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Understanding Language-Learning Environments with Social Cognitive Theory: Gender Differences in Adopting Smart Learning Technologies

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The main purpose of this study is to propose a research model based on social cognitive theory (SCT) to examine EFL learners' adoption of s-learning. This research model incorporates two external constructs (positive experience and behavior modeling) and three mediators (s-learning self-efficacy, outcome expectation, and motivation) as influencing factors on adoption of s-learning. In addition, this study analyzes the effect of gender as a moderator to determine if any difference exists between genders for each path on the research model. The data from 678 EFL learners who use s-learning for English study were analyzed using AMOS 22.0 to test proposed hypotheses. Results indicate that all proposed hypotheses were supported. Furthermore, there was a significant difference between male and female EFL learners for each path. The findings of this study imply that s-learning is becoming an essential learning tool for EFL learners. However, male and female EFL learners differently perceive influencing factors of s-learning adoption. Thus, English educators and practitioners should consider gender as a factor influencing s-learning adoption.

[smart learning/social cognitive theory/gender/technology adoption]

I. INTRODUCTION

Since the rapid growth of computing and the distribution of wireless technology, understanding how language learners use technology effectively to develop their target-language skills has been a critical research issue. Research in general education has progressively focused on delineating the ideal methods for encouraging e-learners while assisting online-learning behaviors. Moreover, many researchers employ information

systems, psychology, education, and sociology to explain and analyze the relationships among various factors that affect the intention to use computer technology for learning (e.g., Compeaau & Higgins, 1995; Jung, 2013; Taylor & Todd, 1995; Venkatesh & Davis, 1996). However, only recently have researchers begun investigating smart language-learning. A well-developed research framework on smart language education has not been developed, though some researchers have begun to study basic issues concerning smart learning environments. Some scholars define smart language-learning environments (SLLE) as the language-learning contexts that utilizes smart devices, along with innovative computer technology that can enable high learner-centered experiences, high authenticity, and high interactivity (e.g., Huang, 2014). Indeed, the tools for smart language learning provide learners with greater access to learning resources as well as enhance opportunities for studying collaboratively with peers, all without the constraints of time and distance (Kukulska-Hulme, 2005).

Among various learning theories, social cognitive theory (SCT) gives distinction to the concept of social influences by modeling or observation of others (Bandura, 2002). During this process, self-efficacy and outcome expectation affect choices about which behaviors to undertake, the effort and diligence exerted in the face of difficulties to the performance of those behaviors, and eventually, the mastery of the behaviors (Harare, 2016). The SCT perspective holds that successful learners possess higher levels of motivation, apply more effective learning strategies, and respond more properly to situational demands (Pintrich & Schunk, 2002). Examining the SLLE with SCT would help language teachers and researchers to understand the interactions of social influences, learners' perceptions, and learning behaviors in the new learning settings.

Unfortunately, the researchers and educators who design smart language-learning systems tend to overlook the intermingled features and mutual interactions and rarely study effects (Compeau & Higgins, 1995; Compeau, Higgins, & Huff, 1999). Thus, this study investigates important factors of the social cognitive model and explores the correlation of these factors in SLLE. This is accomplished by the application of SCT (Bandura, 1986; Compeau & Higgins, 1995), a broadly accepted and empirically authorized model of individual behavior. The findings of this study clarify the relationship between learners and the intention for s-learning and further contribute to the literature on language-learning environments by offering new insight into various factors that affect language learners' adaptation to new language-learning settings.

II. LITERATURE REVIEW

1. Smart Language-Learning Environments (SLLE)

Smart language-learning environments (SLLE) are characterized as places or task spaces that facilitate effective language learning by identifying learning scenarios, recognizing the feature of learners, outlining the learning process, and assessing learning outcomes of learners (Huang, Yang, & Hu, 2012). SLLE eliminates the boundary between physical and virtual worlds and affords language learners with continuous learning assistance. The popularity of smart phones and other portable devices influences learning methodologies and contexts, including language classrooms. It is commonly recognized that smart technology provides an advantage in language learning because the learners can study anyplace, anytime, and anywhere (Collis, 1996). Over the years, researchers have focused on smart learning's mobility and accessibility. Certainly, smart technology has modified notions of time and space, providing new opportunities to access information and transform knowledge construction (Gros, 2016). By combining formal and informal situations, s-learning transforms teaching and learning practices (Kukulska-Hulme, 2005).

In a traditional classroom setting, the language teacher is the central source of input, and learners need to stay in the same place and participate simultaneously in the same activity, whereas in s-learning each language learner can participate in authentic tasks in different spaces and at different times. In addition, supplementary materials are always available and accessible from any device (Gros, 2016). In addition, the use of the smart devices offers language learners the opportunities to create and modify real-world, location-based environments or contexts (Cook, Pachler, & Bachmair, 2011).

Digital technology has inspired a new vision for language learning. Chatti, Agustiawan, Jarke, and Specht (2010) explain that language learning should be primarily personal, social, authentic, flexible, and dynamic in social contexts. They emphasize that effective technology use enables support and guidance in these learning environments. In other words, in SLLE, a realistic location in real time can be important for adapting learning content and situations to the learner. Moreover, the system can predict language learners' needs and provide guidance (Gros, 2016). In short, SLLE implementation goes beyond the application of smart technology. SLLE not only allows learners to access social contexts and interact with others at any place and any time but also dynamically offers essential learning assistance, helpful tools, and learning suggestions.

From a constructivist perspective, smart language learning does not merely boost mastery of target-language content prepared and delivered by teachers but also offers various options for learners, or even allows learners to design their own learning methods through the guidance and support of SLLE. In SLLE, interaction is the core process of teaching and learning. Interaction goes beyond one-way teaching and extends to interpersonal interaction and human-environment interaction (Garrison & Anderson, 2002). Lee (2015) suggested that the characteristics of smart language learning contain

formal and informal learning, social and collaborative learning, and personalized and situated learning.

Due to the complexity of and changes in SLLE, researchers and language teachers must consider learner factors and new pedagogical methodologies that integrate innovative applications (Gros, 2016). In the early 1990s, lack of teacher knowledge about the integration of technology to assist learning led teacher-education programs to focus on hardware and software use (Kukulska-Hulme, 2005). However, teachers soon demanded that computer technology use had to reflect many different factors in educational methodologies and theories. For example, Hwang (2014) stressed that SLLE should move toward a context-aware method that could offer learners immediate support based on subject contents and each learner's background. In addition, Spector (2014) recommended that SLLE designers recognize a diversity of learners with varying competencies, learning styles, cultural backgrounds, and interests. This movement demonstrates that using technology in language classrooms provokes new pedagogical concerns. Researchers need to develop new pedagogical perspectives based on existing theories and by examining the whole learning environment. Exploring various elements in SLLE might provide opportunities for language teachers and learners to understand these changes and develop new strategies and methodologies for more effective and efficient language learning.

2. Social Cognitive Theory (SCT)

Many theories have been proposed over the years to clarify the developmental changes that people experience over their lives. These theories differ in their concepts of human nature and the mechanisms of human behavior (Harare, 2016). SCT integrated behavioral and cognitive theories of learning to deliver a comprehensive model of learning experiences in the real world. Bandura (1997) concluded that people are dynamic information processors who ponder the relationship between their behavior and its consequences. Bandura focused on reinforcement of aspects such as beliefs, expectations, and experiences. In his view, people are not completely machines that only react to external stimuli. Rather, reactions to stimuli are self-activated, initiated by the person (Harare, 2016). Bandura (2001) stressed that human functioning is the product of the interaction between the environment, behavior, and psychological functioning.

Grusec (1992) and Harare (2016) summarized the key principles of SCT concerning learning and behavior: (1) Personal, behavioral, and environmental factors influence one another. That is, a person's constant functioning is the result of continuous interactions among cognitive, behavioral, and personal elements. (2) The learner is not a passive recipient of knowledge. SCT does not reject the significance of the environment in

determining behavior, but it claims that learners can, through anticipation, self-reflection, and self-regulatory processes, apply considerable power over their own outcomes and the environment. (3) Learning is not behavioral but cognitive, and it occurs in a social context. (4) Learning can occur by observing others' behavior and its consequences. (5) Learning includes observation, mining information from those modeling, and valuing the performance of the behavior.

The main parts of SCT are observational learning/modeling, outcome expectations, and self-efficacy. According to Schunk (2012), learning either occurs actively by doing or vicariously by observing models perform. Behavior modeling is the process of observing a behavior and then trying to perform the same behavior. This process is also explained as vicarious learning or observational learning because learning is the outcome of inspecting the behavior and values of models in the learning environment. Outcome expectancy is a person's estimation that a certain behavior will yield a subsequent outcome. Thus, belief about the consequences of a behavior pass to the individual (Bandura, 1997). These beliefs are designed dynamically through learners' previous experiences and vicariously through the observation of others. Bandura (2002) mentioned that outcome expectations are significant in SCT because they affect the judgments learners make about which behaviors to adopt or reject. In addition, self-efficacy has appeared as a powerful concept within SCT. Self-efficacy reveals learners' beliefs about whether they can reach a given level of achievement at a specific task (Bandura, 1997). This concept has proven to be valuable for understanding learners' motivation and success in academic settings. Hence, Pajares (1996) emphasized that higher levels of self-efficacy relate to greater choice, diligence, and more effective strategy use.

In previous research, Wang and Lin (2007) classified the most important personal, behavioral, and environmental factors in the social cognitive model and applied this framework to the design of web-based learning contexts. In their data, the participants who had higher levels of motivation used more effective strategies and react more properly to social demands in the web-based learning environment. Pintrich and De Groot (1990) and Pintrich and Schunk (2002) identified three motivational components that significantly influence learning environments: (1) an expectancy component, (2) a value component, and (3) an affective component. According to Pintrich and Schunk (2002) and Zimmerman (1996), the expectancy component boosted the learners' belief that they could complete a task. Their results demonstrated that self-efficacy strongly influenced activity selection, effort expended, inclination to persist, and task success. Similarly, Joo, Bong, and Choi (2000) indicated that learners' self-efficacy in using the Internet meaningfully balanced their scores on the web-searching quiz.

In addition, Compeau and Higgins (1995) found that observing peers complete a task

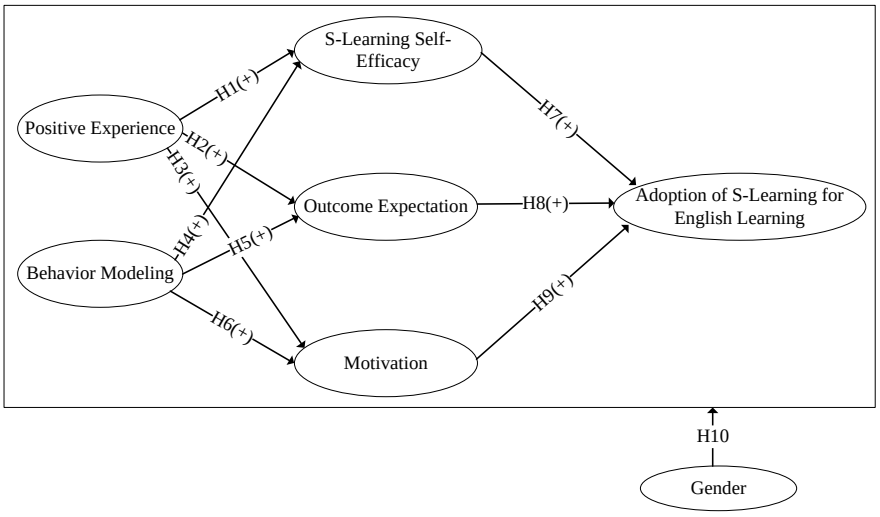
positively affected self-efficacy and consequently improved their performance. In their study, computer skills training indicated that behavioral modeling significantly impacts learners' beliefs and computer performance. Lin, Liu, and Yuan (2001) demonstrated the effect of mentoring in the learning setting, indicating that learners with high assignment scores are those who can strategically use peer monitoring for their improvements. They found that learners performed better with peer monitoring by comparing the learners' assignment scores with peer monitoring with their final scores without peer monitoring. Gist, Schwoerer, and Rosen (1989) compared computer assisted instruction (CAI) to behavior modeling in a spreadsheet-training workshop. The participants in the behavior modeling condition developed higher self-efficacy than those in the CAI condition.

In summary, while several factors with SCT have been found, to date only a few research studies have examined interactions in SLLE. However, the rapidly changing language-learning environment has meant that SCT can be a useful theoretical framework to understand learners' behavior in new learning contexts. According to Al-Mamary, Al-nashmi, Hassan, & Shamsuddin, (2016), SCT can be used as a tool to extend its ideas and constructs into a specific model for a specific purpose because it is broad and covers many diverse areas. SCT is formed based on the dynamic relationship between learner, behavior, and environment. Therefore, SCT can be used as a theoretical framework to understand learners' behavior in smart language-learning classrooms.

III. RESEARCH MODEL WITH HYPOTHESES

Figure 1 illustrates the research model based on SCT with hypotheses. The model emphasizes the importance of two external constructs: positive experience and behavior modeling as they directly pertain to three mediating constructs (s-learning self-efficacy, outcome expectation, and motivation) on the basis of a literature review (e.g., Bandura, 1986; Jung, 2015; Spaulding, Tudor, & Mahatanankoon, 2015). Furthermore, these three mediating constructs are antecedents of s-learning adoption for English learning. However, the strength and significace of the causal relationships proposed in the research model may be influenced by gender. In other words, female EFL students may have different perceptions of these relationships compared with male EFL students. Thus, this research model proposed gender as a moderator because this construct has often been used as a key factor for comparing any existing differences in various contexts of studies (e.g., Albert & Johnson, 2011; Gonzalez-Gomez, Guardiola, Rodriguez, & Alonso, 2012).

FIGURE 1
Research Model



Positive experience is defined as the amount of time that EFL learners spend with s-learning for their English studies as well as the degree to which they promote positive property (Dickerson & Gentry, 1983). Having a positive experience of s-learning for EFL learners' English study can increase their self-efficacy, outcome expectation, and motivation toward s-learning. Prior studies (e.g., Jung, 2014; Wang, Koda, & Perfetti, 2003) claim that a positive experience often precipitates positive behaviors of individuals. Thus, the following hypothesis is proposed:

H1: Positive experience is positively associated with s-learning self-efficacy.
H2: Positive experience is positively associated with outcome expectation.
H3: Positive experience is positively associated with motivation.

Compeau and Higgins (1995) claimed that observing someone else who focuses on performing planned behaviors often fosters ones' perceptions of his or her own ability to perform them successfully. In many cases, behavioral modeling implies the representation of behavior and culture in the abstract. In other words, when others in the same social group perform certain patterns and demonstrate associated outcomes, peers absorb their behaviors and act accordingly (Venkatesh, Morris, Davis, & Davis, 2003). Based on these findings, the following hypotheses are suggested:

H4: Behavior modeling is positively associated with s-learning self-efficacy.
H5: Behavior modeling is positively associated with outcome expectation.

H6: Behavior modeling is positively associated with motivation.

Self-efficacy refers to users' self-confidence that they have enough skills and knowledge to use certain technologies to successfully accomplish their tasks (Bandura, 1986). Based on this definition, this study defines s-learning self-efficacy as EFL learners' self-confidence that they have the knowledge and skills to adopt s-learning for their English study. With increased confidence, EFL learners' adoption of s-learning for English study will be greater. This direct effect has been proven in various contexts of studies across a diverse range of educational settings (e.g., Jung, 2015). Therefore, the following hypothesis is proposed:

H7: S-learning self-efficacy is positively associated with adoption of s-learning for English learning.

According to Compeau et al. (1999), outcome expectation includes both personal and performance categories. Performance outcome expectation is related to the perception of advancement in one's job efficiency and effectiveness, while personal outcome expectation is "related to expectations of change in image or status or to expectations of rewards" (Compeau et al., 1999, p. 148). Based on this operational definition, outcome expectation in this study is defined as EFL learners' perception of improvement when using s-learning as well as expectations of change in image or status or to expectations of rewards from using s-learning for their English study. When EFL learners have a higher outcome expectation, they will be more likely to adopt s-learning. Prior studies (e.g., Spaulding et al., 2015) found a positive relationship between outcome expectations and adoption or continued use of certain technologies and service in various contexts. Thus, H8 is proposed as follows:

H8: Outcome expectation is positively associated with adoption of s-learning for English learning.

Motivation, defined as "the degree of the choices people make and the degree of effort they will exert" (Keller, 1983), often causes EFL learners' behaviors. Based on this definition, this study defines motivation as EFL learners' degree of desire or willingness to adopt s-learning. Prior studies (e.g., Deci & Ryan, 1985; Ryan & Deci, 2000) claim that motivation is a crucial determinant that affects adaptation of behaviors. Thus, if EFL learners' motivation is positive regarding s-learning, there will be an increased likelihood that they will adopt the learning method. Based on this, the following hypothesis is developed:

H9: Motivation is positively associated with adoption of s-learning for English learning.

Gender differences have been an important consideration for many educational studies in a diverse range of behavioral researches. Prior studies (e.g., Chu, 2010; Ong & Lai, 2006) found that learners' perceptions vary according to gender in many educational systems, including mobile learning and social learning. Thus, issues related to gender differences must be addressed (Albert & Johnson, 2011). In the context of s-learning, male and female EFL learners' behaviors will differ in regards to many aspects of behavioral domains. Therefore, the hypothesis related to gender difference (H10) is proposed:

H10: There is a significant difference in hypothesis 1 to 9 according to EFL learners' gender.

IV. RESEARCH METHODOLOGY

1. Development of Measuring Items

Measures for each latent construct were developed by a review of existing measures in the literature. For example, three items based on Compeau and Higgins (1995) were used to assess positive experience and behavior modeling. Items from existing studies (e.g., Deci & Ryan, 1985; Jung, 2015; Ryan & Deci, 2000) measured three constructs (s-learning self-efficacy, outcome expectation, and motivation). Finally, four items based on Davis (1989) were used to measure adoption of s-learning. Thus, a total of 22 items were used for this study. All items were modified to reflect the context of s-learning for English study. Then, content validity was tested by five professionals in the English education field to check the relevance and accuracy of each item. Participants were asked to respond with their degree of agreement or disagreement on a 7-point Likert-type scale, ranging from "1" (strongly disagree) to "7" (strongly agree).

2. Samples

The unit of analysis for this study was individuals, particularly university students who have experience using s-learning for their English study. This group exemplifies a large and distinct population, embodying frequent use of s-learning as well as social-network service for English study. Over a six-month period, the data were collected from

5 four-year universities located in Seoul and another five universities in the southern part of Korea in order to increase generalizability. A total of 692 responses were collected from ten universities. However, 14 responses were excluded due to missing values for some items. Thus, 678 final responses were analyzed to test the proposed hypotheses.

TABLE 1
Participants' Profiles (*n = 678*)

Category		Frequency	Percentage
Gender	Male	294	43.4%
	Female	384	56.6%
Academic Year	Freshman	122	18.0%
	Sophomore	201	29.6%
	Junior	253	37.3%
	Senior	102	15.0%
S-Learning Experience	< 6 months	81	11.9%
	≥ 6, ≤ 1 year	166	24.5%
	≥ 1, ≤ 2 years	237	35.0%
	≥ 2 years	194	28.6%
Study Time (per week)	< 3 hr	67	9.9%
	≥ 3, ≤ 5 hr	243	35.8%
	≥ 5, ≤ 7 hr	190	28.0%
	≥ 7 hr	178	26.3%
Learning Contents (multiple responses)	Reading/Listening	483	71.2%
	Grammar	390	57.5%
	Exam Preparation	377	55.6%
	Dictionary/Vocabulary	625	92.2%
	Other	35	5.2%
Device Used for S-Learning	Smart PC	56	8.3%
	Smartphone	539	79.5%
	Tablet PC	218	32.2%
	Other	21	3.1%

Among the 678 responses, 384 responses (56.6%) were from women. Participants were fairly distributed throughout all years: 18.0% in freshman, 29.6% in sophomore, 37.3% in junior, and 15.0% in senior. This result shows that s-learning for English study has become common for EFL learners regardless of their academic year. In terms of s-learning experience, 35.0% of participants had been using s-learning for more than one year but less than two years. In addition, 28.6% responded that they had been using s-learning for more than two years. Regarding study time per week with s-learning, 35.8% of participants spend more than three hours but less than five hours of their study time with s-learning for English study. 26.3% responded that they use s-learning for English study for more than seven hours per week. This result implies that increasing use of smart device leads EFL learners to spend much time on such device for English study.

The most commonly used service of s-learning was dictionary/vocabulary (92.2%), followed by reading/listening (71.2%), grammar (57.5%), and exam preparation (55.6%). Finally, respondents use smartphones (79.2%) most, followed by tablet PCs (32.2%). The participants' profiles are shown in Table 1.

3. Data Analysis and Results

The collected data (*n = 678*) were analyzed by use of AMOS 22.0 for covariance-based structural equation modeling (CBSEA). Because this study was confirmatory in nature, CBSEA was a suitable approach. The analysis proceeded in two stages: measurement model analysis and structural model analysis (hypothesis test).

1) Assessment of the Measurement Model

The test of the measurement model confirms the validity (convergent and discriminant) and internal consistency (reliability) of measures. Confirmatory factor analysis (CFA) was conducted to yield factor loading for each item and average variance extracted (AVE). The threshold for factor loading and AVE is 0.7 and 0.5, respectively, to demonstrate the convergent validity (Chin, 1998). To determine internal consistency, the most commonly used method, Cronbach's alpha, was used. As shown in Table 2, all loadings and the alpha values for all constructs exceeded the minimum acceptable level, which implies that the measurement model demonstrates convergent validity and reliability.

TABLE 2
Results of Convergent Validity and Reliability Test

Construct	Items	Loading	Cronbach's Alpha	AVE
Positive Experience	pe1	0.746	0.844	0.542
	pe2	0.739		
	pe3	0.724		
Behavior Modeling	bm1	0.758	0.756	0.571
	bm2	0.783		
	bm3	0.725		
S-Learning Self-Efficacy	se1	0.834	0.899	0.668
	se2	0.789		
	se3	0.798		
	se4	0.847		
Outcome Expectation	oe1	0.843	0.901	0.644
	oe2	0.834		
	oe3	0.772		
	oe4	0.757		

Motivation	mot1	0.728	0.927	0.603
	mot2	0.749		
	mot3	0.797		
	mot4	0.828		
Adoption of S-Learning for English Learning	ado1	0.812	0.907	0.703
	ado2	0.836		
	ado3	0.799		
	ado4	0.904		

Another issue to be evaluated before analyzing each path in the research model is the discriminant validity, which is used to indicate the lack of a relationship among latent variables that theoretically should not be associated. To validate the discriminant validity, all correlations among latent constructs should be less than the value of the square root of the average variance extracted (AVE) for each latent construct. As shown in Table 3, the discriminant validity was supported because the correlations did not exceed the square root of AVE value.

TABLE 3
Discriminant Validity Test

Latent Construct	1	2	3	4	5	6
1. Positive Experience	**0.736**					
2. Behavior Modeling	0.204	**0.756**				
3. S-Learning Self-Efficacy	0.311	0.280	**0.817**			
4. Outcome Expectation	0.106	0.111	0.139	**0.802**		
5. Motivation	0.440	0.412	0.368	0.299	**0.776**	
6. Adoption of S-Learning for English Learning	0.291	0.357	0.410	0.399	0.482	**0.839**

Note: Bold numbers on the diagonal are the square roots of AVE.

2) Structural Model Test (Direct Effects Test)

The results of the direct effect (H1 to H9) for both genders are shown in Table 4. Each path for the male and female groups was significant at different levels. Thus, H1 to H9 were supported. However, the strength of each path differed between men and women. For example, the standardized path coefficient (β) between positive experience and s-learning self-efficacy was 0.242 for men and 0.287 for women, which implies that the strength of this causal relationship is slightly higher for women than men. Similarly, the path coefficient between positive experience and outcome expectation was 0.301 (t-value 4.527) for men and 0.410 (t-value 6.798) for women, which was significant at $p <$ 0.01. Other paths (H3 to H6) reveal the same pattern of results.

However, regarding H7 to H9, the path coefficient between three mediating constructs (s-learning self-efficacy, outcome expectation, and motivation) and adoption of s-

learning for men was 0.429, 0.381, and 0.436, respectively. These values of coefficient for women were 0.328, 0.269, and 0.412, which implies that the strength of these causal relationships is a little higher for men than women. In other words, male EFL learners consider s-learning self-efficacy, outcome expectation, and motivation more important than female EFL learners in deciding whether to adopt s-learning.

TABLE 4
Hypothesis Test

Group	Path	Std. β	t-value	Result
Male Group (*n=294*)	H1: Positive Experience → S-Learning Self-Efficacy	0.242**	3.886	Yes
	H2: Positive Experience → Outcome Expectation	0.301**	4.527	Yes
	H3: Positive Experience → Motivation	0.392**	6.623	Yes
	H4: Behavior Modeling → S-Learning Self-Efficacy	0.186*	2.204	Yes
	H5: Behavior Modeling → Outcome Expectation	0.234**	3.654	Yes
	H6: Behavior Modeling → Motivation	0.162*	1.986	Yes
	H7: S-Learning Self-Efficacy → Adoption of S-Learning	0.429**	7.935	Yes
	H8: Outcome Expectation → Adoption of S-Learning	0.381**	4.260	Yes
	H9: Motivation → Adoption of S-Learning	0.436**	5.200	Yes
Female Group (*n=384*)	H1: Positive Experience → S-Learning Self-Efficacy	0.287**	4.924	Yes
	H2: Positive Experience → Outcome Expectation	0.410**	6.798	Yes
	H3: Positive Experience → Motivation	0.416**	5.883	Yes
	H4: Behavior Modeling → S-Learning Self-Efficacy	0.223**	3.510	Yes
	H5: Behavior Modeling → Outcome Expectation	0.267**	4.018	Yes
	H6: Behavior Modeling → Motivation	0.199**	2.883	Yes
	H7: S-Learning Self-Efficacy → Adoption of S-Learning	0.328**	4.306	Yes
	H8: Outcome Expectation → Adoption of S-Learning	0.269**	4.771	Yes
	H9: Motivation → Adoption of S-Learning	0.412**	6.245	Yes

Note: * $p < 0.05$, ** $p < 0.01$

4. Multi-Group Moderation Test

There are two steps to analyze the moderating effect of gender. First, each path for the unconstrained model (free model) of two groups (men and women) should be tested, and each path for each group should be significant for further investigation. The results of the test for the unconstrained model (free model) of two groups were valid, as shown in Table 4. Then, the multi-group moderation test using AMOS 22.0 was conducted to analyze the role of a moderator (gender). For this purpose, the difference between chi-square (χ^2) values for the unconstrained and fully constrained models was examined to test differences between groups at the research model level as well as for each path.

Groups between unconstrained and fully constrained model should be different at the research model level in order to examine path analysis. The result shows that the χ^2 of the unconstrained model was 706.23 while the χ^2 of the fully constrained model was 735.60. Thus, it can be concluded that these two models were different. Then, path-by-path

analysis was conducted to determine if any difference existed for each path between the two groups. First, each path in the research model was constrained one by one, which increased one degree of freedom (DF), and then the constrained model was run to determine the χ^2 of the model. Table 5 shows that the difference between χ^2 values for the unconstrained and constrained models for each path was higher than the threshold 3.84 at $p < 0.05$. This implies that all paths are different for both genders. Thus, gender had a significant impact as a moderator within the research model. In other words, the degree that male EFL learners perceive for each path is different from that of female EFL learners perceive.

TABLE 5
Results of Group Difference at Each Path

Path	Increased DF	Chi-square (χ^2)	$\Delta\chi^2$	Difference in Gender
① Positive Experience → S-Learning Self-Efficacy	1	717.62	11.39	Yes
② Positive Experience → Outcome Expectation	1	710.58	4.35	Yes
③ Positive Experience → Motivation	1	717.62	11.39	Yes
④ Behavior Modeling → S-Learning Self-Efficacy	1	716.95	10.72	Yes
⑤ Behavior Modeling → Outcome Expectation	1	721.55	15.32	Yes
⑥ Behavior Modeling → Motivation	1	718.69	12.46	Yes
⑦ S-Learning Self-Efficacy → Adoption of S-Learning	1	720.47	14.24	Yes
⑧ Outcome Expectation → Adoption of S-Learning	1	716.03	9.8	Yes
⑨ Motivation → Adoption of S-Learning	1	719.44	13.21	Yes

V. CONCLUSION

1. Discussion and Implications

The results indicate a positive relationship between positive experience and the three mediators (s-learning self-efficacy, outcome expectation, and motivation) in both men and women. Thus, H1, H2, and H3 were supported. These results imply that when a prior experience of s-learning is positive, EFL learners have confidence in increasing self-efficacy for the technology. In addition, EFL learners' positive experience likely increases outcome expectation. Finally, when EFL learners have a positive experience

with s-learning, their motivation to adopt s-learning will increase. Previous studies found similar results. For example, Compeau and Higgins (1995) asserted that individuals who have a higher positive experience of technology would develop higher perceptions of self-efficacy than those with low prior experience. Furthermore, Wang et al. (2003) claimed a positive relationship between experience of a certain technology and individual behaviors, including motivation.

In both gender groups, the strength of the causal relationship shows that the path coefficient between positive experience and motivation (0.392 for men and 0.416 for women) has the highest value, which implies that positive experience has a higher positive impact on motivation than the other two constructs (s-learning self-efficacy and outcome expectation). In addition, the findings suggest that female EFL learners place more value on a positive experience of s-learning than male EFL learners on the basis of the comparison between path coefficient values of H1, H2, and H3 for men and women.

Evidence also supports that behavior modeling has a positive impact on s-learning self-efficacy, outcome expectation, and motivation for both men and women. Therefore, H4, H5, and H6 were supported. H4 predicts a positive relationship between behavior modeling and s-learning self-efficacy. In other words, EFL learners who accept behavior modeling (e.g., observing someone else using s-learning) increase their belief in their ability to successfully achieve it (Bandura, 1986). Thus, it can be concluded that EFL learners who observe others using s-learning develop higher awareness of s-learning self-efficacy.

Prior studies (e.g., Compeau & Higgins, 1995) claimed that behavior modeling is also positively associated with outcome expectation. EFL learners who observe rewarded peer behaviors often follow the same behavior (adopting s-learning) to accomplish the same or similar outcomes. Another context of prior research verified the claims that behavior modeling had a significant impact on outcomes in the context of teaching mathematics skills (Schunk, 2012). Thus, the results show that behavior modeling is a crucial factor to increase outcome expectation for both male and female EFL learners. Finally, behavior modeling has a positive impact on motivation. In a similar context to outcome expectation, when EFL learners observe rewarded peer behaviors (in this case, the adoption of s-learning), the motivation to follow other's behavior increases.

In both gender groups, the strength of the causal relationship shows that the path coefficient between behavior modeling and outcome expectation (0.234 for men and 0.267 for women) has the highest value, which implies that both male and female EFL learners expected to increase outcomes by following others' rewarded behaviors. That is, potential EFL learners who think about adopting s-learning for English study are often influenced by others EFL learner' behaviors resulting in positive outcomes.

H7, H8, and H9 were proposed to test the relationship between the three mediators

and adoption of s-learning for English learning. These hypotheses were significantly supported, suggesting that EFL learners adopt s-learning because they know about the learning environment and expect a higher performance with positive learning motivation from peers. Jung (2014) claims that EFL learners adapt to new learning environments such as s-learning because of the distinctive benefits of learning environment. Regarding the strength of these relationships, motivation has the highest path coefficient for both groups. Moreover, the men have a higher path coefficient of those three paths than the women. These results imply that male EFL learners consider s-learning self-efficacy, outcome expectation, and motivation more important than female EFL learners in deciding whether or not to adopt s-learning.

Finally, the result of the multi-group moderation analysis reveals that there is a significant difference between male EFL learners and female EFL learners' perception of the proposed causal relationships in the research model. In other words, the level of perception that the men have on the impacts of each construct differ from that of the women. For example, male EFL learners think positive experience of s-learning is an important factor for increasing outcome expectation. However, a psychological difference in the degree of perception between female and male EFL learners exists for all proposed paths in the research model. The impact of gender as a moderator has been examined in various contexts of educational research (e.g., Albert & Johnson, 2011; Gonzalez-Gomez et al., 2012). These studies also claim that gender should be considered to explain individuals' behaviors.

The findings of this study highlight the distinctiveness of s-learning for EFL learners, which can help English educators and practitioners understand English learners' behaviors. The proposed research model attempts to provide understandable and validated information, explaining the rationales of adopting or not adopting s-learning for English study. Rather than focusing on technical aspects of the new learning environment, which is very common in the literature, this study proves that SCT can be applied to s-learning in explaining EFL learners' behaviors. This study may give researchers in English education some insights into key factors for adopting or not adopting s-learning.

Another contribution of this study is related to its research methodology, particularly the development of validated measures for future s-learning research. Even if items to measure each construct in the research model were adopted from the literature, the validation of all items after modifying them adds value to this study. In addition, the data analyzed in the study were collected from actual s-learning users, which gives English teachers and educators a better understanding of what to expect of EFL learners' behavior from a non-technical perspective. Finally, this study indicates that all relationships among constructs in the research model may differ based on learner's

gender. This result suggests that male and female EFL learners behave differently when deciding whether to adopt s-learning as a primary method of English study.

In addition, this study contributes to English education practices. First, this study reveals that s-learning for English study has become a more popular method than other approaches. This trend suggests that EFL learners continue to seek better-positioned learning environments, which benefits them by increasing the effectiveness, efficiency, and productivity of their English learning. Thus, English educational institutions and practitioners who are considering utilizing s-learning services for EFL learners can use this study's findings to better alert and train themselves in a manner that permits them to look for and quickly respond to promising English learning technologies. That is, practitioners of English education must dedicate more financial and non-financial resources to understanding innovative English learning technologies. By doing so, they can deploy English educational strategies from EFL learner's perspectives, which provides opportunities for them to have more competitive advantages than those unable to understand an EFL learner's behaviors.

Finally, the findings of this study provide meaningful values to s-learning firms in that when developing an s-learning service they must tailor it to the needs of learners with different characteristics, including gender. For example, EFL learners are often influenced by positive experience and peer learners when deciding on certain behaviors. Thus, s-learning service providers can focus on activities that promote EFL learners' positive experience and interaction with their peers. Further, the government and related organizations should develop policies and regulations that support s-learning as a new method of English education.

2. Limitations and Future Study

Although this study highlights several important implications, it is also limited in several respects. First, the data were collected during a fixed period and at one point in time rather than over time. Thus, to increase the strength and validity of the findings, a longitudinal study is needed. In addition, using a small number of items for measuring each construct may limit the reliability and validity of measures because reliability and validity are often demonstrated with a limited number of measures. Finally, this study focused on gender as a single moderator. However, other variables such as academic year, age, and length of s-learning experience should be examined to achieve a more in-depth understanding of s-learning for English study.

On the basis of these limitations, this study provides opportunities for future studies of s-learning for English education. For example, future study can collect data from culturally and individually diverse groups in order to achieve more accurate and valid

findings. This study also used SCT to explain EFL learners' adoption of s-learning, which may neglect diverse viewpoints. Thus, future study may develop other influencing constructs from both literature and s-learning users. Finally, future research may examine either potential mediating or moderating effects (interaction terms). For example, constructs such as s-learning knowledge (both technical and non-technical knowledge) can be applied as a moderator to discover if it enhances a relationship between influencing constructs and influenced constructs.

REFERENCES

Albert, L. J., & Johnson, C. S. (2011). Socioeconomic status and gender-based differences in students' perceptions of e-learning systems. *Decision Sciences Journal of Innovative Education, 9*(3), 421–436.

Al-Mamary, Y. H., Al-nashmi, M., Hassan, A. H. G., & Shamsuddin, A. (2016). A critical review of models and theories in field of individual acceptance of technology. *International Journal of Hybrid Information Technology, 9*(6), 143–158.

Bandura, A. (1986). *Social foundations of thought and action*. Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. (1997). *Self-efficacy: the exercise of control*. New York: W. H. Freeman.

Bandura, A. (2001). Social cognitive theory: An agentive perspective. *Annual Review of Psychology, 52*, 1–26.

Bandura, A. (2002). Social cognitive theory in cultural context. *Applied Psychology, 51*(2), 269-290.

Chatti, M., Agustiawan, M., Jarke, M., & Specht, M. (2010). Toward a personal learning environment framework. *Int. J. Virtual. Pers. Learn. Environ, 1*(4), 66–85.

Chin, W. W. (1998). The partial least squares approach to structural equation modeling. *Modern Methods for Business Research, 295*(2), 295–336.

Chu, R. J. (2010). How family support and Internet self-efficacy influence the effects of e-learning among higher aged adults: Analyses of gender and age differences. *Computers & Education, 55*(1), 255–264.

Collis, B. (1996). *Tele-learning in a digital world: The future of distance learning*. London: International Thomson Computer Press.

Cook, J., Pachler, N., & Bachmair, B. (2011). Ubiquitous mobility with mobile phones: A cultural ecology for mobile learning. *E-learning Digit Media, 8*(3), 181–195.

Compeau, D. R., & Higgins, C. A. (1995). Application of social cognitive theory to training for computer skills. *Information Systems Research, 6*(2), 118–143.

Compeau, D., Higgins, C., & Huff, S. (1999). Social cognitive theory and individual reactions to computing technology: A longitudinal study. *MIS Quarterly, 23*(2),

145–158.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319–340.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.

Dickerson, M. D., & Gentry, J. W. (1983). Characteristics of adopters and non-adopters of home computers. *Journal of Consumer Research, 10*, 225–235.

Garrison, D. R., & Anderson, T. (2002). *E-Learning in the 21st Century: A framework for research and practice.* London: Routledge.

Gist, M. E., Schwoerer, C. E., & Rosen, B. (1989). Effects of alternative training methods on self-efficacy performance in computer software training. *Journal of Applied Psychology, 74*, 884–891.

Gonzalez-Gomez, F., Guardiola, J., Rodriguez, O. M., & Alonso, M. A. M. (2012). Gender differences in e-learning satisfaction. *Computers & Education, 58*(1), 283–290.

Gros, B. (2016). *The future of ubiquitous learning: The dialogue between emerging pedagogies and emerging technologies.* Berlin Heidelberg: Springer.

Grusec, J. (1992). Social learning theory and developmental psychology: The legacies of Robert Sears and Albert Bandura. *Developmental Psychology, 28*(5), 776–786.

Harare, S. (2016). Socio-cognitive theory approach in second language acquisition: The state of the art. *International Journal of Modern Language Teaching and Learning, 1*(4), 145–152.

Huang, R. (2014). Three realms of smart education: From environment model to system. *Modern Distance Education Research, 6*, 3–11.

Huang, R., Yang, J., & Hu, Y. (2012). From digital to smart: The evolution and trends of learning environment. *Open Education Research, 18*(1), 12–24.

Hwang, G. (2014). Definition, framework and research issues of smart learning environments: A context-aware ubiquitous learning perspective. *Smart Learning Environments, 1*(1), 1–14.

Joo, Y. J., Bong, M., & Choi, H. J. (2000). Self-efficacy for self-regulated learning, academic self-efficacy, and Internet self-efficacy in Web-based instruction. *Educational Technology Research & Development, 48*(2), 5–17.

Jung, H. J. (2013). Effect of social media characteristics on perceived usefulness of mobile English learning and learning performance. *English Language & Literature Teaching, 19(2)*, 315-333.

Jung, H. J. (2014). Ubiquitous learning: Determinants impacting learners' satisfaction and performance with smartphones. *Language Learning & Technology, 18*(3), 97–119.

Jung, H. J. (2015). Understanding the intention to use smart learning for English learning:

An empirical investigation of the role of learner attributes and learning environment attributes. *English Language & Literature Teaching, 21(4*), 17–36.

Keller, J. M. (1983). Motivational design of instruction. In C. M. Reigeluth (ed.), *Instructional design theories and models: An overview of their current status* (pp. 386–433). Hillsdale, New Jersey: Erlbaum.

Kukulska-Hulme, A. (2005). Mobile usability and user experience. In A. Kukulska Hulme & J. Traxler (Eds.), *Mobile Learning: A handbook for educators and trainers* (pp. 45–46). London: Routledge.

Lee, A. (2015). Authentication scheme for smart learning system in the cloud computing environment. *Journal of Computer Virology and Hacking Techniques, 11*(3), 149–155.

Lin, S. S. J., Liu, E. Z. F., & Yuan, S.-M. (2001). Web-based peer assessment: feedback for students with various thinking-styles. *Journal of Computer Assisted Learning, 17*(4), 420–432.

Ong, C. S., & Lai, J. Y. (2006). Gender differences in perceptions and relationships among dominants of e-learning acceptance. *Journal of Computers in Human Behavior, 22*(5), 816–829.

Pajares, F. (1996). Self-efficacy beliefs in academic settings. *Review of Educational Research, 66*, 543–578.

Pintrich, P. R., & De Groot, E. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology, 82*, 33–40.

Pintrich, P. R., & Schunk, D. H. (2002). *Motivation in education: theory, research, and applications* (2nd ed.). Englewood Cliffs, NJ: Prentice Hall.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68–78.

Schunk, D. H. (2012). *Learning Theories: An Educational Perspective*. Boston: Pearson.

Spaulding, A., Tudor, K. W., & Mahatanankoon, P. (2015). The effects of outcome expectations on individual's anxiety and continued usage of mobile devices: A post-adoption study. *International Food and Agribusiness Management Review, 18*(4), 173–188.

Spector, J. M. (2014). Conceptualizing the emerging field of smart learning environments. *Smart Learning Environments, 1*(1), 2–10.

Taylor, S., & Todd, P. A. (1995). Understanding information technology usage: A test of competing models. *Information Systems Research, 6*(2), 144–176.

Venkatesh, V., & Davis, F. D. (1996). A model of the antecedents of perceived ease of use: development and test. *Decision Sciences, 27*(3), 451–482.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of

information technology: Toward a unified view. *MIS Quarterly, 27*(3), 425–478.
Wang, M., Koda, K., & Perfetti, C. A. (2003). Alphabetic and nonalphabetic L1 effects in English word identification: A comparison of Korean and Chinese English L2 learners. *Cognition*, *87*(2), 129–149.
Wang, S., & Lin, S. (2007). The application of social cognitive theory to web-based learning through NetPorts. *British Journal of Educational Technology, 38*(4), 600–612.
Zimmerman, B. J. (1996). Enhancing student academic and health functioning: A self-regulatory perspective. *School Psychology Quarterly, 11*, 47–66.

Examples in: s-learning, language learning
Applicable Language: English
Applicable Levels: Secondary, Higher education

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