Iranian Journal of Applied Language Studies
Print ISSN: 2008-5494 Online ISSN: 2322-3650
Homepage: https://ijals.usb.ac.ir
University of Sistan and Baluchestan
Uppsala University

Development and Validation of Cultuling Competence Test and Examining Its Relationship with Language Aptitude, Cultural Intelligence, Verbal Intelligence, and Second Language Willingness to Communicate

Hossein Makiabadi[1], Reza Pishghadam[2], Shaghayegh Shayesteh[3]

[1]Ph.D., Department of English, Faculty of Letters and Humanities, Ferdowsi University of Mashhad, Mashhad, Iran, Email:hossein201124@yahoo.com

[2]*Corresponding author*, Professor, Department of English, Faculty of Letters and Humanities, Ferdowsi University of Mashhad, Mashhad, Iran, Email:rpishghadam@yahoo.com

[3]Assistant Professor, Department of English, Faculty of Letters and Humanities, Ferdowsi University of Mashhad, Mashhad, Iran, Email:shayesteh@um.ac.ir

Abstract

The focus of prior studies has been on introducing different cultulings in Iranian culture; as a result, little attention has been given to their relationship with individual differences and language-related variables. Therefore, to address this gap, the researchers first devised a cultuling competency test to measure individuals' ability to identify 14 culturally different contexts. They then substantiated the construct validity of the cultuling competency test through CFA, and its reliability was measured using Cronbach's alpha, suggesting high reliability. Next, the researchers aimed to assess the role of cultuling in individuals' language aptitude, verbal intelligence, cultural intelligence, and second language (L2) willingness to communicate (WTC). The results indicated that cultuling is a significant predictor of verbal intelligence. It was also found that L2 WTC and cultural intelligence are positively correlated. Finally, the findings revealed that language aptitude has a significant relationship with both cultural and verbal intelligence.

Keywords: cultuling, cultural intelligence, language aptitude, L2 WTC, verbal intelligence

Received: June 10, 2024 Revised: October 22, 2024 Accepted: November 28, 2024 Published: March 10, 2025
Article type: Research Article DOI: 10.22111/ijals.2025.47777.2422
Publisher: University of Sistan and Baluchestan

How to cite: Makiabadi, H., Pishghadam, R. & Shayesteh, Sh. (2025). Development and validation of cultuling competence test and examining its relationship with language aptitude, cultural intelligence, verbal intelligence, and second language willingness to communicate. *Iranian Journal of Applied Language Studies*, *17*(1), 53-72.
https://doi.org/10.22111/ijals.2025.47777.2422

1.Introduction

Earley and Ang (2003) first proposed the construct of cultural intelligence, or cultural quotient (CQ), and defined it as "a person's capability to adapt effectively to new cultural contexts" (p. 59). CI has been conceptualized as another complementary form of intelligence that assists individuals in tackling diversity and new cultural contexts (Özaslan, 2017). Moreover, Vygotsky (1978, 1986) and Halliday (2003) have highlighted the fact that culture is a social behavior that significantly contributes to language production and profoundly affects people's thoughts within a community. Considering the language-culture relationship, Pishghadam (2013) accentuated the pivotal role of language in providing new insights into the awareness and understanding of a society's culture and held that "language first led to the technology development and at the same time created culture, this culture again produces a special discourse in a society explaining how to practice wisdom" (p. 51). Consequently, Pishghadam (2013), inspired by prior theories on the interconnected relationship between 'language' and 'culture,' combined these two terms and introduced the novel concept of 'cultuling,' that is, 'culture in language' within the sociology of language education.

Another type of intelligence is verbal intelligence (VI), which refers to an individual's ability to grasp, utilize, and manipulate written or spoken language effectively (Gardner, 1983). As rightly put by Armstrong (2009), individuals with a high level of VI can produce written or oral forms more productively. Furthermore, Filiz (2020) indicated that an increase in VI eventually leads to individuals gaining more effective communication skills, as intelligence is deemed one of the basic prerequisites for constructive communication. In other words, it can be concluded that people with a high level of VI are more willing to communicate with others when given the opportunity.

The concept of willingness to communicate (WTC) initially stemmed from the notion of unwillingness to communicate, which was depicted as "a chronic tendency to avoid and/or devalue oral communication" (Burgoon, 1976, p. 60). Later, the term unwillingness was superseded by willingness to convey a more positive sense (McCroskey & Richmond, 1987) and has been proven to be an important contributor to learning and the amount of communication taking place in the classroom (MacIntyre et al., 1998). Additionally, a myriad of variables, such as motivation (Peng, 2015), attitude (Yashima, 2002), and aptitude (Marashi & Sahafnia, 2020), have been assumed to influence WTC in a second language (L2).

In addition to cultuling and WTC, another factor that plays an essential role in L2 learning is a student's aptitude (Dörnyei, 2005; Ellis, 2004; Kormos & Safar, 2008). Language aptitude has been defined as "the strength individual learners have –relative to their population– in the cognitive abilities information processing draws on during L2 learning and performance in various contexts and at different stages" (Robinson, 2005, p. 46).

In brief, owing to the fact that cultuling is a new concept in the sociology of language studies, there is no statistical tool to measure individuals' cultuling competence in different cultural

contexts. Moreover, previous studies have primarily focused on introducing various cultulings in Persian culture; as a result, little attention has been given to the possible relationship between cultuling and language education. Furthermore, after thoroughly reviewing the literature on cultuling, VI, CI, language aptitude, and L2 WTC, the researchers identified a gap concerning the interaction of these variables. More specifically, the main purpose of this study is to respond to the following questions:

1. Does the cultuling competence scale have acceptable psychometric properties (reliability and validity)?
2. Is there any statistically significant relationship between cultling, verbal intelligence, language aptitude, cultural intelligence, and L2 WTC?

2. Literature Review

2.1. Cultuling

Cultural differences in many societies have been a major concern for a large number of linguists, sociologists, and experts in various disciplines (Wardhaugh, 2010). Nieto (2010) defined culture as a set of common beliefs and values within a society that can be transferred from one generation to another, while Heine (2008) asserted that these beliefs profoundly impact people's lifestyles and lead to certain social and mental habits. Furthermore, in Wardhaugh's (2010) words, culture is a tool through which individuals establish communication with other members. As a result, scrutinizing a community's culture provides insights into its people's way of life, customs, beliefs, and thoughts. Moreover, the transference of culture occurs through language, which serves as a symbolic communicative system (Bates & Plog, 1990; Derakhshan, 2018; Pishghadam & Ebrahimi, 2020). In addition, Lakoff (1987) emphasizes the significant role that language plays in shaping an individual's actions and holds the view that language analysis is a key factor in gaining a thorough understanding of a group's habits and culture.

Considering that language and culture are closely interconnected, Pishghadam (2013) convincingly put forward the theory that the meticulous analysis of a society's language paves the way for individuals to uncover its people's cultural patterns, hidden ideologies, traditions, beliefs, customs, and rituals, all of which shape the foundation of what he conceptualized as the "culturology of language" (p. 52). Subsequently, inspired by the theories and hypotheses proposed and emphasized by Halliday (1975, 1994), Vygotsky (1978, 1986), Sapir-Whorf (1956), and Agar (1994), Pishghadam (2013) merged the terms 'language' and 'culture' to introduce the concept of 'cultuling,' or 'culture in language.' "Language can represent the culture of a society" (Pishghadam, 2013, p. 47). Through a close examination of cultulings within a society, individuals can identify faulty cultural genes and habits and attempt to replace them with more appropriate ones. In doing so, words, phrases, and sentences embedded in various contexts are extracted and analyzed to shed light on people's behavior, lifestyle, and hidden cultural aspects (Pishghadam & Ebrahimi, 2020).

Following the emergence of cultuling in sociological studies of language, a plethora of studies has been conducted, including research on swearing (Pishghadam & Attaran, 2014), death-oriented terms (Pishghadam, Firooziyan Pour Esfahani, et al., 2020), and positive thinking (Pishghadam et al., 2020) in relation to this newly developed theory. For example, Pishghadam and Attaran (2014) examined the swearing cultuling from sociological and religious perspectives in English and Persian. After analyzing dialogues from 100 Persian and English films, they demonstrated that Iranians use swearing more frequently and in a wider range of contexts, reflecting a lack of trust and skepticism among community members. Additionally, Mehrabi and Mahmoodi Bakhtiari (2021), in a corpus-based study, investigated the cultuling of insult in the novel *My Uncle Napoleon* based on its English translation. Their findings indicated that anger, sarcasm, violence, and disdain were the primary reasons for employing the cultuling of insult.

2.2. Language Aptitude

Language aptitude is recognized as a set of cognitive capacities that provide individuals with the ability to discern, account for, diagnose, and predict why some people, under equal conditions, can master a second language (L2) more effectively than others (Carroll, 1990; Doughty, 2019; Wen & Skehan, 2021). Carroll (1974) referred to L2 aptitude as "some characteristic of an individual which controls, at a given point of time, the rate of progress that he will make subsequently in learning a foreign language" (p. 320). Furthermore, in Dörnyei and Ryan's (2015) words, L2 aptitude is a person's cognitive readiness and ability to master foreign languages before receiving any prior instruction. A wide array of studies on L2 aptitude has clearly indicated that language learners with higher L2 aptitude tend to be more proficient foreign language learners (Biedron, 2015; Biedron & Pawlak, 2016; Skehan, 2015; Wen, 2012).

Gass and Selinker (2008) have also placed considerable emphasis on the multidimensional nature of language aptitude, defining it as "a learner's ability to learn another language [made up of] numerous components, such as verbal aptitude [which] seems [to be a] reasonable predictor of second language learning success" (p. 417).

In terms of empirical studies, a growing body of research has explored the predictive and explanatory role of language aptitude in explaining individual differences (IDs) in online and offline linguistic task performance, long-term progress, and final achievement in language training programs and classroom instruction (Li, 2015, 2017, 2019; Li & Zhao, 2021). Over the last few decades, many language aptitude tests have been introduced, with the Modern Language Aptitude Test (MLAT), developed by Carroll and Sapon (1959, 2002), being the most well-known and representative assessment tool. Similarly, Ehrman and Oxford (1995) demonstrated that among various ID variables, aptitude measures—such as the MLAT—showed significant correlations with language proficiency. Furthermore, Derakhshan and Malmir (2021) illustrated that L2 aptitude

plays a pivotal role in the development of L2 pragmatic competence, particularly in speech-act knowledge.

2.3. Cultural Intelligence

Cultural intelligence (CI), among different types of intelligence, is a relatively new concept compared to its predecessors, such as emotional and social intelligence (Altinay et al., 2020). CI has been defined as the "ability to interact effectively across cultural contexts and with culturally different individuals" (Thomas et al., 2015, p. 5). Theoretically, metacognition, cognition, motivation, and behavior are recognized as the four major dimensions of CI (Earley & Ang, 2003). Furthermore, Bücker et al. (2016) have elaborated on this multifaceted construct, emphasizing that it comprises two significant aspects: a mental or cognitive component (metacognitive and cognitive CI) and an action-focused component (motivational and behavioral CI). Similarly, Schlagel and Sarstedt (2016) have argued that these four dimensions can be considered independent, as they exert distinct influences on various factors, such as creativity and opportunity recognition (Lorenz et al., 2018).

Empirically, numerous studies have examined the relationship between CI and various language learning variables, particularly over the last two decades (Goh, 2012; Özaslan, 2017; Petrovic, 2011; Şenel, 2020). Overall, findings indicate that CI is a key factor in effective communication and enhances the quality of learning. Additionally, CI has been identified as a strong predictor of students' academic achievement (Collins et al., 2016). Özaslan (2017), in her thesis on the Turkish context, found that CI positively and significantly enhances English language learners' willingness to communicate (WTC). In another study, Presbitero (2019) provided evidence of CI's critical role in reducing foreign language anxiety within global virtual teams (GVTs), ultimately improving their communicative skills and individual task performance.

2.4. Verbal Intelligence

Verbal-linguistic intelligence is one of the multiple intelligences developed by Gardner (1983). It refers to an individual's ability to effectively use language in both oral and written communication (Armstrong, 2009). Gardner (1983) provided a comprehensive definition of linguistic intelligence, describing it as a person's sensitivity to spoken and written language, the capacity to use language to achieve objectives, and the ability to master new languages.

Based on the concept of linguistic intelligence, it can be concluded that it encompasses the ability to persuade others through speech, engage in creative writing, and learn new languages with ease (Erlina et al., 2019). Additionally, Hasanudin and Fitrianingsih (2019) argued that this type of intelligence includes the ability to manipulate syntax, phonology, semantics, and pragmatic elements of language. Baum, Viens, and Slatin (2005) further asserted that an individual's capacity

to use both their native and foreign languages is an integral part of verbal-linguistic intelligence. Similarly, Razmjoo and Jozaghi (2010) suggested that individuals with high verbal-linguistic intelligence are more likely to excel as writers, novelists, comedians, and poets.

Empirical research supports the significance of verbal-linguistic intelligence in communication. For instance, Parsa et al. (2013) demonstrated that this form of intelligence plays a crucial role in effective communication. Al-Mekhlafi (2015) also emphasized that "individuals with strong verbal-linguistic intelligence tend to excel in language mastery, with particular attention to vocabulary and grammar" (p. 2).

2.5. L2 WTC

The concept of willingness to communicate (WTC), which refers to the intention to engage in communication when given the opportunity, was initially introduced in the context of first language (L1) communication (McCroskey & Baer, 1985; McCroskey & Richmond, 1990). MacIntyre et al. (1998, p. 547) extended WTC to the language learning and teaching domain, defining it as "a readiness to enter into discourse in a particular time with a specific person or persons, using an L2." They proposed a pyramid-layered model of WTC, in which various situational and enduring variables influence learners' willingness to use their L2 for communication. Since the emergence of L2 WTC, second language acquisition (SLA) researchers have particularly focused on its internal (trait-like) nature (Fallah, 2014; Lee et al., 2020; MacIntyre et al., 2003; Yashima, 2009). A review of the current findings suggests that factors such as learners' age, L2 motivation, self-confidence, L2 anxiety, international posture, and attitude toward the L2 are positively associated with L2 WTC in the classroom (Cao & Wei, 2019; Dewaele & Dewaele, 2018; Ghonsooly et al., 2012; Lee et al., 2021; Yashima, 2009).

However, recent studies have increasingly conceptualized L2 WTC as a process rather than a fixed personality trait (MacIntyre et al., 1998). That is to say, L2 WTC is considered a dynamic, temporal, and context-dependent phenomenon that can be analyzed across different levels. Consequently, a substantial body of research has investigated external factors influencing learners' L2 WTC. These factors include group dynamics, familiarity with an interlocutor, social support from friends or teachers, topic familiarity and interest, teacher's frequent use of L2, communication mode (e.g., face-to-face vs. online), and international experience (Kang, 2014; Kruk, 2019; Lee, 2020; MacIntyre et al., 2001; Peng, 2019; Peng & Woodrow, 2010; Satar & Özdener, 2008). To gain a more comprehensive understanding of WTC, recent studies have increasingly adopted a situated and dynamic perspective, allowing for the examination of L2 WTC at both trait-like and state-like levels (Dewaele & Dewaele, 2018; Zhang et al., 2018).

3. Methodology

3.1.Participants

A total of 195 individuals from diverse backgrounds were recruited for this study using convenience sampling. The sample comprised 159 females and 30 males, ranging in age from 18 to 38 years (M=21.81, SD=3.82), all of whom were native Persian speakers. It is important to note that participants were assured of the confidentiality of their responses, and verbal consent was obtained from all of them before the study commenced. Additionally, to assess the predictive validity of the Cultuling Competence Scale, a subset of 25 individuals was selected through convenience sampling.

3.2. Instrumentation

3.2.1.Cultuling Competence Test

In this study, the Cultuling Competence Test developed by Makiabadi et al. (2022) was employed to assess individuals' ability to identify various cultulings within Iranian culture. This test includes 14 cultulings derived from *Cultuling: A Novel Approach to Examining Iranians' Cultural Memes*, authored by Pishghadam and Ebrahimi (2020). Additionally, in the present study, the test was examined across formal, semi-formal, and informal contexts. The reliability of the test, as measured by Cronbach's alpha, was found to be 0.82.

3.2.2. Language Aptitude Test

To assess language aptitude, the Pishghadam Language Aptitude Test (PLAT) was utilized. Developed for adults, the test was validated by the Pishghadam Testing and Language Aptitude Measurement Center in 2020. The PLAT comprises 40 items, divided into four sections: Numbers (10 items), Words (10 items), Sentences (10 items), and Invented Language (10 items). The test demonstrated high reliability, with a Cronbach's alpha coefficient of .92.

3.2.3.Cultural Intelligence Scale (CIS)

The CIS developed by Ang et al. (2007) was employed to assess learners' cultural intelligence levels. The CIS is a seven-point Likert scale ranging from "strongly disagree" to "strongly agree" and comprises 20 items. Furthermore, the scale includes four subscales: meta-cognitive CQ (α= .72) (items 1, 2, 3, and 4), cognitive CQ (α=.88) (items 5, 6, 7, 8, 9, and 10), motivational CQ (α= .90) (items 11, 12, 13, 14, and 15), and behavioral CQ (α=.76) (items 16, 17, 18, 19, and 20).

3.2.4. Verbal Intelligence Test

The most widely used test to measure verbal intellectual functioning is the Vocabulary subtest of the WAIS-III (Wechsler, 1981), which consists of 40 words. An examinee is given a word and asked to provide a definition of its meaning. Based on their performance, responses receive 0, 1, or 2 points, allowing for a score range from 0 to 80. In addition, the reliability coefficient of the VI test is .92.

3.2.5. Willingness to Communicate on English Scale

To measure individuals' willingness to communicate, the second 8-item questionnaire, derived from a 27-item questionnaire constructed by MacIntyre et al. (2001) and initially translated into Persian and validated by Makiabadi et al. (2019), was used in this study. Participants responded to items on a five-point Likert-type scale ranging from 1 (never willing) to 5 (always willing). In addition, the scale demonstrates a viable internal consistency of .78.

3.3. Procedure

To collect data, all five scales and tests—namely, the cultuling competence test, language aptitude test, verbal intelligence test, cultural intelligence scale, and willingness to communicate scale—were administered to individuals from diverse backgrounds. It took approximately 1 hour and 30 minutes for participants to complete the items. One of the researchers was always present to address any questions they had. Moreover, participants were assured that their responses would remain confidential. Following data collection, the data were entered into SPSS software. Cronbach's alpha (α) was employed to measure the reliability of the scales, and to verify the construct validity of the cultuling competence test, confirmatory factor analysis (CFA) was conducted. Finally, the relationships among the constructs were examined using structural equation modeling (SEM), and the proposed model was tested through the Amos statistical package.

4.Results

4.1.Descriptive Statistics

Descriptive statistics, including the mean and standard deviation for participants' Language Aptitude (LA), Cultuling Competence, Verbal Intelligence (VI), Cultural Intelligence (CI), and L2 Willingness to Communicate (L2WTC), are presented in Table 1.

Table 1

Descriptive Statistics for the Variables of the Study

	Min	Max	Mean	SD
LA	0	92	40.75	17.56
Numbers	0	11	6.70	2.39
Words	0	20	10.22	4.69
Sentences	0	30	9.00	8.32
Invented Language	0	36	14.83	9.01
Cultuling	12	135	72.71	27.28
Informal	0	67	32.91	14.15
Semi-formal	1	41	20.55	9.35
Formal	2	43	19.25	9.31
VI	30	71	58.39	7.47
CI	40	124	82.00	16.28
Metacognitive	7	27	17.58	3.29
Cognitive	6	37	20.50	6.60
Motivational	5	35	23.72	6.17
Behavioral	5	34	20.20	4.89
L2WTC	12	40	28.01	5.67

As a preliminary step, the normality of the data was examined. As shown in Table 2, the Skewness and Kurtosis values fall within the acceptable range of -2 to +2, indicating a normal distribution.

Table 2

Normality Test for the Data

	Skewness	Kurtosis
LA	.50	.31
Numbers	-.18	-1.01
Words	.57	-.02
Sentences	.82	.15
New Language	.16	-.65
Cultuling	-.09	-.85
Informal	.08	-.61
Semi-formal	-.12	-.90
Formal	.25	-.52
VI	-.89	.75
CI	-.01	-.09
Metacognitive	.07	.06
Cognitive	-.03	-.18
Motivational	-.28	-.01
Behavioral	-.05	.43
L2WTC	-.04	-.11

4.2. Reliability Estimates

The overall reliabilities of the scales and questionnaires, along with their subconstructs, were above .70, which is considered acceptable (Table 3).

Table 3

Reliability Estimates for the Variables

	N	Cronbach's Alpha
LA	40	.85
Numbers	10	.71
Words	10	.81
Sentences	10	.87
Invented Language	10	.71
Cultuling	14	.80
Informal	6	.75
Semi-formal	4	.73
Formal	4	.71
VI	40	.76
CI	20	.91
Metacognitive	5	.72
Cognitive	5	.88
Motivational	5	.90
Behavioral	5	.76
L2WTC	8	.78

4.3. Correlational Analysis

To examine potential correlations among the variables, Pearson's product-moment correlation was conducted. As shown in Table 4, several significant relationships were identified.

Language Aptitude (LA) exhibited a significant positive correlation with Verbal Intelligence (VI) ($r=.29$, $p<0.01$). Additionally, Cultuling demonstrated a significant relationship with VI ($r=.21$, $p<0.01$). VI was also positively correlated with specific subconstructs of LA, namely Words ($r=.17$, $p<0.05$) and Invented Language ($r=.36$, $p<0.01$), as well as with Cultuling in both informal ($r=.20$, $p<0.01$) and formal ($r=.24$, $p<0.01$) contexts. Furthermore, L2 Willingness to Communicate (L2WTC) was positively correlated with Cultural Intelligence (CI) ($r=.34$, $p<0.01$) and all of its subconstructs, including metacognitive ($r=.39$, $p<0.01$), cognitive ($r=.20$, $p<0.05$), motivational ($r=.26$, $p<0.01$), and behavioral ($r=.25$, $p<0.01$). Regarding subconstructs, Invented Language (a subconstruct of LA) showed significant relationships with CI ($r=.14$, $p<0.05$) and one of its subconstructs, Cognitive CI ($r=.13$, $p<0.05$).

Table 4

Correlational Analysis for the Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. LA	1															
2. Numbers	.49**	1														
3. Words	.53**	.20**	1													
4. Sentences	.82**	.44**	.28**	1												
5. Invented Lang	.79**	.18*	.21**	.41**	1											
6. Cultuling	.12	.11	.02	.10	.09	1										
7. Informal	.12	.09	.02	.08	.12	.89**	1									
8. Semiformal	.06	.10	.02	.07	.02	.78**	.51**	1								
9. Formal	.10	.08	.01	.11	.06	.80**	.56**	.50**	1							
10. VI	.29**	.13	.17*	.10	.36**	.21**	.20**	.07	.24**	1						
11. CI	.08	-.02	-.06	.06	.14*	.02	.09	-.02	-.06	.05	1					
12. Metacognitive	.04	-.07	-.04	-.01	.13	.02	.07	.01	-.05	.04	.74**	1				
13. Cognitive	.12	.03	-.05	.10	.17*	.03	.10	-.02	-.06	.02	.82**	.55**	1			
14. Motivational	.05	-.03	-.12	.03	.13	.02	.09	-.01	-.05	.07	.81**	.52**	.49**	1		
15. Behavioral	.03	-.03	.04	.03	.01	-.01	-.01	-.02	-.01	.03	.70**	.41**	.38**	.42**	1	
16. L2WTC	-.05	-.10	-.02	-.07	-.01	.10	.10	.03	.11	-.07	.34**	.39**	.20**	.26**	.25**	1

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

*. Correlation is significant at the 0.05 level (2-tailed).

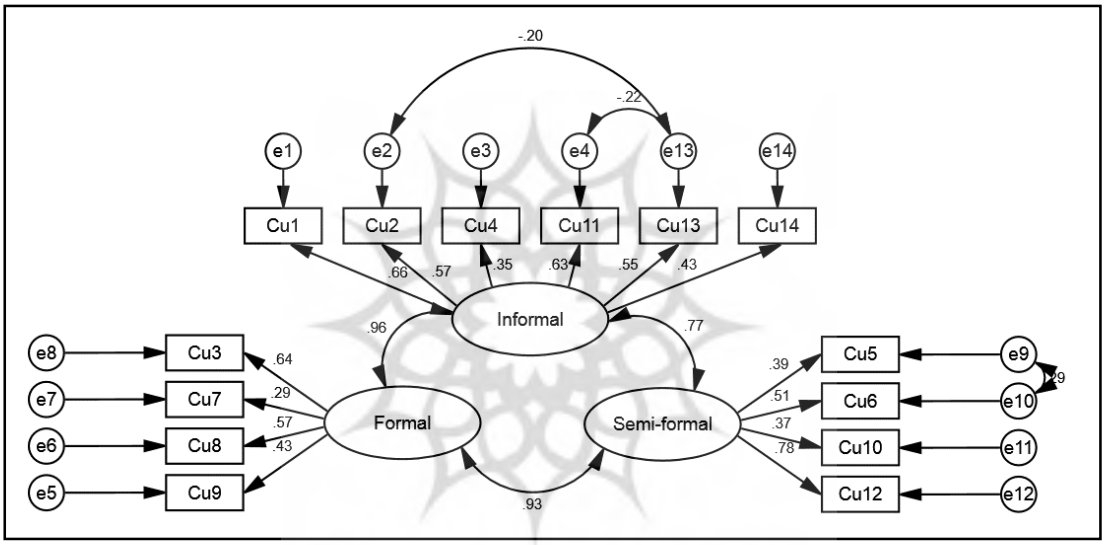
4.4. Validation of the Cultuling Questionnaire

To validate the construct of the Cultuling Questionnaire, Confirmatory Factor Analysis (CFA) was conducted. Prior to this, Harman's single-factor test was performed, revealing that the first factor accounted for only 30.38% of the variance, thereby confirming the multidimensional nature of the construct.

The questionnaire comprises three subconstructs: Informal (6 items), Semi-formal (4 items), and Formal (4 items). Standardized factor loadings are presented in Figure 1. Notably, no items were removed to improve the model fit. Goodness-of-fit indices are reported in Table 5.

Figure 1

Measurement Model for the Cultuling Questionnaire



4.5. SEM Analysis

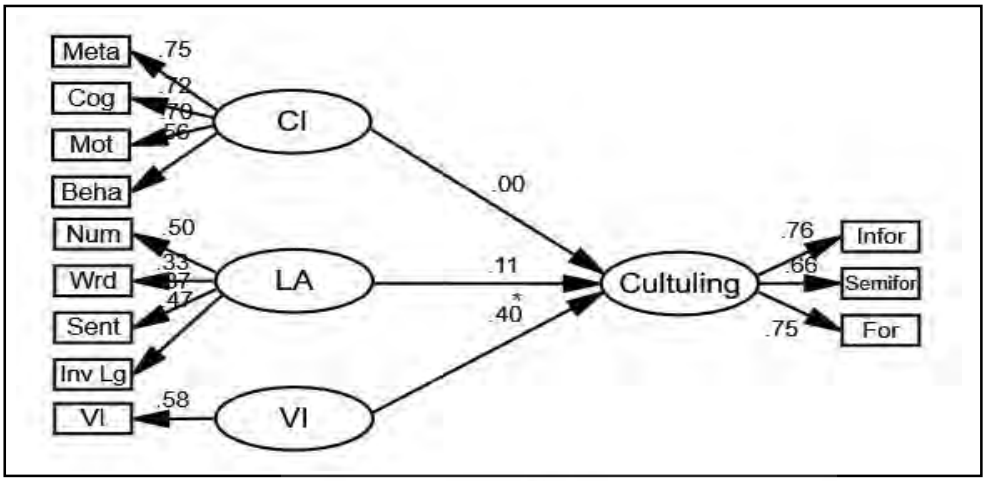
To check the predictive power of the independent variables, structural equation modeling (SEM) was conducted through Amos. Four models (figures 2, 3, 4, and 5) were proposed for the prediction of the dependent variables. The goodness of fit indices showed that the models fit the data adequately (see Table 5).

Model 1

The first model (Figure 2) verifies the predictive power of CI, LA, and VI. As Figure 2 illustrates, only VI predicts cultuling ($\beta = .40$, $p < 0.05$).

Figure 2

The Schematic Representation of the Relationships among CI, LA, VI, and Cultuling

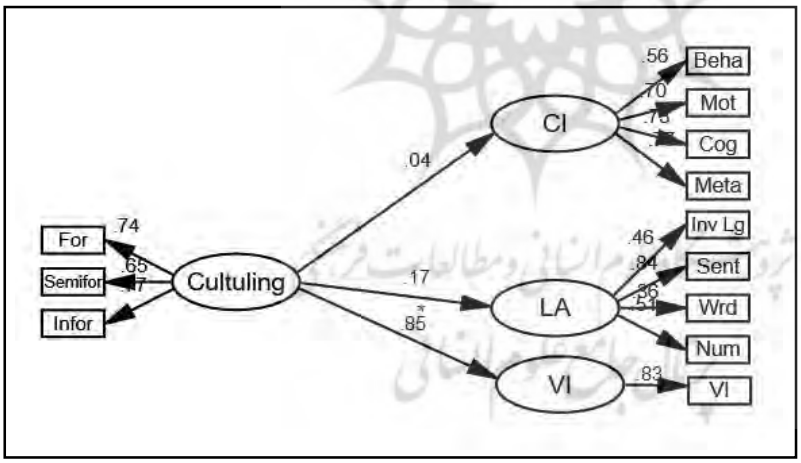


Model 2

The second model (Figure 3) verifies the predictive power of cultuling. As Figure 3 illustrates, cultuling predicts VI (β=.85, p<0.05).

Figure 3

The Schematic Representation of the Relationships among Cultuling, CI, LA, and VI

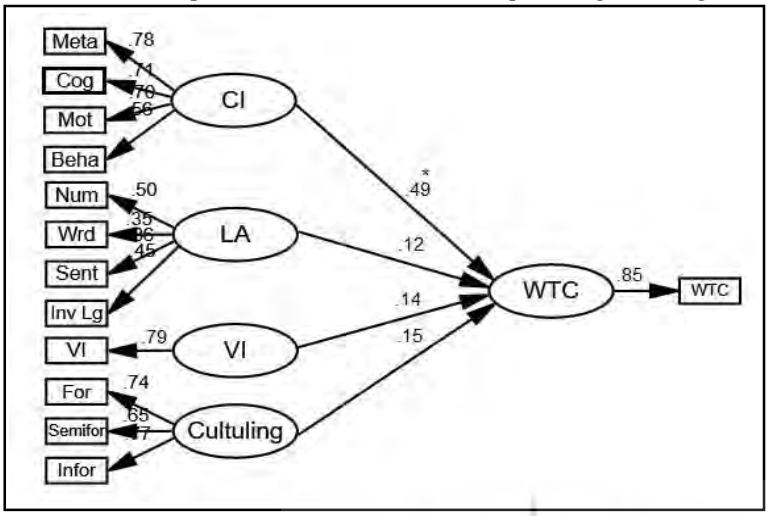


Model 3

The third model (Figure 4) verifies the predictive power of cultuling, CI, LA, and VI. As Figure 4 illustrates, CI significantly predicts L2WTC (β=.49, p<0.05).

Figure 4

The Schematic Representation of the Relationships among Cultuling, CI, LA, VI, and L2WTC

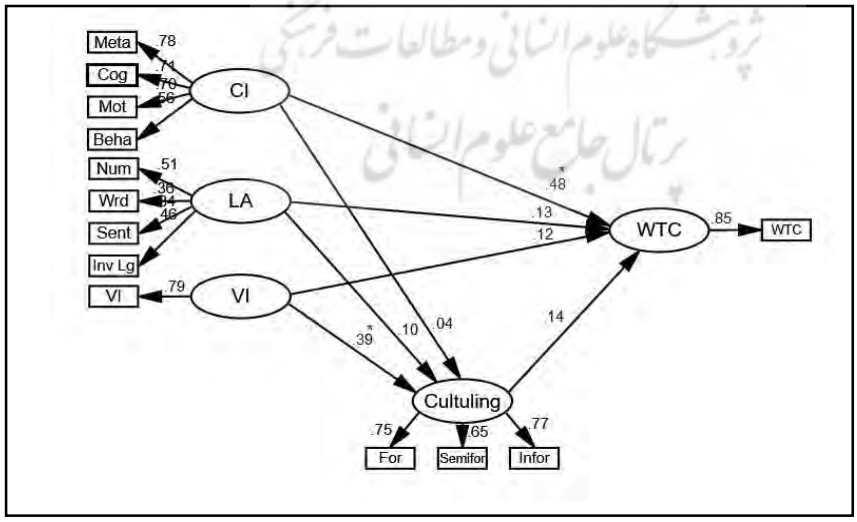


Model 4

The fourth model (Figure 5) examines the predictive power of CI, LA, and VI, with cultuling as a mediator. A bootstrap analysis was conducted to assess the indirect effects. As depicted in Figure 5, among CI, LA, and VI, only CI directly predicts L2WTC ($\beta = .48$, $p < 0.05$). However, when mediated by cultuling, none of the variables significantly predict L2WTC, either positively or negatively. Additionally, the figure indicates that VI is a positive predictor of cultuling ($\beta = .39$, $p < 0.05$).

Figure 5

The Schematic Representation of the Relationships among CI, LA, VI, Cultuling, and L2WTC



To see whether the models fit the data, the goodness of fit indices were calculated using Amos. Table 5 shows the relative chi-square (i.e., chi-square index divided by the degrees of freedom (χ^2/df)), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square

Error of Approximation (RMSEA), and Standardized Root Mean Squared Error (SRMR). The criterion for acceptance is different across researchers. In the present study, values for χ^2/df should be less than 3 (Ullman, 2001), TLI and CFI were over .90, and RMSEA and SRMR were equal to or less than .08 (Browne & Cudeck, 1993).

Table 5

The Goodness of Fit Indices for the Models

Models	χ^2/df	df	CFI	TLI	RMSEA	SRMR
Cultuling Questionnaire	1.70	71	.91	.90	.06	.06
Model 1	1.35	52	.96	.95	.04	.06
Model 2	1.31	52	.94	.95	.04	.06
Model 3	1.23	63	.97	.95	.03	.06
Model 4	1.23	63	.97	.95	.03	.06

5. Discussion

The present study aimed to explore potential relationships among cultuling competence, language aptitude, cultural intelligence, verbal intelligence, and L2 WTC. The first objective was to validate the construct of the cultuling competence scale, which was successfully confirmed through CFA. Additionally, the scale demonstrated high reliability, as indicated by a strong Cronbach's alpha value.

Regarding the second aim, examining the relationships among the variables, the findings revealed that cultuling competence is a strong predictor of verbal/linguistic intelligence. As individuals gain deeper insights into the implicit cultural elements embedded in their community, their ability to use and manipulate language also improves. This finding holds particular significance in L2 learning contexts, as previous research has demonstrated that students with higher verbal intelligence tend to be more actively engaged in writing, reading, interpreting, and narrating (Halil, 2017). Moreover, verbal intelligence plays a crucial role in communication (Parsa et al., 2013). From an educational perspective, these results highlight the importance of raising learners' awareness of various cultulings in the target language, as doing so can significantly enhance their communicative competence. Furthermore, verbal intelligence was found to be significantly correlated with certain subcomponents of language aptitude, supporting the findings of Al-Mekhlafi (2015), who argued that individuals with high verbal intelligence encounter fewer difficulties in language learning.

Furthermore, the results of SEM analysis indicated that cultural intelligence positively predicts L2 WTC. This suggests that as individuals' knowledge of the L2 culture and their adaptability to interact with culturally diverse people increase, their willingness to communicate in L2 also improves. Similarly, Özaslan (2017) asserted that cultural intelligence is closely and positively linked with students' willingness to communicate. Ghonsooly et al. (2012) further demonstrated that learners' attitudes toward the international community serve as a strong predictor of L2 WTC. These findings emphasize that language learning is not solely about mastering

linguistic components. Instead, language instructors should integrate cultural elements into their teaching, as familiarity with the target culture enhances students' communicative competence.

Additionally, Pearson product-moment correlation analysis revealed a significant relationship between language aptitude and cultural intelligence. More specifically, *numbers*, a subcomponent of language aptitude, was significantly correlated with the metacognitive dimension of cultural intelligence. Similarly, *new language*, another subcomponent of language aptitude, showed significant associations with both the cognitive and metacognitive dimensions of cultural intelligence. In other words, individuals with higher language aptitude are more likely to develop skills for navigating diverse and cross-cultural situations. High-aptitude learners, who can acquire linguistic elements more easily and quickly than others (Wen & Skehan, 2011), are also more likely to gain deeper insights into the social, economic, and religious beliefs of other cultures—key aspects of the cognitive dimension of cultural intelligence (Earley & Peterson, 2004).

Moreover, language aptitude, one of the most extensively studied cognitive individual difference variables in second language acquisition, plays a direct role in facilitating faster and more effective L2 acquisition (Abrahamsson & Hyltenstam, 2008). As Dörnyei (2005) highlighted, language aptitude "is not a unitary factor but rather a complex of basic abilities that are essential to facilitate foreign language learning" (p. 34). Given its established role in L2 acquisition, it is reasonable to argue that language aptitude also contributes to cultural knowledge, which is an integral and inseparable component of language learning (Halliday, 1994; Pishghadam, 2013).

In addition to its relationship with cultural intelligence, the findings also demonstrated that language aptitude significantly predicts verbal intelligence. Previous studies have consistently shown that higher language aptitude enhances the process of language learning, with more linguistically gifted learners demonstrating greater potential to acquire an L2 (Biedron & Pawlak, 2016; Skehan, 2015; Wen, 2012).

Several limitations should be considered when interpreting the findings of the present study. First, the study relied exclusively on quantitative methods to examine the relationships between variables. As a result, caution is warranted when making causal inferences. Future research incorporating qualitative approaches, such as interviews or case studies, could provide deeper insights into these relationships. Second, the findings are only generalizable to the specific sample used in this study. Further research in diverse contexts is necessary to validate these results and ensure their broader applicability.

Despite these limitations, this study represents a significant contribution to the field. In addition to confirming the construct validity of cultuling competence, it was the first to explore its associations with other language-related variables. The findings highlight the potential of cultuling competence as a key factor in foreign language education, particularly within sociolinguistic and sociocultural studies of language. These insights pave the way for future research to further investigate its role in language learning and intercultural communication.

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