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Structural Equation Modeling of the Individual, Linguistic, and Social Variables in Predicting Iranian Young Adult Immigrants' Speaking Fluency, Accuracy, Complexity, and Pronunciation in Canada

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ABSTRACT
The study investigated the role of age of arrival, length of resistance, amount and types of input, language-richness, and parents' educational background in predicting Iranian immigrants' speaking fluency, accuracy, complexity, and pronunciation. To attain the goal, 108 Iranian intermediate EFL learners living in Canada, who were homogenized through the CELPIP-General Test, were selected based on the availability sampling to complete the Alberta Language Environment Questionnaire (ALEQ) and participated in a speaking test. The performances were assessed based on Wigglesworth and Storch's (2009) fluency, Storch and Wigglesworth's (2007) accuracy, and Skehan's (2009) complexity. Pronunciation was measured according to Jenkins' (2000) Lingua Franca Core (LFC) which focuses on phonetic features crucial to intelligibility. The structural Equation Modeling (SEM) and the schematic illustration confirmed the hypothesized model (x^2⁄df= .037 RMSEA=.043; RMR =.01; GFI = .95; AGFI =.74; NFI =.70; CFI =.79; IFI =.88; TLI=.89) revealing that age of arrival (AoA), schooling in L2, and language-rich activities could predict fluency, accuracy, complexity, and pronunciation, however, LoR was a significant predictor of neither complexity nor pronunciation. While siblings' input/output could predict only speaking accuracy, maternal education significantly predicted speaking complexity. The findings supported the Critical Period Hypothesis, the significant role of AoA in the development of bilingualism, and the effectiveness of L2 instruction. The results confirmed the direction of the path model exposing the inefficacy of paternal and maternal education and parents' input/output in predicting the variances in immigrants' speaking ability. The findings suggested that parents maximize the number of activities in the second language and, if possible, migrate to second-language countries before their children pass the critical age to learn the second language.

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1. INTRODUCTION

The examination of the individual, cultural, and social affecting young adult immigrants' L2 ability is significant since the literature has shown that their L2 ability can determine their educational and occupational success in the short and long run. Immigration, in most cases, is conjoined with the acquisition of a new language. Although migration, in most cases, is associated with the acquisition of a new language and occurs in a wide range of different age groups, the type, and quality of the second language acquisition of teenage immigrants, considering the cultural, educational, and psychological impact, social acceptance and acquisition job opportunities are of great importance (Mustafa et al., 2021). Immigrants, however, do not abandon their mother tongue and retain their first language to communicate with family members and contact relatives in their original countries (Pham & Tipton, 2018). The retention of the first language and the acquisition of a second one result in a condition which is known as additive bilingualism which refers to a kind of learning atmosphere that makes individuals improve a second language through immersion while concurrently preserving their abilities in their L1 (Duncan & Paradis, 2020). The use of both languages at home and in other social contexts can function as a significant factor affecting their L2 development.

Each year, a noticeable number of Iranian families immigrate to Canada, and some of these families include underage members. The ability to speak correctly, fluently, and accurately has a significant impact on providing suitable conditions for establishing better communication between immigrant teenagers and their peers in school and society. Lack of correct pronunciation, incorrect sentences, and non-native accents are influential factors in creating a gap between Iranian immigrant teenagers and their peers. Therefore, it is very important to investigate what factors and with what quality affect their accuracy, fluency, complexity, and pronunciation. However, little attention has been paid to the individual, environmental, linguistic, and social factors affecting the speaking ability of young Iranian immigrants in Canada (Noushi and Ghasemi, 2021; Bagheri Nusei and Ersudi, 2022). The present study aimed to fill this gap by investigating whether the participants' LoR, AoA, schooling in L2, language-rich tasks in L2, types and amount of input, and their parents' educational level could predict young adult immigrants' speaking fluency, accuracy, complexity, and pronunciation. To be more specific, the following research questions guided this study:

1. **Does the interaction of predictor variables age of arrival, length of resistance, schooling in L2, amount and types of input, language-rich activities, and parents' educational background (henceforth: external factors) predict Iranian young adult immigrants' speaking fluency, accuracy, and complexity in Canada on a range of latent constructs?**

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2. LITERATURE REVIEW

Age-related factors have always been challenging variables in L2 acquisition literature. Both age of onset (Age of Arrival in immigration studies) and LoR have been examined in a wide range of pertinent studies for their possible effects on immigrants' L2 development. Regarding AoA, the Critical Period Hypothesis (CPH) is at the heart of discussions that suggests after a certain maturational point, the L2 learner is no longer capable of achieving native-like proficiency (Pham & Tipton, 2018). Some scholars (Paradis, 2011) have argued that while younger learners rely on implicit knowledge, older learners use explicit knowledge to acquire an L2. One of the factors that are believed to affect learners' L2 acquisition is the amount of input they receive inside and outside of their homes (Singleton & Pfenninger, 2018). Pham and Tipton (2018) argue that in additive bilingualism, both first and second languages are developed mainly based on the amount of input learners are exposed to. Another pertinent issue is the amount of L1 and L2 used by siblings. The significant effect of input was traced in a number of studies (Paradis et al., 2020). A review of previous studies showed that maternal higher education correlated with immigrant children's level of L2 development. For example, Golberg et al. (2008) and Paradis (2010) found that those children whose mothers had tertiary-level degrees had higher lexical scores than those whose mothers were high school diploma holders. A significant correlation between parental education and children's second language acquisition ability has also been reported in a large number of studies (Paradis et al., 2020). The results of the research showed that usually more educated parents use a wider range of vocabulary and grammatical structures at home, which can significantly improve the second language knowledge of their immigrant children. The findings of this study can enrich the theory of bilingualism by providing evidence from an immigrant group and raising the level of the existing background. It can also determine whether and how age-related variables affect other language variables. The findings can also inform educational policymakers about the possible underachievement of young immigrants so that they can provide additional educational measures to help second language learners catch up with their mother tongue.

3. METHOD

The following instruments were utilized:

Alberta Questionnaire (Paradis et al., 2010). It was used to obtain information on participants' gender, their age at the time of the study, their age at the time of arrival in Canada, amount of exposure to a second language, socioeconomic status, parents' English language proficiency, parental education, types of schools, use of English among family members at home, between older and younger siblings, first and second language input and output directly used by the child, and the child's media experiences. Organized activities and games in both English and Farsi. This questionnaire contains 19 questions in four sections, namely (A) early milestones, (B) current first language abilities, (C) behavior patterns and activity preferences, and (D) family history. The reliability coefficient of the internal agreement was calculated by Cronbach's alpha d and showed an index of 89%, which is a high-reliability index. To evaluate content validity, two qualitative and quantitative methods were considered. In the qualitative

review of the content, five experts in the field of education were asked to provide the necessary feedback after the qualitative review of the tool. In the quantitative content validity, two relative coefficients of content validity (CVR) and content validity index (CVI) were used. To determine CVR, 15 field experts were asked to check each item based on the "necessary", "useful but not necessary" and "not necessary" indicators. The CVR calculated for each item showed an average above 49%, which is a high validity, and the content validity of the items was confirmed. The CVI calculated based on the average CVR of each item was higher than 89% and confirmed the content validity of the used scale.

Speaking Tasks. To examine the speaking accuracy, fluency, complexity, and pronunciation of the participants, the researchers employed five speaking tasks provided in *IELTS 15 Academic Student's Book with Answers with Audio with Resource Bank: Authentic Practice Tests (2020)*. The task included questions about the examinee's background, favorites, education, home, and neighborhood. In the second task, the examinees were provided with a picture together with three questions, which are all related to the same topic, and were required to talk about it for at least five minutes, and the third task included some questions pertinent to task two.

Rating Scales. The following measures were used to assess the quality of L2 speaking output:

I. *a. Fluency:* In the present research, following Yuan and Ellis (2003), fluency was measured on three quantifiable aspects: speed (length of syllables and the number of syllables within each task divided by the number of seconds used to complete the task and multiplied by 60), breakdown (silent pauses, filled pauses, and length of silent pauses), and repair (repeated, reformulated, corrected, reformulated, or replaced syllables, words, and phrases.

II. *b. Complexity:* complexity measure included the chord of the triad, namely, syntactic complexity, syntactic variety, and Mean segmental Type-Token Ratio (MSTTR).

Syntactic complexity: this study, was measured through the proportion of clauses to c-units, as well as the percentage of dependent clauses of total clauses per Communication-Unit (C-unit) (Skehan, 2009). Clauses are either simple independent finite clauses or dependent finite or non-finite clauses. A c-unit is defined as each independent utterance providing referential or pragmatic meaning. Thus, a c-unit may be made up of one simple independent finite clause or else an independent finite clause plus one or more dependent finite or nonfinite clauses.

Syntactic variety: the total number of different grammatical verb forms including tense (e.g., simple present, present continuous, and present perfect) and modality (e.g., can, should, must, and May), and voice (passive and active voice, passive voice in the past).

Lexical sophistication: it was automatically evaluated through Coh-Metrix (McNamara et al., 2014) on the lexical range (LMTD, vocd) and lexical frequency (CELEX log word frequency). Type-token ratio (TTR) was not used to measure lexical diversity as each speech sample had a wide range of length and TTR is sensitive to length. Instead, MLTD and

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Vocd, which are modified TTR to adjust for text length, were used to represent lexical diversity. For grammatical complexity, the number of subordinations per c-unit was used.

III. ***c. Accuracy:*** **Accuracy was measured according to Storch and Wigglesworth (2007) through the total proportion of error-free T-units to all T-units (EFT/T) and the proportion of error-free clauses to all clauses (EFC/C). All types of errors including syntactical errors (e.g., errors in word order, missing elements), morphological errors (e.g., verb tense, subject-verb agreement, errors in the use of articles and prepositions, errors in word forms), and lexical ones were carefully examined. Errors in lexis (word choice) were counted when the correct lexical form or collocation (eg. He was waiting for you) was not used, therefore, the errors in spelling were ignored.**

d. Pronunciation features: The purpose was to measure whether the participants correctly pronounce English sounds. Therefore, instead of focusing on the deviation of particular sounds from the target norms, the present study examined sounds important to speech intelligibility. Specifically, the researchers followed Jenkins' (2000) Lingua Franca Core (LFC) which focuses on phonetic features crucial to intelligibility. The present study acoustically analyzed features using Praat (Boersma & Weenink, 2005). The Forced Alignment and Vowel Extraction (FAVE) program (Labo & Rosenfelder, 2011) was used to automatically align examinees' speech with the text transcription.

Considering the outbreak of Covid-19, all data were collected online since face-to-face access to the participants was either impossible or dangerous. One hundred and eight students (51 boys and 57 girls) living in Toronto, Mississauga, and Newmarket with the age range between 10 and 12 years participated in the study. They were selected based on availability sampling. Parents were administered a questionnaire, as an interview, to gather information about their children's AoA, LoR, the amount of exposure, their educational background, and the frequency with which their children engaged in language-rich activities in English and Persian in a given week. Activities included listening/speaking activities (television, YouTube, What's App, mind games, and music), reading/writing activities (books, websites, computer games, and messaging), playing with friends, and extracurricular activities (homework, sports, and religious activities) as a set of predictor variables. The spoken corpus comprised interviews with the students to assess their speaking skills based on their ability to express their opinions on an abstract topic and speak about their personal experiences, favorites, education, and neighborhood. Due to the Covid-19 condition, all interviews were conducted via Skype and were video-recorded. For better sound quality, the background noise was reduced using Audacity Team (2018) and the recorded files were transcribed according to Philadelphia Neighborhood Corpus transcription guidelines (Labov & Rosenfelder, 2011) via ELAN software (Andersson & *Sandgren*, 2016) (https://tla.mpi.nl/tools/tla-tools/elan/download). In this study, the performance of the participants was measured according to the transcript-based

measurement of the fluency features, lexico-grammatical complexity, accuracy features, and pronunciation. Two raters were full-time doctoral students of the University of Alberta's Language Education Department with an IELTS score of 8 and an average of 4 years of undergraduate teaching experience and were trained for 5 sessions to get familiar with the process of scoring the speaking performances for accuracy, fluency, complexity, and pronunciation. An analytic table on the sub-components of CAF based on the above-mentioned rating scales was prepared and made available to them. Some samples were analyzed in front of them practically to get a hand on scoring these features in the participants' speaking performance. Concerning the transcript-based measurement of fluency features, the transcripts were manually coded with the following features: speed (length and the number of syllables), pause type (i.e., silent and filled pauses), pause position (i.e., juncture and non-juncture pauses), and pause repair (i.e., repair strategy). The pause types were coded on a Praat (Weenink & Boersma, 2005). Silent pauses were automatically detected by a Praat script (Lennes, 2002), and filled pauses were identified as filler words such as *um, uh, hmm,* and so on. Pause position, repair, and speed were manually coded directly on the transcripts. There was 89% of agreement in recognizing the pertinent remarks on CAF and pronunciation features.

4. RESULTS and DISCUSSION

To capture the extent to which all the predictor variables contribute to an overall construct capturing the overall setting in which the participants were acquiring, structural equation modeling (SEM), a statistical technique capable of describing overall unobserved, or latent, constructs through sets of observed and measurable variables was run. SEM allowed the identification of the extent to which the measured predictor components, also known as external factors in this study, (AoA, LoR, Sl2, amount and type of input by parents, older or younger siblings, language-rich activities, parental education), load onto a latent construct speaking proficiency, how the external factors load onto a latent construct background, and to what extent this background construct can predict the speaking proficiency construct in terms of accuracy, fluency, complexity, and pronunciation. The goodness of fit indices for the model was assessed by using the maximum likelihood estimation technique in AMOS version 21. At first, the two latent constructs external factors and speaking proficiency were defined based on the relevant measured variables (the four proficiency variables and the six background factors), and subsequently, proficiency was regressed to the background. According to table 1, the goodness of fit indices in the model for the factors were respectively (GFI=.88) (NFI=.74) (PGFI=.84) (AGFI=.83) (RMSEA=.06) (IFI=.80) (CFI=.90) (RMR=.029). According to the estimate for the goodness of fit index of the model, the closer the obtained values are to number one, the more acceptable they will be. The hypothesized model is shown schematically in Figure 1. The covariance correlation of the variables of each construct with each other was .38; .68; .90; .93; .88; and .91 respectively.

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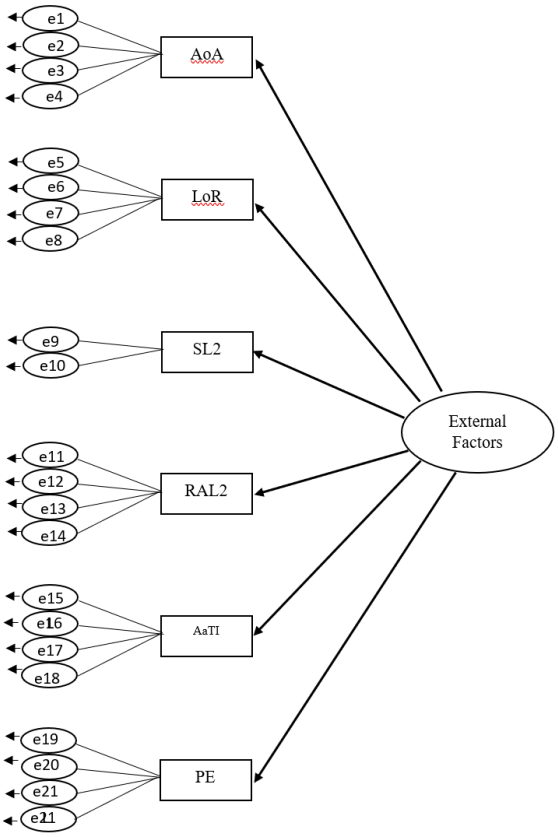
Table 1. Goodness Indicators on the Value of the Measurement Model of the Evaluated Variables

Goodness indicators on value	*OB Values*	
	external	internal
Goodness-of-fit Index (GFI)	.88	.83
Adjusted Goodness-of-fit Index (AGFI)	.83	.75
Parsimony Goodness-of-fit Index (PGFI)	.64	.69
Normed Fit Index (NFI)	.74	.77
Non-Normal Fit Index (NNFI)	.79	.69
Root Mean Square Residual (RMR)	.029	.049
Comparative Fit Index (CFI)	.90	.77
Increment Fit Index (IFI)	.80	.74
Root Mean Square Error of Approximation (RMSEA)	.06	.014
Covariance Correlation of the Variables of Each Construct with Each other's Constructs	.38	.68

The resulting model is schematically represented in Figure 1. The comparative fit index (CFI) is above the threshold of .95 (.99) and the root mean square error of approximation (RMSEA) is below .06.

Figure 1. The Hypothetical Model of Structural equation modeling



Note. AoA=age of acquisition; LoR= length of residence; Sl2= schooling in L2; RAL2= rich activity in L2; AoTI= Amount and types of input; PE= parental education

Covariance matrices of the constructs and the latent variables are presented in Table ١. In terms of the individual measures contributing to the predictor variables, a significant negative path was found between AoA and L2 use while talking to mother (r = -.425, p < .05), father (r = -.483, p < .05), older siblings (r = -.672, p < .05), younger siblings (r = -.685, p < .05), parents (r = -.498, p < .05), and siblings (r = -.739, p < .05), and there were significant, positive relationships between the participants' LoR and their L2 use while talking to mother (r = .411, p < .05), father (r = .451, p < .05), older siblings (r = .629, p < .05), younger siblings (r = .655, p < .05), parents (r = .473, p < .05), and siblings (r = .699, p < .05).

Concerning the amounts of English input from different groups, the findings showed no significant difference between the input from fathers (M = 3.02, SD = 1.21) and mothers (M = 2.86, SD = 1.17), Z = 1.12, p = .262; however, younger siblings (M = 4.22, SD = 1.06) used more English than their fathers (Z = .91, p = .001), mothers (Z = -7.11, p = .001), and older siblings (Z = -5.71, p = .001). Older siblings also used significantly more English than their mothers (Z = -3.56, p = .001) and fathers (Z = -2.49, p = .013). Considering fathers and mothers as parents and older and younger siblings as siblings, the findings showed that the English sibling-directed output was significantly more than the parents-directed output (Z = -3.17, p = .002); similarly, the English sibling-generated input was significantly more than parents-generated input (Z = -6.82, p = .001).

For the language-rich tasks, the results revealed that the participants' LoR was positively related to their speaking and listening in English (television, YouTube, and music) (r = .566, p < .05), reading and writing in English (books, websites, and messaging) (r = .463, p < .05), playing with friends in English (r = .564, p < .05), and doing extra-curricular activities in English (homework clubs, sports, and religious activities) (r = .271, p < .05). The participants' use of English-rich activities is positively predicted by their LoR, and their engagement with Farsi-rich tasks was negatively associated with their LoR in Canada(Z = -3.27, p = .001 and Z = -3.31, p = .001). The interesting point is that the change in the pattern seems to occur around the 6.5 years of stay. In other words, a shift in their engagement

with different languages happens when they are in Canada for 6.5 years.

To examine the predictability power of the external variables on speaking, the descriptive statistics concerning the participants' speaking accuracy, fluency, complexity, and pronunciation with all sub-scales were run (Skewness and Kurtosis ≤2). To determine the factors that predict Iranian young adult immigrants' speaking scores, structural equation modeling was run. First of all, the model fit increases across models were computed. The findings showed that the independent variables in AoA and LoR (F= 2, 105) = 67.86, p < .05), schooling in L2 (F=3, 104) = 49.6, p < .05), amount and type of input (F=6, 101) = 30.15, p < .05), and parental education (F=8, 99) = 22.30, p < .05) significantly predicted the dependent variable. The full model accounted for 64 percent of the variances in the speaking accuracy scores. Table 2 represented the covariance matrix of all scales.

Table 2. Covariance Matrix of All Scales

Variable	AoA	LoR	SL2	RA L2	AaT Ip	AaT Is	PE	ME	accu racy	fluen cy	com plexi ty	pron unci ation
AoA	1.54 *	1.59 *	1.0 1*	1.0 2*	1.05 *	1.01 *	1.06 *	1.03 *	1.04 *	.981 *	.398 *	.476 *
LoR		.850 *	.74 6*	.74 5*	.749 *	.745 *	.738 *	.739 *	.740 *	.507 *	.136	.099
Schooling in L2			.47 4*	.37 1*	.378 *	.371 *	.351 *	.350 *	.356 *	.377 *	.430 *	.444 *
Rich activities in L2				.22 3*	.228 *	.223 *	.220 *	.222 *	.224 *	.379 *	.150 *	.162 *
parents' input/outpu t					.156	.158	.150	.154	.156	.078	.063	.022
siblings' input/outpu t						.238 *	.241 *	.247 *	.248 *	.081	.105	.073
Paternal education							.050	.055	.054	.018	.029	.033
Maternal education								.350 *	.337 *	.029	.115 *	.049

accuracy									.355*	.379*	.383*	.473*
Complexity										.380*	.389*	.476*
Fluency											.430*	.444*
pronunciation												.449*

As Table 2 shows, AoA (β = 1.04, t = 3.11, p < .05), LoR (β = .74٭, t = 2.89, p < .05), schooling in L2 (β = .365, t = 2.16, p < .05), rich activities in L2 (β = .224, t = 2.24, p < .05), and siblings input/output (β = .248, t = 2.12, p < .05) were significant predictors of speaking accuracy; however, paternal (β =.050, t = .405, p = .686) and maternal (β = .054, t = .627, p = .532) education and parents input/output (β = .156, t = 1.74, p = .085) were not significant predictors.

The model fit increases across models were computed for speaking fluency. The findings showed that the independent variables in AoA and LoR (F=2, 105) = 147.87, p < .05), Model 2 (F=3, 104) = 112.72, p < .05), amount and type of input (F=6, 101) = 58.47, p < .05), and parental education (F=8, 99) = 43.09, p < .05) significantly predicted the dependent variable. Regarding the *R* square increases across the models, the results showed that there were significant increases between AoA, LoR, and schooling in L2, R^2 = .733 to R^2 = .758 (p < .05), and between schooling in L2 and amount and type of input, R^2 = .758 to R^2 = .783 (p < .05); however, the increase between amount and type of input and parental education was not significant R^2 = .783 to R^2 = .792 (p = .910). The full model accounted for 79 percent of the variances in the speaking fluency scores. As shown in table 1, AoA (β = .891, t = 3.45, p < .05), LoR (β = .507, t = 2.52, p < .05), schooling in L2 (β = .377, t = 2.48, p < .05), and rich activities in L2 (β = .379, t = 1.63, p < .05) were significant predictors of speaking fluency, but siblings input/output (β = .081, t = .887, p = .377), paternal (β = .018, t = .251, p = .802) and maternal (β = .029, t = .433, p = .666) education were not significant predictors of speaking fluency.

As for the speaking complexity, the model fit rises across models were examined, and the results indicated that the independent variables in AoA (β = .389, t = 1.99, p < .05), schooling in L2 (β = .430, t = 3.59, p < .05), rich activities in L2 (β = .150, t = 1.63, p < .05), and Maternal education (β = .115, t = 2.39, p < .05) were significant predictors of speaking complexity, but siblings input/output (β = .105, t = 1.51, p = .377), LoR (β = .136, t = .856, p = .394), paternal education (β = .029, t = .528, p = .599), and parents input/output (β = .105, t = 1.105, p = .272) were not significant predictors of speaking complexity. Regarding the R square increases across the models, the results revealed that there were significant increases between

AoA, LoR, and schooling in L2, R^2 = .784 to R^2 = .836 (p < .05), between schooling in L2 and amount and type of input, R^2 = .836 to R^2 = .857 (p < .05), and between amount and type of input to parental education, R^2 = .857 to R^2 = .875 (p < .05). The full model accounted for the 87 percent of the variances in the speaking complexity.

The last dependent variable of this study was the participants' pronunciation. AoA (β = .476, t = 2.8, p < .05), schooling in L2 (β = .099, t = 4.42, p < .05), rich activities in L2 (β = .444, t = 1.95, p < .05) were significant predictors of pronunciation, but siblings input/output (β = .070, t = 1.16, p = .248), LoR (β = .132, t = .773, p = .441), paternal education (β = .073, t = .437, p = .599), and Maternal education (β = .49, t = .780, p = .256), and parents input/output (β = .22, t = 1.105, p = .272) were not significant predictors of speaking complexity. To ensure the appropriateness of the factor model for each main variable the significant relationship in the interrelated network of the scale associations, and the adequacy of sampling, the Bartlett test and KMO were employed. A small value for the Bartlett test and KMO (p<.5) means the inappropriateness of the factor model for all main variables and problems with the sampling. Table2 presents KMO and Bartlett's test results on the performance of SME.

Table 3. KMO and Bartlett's Test of Study Variables

Variable		AoA	LoR	SL2	AaTIp	AaTIs	PE	ME
KMO		.83	.85	.84	.86	.87	.81	.80
Approx.		732.1	471.3	432.2	433.2	441.2	431.2	430.2
Bartlett's Test	df	107	107	107	107	107	107	107
	Sig.	.001	.002	.000	.001	.003	.002	.003

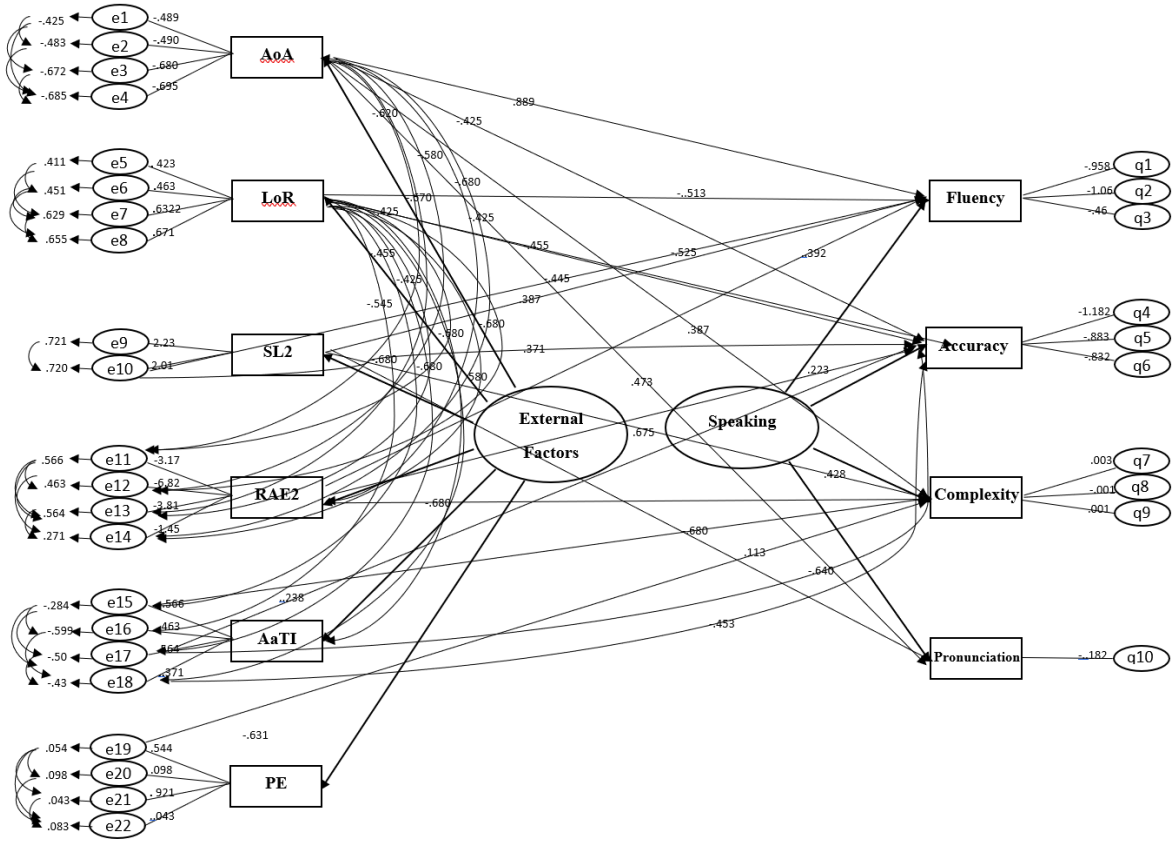
The confidence level of 0.000 for Bartlett's test validated the appropriateness of the factor model for all of the main variables of the study and thus supported the factorability of the correlation matrix. The KMO and Bartlett's Test of Sphericity values suggest that the data on the performance of SMEs in this study is suitable for further analysis. In the confirmatory stage, the goodness of fit indices for the model was assessed by using the maximum likelihood estimation technique in AMOS version 21. The calculated fitness indices indicated that our posited model of the relationships among the study's main variables fitted the data. The results exhibited an acceptable good fit to the data set as follows (x^2/df= .037; RMSEA=.043; RMR =.01; GFI = .95; AGFI =.74; NFI =.70; CFI =.79; IFI =.88; TLI=.89). The loading factors signify the high correlation between each sub-scale and the latent variables. The schematic illustration of the accepted structural model with standardized path coefficients among the main variables and sub-scales of the study is shown in Figure 2. The non-significant paths were eliminated from the final accepted model.

Table 4. Evaluation Index of the Modified Structural Model

Fit Measures	Model Fit	Abb	Index	Consortium of indicators
$50 < X^2$	.037	X^2	Chi-Square ($\chi 2$)	Absolute value index
GFI >	.95	GFI	Goodness-of-fit Index	
AGFI >	.74	AGFI	Adjusted Goodness-of-fit Index	
NNFI >	.79	NNFI	Non Normal Fit Index	Comparative value index
NFI >	.70	NFI	Normal Fit Index	
CFI >	.79	CFI	Comparative Fit Index (CFI)	
IFI >	.88	IFI	Incremental Fit Index (IFI)	
50 < PNFI	.79	PNFI	Parsimonious Normed Fit Index (PNFI)	Indicators of frugal value
RMSEA <	.043	RMSEA	Root Mean Square Error of Approximation (RMSEA)	
BTW 1-3	1,23	CMIN/df	Chi-square Fit Statistics/degree of freedom	

As Table 4 presents, significant paths leading from AoA, LoR, SL2, and rich activities in L2 to the hypothesized model have been found. The factor loadings of the items constructing all the variables were checked and shown to be greater than .05. Most of the inter-group correlations were found between the sub-scales of AoA, LoR, SL2, and AaTI to accuracy, complexity, fluency, and pronunciation, respectively (Figure 2).

Figure 2. SEM in Standardized Estimates of All Significant Paths



The present study investigated the participants' LoR, AoA, amount and type of input L2 use, schooling in L2, language-rich tasks in L2, and their parents' educational level. Furthermore, the extent to which these variables predicted the participants' accuracy, fluency, complexity, and pronunciation was also studied. The findings of this study showed that AoA was a significant predictor of immigrants' speaking fluency, accuracy, complexity, and pronunciation. This finding is in line with prior studies which showed that after a certain AoA (around puberty), there would be a decline in the participants' pronunciation scores in pronunciation (Abrahamsen, 2012; Alborzi, et al., 2018; Saito et al, 2018), accuracy (Jenkins, 2000), and complexity (Saito et al,2018). The findings of this study showed that in all measures of speaking ability, there were points between 10 to 12 years old when the decline in the performance of the participants started.

Concerning LoR, the findings revealed that immigrants' LoR was a significant predictor of speaking accuracy, and fluency, but it was not a predictor of complexity and pronunciation. Prior studies (Saito et al., 2018) found that length of stay significantly predicted immigrants' speaking fluency and accuracy. As Singleton and Pfenninger (2018) argued, LoR (length of L2 experience) seems to affect the time of conceptualization and formulation, in which the concepts and structures are made. As Skehan (2009) emphasizes the synchronicity of these stages in oral production, it seems logical to expect less experienced L2 users to have more

hesitations while speaking in an L2. However, the complexity and pronunciation seemed to be affected by other variables. One indicator of input quality was the participants' years of schooling in L2, which equals high-quality L2 input (Pham & Tipton, 2018). In the present study, schooling in L2 was found to be a significant predictor of speaking accuracy, fluency, complexity, and pronunciation.

Regarding the language used by family members at home, which in this study is labeled as input/output of parents and input/output of siblings, the findings showed that the amount of output directed by parents in English is significantly higher than the input produced by the parent in English, but there was no significant difference between the amount of input produced by the English sibling and the output of the directed sibling. The findings also showed that sibling-directed output of English was significantly higher than parent-directed output. Similarly, input produced by English siblings was significantly higher than input produced by parents. In general, siblings' English resources appear to be a better proportion of the parental counterpart variables. These findings were consistent with the findings of previous studies (Duncan & Paradis, 2020; Paradis et al., 2020). The findings also showed that only maternal education significantly predicts participants' complexity. Contrary to the results of this study, others did not document parental education (especially maternal) to be a significant predictor of immigrants' second language development (Paradis et al., 2020). The reason might be due to the difference in the level of parents' education in this study as compared to the previous ones as it was higher than that in the previous studies. In this study, the vast majority of parents had a high school diploma or higher. Rich language-learning activities in the second language were another variable that significantly predicted immigrants' fluency, accuracy, complexity, and pronunciation. Consistent with previous studies (Paradis et al., 2020), the results showed that immigrants' exposure to a second language through language-rich tasks can significantly predict various aspects of their oral performance.

5. CONCLUSION

Based on the results of this study, both age-related and language experience variables affect Iranian immigrants' L2 ability, which can affect their educational and occupational success. The findings of this study supported the CPH, and the onset age range of 10 was found to be significant. Due to Covid-19 Conditions, this study employed a questionnaire to collect immigrants' language experience profiles. Although the main data collection instrument in the studies similar to the present one is the questionnaire; however, this research tried to enrich the data by combining interviews and questionnaires and examining the various linguistic factors. However, other researchers can use retrospective studies, case-control studies, prospective studies, and observation to record L2 interaction abilities. In addition, other researchers can conduct longitudinal and case studies to examine the role of different variables in the second language development of immigrant children. These

studies can also identify the abilities of different formal and informal learning conditions in the development of immigrants' second language abilities. The present study only focused on the general English language ability of the participants. However, other researchers could conduct the same study using academic speaking tasks to investigate whether variables related to age and language experience can predict immigrants' academic oral performance. Also, due to a large number of variables under study, the lack of sufficient sample size was another limitation of this research that other researchers can provide more accurate interpretations of the subject by increasing the number of participants.

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