MEESO

Modern English Education

http://dx.doi.org/10.18095/meeso.2021.22.1.1

Structural Equation Modeling of Korean Secondary and College Students' Willingness to Communicate in English*

Jaeho Choi
Sangmyung University

ARTICLE INFO

Received: 03 January 2021
Revised: 23 January 2021
Accepted: 20 February 2021

Examples in: English
Applicable Languages: English
Applicable Levels: Secondary/Tertiary

KEYWORDS

willingness to communicate (WTC)/
structural equation model (SEM)/
L2 speaking anxiety/
L2 learning motivation/
communication competence/
의사소통의지/
구조방정식모형/
제2언어 말하기 불안감/
제2언어 학습 동기/
의사소통능력

ABSTRACT

Choi, Jaeho. (2021). Structural equation modeling of Korean secondary and college students' willingness to communicate in English. *Modern English Education*, *22*(1), 1-10.

With the growing importance of English communication competence in global communications and English learning, willingness to communicate (WTC) has received attention as a predictor of students' participation in communicative learning activities. Research on L2 WTC has reported causal relations between L2 WTC and personal and situational factors including motivation, perceived competence, L2 anxiety, and classroom environment. This study examined a hypothesized structural model of causal relations between L1 WTC, L2 communication competence, intrinsic language learning motivation, L2 speaking anxiety, classroom environment–teacher support, task orientation, and peer support– and L2 WTC. A total of 1,277 college and secondary students participated in a survey. The data were analyzed to examine a structural equation model of L2 WTC in EFL class in Korea. Analysis procedures included exploratory factor analysis (EFA), confirmatory factor analysis (CFA), and estimation of structural equation modeling (SEM). The results evidenced the fitness of the hypothesized SEM. The findings confirmed casual relationships between latent variables in the model. Direct effects of motivation, perceived competence, and L1 WTC were significant on L2 WTC. Indirect causation was also found to be significant. L2 anxiety had a negative indirect effect on L2 WTC, mediated by competence. Classroom environment affected L2 WTC through motivation and competence. Motivation significantly influenced L2 WTC both directly and indirectly. Discussions on research results and implications and limitations of the study are presented.

I. INTRODUCTION

With increasing global communication in English, English education has been emphasizing authentic communication in class to equip learners with communication competence. Communicative language learning and teaching (CLLT) addresses the social demand of competence-based learning. In the 2015 National Curriculum of Korea, communicative English learning and teaching is manifested as a major goal and norm of K-12 English education. While there is hindrance to CLLT, such as grammar oriented traditional teaching (T. Park & J. Chang, 2017), high stakes standardized testing, and lack of teachers' belief on communicative language teaching (Y. T. Kim, 2008), various efforts are made to improve teaching practices. In addition to those instructional approaches on communicative learning, students' participation of communication also has been paid attention. Research on students' participation

* This work was supported by the Ministry of Education of the Republic of Korea and the National Research Foundation of Korea (NRF-2018S1A5A2A01037785).

Jaeho Choi (Professor)
Department of English Education, Sangmyung University, 20 Hongjimun 2-gil, Jongno-gu, Seoul, 03016, Korea
Tel: (02) 781-7584 / Email: 21clearn@smu.ac.kr

of L2 communication presents several motivational and affective factors that trigger or debilitate communication behaviors.

Language learners' willingness to communicate (WTC) in L2 is one of the most powerful predictors of learners' communication behaviors. Willingness to communicate (WTC) in L2 is a learner's readiness or intention to engage in communication in L2 in a certain situation with a specific person (MacIntyre et al., 1998). While communicative instructions and learning materials may provide opportunities of authentic communication, the final decision to communicate is directly influenced by willingness to communicate. MacIntyre et al. (2003) suggest that WTC is a significant predictor of students' participation in communicative language learning. The effects of WTC are also evident on the frequency and intensity of engagement and academic achievement in L2 learning (H. J. Kim, 2005; MacIntyre et al., 2003; J. M. Nam, 2011). Thus, MacIntyre et al. (2003) assert that the major objective of language education is to foster learners' willingness to communicate.

WTC research reveals that WTC is influenced by affective and personal factors, such as motivation, attitudes, anxiety, and confidence, and environmental and situational factors including class environment, teacher supports, and learning tasks (Baker & MacIntyre, 2000; Khajavi et. al., 2016; Peng, 2009; Peng & Woodrow, 2010). The early studies understood WTC in terms of personal traits which are persistent across situations and time. However, MacIntyre et al. (1998) identify the temporal and situational nature of WTC and suggest that environmental factors are also significant predictors of WTC. In addition, ESL research in non-English speaking regions has brought to L2 WTC research a new perspective of the difference between ESL and EFL. For instance, Peng and Woodrow (2010) research L2 WTC among Chinese students in an EFL setting, adopting ecological approach. Drawing on the duality of trait-like and situational nature, diverse and comprehensive factors need to be explored relating with L2 WTC.

In Korea, research has been done on L2 WTC with various population from elementary to college students, revealing correlational and causal relationships between L2 WTC and various personal and environmental factors. As personal factors, learners' motivation, perceived competence, attitude, L2 anxiety, and other affective variables have been examined. Environmental factors, such as learning conditions, teachers' support, task-orientation, and types of instruction were also examined in relation with L2 WTC. In spite of ample studies, research in Korea is biased to L2 learning and personal aspects. For instance, the examined variables are mostly motivational and affective factors related to English learning (J. S. Cha & T. Y. Kim, 2013; H. J. Kim & Iwaki, 2008; Y. Kim & J. Kang, 2014) while several studies included environmental aspects (M. Cho & K. H. Pyo, 2020; K. J. Kim, 2020; Moodie & J. E. Lee, 2017; T. I. Pae, 2011). In addition, the examined variables on L2 WTC were mostly related with English learning ignoring personal tendency to communicate regardless of L1 or L2, which is inherent in L1 WTC model. Because L1 WTC tends to be consistent as a personal trait, it is assumed to influence communication behaviors whether in L1 or L2. The other limitation of L2 WTC research in Korea is that research participants were homogeneous in their ages or levels of schools, lacking comprehensive understanding across ages.

Drawing on the findings and limitations of previous studies, this study examines L1 WTC and environmental variables as well as motivational and affective factors with the extended range of participants' age from middle school students to college students.

II. THEORETICAL BACKGROUND

In L1 communication, WTC is defined as the intention to communicate when free to do so, which is heavily dependent on individual personality (McCroskey & Baker, 1985). Since McCroskey and Baker (1985) introduced WTC in L1, the concept of WTC has been widely adopted by L2 scholars to explain L2 learners' communication behaviors. In the L1 discourse research, WTC is perceived as a personality trait influenced by stable trait-like variables, such as introversion, communication apprehension, self-esteem, perceived competence, and anomie (MacIntyre, 1994). Due to the trait-like nature, WTC is assumed to be consistent over time and across situations. However, situational aspects of WTC have been introduced to illustrate L2 communication behaviors which are prone to be affected by situational factors including interlocutors, purposes of communication, and contexts.

WTC is not a unitary construct but a complex composite of individual and situational factors. Focusing on the dual aspects of WTC, MacIntyre et al. (1998) propose a pyramid model of WTC which depicts multi-layered factors predicting L2 WTC (see Figure 1). Upon the conception of WTC as a complex composite of stable and situational factors, they define L2 WTC as "a readiness to enter into discourse at a particular time with specific person or persons, using a L2" (MacIntyre et al., 1998, p.547).

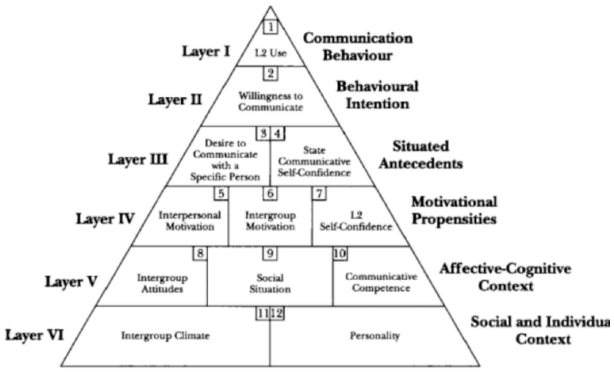

FIGURE 1 Pyramid Model of WTC (MacIntyre et al., 1998)

With instructional purposes in ESL study, L2 WTC research has explored predicting variables of WTC. The dual nature of WTC suggests stable personality variables and situational factors as predictors, and empirical studies present evidences for the proposed relationship between those variables and L2 WTC. In term of personality traits, immersion experience (MacIntyre et al, 2003), motivation (Hashimoto, 2002; N. H. Kim & M. A. Jung, 2019; H. Lee & W. Kim, 2006), self-confidence or competence (Baker & MacIntyre, 2000; K. Gwag, 2018), gender and age (MacIntyre et al., 2002), international posture (Yashima, 2002; Yashima, Zenuk-Nishide, & Shimizu, 2004), motivational ego (H. Park & H. J. Lee, 2013), and anxiety (K. Gwag, 2018; H. Lee & W. Kim, 2006) are suggested to predict WTC. In addition, situational factors including experience of English learning, exposure to native speakers, and learning activities. (Baker & MacIntyre, 2000; Khajavi et al., 2016; Peng, 2009) have significant effects on L2 WTC.

Communication competence is one of the most frequently examined variables in L2 WTC. The causal relation is suggested in MacIntyre et al.'s (1998) pyramid model and backed by empirical studies in various contexts in China (Peng & Woodrow, 2010), Iran (Khajavy et al., 2016), Japan (Yasima, 2002), South Korea (K. Gwag, 2018; S. J. Kim, 2004; Y. Kim & J. Kang, 2014), and Turkey (Centinkaya, 2005). The positive direct effects of competence, or confidence, were evidenced on L2 WTC.

L2 anxiety is another common predictor of L2 WTC. L2 anxiety is known to decrease willingness to communicate. In research, the effects of L2 anxiety have been examined in combination with communication competence. Peng and Woodrow (2010) composite L2 anxiety and communication competence for confidence and report the significant effects of the combined variable on L2 WTC. J. S. Cha and T. Y. Kim's study (2013) confirm that anxiety influences L2 WTC among elementary students. In addition, the relation between L2 anxiety and competence has been tested to prove that anxiety causes lowering competence. L2 anxiety research with Korean students presents that the anxiety has negative effects on L2 WTC directly or indirectly through competence (K. Gwag, 2018; H. Lee & W. Kim, 2006).

The effects of *motivation* have been explored as a direct or indirect predictor of L2 WTC or a mediator between WTC and other variable. Motivation to learn English has also proven to be effective to promote L2WTC directly and indirectly (Peng & Woodrow, 2010) with Chinese EFL students. The effects are also reported in J. S. Cha and T. Y. Kim's study (2013) with Korean elementary students. The indirect effects of motivation via confidence (Cetinkaya, 2005; Khajavy et al., 2016; S. J. Kim, 2004; Yashima, 2002) are reported as well.

Classroom environment is a situational stimulus to L2 WTC. Peng (2012), who suggested ecological approaches to WTC, proposes that L2 WTC needs to be understood ecologically considering individual, social, and global aspects simultaneously. He suggests that classroom environment is a major factor to affect the level of WTC, interplaying with individual traits and institutional and social settings of L2 learning. In pursuit of structural relationship between influencing factors of WTC, Peng and Woodrow (2010) present that classroom environment affects WTC directly and indirectly through communication confidence. Zarrinabadi (2014) identifies four characteristics of class that promote or debilitate L2 WTC: teacher's wait time, learning topics, error correction, and teacher support. Learners are more likely to engage in L2 communication when the teacher waits learners' responses, chooses topics favored by students, delays error correction, and provides supportive comments and gestures such as nodding, smiling, and compliment. The positive effects of supportive environments on WTC are supported by S. J. Kang (2005) and MacIntyre, Clément, and Conrod (2001) as well. S. J. Kang (2005) comments that learners are more willing to communicate when they feel secure in the communication settings. The difference between native and non-native English teachers was also tested. K. Gwag (2018) confirms the effects of native speaking teachers on L2 WTC, but there were no significant effects on WTC of elementary students in J. S. Cha, and T. Y. Kim's (2013) study.

While the relations between variables are sought using statistical methods of correlation, regression, and comparisons of group means, the complex nature of L2 WTC requires comprehensive approaches in research. For instance, MacIntyre et al. (1998) present a multi-layered pyramid model of L2 WTC, and Peng (2012) suggests an ecological approach to L2 WTC, adapting Bronfenbrenner's (1997) ecological perspective to EFL context. For the comprehensive understanding of relations between variables, structural equation modeling is commonly applied to statistical analysis. Thus, this study examines relations between L2 WTC and variables known to have effects on WTC, using the structural equation modeling technique.

In addition, this study examines the acknowledged relationships between L2 WTC and influencing factors in Korean context, diversifying cultures and languages. Thus, L1 WTC is added to explain the effects of personality or tendency inclined to communication on L2 WTC among Korean students. As the study explores structural relations between L2 WTC and personal and situational factors with a structural equation model (see Figure 2), the following hypotheses are examined:

Hypothesis 1.
Communication competence, L1 WTC, and learning motivation have positive effects on L2 WTC.
Hypothesis 2.
L2 speaking anxiety has a negative effect on communication competence.
Hypothesis 3.
Class environment has positive effects on communication competence and learning motivation.
Hypothesis 4.
L2 speaking anxiety has an indirect, negative effect on

L2 WTC, mediated by communication competence.

Hypothesis 5.

Class environment has an indirect, positive effect on L2 WTC, mediated by communication competence and learning motivation.

Hypothesis 6.

Learning motivation has an indirect, positive effect on L2 WTC, mediated by communication competence.

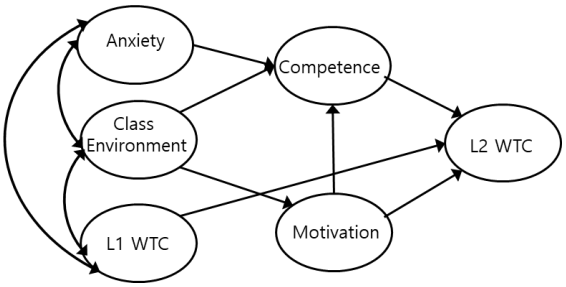

FIGURE 2 Hypothesized Model

III. METHOD

1. Participants

For the comprehensive and representative sampling of Korean EFL students, the researcher contacted English teachers and professors of schools in Seoul and other regions including Kwangmyung, Ansan, and Kwangju. For the schools in which teachers wanted to participate in the study, the researcher contacted the principles for the permission of survey study. After approval of conducting the study, the researcher sent copies of paper-pencil survey questionnaire via mail. After completion of survey, teachers of the schools mailed the marked questionnaires back. The returned copies of survey were of 1,277 students. The returned responses were inputted on Excel spread sheets for analysis. Demographic data of 18 students were missing. The distribution of classified participants (total 1,259) was relatively proportioned across regions, level of schools, and gender (see Table 1).

2. Measures

A survey was developed to measure WTC related variables: 1) L2 learning motivation, 2) L2 classroom speaking anxiety, 3) perceived L2 communication competence, 4) classroom environment, 5) L1 WTC, and 6) L2 WTC. Items for each variable were derived from the review of literature, and the content validity–the degree to which the items represent the construct to be measured–was assessed by three experts: a professor majoring in English education, a high school English teacher, and a middle school English teacher. They had sufficient teaching experiences and participated in other research with the researcher, so that they were supposed to have sufficient understanding on the concepts and practices of English learning and teaching. For the face validity, the evaluation of how it reads, ten students (four college students, three middle, and three high school students) reviewed the survey. The survey consists of 69 questions in seven sections: one section for demographic information and six sections for variables. Items for each variable were examined through exploratory factor analysis (EFA) and internal reliability. EFA was conducted to test factor structure of each variable, and items whose commonalities are below .40 were eliminated. Cronbach's α was adopted for the test of internal reliability. In addition, composite reliability was calculated to assess the degree in which a set of observed variables represents the common latent variable. A coefficient estimate of .70 or higher is regarded as good reliability (Hair et al., 2006).

For the measurement of L2 learning motivation, 18 questions for intrinsic and extrinsic motivation were adopted from Noels et al.'s (2000) Language Learning Orientations Scale. They were translated in Korean and reduced to 17 questions after examination of content and face validity. An exploratory factor analysis identified 13 items of two factors–intrinsic and extrinsic, which satisfied .40 commonality value and internal reliability. However, the following confirmatory factor analysis (CFA), the standardized regression weight of the extrinsic motivation items was .108 which is much below the acceptable level of .50. Thus, nine items for intrinsic motivation were maintained for the following analysis, structured equation modeling. The Cronbach's α for the items was .929.

L1 WTC was measured using McCroskey's (1992) WTC scale which was developed for L1 WTC. Ten out of 20 items, except filter items, were translated in Korean. Each item asks the degree of WTC in a certain situation from 0 (never) and 10 (always). An exploratory factor analysis revealed the scale comprises two subscales: WTC in private situation and WTC in public. The Cronbach's α results were .846 for L1 WTC in private and .914 for L1 WTC in public.

TABLE 1
Number of Participants by Region, Education Level, and Gender

Region	Number of Classified Participants (Male/Female)				No. of Non-classified
	Middle	High	College	Total	
Seoul	279(129/150)	264(226/38)	165(64/101)	708(419/289)	18 participants
Other	161(79/82)	186(86/100)	204(95/109)	551(260/291)	
Total	440(208/232)	450(312/138)	369(159/210)	1259(679/580)	

L2 WTC items were from Peng and Woodrow's (2010) L2 WTC scale which is the revision of Weaver's (2005) WTC instrument. Respondents indicated their tendency to engage in L2 communication in a specific communicative situation in class from 1 (never) to 10 (always). Total ten questions were translated in Korean and identified to be unidimensional representing a single factor. The Cronbach's α for the items was .949.

Woodrow's (2006) in-class speaking anxiety scale was adopted for L2 classroom speaking anxiety. Six questions suggest six different in-class situations in which students are supposed to speak in L2. Respondents indicate their anxiety levels from 1 (not at all) to 7 (extremely). An exploratory factor analysis yielded the unidimensionality of the scale. The Cronbach's α for the items was .933.

Students' perceived competence to communicate in L2 was measured by Peng and Woodrow's (2010) scale of perceived communication competence in English. The levels of competence to communicate in six communicational situations were marked from 0% to 100% in 11-point Likert scale. All six items represented a single factor, and the Cronbach's α was .948.

Peng and Woodrow's (2010) scale of classroom environment was used to measure teacher support, task orientation, and student cohesiveness. Thirteen questions present the positive and supportive classroom situations in 7-point Likert scale ranging from 1 (totally different) to 7 (totally coincidental). An exploratory factor analysis identified three factors of teacher support with four items, task orientation with four items, and peer support with five items. All three factors had sufficient levels of internal reliability measured by Cronbach's α. The statistics were .923 for teacher support, .876 for task orientation, and .902 for student cohesiveness.

3. Data Analysis

For comprehensive understanding of causal relationship between WTC variables, structural equation modeling (SEM) was employed for analysis. Data analysis was conducted in three phases: exploratory factor analysis, confirmatory factor analysis, and structural equation modeling. The exploratory factor analysis intended to evaluate reliability and validity of instruments. For the items of unidimentional factors, such as anxiety, competence, and L2 WTC, a parceling technique was applied to construct analysis models. Parceling is a procedure to composite observed variables by summing or averaging. The procedure is taken to reduce the observed variables in models due to the constraint of the sample size and more stable structural parameter estimation (Bagozzi & Heatherton, 1994), lower levels of nonnormality, and better model fitting solutions (Bandalos, 2002). The confirmatory factor analysis (CFA) was to determine the fit of a CFA model to the observed data. Then, the estimation of a structural equation was done adopting maximum likelihood estimation (MLE). The goodness of model fit was evaluated using the likelihood ratio chi-square (χ^2), GFI, AGFI, TLI, CFI, and RMSEA. SPSS 22 and Amos 22 were employed for the statistical analysis.

IV. RESULTS

Descriptive statistics and correlation matrix of variables are presented in Table 2 including means, standard deviations, skewness, kurtosis, and correlations of the variables. Skewness and kurtosis of the variables were within the absolute value of 2, which is acceptable to meet the normality assumption of the multivariate data (Kline, 2005). Except for Teacher-Anxiety1 and Teacher-Anxiety2, bivariate correlations of most variables were significant at the level of .05.

To measure the convergent and discriminant validity of six latent variables, a confirmatory factor analysis (CFA) was conducted. The goodness of the model fit was measured by six indices: chi square, goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), TLI (Tucker-Lewis index), comparative fit index (CFI), and root-mean-square error of approximation (RMSEA). The criteria of fitness and the CFA results are presented in Table 3. Chi square measurement did not prove the fitness of model. However, the value of chi square tends to be large in case of large samples over 400. Thus, other indices are referred to for evaluation of goodness of fit. Other statistics indicate that the measurement model fit was reasonable; GFI, AGFI, TLI, and CFI as shown in Table 3. While the acceptable criteria of RMSEA is about .05 or less, a value of about .08 or less would indicate a reasonable error of approximation. Thus, the analysis results suggest the overall goodness of the model fit.

SEM analysis confirmed the fitness of the hypothesized structural model. For better fitting of model, however, model modification was done referring to modification indices (M.I.) and parameter change (Par Change). Covariance between Error 3 and 7 was established referring to their M.I. = 96.045 and Par Change = .433, which is the highest among indices. The covariance between two variables is attributed to the personal relationship with friends in that Error variable 3 is of peer support measure, and Error 7 is of measurement of L1 WTC with friends. The modification resulted in better fitting indices, and the improved model was proved to fit well with the data as shown in TABLE 4. While the chi square (χ^2) values are quite larger than the acceptable criteria, it is common with large samples over 500. The other indices support the fitness of the model. The standardized path coefficients and significance of the relationships of the variables are presented in Figure 3.

TABLE 2
Descriptive Statistics and Correlation Matrix

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Intrinsic1	1													
2. Intrinsic2	.838**	1												
3. Anxiety1	-.190**	-.181**	1											
4. Anxiety2	-.193**	-.191**	.886**	1										
5. Competence1	.404**	.423**	-.330**	-.371**	1									
6. Competence2	.420**	.437**	-.344**	-.368**	.935**	1								
7. Teacher	.207**	.181**	.010	-.024	.197**	.190**	1							
8. Task	.414**	.362**	-.180**	-.172**	.419**	.427**	.587**	1						
9. Peer	.218**	.186**	-.074**	-.105**	.314**	.323**	.497**	.578**	1					
10. Private	.124**	.149**	-.095**	-.142**	.294**	.291**	.205**	.250**	.422**	1				
11. Public	.250**	.278**	-.225**	-.208**	.337**	.344**	.157**	.321**	.335**	.619**	1			
12. WTC1	.493**	.518**	-.230**	-.251**	.562**	.542**	.154**	.368**	.268**	.355**	.464**	1		
13. WTC2	.500**	.525**	-.238**	-.232**	.517**	.532**	.133**	.366**	.248**	.302**	.475**	.804**	1	
14. WTC3	.533**	.556**	-.244**	-.240**	.539**	.553**	.136**	.374**	.257**	.320**	.454**	.791**	.896**	1
Mean	4.156	3.971	4.384	4.104	5.520	5.316	5.333	4.910	5.524	7.342	5.258	4.811	4.419	4.717
SD	1.501	1.623	1.718	1.665	2.624	2.660	1.412	1.429	1.218	2.117	2.175	2.675	2.756	2.766
Skewness	-.107	-.025	-.294	-.094	-.246	-.172	-.712	-.425	-.719	-.930	-.034	-.095	.041	-.042
Kurtosis	-.641	-.762	-.696	-.632	-.585	-.665	.092	-.125	.431	.824	-.120	-.702	-.755	-.763

** $p < .01$

TABLE 3
Confirmatory Factor Analysis Results

	χ^2	*df*	*p*	GFI	AGFI	TLI	CFI	RMSEA
Model	501.631	62	<.001	0.945	0.907	0.953	0.968	0.075
Range of goodness			>.05	≈ 1	>.90	>.90	>.90	< .05 for good or < .08 for acceptable

TABLE 4
Fit Measures for the Structural Models

	χ^2	*df*	*p*	GFI	AGFI	TLI	CFI	RMSEA
Initial Model	572.558	67	<.001	0.936	0.900	0.950	0.963	0.077
Improved Model	470.156	66	<.001	0.949	0.918	0.960	0.971	0.069
Range of goodness			>.05	≈ 1	>.90	>.90	>.90	< .05 for good or < .08 for acceptable

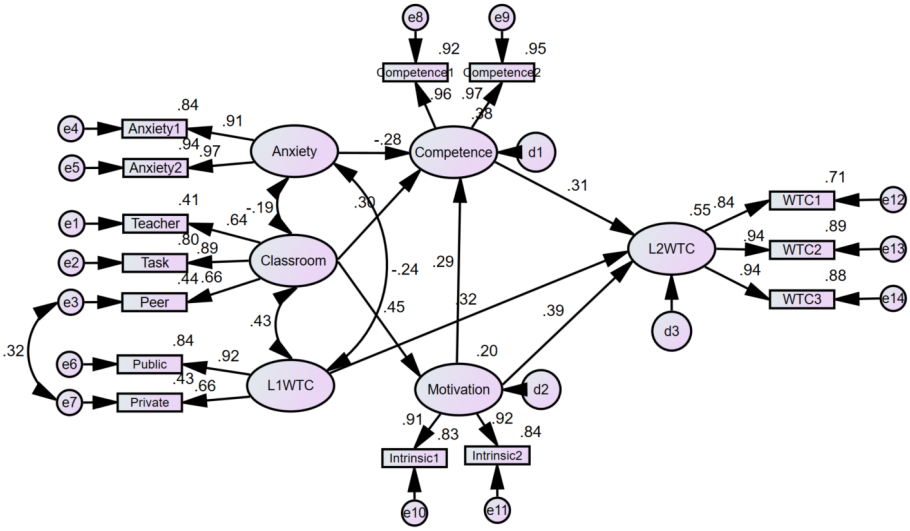

FIGURE 3 The Structural Equation Model

The hypotheses of causal relationships between latent variables were tested, and Table 5 presents the results of direct causal relations. The first hypothesis of direct positive effects of communication competence, L1 WTC, and learning motivation on L2 WTC were supported. All three independent variables had statistically significant positive effects on L2 WTC: (communication competence $\beta = .307$, $t = 12.322$, $p < .001$; L1 WTC $\beta = .319$, $t = 12.325$, $p < .001$; learning motivation $\beta = .392$, $t = 15.070$, $p < .001$). The negative effect of L2 speaking anxiety was significant on communication competence ($\beta = -.280$, $t = -10.973$, $p < .001$). Class environment also had significant positive effects on communication competence as well as on learning motivation: (communication competence $\beta = .303$, $t = 9.695$, $p < .001$; learning motivation $\beta = .83$, $t = 13.423$, $p < .001$).

In the structural model, indirect effects were hypothesized between L2 speaking anxiety and L2 WTC, mediated by communication competence, between classroom environment and L2 WTC via competence and learning motivation, and between motivation and L2 WTC through competition. Following the suggestions of MacKinnon, Fairchild, and Fritz (2007), the indirect effects were estimated by computing the product of path coefficient *a* (link between the exogenous variable and the mediator) and path coefficient *b* (link between the mediator and the endogenous variable). The results are shown in Table 6.

TABLE 5
Parameter Estimates of the Structural Equation Model

	Relationship of variables	*B*	*β*	*t*	*p*
Hypothesis 1	L2 WTC ← Competence	.273	.307	12.322	< .001
	L2 WTC ← L1 WTC	.513	.319	12.325	< .001
	L2 WTC ← Motivation	.583	.392	15.070	< .001
Hypothesis 2	Competence ← Anxiety	-.432	-.280	-10.973	< .001
Hypothesis 3	Competence ← Classroom	.941	.303	9.695	< .001
	Motivation ← Classroom	.830	.447	13.423	< .001

TABLE 6
Standardized Regression Coefficient for the Mediation Analysis

Path	Direct effect	Indirect effect	Total effect
Anxiety → Competence → L2 WTC	0	-0.086*	-0.086
Classroom → Competence/Motivation → L2 WTC	0	0.308*	0.308
Motivation → Competence → L2 WTC	0.392***	0.088*	0.480

*** $p < .001$, * $p < .05$

The calculated indirect effects were tested for the statistical significance, employing PRODCLIN (distribution of the PRODuct Confidence Limits for Indirect Effects) program. For each hypothesized indirect relation, PRODCLIN program computed asymmetric confidence intervals for the mediated effect. The 95% confidence interval for *a^b^* was created using coefficient values for the two paths (*a* & *b*), correlation, and their standard errors. If zero is not included within the confidence interval, the mediated effect is statistically significant. All the hypothesized relations bearing mediating variables were proven to be significant at the level of .05. The 95% confidence intervals did not contain zero within their ranges: Competition between Anxiety and L2 WTC CI [- .160, - .085], Competence/Motivation between Classroom and L2 WTC CI [.708, 1.024], and Competence between Motivation and L2 WTC CI [.096, .176].

In conclusion, three variables of Competence, Motivation, and L1 WTC accounted for 55% of the variance in L2 WTC, 38% of the variance in Competence was attributed to Anxiety, Classroom, and Motivation, and 20% of Motivation variance was explained by Classroom.

V. DISCUSSION

Structural equation modeling of L2 WTC with personal and situational variables was examined in terms of fitness of modeling. The results support the hypothesized model confirming causal relationships between variables. First, the direct effects of communication competence, learning motivation, and L1 WTC were proven to be significant on L2 WTC. Communication competence and motivation have been reported as a strong predictors of L2 WTC in previous studies, and the result of study confirmed the conclusions of the studies. While the results are congruent to existing research findings, they are meaningful in that motivation is directly and indirectly related to L2 WTC, and competence is solely connected to L2 WTC without combining with anxiety unlike Peng and Woodrow's study (2010). Usually, motivation effects on L2 WTC are established indirectly, mediated by other variables. This study reveals that motivation has both direct and indirect effects on L2 WTC. In addition, L2 learning motivation in this study includes only intrinsic motivation. In the process of confirmatory factor analysis, the other subscale of motivation, extrinsic motivation, was discarded due to low loading of weight on Motivation variable. In some studies, L2 learning motivation variable constitutes intrinsic and extrinsic components. However, as shown in the studies of T. I. Pae (2011) and H. Lee and W. Kim (2006), both types of motivation are used to be separated for analysis. H. Lee and W. Kim (2006) found that intrinsic motivation solely influenced WTC, and T. I. Pae (2011) excluded extrinsic motivation in the structural modeling of L2 WTC as in this study. The examples indicate it is reasonable to assign two sub-scales of L2 learning motivation to different latent variables in L2 WTC SEM design.

The inclusion of L1 WTC is unique in this study. Most L2 WTC SEM models have variables specific for L2 situations, which mostly deal with L2 learning. However, as in L1 WTC research (MacIntyre, 1994; McCroskey & Baker, 1985), personal tendency and inclination to communication is an important precursor of WTC. The results indicate that L1 WTC has more significant effects on L2 WTC than communication competence which has been known as a strong predictor of L2 WTC.

Structuring anxiety as an indirect predictor to L2 WTC via competition suggests a possible causal relation between the variables which have been considered to construct a single latent variable. Relatively low correlations between anxiety and L2 WTC variables present a plausible conjecture that the direct relation may not significant. Further studies are requested to investigate the causal relations among anxiety, competence, and L2 WTC.

In addition, classroom environment influenced L2 WTC indirectly through communication competence and intrinsic motivation. This study defines the relations between classroom and L2 WTC as indirect causal connections, without direct causation. Classroom environment is proved to be positive to intrinsic motivation and communication competence, and the findings suggest instructional interventions to enhance students' motivation and communication competence, resulting in boosting of L2 WTC.

The findings of this study highlight the importance of L1 WTC and possible instructional intervention. In addition, factorization of confidence into anxiety and competence has proven to be sound to understand sub-structure of the factors. Suggestions regarding deviation of intrinsic and extrinsic language learning motivation need to be examined further. The addition of Korean context to the structural equation modeling of L2 WTC also advanced generalization of L2 WTC model including motivation, competence, anxiety, classroom environment and L1 WTC.

REFERENCES

Bagozzi, R. P., & Heatherton, T. F. (1994). A general approach to representing multifaceted personality constructs: Application to state self-esteem. *Structural Equation Modeling: A Multidisciplinary Journal*, *1*(1), 35-67.

Baker, S. C., & MacIntyre, P. D. (2000). The role of gender and immersion in communication and second language orientations. *Language Learning*, *50*(2), 311-341.

Bandalos, D. L. (2002). The effects of item parceling on goodness-of-fit and parameter estimate bias in structural equation modeling. *Structural Equation Modeling*, *9*(1), 78-102.

Bronfenbrenner, U. (1997). The ecology of cognitive development: Research models and fugitive findings. In K. Arnold & I. C. King (Eds.), *College student develop-*

ment and academic life: Psychological intellectual, social, and moral issues (pp. 3-44). Routledge.

Cetinkaya, Y. B. (2005). *Turkish college students' willingness to communicate in English as a foreign language* [Unpublished doctoral dissertation]. Ohio State University.

Cha, Jung-Sun, & Kim, Tae-Young (2013). Effects of English-learning motivation and language anxiety of the elementary school students on willingness to communicate in English and English speaking. *Primary English Education*, *19*(1), 271-294.

Cho, Minhee, & Pyo, Kyong-Hyon. (2020). Change in language anxiety and willingness to communicate at English flipped classroom. *Studies in Linguistics*, *55*, 225-248.

Gwag, Kyongseob. (2018). A study of the relationship among FLA, SPCC and WTC within the context of Korean EFL university learners. *Journal of the Korea English Education Society*, *17*(1), 65-84.

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). *Multivariate data analysis* (6th ed.). Prentice Hall.

Hashimoto, Y. (2002). Motivation and willingness to communicate as predictors of reported L2 use: The Japanese ESL context. *Second Language Studies*, *20*(2), 29-70.

Kang, Su-Ja. (2005). Dynamic emergence of situational willingness to communicate in a second language. *System*, *33*(2), 277-292.

Khajavi, G. H., Ghonsooly, B., Hosseini Fatemi, A., & Choi, C. W. (2016). Willingness to communicate in English: A microsystem model in the Iranian EFL classroom context. *TESOL Quarterly*, *50*(1), 154-180.

Kim, Hyun Jin. (2005). Language anxiety, perceived competence, willingness to communicate, and motivation as predictors of second language communication frequency: The Korean EFL Context. *Foreign Languages Education*, *12*(1), 161-184.

Kim, Hyun Jin, & Iwaki, Nami. (2008). The role of L2 communication anxiety in tendencies in self-perceptions of L2 competence in the Korean and Japanese contexts. *Modern English Education*, *9*(3), 63-82.

Kim, Kyung Ja. (2020). English learning motivation and willingness to communicate in online instruction: Structural equation modeling. *Studies in English Education*, *25*(4), 653-674.

Kim, NamHee, & Jung, Mie-Ae (2019). The comparison of the relationships of L2 motivation, attitudes, speaking strategies and WTC according to the levels of WTC. *Studies in English Education*, *24*(1), 181-204.

Kim, Seung Jung. (2004). *Exploring willingness to communicate (WTC) in English among Korean EFL (English as a foreign language) students in Korea: WTC as a predictor of success in second language acquisition* [Unpublished doctoral dissertation]. Ohio State University.

Kim, Young Tae. (2008). A study of primary school teachers' beliefs and teaching practices on the communicative Language teaching in primary school English classrooms. *Studies in English Education*, *13*(2), 210-238.

Kim, Youngwoo, & Kang, Jin. (2014). A study of Korean primary school students' use of English and their willingness to communicate in English. *English Language Teaching*, *26*(3), 89-112.

Kline, R. B. (2005). *Principles and practice of structural equation modeling* (2nd ed.). The Guilford Press.

Lee, Hae-ryeon, & Kim, Woo-hyung. (2006). Correlations between affective variables and communicative language ability: Focused on anxiety, motivation and willingness to communicate. *Studies on English Language & Literature*, *32*(1), 245-267.

MacIntyre, P. D. (1994). Variables underlying willingness to communicate: A causal analysis. *Communication Research Reports*, *11*(2), 135-142.

MacIntyre, P. D., Baker, S. C., Clément, R., & Donovan, L. A. (2002). Sex and age effects on willingness to communicate, anxiety, perceived competence, and L2 motivation among junior high school French immersion students. *Language Learning*, *52*(3), 537-564.

MacIntyre, P. D., Baker, S. C., Clément, R., & Donovan, L. A. (2003). Talking in order to learn: Willingness to communicate and intensive language programs. *Canadian Modern Language Review*, *59*(4), 589-607.

Maclntyre, P. D., Clément, R., & Conrod, S. (2001). Willingness to communicate, social support, and language-learning orientations of immersion students. *Studies in Second Language Acquisition*, *23*, 369-388.

MacIntyre, P. D., Clément, R., Dörnyei, Z., & Noels, K. A. (1998). Conceptualizing willingness to communicate in a L2: A situated model of confidence and affiliation. *Modern Language Journal*, *82*(4), 545-562.

MacKinnon, D. P., Fairchild, A. J., & Fritz, M. S. (2007). Mediation analysis. *Annual Review of Psychology*, *58,* 593-614.

McCroskey, J. C. (1992). Reliability and validity of the willingness to communicate scale. *Communication Quarterly*, *40*(1), 16-25.

McCroskey, J. C., & Baker, J. E. (1985, November). *Willingness to communicate: The construct and its measurement.* Paper presented at the annual meeting of the Speech Communication Association, Denver, CO. (ERIC Document Reproduction Service No. ED265604)

Moodie, I., & Lee, Jee Eun. (2017). The influence of an orientation program on willingness to communicate and L2 anxiety. *Foreign Languages Education*, *24*(2), 25-44.

Nam, Jung-Mi. (2011). Correlational study on English learners' motivation, anxiety, WTC and their English achievement scores in native teachers' classes. *English Language & Literature Teaching*, *17*(2), 139-160.

Noels, K. A., Pelletier, L. G., Clément, R., & Vallerand, R. J. (2000). Why are you learning a second language? Motivational orientations and self-determination theory. *Language Learning*, *50*(1), 57-85.

Pae, Tae-Il. (2011). A study on the structural model of will-

ingness to communicate in the L2. *English Teaching*, *66*(4), 307-327.
Park, Taejoon, & Chang, Jaehak. (2017). A study on high school teachers' opinions about issues of communicative English teaching and assessment. *Korean Journal of English Language and Linguistics*, *17*(4), 839-863.
Park, Hyesook, & Lee, Ho Jung. (2013). L2 motivational selves and WTC in Korean college learners of English: From a structural equation model. *Studies in English Education*, *18*(2), 259-284.
Peng, J. E. (2009). *Exploring willingness to communicate (WTC) in English in Chinese EFL university classrooms: A mixed methods approach* [Unpublished doctoral dissertation]. Sydney University.
Peng, J. E. (2012). Towards an ecological understanding of willingness to communicate in EFL classrooms in China. *System*, *40*(2), 203-213.
Peng, J. E., & Woodrow, L. J. (2010). Willingness to communicate in English: A model in the Chinese EFL classroom context. *Language Learning*, *60*(4), 834-876.
Weaver, C. (2005). Using the Rasch model to develop a measure of second language learners' willingness to communicate within a language classroom. *Journal of Applied Measurement*, *6*(4), 396-415.
Woodrow, L. J. (2006). Anxiety and speaking English as a second language. *RELC Journal*, *37*(3), 308-328.
Yashima, T. (2002). Willingness to communicate in a second language: The Japanese EFL context. *Modern Language Journal*, *86*(1), 54-66.
Yashima, T., Zenuk-Nishide, L., & Shimizu, K. (2004). The influence of attitudes and affect on willingness to communicate and second language communication. *Language Learning*, *54*(1), 119-152.
Zarrinabadi, N. (2014). Communicating in a second language: Investigating the effect of teacher on learners' willingness to communicate. *System*, *42*(1), 288-295.