Accuracy of Iranian High School English Learners with Varied Personality Traits during the COVID-19 Pandemic

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Abstract

This study examined the effects of virtual English instruction via the Iranian Student Education Network (SHAD) on the speaking accuracy of Iranian high school English learners with varied personality traits during the COVID-19 pandemic. The participants (n = 54) completed the Quick Oxford Placement Test and the Eysenck Personality Inventory before taking a speaking test based on the Vision English for Schools Series. The participants' voice-recorded responses to the speaking test were then analyzed for accurate verb usage. After completing 18 online sessions with diverse speaking tasks on SHAD, the participants retook the speaking test, and their performances were analyzed. The results indicated significant effects on the speaking accuracy of both extroverts and introverts, with introversion showing the most positive impact. Semi-structured telephonic interviews were conducted to gather participants' perceptions of virtual education. The findings highlighted the challenges and opportunities faced by Iranian high school English learners in online classes, with implications for virtual language education and materials development.

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1. Introduction

COVID-19 has posed significant challenges for people in the 21st century, impacting various aspects of their lives, such as social, emotional, economic, and particularly educational practices. Iran, like many other countries globally, is currently grappling with the effects of the pandemic and has implemented one of the longest lockdowns worldwide, including the temporary closure of universities and educational institutions (Monjezi et al., 2021; Toroujeni, 2022). As such, to provide proper teaching and sustain learning during the closure of schools and universities, the education sector seems set to benefit from the diverse affordances of technology-enhanced education. Virtual/distance education in Iranian public schools is carried out through a wide range of online platforms, including the Iranian student education network (known as SHAD), Adobe Connect, Zoom, etc. Despite the widespread availability of such platforms for the pursuit of education, learner variables are deemed to provide valuable insights into the conditions which affect learning through virtual/distance education. Further research on the role of learner variables, including their personality traits, in the success or failure of virtual education thus seems indispensable.

Speaking as the major language skill for oral interaction in various aspects of human life such as culture, business, politics, administration, science, and academia is, in turn, regarded as one of the most challenging aspects of language to be developed for many Englishes as a Foreign Language (EFL) learners (Lazarton, 2001). The problem becomes even more complex considering the challenges of virtual/distance education added to the demands of developing speaking skill for EFL learners. Indeed, taking teaching/learning practices from face-to-face to virtual/distance contexts, where the interaction between individuals is mainly restricted to some controlled virtual practices, is deemed to influence learners' development depending on their personality traits (Babakhouya, 2019; Vural, 2019).

Despite the rapid developments of technology-enhanced instructional platforms worldwide (CheshmehSohrabi & Mashhadi, 2023), there is a paucity of research examining any possible effects of virtual instruction via SHAD on the speaking accuracy of Iranian high school learners of English with varied personality traits during the COVID-19 pandemic (Jalilinia, 2021; Maali Tafti & Tabatabaee-Yazdi, 2023; Tabatabaee Lotfi, et al., 2022). Despite a wealth of evidence linking personality traits to a variety of life outcomes and disorders, no such correlation has been properly considered in relation to personality traits and English language speaking in the context of Iran concerning SHAD

2. Literature Review

2.1. Personality Traits

Behavioral psychologists have long considered individual differences (IDs) to develop a systematic method of classifying personality traits (Kozhevnikov, et al., 2014). According to Von Stumm, et al. (2011), personality traits refer to inborn temperament and behavioral characteristics arising under different conditions and a combination of individual features which distinguishes people from each other. Eysenck (1975) developed a theory of personality traits, which is rooted in the notions of excitation-inhibition and arousal

hypotheses as well as the physiological results from Pavlov's classical conditioning. He therefore asserted that personality traits reflect IDs in the ways in which people's neurological systems function. Eysenck's theory makes its greatest contribution by opening up the prospect of identifying genetic factors and establishing the universality and stability of personality traits (Dadson, 2020). Eysenck's original research has indeed led to the identification of various dimensions of personality. The first dimension, termed extraversion-introversion, considers extraversion as the ability of an individual to be outgoing, assertive, and expressive (Zopiatus & Constanti, 2012), whereas introversion is demonstrated in more reflective and reserved behavior.

Neuroticism is the designation Eysenck assigned to describe a dimension that goes from normal, comparatively calm, and collected persons to those who tend to be quite nervous. The neuroticisms represent the tendency to exhibit poor emotional adjustment, pessimism, anxiety, nervousness, sadness, and tenseness. According to John and Srivastava (1999), "neuroticism contrasts emotional stability and even-temperedness with negative emotionality" (p. 30).

2.2. The Role of Personality Traits in EFL Learning

Early in the history of second language acquisition (SLA), it was noticed that personality traits might have an impact on non-linguistic, affective elements connected to SLA. Even in the field of psychology, most researchers concurred that extraversion and neuroticism had a significant impact on language learning (e.g., Eysenck, 1992; Eysenck, et al., 1985; McCrae & Costa, 1991). Some scholars have also discussed how affective factors such as self-esteem and confidence interact with characteristics like conscientiousness, agreeableness, and openness to experience (e.g., Watson & Clark, 1992). The SLA researchers had similarly some grounds to believe that personality traits would be crucial in figuring out the causes of both foreign language speaking anxiety and confidence given that affective factors could influence second or foreign language speaking in particular. Early SLA researchers, however, reported contradictory findings, which led to the pessimistic conclusion made by Lalonde and Gardner (1984, cited in Capellan, 2017) that, "based on such research, there is little reason to conclude that personality variables are directly implicated to any great extent in [SLA]" (p. 225). It thus seems illuminating to examine if there is any trade-off between IDs, particularly personality traits, and learner development and success in EFL learning via virtual/distance instructional platforms.

2.3. Language Instruction during COVID-19 Pandemic in Iran

The ability to use English for spoken communication is one of the key reasons many people worldwide study English. Iranian language learners, like those in other nations, frequently assess their progress in language learning primarily on how much they feel their spoken language ability has been developed (Sadeghi & Richards, 2015). However, mastering speaking in an EFL context, including Iran, is not an easy task to reach. This problem results basically from the lack of exposure to ample speaking opportunities in Iranian language classrooms. This problem has been recently exacerbated due to the COVID-19 pandemic and the consequent closure of schools and universities during which the classes are held online (Monjezi, et al., 2021).

In response to the COVID-19 pandemic and the temporary halt in face-to-face instruction at schools and universities, the Ministry of Education of Iran launched SHAD: a communication and educational software offering a virtual platform for students, teachers, and principals to sustain instructional practices. It provided users with anywhere-anytime accessibility to content materials, synchronous and asynchronous discussions, and feedback. Despite the reported benefits of information and communication technology (ICT)-based affordances, the proper implementation of virtual/distance education has often been hindered by some technical, pedagogical, psychological, cultural and administrative factors, among others (Alves, et al., 2017; Mashhadi, et al., 2016; Shudong & Higgins, 2005).

According to Ahmady, et al. (2020), the implementation of virtual/distance education in elementary and secondary schools in Iran during the COVID-19 is complex and multifaceted due to the (1) Iranian cultural, and social context of education, (2) lack of teachers' preparedness for virtual/distance education, (3) incongruity of the mainstream curriculum with ICT-based education, (4) lack of access to all required infrastructure and equipment for virtual/distance education, (5) teachers'/students' preferences for conventional education (6) unfeasibility of using ICT-based education for all age groups, and (7) lack of teachers'/students' requisite ICT literacy skills, etc.

2.4. Empirical Studies

A wide range of research has already been conducted on speaking ability, virtual/distance learning, and personality traits in separate studies. However, very few studies have examined two or three of these variables in a single study. For instance, investigating the interaction between EFL learners' personality traits and speaking performance among 3,145 participants from the U.S. Foreign Service Institute databases of native English speaker students, Ehrman (2008) argued that most students ($n=272$) were from the introversion-sensing-thinking-judging personality type. The results also revealed that introverts were more concerned with speaking accuracy, while extroverts tended to be more accurate than fluent. Iwawaki, et al. (1980) examined the correlations between English achievement tests and extraversion/introversion personality types for a group of 96 female students at a junior college in western Japan. Influenced by the Big Three P-E-N (psychoticism, extraversion, and neuroticism) model, they used an 86-item personality questionnaire. The findings showed that extroverts and introverts performed similarly on all of the researchers' tests, with no statistically significant differences. In another study, Vural (2019) set out to determine the interaction between personality traits and the speaking performance of EFL learners. The results revealed that anxiety and foreign language speaking performance were positively and significantly predicted by neuroticism and agreeableness, however; they were negatively and significantly predicted by extraversion, openness, and conscientiousness.

Some other scholars have, in turn, investigated the effect of learners' affective and cognitive factors (e.g., Hyland, 2011; Stefanou & Revesz, 2015; Storch & Wigglesworth, 2010) and IDs (Sheen, 2007) on their language development. For instance, Sheen (2007) considered the effect of individual differences, namely, language analytic ability, including grammatical sensitivity, and inductive language learning ability, on students' learning gains from corrective feedback (CF). The result showed that students with a higher language analytic ability could benefit more

from meta-linguistic explanations than direct corrections. Stefanou and Revesz (2015) also examined the effect of learner analytic ability on their learning development due to different types of CF. However, contrary to Sheen (2007), the researchers found that while the participants with higher analytic ability benefited from direct feedback, no connection was found between IDs and the achieved gains of direct feedback plus metalinguistic explanations. In another research, Rahimi (2015) considered the effect of cognitive and affective factors on the retention of CF by Iranian EFL learners who received indirect CF plus metalinguistic explanations in the form of codes on five broad error categories (i.e., verb, noun, article, word, and sentence). The results showed that compared to the field-dependent-oriented learners, those who were field independent benefited more from teacher CF on sentence structure in the short run, and on the verb, noun ending, and article in the long run. From the affective perspective, students with higher motivation had better success in their subsequent writings in the posttest, while in the delayed posttest motivation was not a determining factor for student success.

As the reviewed studies suggest, there are conflicting results on the role of personality traits in language learning development. While some studies reported that personality traits could predict EFL learners' success, other studies could not find any significant relationship between the two variables. This could be explained by various factors, including the use of different instruments, the small sample size of the studies, and the way language-related traits have been measured. To provide further evidence in this regard, this study investigated if there was any significant relationship between different personality traits and speaking accuracy development of Iranian high school learners of English during the COVID-19 pandemic by addressing the following research questions:

- 1) Does virtual education during the COVID-19 pandemic affect the speaking accuracy of extrovert and introvert Iranian high school learners of English differently?
- 2) Does virtual education during the COVID-19 pandemic affect the speaking accuracy of stable and neurotic Iranian high school learners of English differently?
- 3) Which learner personality trait was most affected by virtual education during the COVID-19 pandemic in terms of learners' speaking accuracy development?
- 4) What are the perceptions of Iranian high school learners of English with different personality traits about virtual education during the COVID-19 pandemic?

3. Methodology

3.1. Participants

This mixed-methods study recruited 95 male and female Iranian high school English learners (aged 15 to 18 years old) from private language institutes in Ahvaz, southwestern Iran, using the convenience sampling technique. In order to ensure the homogeneity of the participants in this study, a Quick Oxford Placement Test (QOPT) was included to determine the students' levels of proficiency. Consequently, 32 male and 22 female students who scored between 31 and 40 were selected to participate in the 18 online sessions that encompassed various speaking tasks on SHAD. This score band is equivalent to the A2-2 level in the Common European Framework of Reference for Languages (CEFR) from the pre-A1 to C2. This level of proficiency was indeed selected to accommodate more high school English

learners, since proficiency levels higher than A2-2 are hardly observed among Iranian high school learners of English (Sadeghi & Richards, 2015).

3.2. Instruments

3.2.1 QOPT

In order to ensure the homogeneity of the participants, the researchers administered a QOPT including 120 items demonstrating the test takers' ability to use English for everyday purposes. The test is divided into two parts, namely language use, and listening. In the language use section, including 110 items, in addition to standard grammar, lexis, and listening questions, the test concentrates on meaning beyond the sentence, including the implied meanings. The language sampled in the test is a reliable indicator of a person's general language proficiency. The listening section, in turn, includes ten items that require the learners approximately ten minutes to complete. To calculate the reliability of the QOPT, the internal consistency of scores within the test itself was examined using Cronbach's alpha. The value of Cronbach's alpha ($\alpha = 0.88$) is deemed acceptable and shows how well the items within the test are measuring the same construct. As for the content validity of the QOPT, three experts in language testing and assessment reviewed the test items to determine if they adequately represented the content domain. They ensured that the 120 items covered the necessary aspects of using English for everyday purposes, including grammar, lexis, listening, and implied meanings.

3.2.2 Eysenck Personality Inventory (1975)

The Eysenck Personality Inventory (EPI), measuring two pervasive, independent dimensions of personality, namely extraversion-introversion and neuroticism-stability, was administered to identify personality traits among the participants. EPI accounts for most of the variance in the personality domain and contains 57—Yes-No questions measuring extraversion/introversion and neuroticism/stability. The presence of a falsification measure is provided for the recognition of response distortion. The EPI score band includes:

Lie score, which is out of nine, measures how socially desirable the respondents are trying to be in their answers. The respondents who score five or higher on this scale are most likely trying to make themselves look decent and are not being entirely honest in their responses. In E (Extraversion) and N (Neuroticism), which are scored out of 24, the former measures how extroverted the respondent is, whereas the latter measures how neurotic the respondent is. Before being administered, the EPI was translated into Persian to ensure the accuracy of the translation. This step helped ensure that the meaning of the items was preserved during the translation process, and, in turn, contributed to the content validity of the EPI (Bodling & Martin, 2011). To calculate internal consistency reliability, Cronbach's alpha was used to assess the consistency of responses across the items measuring each dimension (E and N) and the lie score ($\alpha = 0.86$). The higher the reliability coefficient, the more consistent the responses are within each dimension.

3.2.3. Speaking Test

In order to check the effects of virtual instruction on the participants' speaking accuracy, the researchers designed a speaking accuracy test based on some topics covered in the Vision English for Schools Series, developed by the Iranian Ministry of Education, including a)

Iranian scientists; b) using dictionaries; and c) renewable energy, etc. The speaking accuracy test included a set of fixed questions conducted across all participants similarly as follows:

What do you know about the most famous Iranian scientists? What are their most well-known inventions?

Why is it important to respect our elders?

How important is it to protect our culture for the next generation?

How can we improve our pronunciation?

Where can we find some helpful information about words?

What factors do you consider when choosing a dictionary?

How many different types of renewable energy are there?

In your opinion, can renewable energy replace fossil fuels?

Will renewable energy sources stop global warming?

The speaking test was intended to be carried out through SHAD video calls in the form of a four-minute interview between the researcher and each participant. The interviews were voice-recorded and analyzed in terms of the ratio of accurate verbs used by the participants in the test. Since learners' speaking skill, in general, develops longitudinally, measuring its development during a short-term treatment may not be worthwhile. As such, the number of accurate verbs produced by the participants in the speaking test was divided by the total number of verbs they used in their speech to measure their speaking accuracy development. This ratio was regarded as the participants' speaking accuracy test score based on Yuan and Ellis (2003). To measure the reliability of the speaking test, two raters scored the participants' performance in the speaking tests, and the results taken from the two raters were compared through Pearson Correlation Coefficient (see Table 2).

Procedure

After obtaining the informed consent from the volunteering students, one of the researchers, as teacher-as-researcher, administered the QOPT to see if all the students enjoyed almost the same level of general language proficiency. Having scored the tests, the researchers included the test takers who scored between 31 and 40, equivalent to the A2-2 level in the CEFR as the participants. Afterward, the participants took the EPI intended to identify their personality traits in terms of extroversion/introversion and neuroticism/stability. According to the findings of the inventory, the participants were categorized into four groups as follows:

Group 1: The participants with an N score below 12 (Stable).

Group 2: The participants with an N score above 12 (Neurotic). Group 3: The participants with an E score below 12 (Introvert). Group 4: The participants with an E score above 12 (Extrovert).

Having completed the QOPT and EPI, the participants including 32 male and 22 female Iranian high school English learners aged 15 to 18 years old, took a speaking test based on the course content of Vision English for Schools Series on SHAD. The test was voice-recorded and rated in terms of the ratio of accurate verbs used by the participants. The test scores were, in turn, considered as a benchmark for later comparative analysis with the post-

assessment.

In the treatment phase, SHAD was taken as the instructional platform where all participants took part in 18 online treatment sessions over 12 weeks. In each session, one topic, which was based on the course content of Vision (3) textbook, was selected by the teacher researcher so that students could embark on diverse tasks and practices as follows:

Picture prompt ESL warm-up: Depending on class topic, the teacher-as-researcher shared some pictures with the participants, discussed each picture that lent itself well to the class topic and helped students activate their prior knowledge about the topic. The students were then instructed to describe what they could see, guess what would happen next, link it to their previous experiences, make sentences based on each picture, respond to a few related questions, etc.

Retelling a story: This activity focused on the speaking accuracy of some targeted grammatical structures. Each student had to retell a story related to the topic at hand to the class. Story retelling was characterized by actively involving a learner in the reading episode and promoting additional elaboration on the story in their own words (Clatt & Shaw, 1988).

Breaking news English: The students were asked to tell news related to the topic at hand in two or three minutes so they could receive feedback from the teacher and their peers.

Short video clips: A video clip of 4-5 minutes in length was shared in SHAD, and the students were asked to discuss it in line with the topic at hand.

Presentation: The students were asked to give an oral presentation about the topics covered.

Throughout the treatment, the researcher played the role of a supervisor and a facilitator. In the post-assessment phase, the students retook the speaking test based on the same topics covered in the Vision English for Schools Series, and their performances were scored concerning the ratio of accurate verbs to explore any significant relationship between the participants' personality traits and their speaking accuracy development through virtual education.

To address the fourth research question, the researchers sought the perceptions of Iranian high school English learners with different personality traits about virtual education through an unstructured telephonic interview in Persian with twenty participants (8 males and 12 females). The interviews indeed progressed in the manner a typical conversation would; however, it concerned the research topic, and the participants were asked to express their perceptions about learning English via SHAD during the COVID-19 pandemic.

4. Results

The descriptive statistics of the QOPT are illustrated in Table 1.

Table 1. Descriptive statistics of the QOPT

	Valid	95
N	Missing	0
Mean		37.3368
Median		36.0000
Mode		36.00a
Std. Deviation		1.01338E1
Skewness		1.038
Std. Error of Skewness		.247
Kurtosis		1.127
Std. Error of Kurtosis		.490
Minimum		19.00
Maximum		70.00

a. Multiple modes exist. The smallest value is shown

According to Table 1, the mean and standard deviation of QOPT scores were 37.3 and 1.01, respectively. Based on the QOPT results, 54 out of 95 Iranian high school English learners who scored between 31 and 40, equivalent to the A2-2 level in CEFR, were selected as the participants to include more high school English language learners due to the fact that higher proficiency levels than A2-2 are infrequently seen among Iranian high school learners of English.

To measure the reliability of the speaking test, two raters scored the participants' performance in the speaking tests, and the results taken from the two raters were compared through the Pearson correlation coefficient (r). Moreover, QOPT and EPI were piloted on 20 comparable participants twice, and the test-retest reliability was measured. The r values for these instruments are presented in Table 2.

Table 2. The reliability of the QOPT, EPI, and speaking test

Instrument	Sig.	Pearson correlation
QOPT	0.00	0.725**
EPI	0.00	0.739**
Speaking Test	0.00	0.919**

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

In order to identify the personality traits of the participants, the results of EPI were analyzed descriptively, and the participants were placed into four personality trait groups, including neurotic, stable, extrovert, and introvert. Table 3 presents the frequency and the mean score of each group.

Table 3. *Distribution of the participants in terms of personality traits*

Personality Trait		Frequency	Mean Score
Extroversion	Introvert	30	9.2
	Extrovert	24	16.1
	Sum	54	12.26
Introversion	Stable	35	10.8
	Neurotic	19	17.1
	Sum	54	13.01

To measure the effects and the interaction of the two independent variables on the participants' speaking accuracy, the researchers compared their scores on the speaking tests. Descriptive statistics were run to notice if there was any significant difference in terms of speaking accuracy among the four groups of learners before the treatment. Table 4 provides the mean and standard deviation for each combination of the independent variables.

Table 4. *Descriptive statistics of pretest speaking test*

	N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
Stable	35	0.5949	0.12731	0.02152	0.35	0.88
Neurotic	19	0.5926	0.11484	0.02635	0.41	0.81
Introvert	30	0.5767	0.10880	0.01986	0.35	0.79
Extrovert	24	0.5950	0.11096	0.02265	0.36	0.81
Total	108	0.5894	0.11527	0.01109	0.35	0.88

As Table 4 illustrates, the four groups were roughly the same in terms of their speaking accuracy scores at the outset of the study. According to Table 4, the highest speaking accuracy scores belonged to the extrovert group members ($M= 0.595$), while the lowest scores belonged to the introvert group participants ($M= 0.576$). The Levene test was performed to check the homogeneity of the variances.

Table 5. *The Levene test of homogeneity of variances*

Accuracy pretest			
The Levene Statistic	df1	df2	Sig.
0.253	3	104	0.859

As shown in Table 5, the Levene test significance equaled 0.859 indicating that variances were homogeneous. The normality test of Kolmogorov-Smirnov and Shapiro-Wilk was followed to ensure the normality of the data. The results of these two tests are presented below in Table 6.

Table 6. Normality of distribution test

Personality	Traits	Kolmogorov- Smirnova			Shapiro- Wil		
		Statistic	df	Sig.	Statistic	df	Sig.
	Stable	0.074	35	0.200*	0.988	35	0.958
AcAccuracy pretest	Neurotic	0.105	19	0.200*	0.956	19	0.490
	Introvert	0.150	30	0.084	0.964	30	0.398
	Extrovert	0.116	24	0.200*	0.978	24	0.851

Lilliefors Significance Correction

*. This is a lower bound of the true significance.

As can be seen from Table 6, in all four groups, the dependent variable, i.e., accuracy scores, were normally distributed since the values of the Kolmogorov-Smirnov and Shapiro-Wilk tests were greater than 0.05. The pretest scores in the four groups were then compared using the one-way analysis of variance (ANOVA). The results of the one-way ANOVA are given below in Table 7.

Table 7. One-way ANOVA results related to the pretest

Accuracy Pretest	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.007	3	.002	.168	.918
Within Groups	1.415	104	.014		
Total	1.422	107			

It can be seen in Table 7 that the significance value is 0.918 ($p= 0.91$), which is much above 0.05, and, therefore, there is no statistically significant difference in the mean score of the speaking test before the participants with different personality types took the virtual instruction. In order to measure the effects of virtual instruction on the participants' speaking accuracy, the researchers tested the significance of the difference in the posttest speaking scores across the four personality type groups. To this end, descriptive statistics were run to notice if there was any significant difference in the speaking accuracy of the four groups after the treatment. Table 8 provides the mean, standard deviation, and minimum and maximum scores for each group of the independent variables.

Table 8. Descriptive statistics of posttest speaking test scores of the four groups

	N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
Stable	35	0.6157	0.12370	0.02091	0.36	0.81
Neurotic	19	0.6147	0.09258	0.02124	0.45	0.80
Introvert	30	0.6837	0.08751	0.01598	0.49	0.82
Extrovert	24	0.6088	0.08833	0.01803	0.47	0.77
Total	108	0.6329	0.10519	0.01012	0.36	0.82

As Table 8 illustrates, the four groups differed in terms of the mean of their speaking test scores after receiving the virtual instruction. According to Table 8, the highest speaking accuracy scores belonged to the introvert group members ($M= 0.683$), while the

lowest scores belonged to the extrovert group participants ($M=0.608$). The Levene test was then run to check the homogeneity of variances as one of the assumptions of one-way ANOVA.

Table 9. *The Levene test of homogeneity of variances*

Accuracy pretest			
The Levene Statistic	df1	df2	Sig.
2.424	3	104	0.07

As in Table 9, the Levene test significance equaled 0.07 showing that variances were homogeneous. The normality test of Kolmogorov-Smirnov and Shapiro-Wilk was then followed. Although Kolmogorov-Smirnov results were sufficient for claiming the normality of the data, Shapiro-Wilk results were examined to ensure the normality of the data. The results of these two tests are presented below in Table 10.

Table 10. *Normality of distribution test*

Personality	Traits	Kolmogorov- Smirnova		Shapiro- Wil			
		Statistic	df	Statistic	df	Sig.	
Pretest	Stable	.097	35	0.200*	0.960	35	0.230
		0.154	19	0.200*	0.948	19	0.360
	Introvert	0.129	30	0.200*	0.956	30	0.237
	Extrovert	0.209	24	0.08	0.936	24	0.132

a. Lilliefors Significance Correction

*This is a lower bound of the true significance.

As represented in Table 10, in all four groups, the dependent variable, i.e., accuracy scores, were normally distributed since the values of the Kolmogorov-Smirnov and Shapiro-Wilk Tests were greater than 0.05. The four groups' posttest scores were then compared using the one-way ANOVA procedure. The results of the one-way ANOVA test are presented below in Table 11, indicating that the significance value is 0.019 ($p=0.019$), which is much below 0.05. Therefore, there is a statistically significant difference in the mean score of the speaking test scores after the participants of the four personality types took the virtual instruction.

Table 11. *One-way ANOVA results of the posttest*

Accuracy Pre	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.108	3	0.036	3.477	0.019
Within Groups	1.076	104	0.010		
Total	1.184	107			

The results related to the one-way ANOVA indicated that a significant difference existed in the four groups in terms of their speaking test scores after receiving the instruction. In other words, opposite to the pretest homogeneity of speaking test scores across the four groups, the groups were not homogeneous in their speaking accuracy after they received the treatment, and the instruction resulted in a change in the speaking accuracy of the participants with different personality traits. The Tukey post hoc test was followed to

identify which group performed the most successfully in the posttest. The results are shown in Table 12.

Table 12. Multiple comparisons of posttest speaking accuracy differences

Accuracy Post Tukey HSD						
(I) Personality Traits	(J) Personality Traits	Mean Difference(I-J)	Std.Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Stable	Neurotic	0.00098	0.02899	1.000	-0.0747	0.0767
	Introvert	-0.06795*	0.02531	0.041	-0.1340	-0.0019
	Extrovert	0.00696	0.02696	0.994	-0.0634	0.0774
Neurotic	stable	-0.00098	0.02899	1.000	-0.0767	0.0747
	Introvert	-0.06893	0.02982	0.102	-0.1468	0.0089
	Extrovert	0.00599	0.03124	0.997	-0.0756	0.0875
Introvert	stable	0.06795*	0.02531	0.041	0.0019	0.1340
	Neurotic	0.06893	0.02982	0.102	-0.0089	0.1468
	Extrovert	0.07492*	0.02786	0.041	0.0022	0.1477
Extrovert	stable	-0.00696	0.02696	0.994	-0.0774	0.0634
	Neurotic	-0.00599	0.03124	0.997	-0.0875	0.0756
	Introvert	-0.07492*	0.02786	0.041	-0.1477	-0.0022

*. The mean difference is significant at the 0.05 level.

The results of the Tukey post hoc test showed that the mean of the speaking test score was significantly higher among introvert learners (mean= 0.683 ± 0.08; p= .046) compared to the extroverts, stables, and neurotics. There was, however, no statistically significant difference between the three groups of extroverts, stables, and neurotics. Therefore, considering the first research question, the results indicated that virtual education during the COVID-19 pandemic affected the speaking accuracy of extrovert and introvert Iranian high school learners of English differently. However, regarding the second research question, the results indicated that virtual education did not affect the speaking accuracy of stable and neurotic Iranian high school learners of English differently. As with the third research question, the results indicated that introversion, as a personality trait, was most positively affected by virtual education during the COVID-19 pandemic in terms of the learners' speaking accuracy.

In turn, the participants' perceptions about the virtual education during COVID-19 pandemic represented the challenges and opportunities they had in online EFL classes in terms of 12 themes; nine were related to challenges and three to the opportunities of online EFL classes. The nine dominant themes that emerged from the interviews concerning the challenges of virtual education during the COVID-19 included non-customized platforms, material-related issues, connection/Internet issues, pedagogical problems, evaluation problems, teachers' limited IT literacy, context-dependent issues, interaction-related issues, and students-related problems. Three dominant themes emerging from the interviews in relation to online class opportunities were, in turn, identified to be more freedom in online classes, availability of learning aids in online classes, and the supplementary role of online classes to regular classes.

5. Discussion

The first research question in this study investigated if virtual education during the COVID-19 pandemic affected the speaking accuracy of extrovert and introvert Iranian high school learners of English differently. The results revealed that in comparison to extroverts, introvert English learners took more advantage of virtual instruction in terms of their speaking accuracy test scores. Indeed, while there was no significant difference between introverts' and extroverts' scores in the pretest scores, the difference in the posttest scores was significantly higher for introverts. This finding, however, contradicts some previous studies. For instance, Ehrman (2008) reported that introvert EFL learners were more concerned with speaking accuracy, while extroverts tended to be more fluent than accurate. This contradiction can be explained by the treatment context, given that the present study was carried out in an online setting, while Ehrman's study was carried out in a face-to-face classroom environment. The results of this study also contradicted those of Iwawaki, Eysenck, and Eysenck (1980), who found no significant differences in overall test scores between extroverts and introverts. The contradictions between the two studies could be explained by the small sample sizes, the high number of questionnaire items, the use of raw questionnaire items, and/or the context of the study.

In a similar strand, Vural (2019), who investigated the interaction between personality traits and foreign language speaking performance and anxiety, reported that extraversion, openness and conscientiousness significantly and negatively, while neuroticism and introversion significantly and positively predicted foreign language speaking performance, and anxiety. The results also suggested that personality could predict foreign language speaking performance. Indeed, the point that introversion affected speaking performance positively while extraversion negatively affected it agrees with the present study; however, the point that neuroticism and introversion were both positively related to speaking performance contradicted it.

The second research question sought if virtual education during the COVID-19 pandemic influenced the speaking accuracy of stable and neurotic Iranian high school learners of English differently. Based on the findings, no significant difference existed between neurotics and stables in terms of the effects of virtual instruction on their speaking accuracy. Indeed, the mean accuracy scores of the neurotics and the stables were not statistically significant either in the pretest or the posttest. The underperformance of neurotics in the posttest can be explained by Dewaele's (2013) statement, in which a significant positive relationship exists between the trait of neuroticism and extraversion on the one hand, and second language anxiety on the other hand. Indeed, language anxiety might have prohibited the development of speaking accuracy among the participants. This claim is made because, as Bahrudin and Amir (2018) maintain, the element of neuroticism possesses the attributes of feeling worrisome; therefore, the learners tend to be more anxious about how their linguistic competence would be perceived.

The results of the third research question, in turn, revealed that in comparison to extroverts, neurotics, and stables, introvert learners took more advantage of virtual instruction in terms of its effect on their speaking accuracy. Moreover, the findings indicated

that the virtual instruction did not affect the speaking accuracy of neurotic, stable, and extrovert EFL learners in significantly different ways. In this regard, some previous studies have reported similar findings, although most have been carried out in face-to-face classroom contexts. For instance, Hyland (2011) has confirmed the interaction between affective factors and EFL learners' cognitive processes. In the same vein, Rahimi's (2015) results showed that personality traits interacted with language-related skills. He maintained that compared to the field-dependent-oriented learners, field-independent learners benefited more from teacher's corrective feedback on sentence structure in the short term, and corrective feedback on the verbs, noun endings, and articles in the long term.

The fourth research question exploring the perceptions of Iranian high school learners of English with different personality traits about virtual education during the COVID-19 pandemic, yielded essential results regarding the opportunities and challenges they experienced in online English classes. As regards such challenges as design and material-related issues, some respondents reported it was cumbersome to complete class assignments using non-customized online platforms, which agrees with the findings of some previous studies (e.g., Krasulia & Saks, 2020; Mashhadi, Al Suraiifi, & Fahad, 2022). Similarly, Mashhadi, et al. (2022) found it troublesome for students to read text-based instructional materials on some non-customized online platforms such as mobile phones' tiny screens.

Some students also voiced their concerns related to connection/Internet issues in online classes, which are in line with the results of Khatoony and Nezhadmehr (2020), indicating that the low speed of the Internet could be a hindrance to holding online classes in Iran. Based on what the interviewees said, the problem even became more complex for teaching pronunciation and speaking skills online. This finding is consistent with the findings of Kochem et al. (2020), who found teaching pronunciation online demanding. Maldonado Fernández and Pérez Fuentes (2020) likewise had some related challenges in teaching reading comprehension skills in online classes. Further, some students interviewed referred to English teachers' limited IT literacy and pedagogical issues in holding online classes. This is consistent with the findings of Hussain Al-Qahtani (2019) who believed that teachers were not well-prepared to teach English online. In terms of the evaluation problems, taking exams online made most learners very stressed out, which conforms to Mashhadi, et al. (2022). This entails that test for online classes be developed based on the affordances and limitations of digital platforms.

Considering the student-related issues, some were concerned about financial issues and believed that using digital devices for long-term English learning was not cost-effective. These findings corroborate those of Abdul Razak and Ali (2019), Ameen, et al. (2017), and Fujimoto (2012), who expressed their concerns about the expense of investing in technology-enhanced education. Regarding the virtual education opportunities, the majority of the respondents believed that learning through virtual platforms could extend learning beyond the boundaries of conventional classrooms on an anywhere-anytime basis which is in agreement with the results of previous literature (e.g., Hayati, et al., 2013; Rahman, 2020; Yurdagül & Öz, 2018).

6. Conclusion

This study was mainly intended to investigate the effect of virtual instruction of English during the COVID-19 pandemic on the speaking accuracy of extrovert/introvert and stable/neurotic Iranian High school learners of English. The results indicated that introversion was most positively affected by virtual education during the pandemic regarding the participants' speaking accuracy. However, as the reviewed studies indicated, the results about the role of personality traits in the language learning process are still contradictory. While some studies reported that personality traits could predict EFL learners' success, others could not find any significant relationship between the two variables. The participants' perceptions also revealed the challenges and opportunities Iranian High school English learners had in online EFL classes. The findings have several implications for teachers, curriculum designers, and material developers. Teachers should consider individual learner differences when designing and implementing virtual language instruction. Providing tailored instructional approaches and tasks that cater to the strengths and preferences of different personality types can enhance learning outcomes. Curriculum designers and material developers should likewise take into account these insights to address the specific needs and concerns of students in virtual language education. This can include developing interactive and engaging materials that promote active participation, interaction, and communication in the online learning environment.

Given that the study included a relatively small sample size of 54 Iranian high school English learners, the findings may not be directly transferable to other educational contexts or language learning situations. Moreover, the study focused on the virtual instruction of English through SHAD. The findings may not be applicable to other virtual learning platforms or settings, as different platforms may have varying features, resources, and instructional approaches. Further cross-cultural research is desirable in order to identify potential cultural factors that may influence the effectiveness of virtual education in different cultural and linguistic contexts. In addition, the influence of a broader range of personality traits beyond extraversion-introversion and neuroticism-stability, such as openness to experience, agreeableness, and conscientiousness can further deepen the understanding of the effects of virtual instruction on speaking accuracy.

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