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THE EFFECTS OF PEDAGOGICAL AGENTS ON LISTENING ANXIETY AND
LISTENING COMPREHENSION IN AN ENGLISH AS A FOREIGN LANGUAGE

CONTEXT

by

Young-Ah Ko

A dissertation submitted in partial fulfillment
of the requirements for the degree

of

DOCTOR OF PHILOSOPHY

in

Instructional Technology and Learning Sciences

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2010

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ABSTRACT

The Effects of Pedagogical Agents on Listening Anxiety
and Listening Comprehension in an English as a Foreign Language Context

by

Young-Ah Ko, Doctor of Philosophy

Utah State University, 2010

Major Professor: Dr. Douglas Holton
Department: Instructional Technology and Learning Sciences

This study aimed to explore the impact of pedagogical agents in computer-based listening instruction on EFL students' listening anxiety levels and listening comprehension skills. A total of 66 Korean college students received computer-based listening instruction. Students were randomly assigned to one of three conditions: American agent condition, Korean agent condition, or no-agent condition. Additional data sources were included in the experimental design in order to investigate students' learning experience more thoroughly.

Results indicated that there were no statistical differences in listening anxiety levels and listening comprehension skills between students who worked with the agent and students who worked without the agent. In addition, there was no statistical difference in listening anxiety levels between students who worked with the Korean agent and students who worked with the American agent. However, survey findings indicated a

few differences between the agent condition and the no-agent condition when students were asked to describe their learning experiences. Students from both groups enjoyed the lesson overall; however, their comments revealed some differences. Students in the agent condition regarded the agent as an important contribution to their enjoyable learning experience, and specifically chose the presence of the agent as the reason they would want to work with the program again, while students in the no-agent condition mainly enjoyed the useful functions integrated into the computer-based lesson, and indicated they would work with the program again because it was interesting and helpful.

Although there were no statistical differences between the groups, these results seem to illuminate that the guidance provided by the pedagogical agent during the lesson positively affected students' learning experiences, which is in line with previous study findings. The findings from the survey can also provide suggestions regarding what aspects of pedagogical agents should be kept or improved for language learning. More data would strengthen the impact of the results. However, these findings offer practical and theoretical implications for using pedagogical agents in foreign language education.

(109 pages)

DEDICATION

To my husband, Yoon-Shin,
for his continuous love, sacrifices and understanding
and my parents, Yong-Hee Choi and Heung Yeol Ko,
for their prayers, support, and unconditional love

throughout my long journey

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Above all, I would like to give special thanks to God who has been there for me all the time. Going through difficulties has made me seek God and pray to God more, and now I can see that “all things work together for good” and that it led me to a path filled with His Grace. I wouldn’t have come this far without His guidance.

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Young-Ah Ko

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CHAPTER 1

INTRODUCTION

Background

The number of foreign language learners is increasing, and foreign language educators and researchers have been putting efforts into teaching English more effectively. Along with the desire to find more effective ways of teaching English, concern over dealing with learners' negative feelings and attitudes while learning English has also increased. This concern over learners' negative feelings and attitudes is based on a few language learning theories proposed by a number of language researchers (i.e., Krashen, 1988; Onwuegbuzie, Bailey, & Daley, 1999; Young, 1991). A number of factors influence foreign language learning, and anxiety when learning a foreign language has been identified as one critical factor interfering with foreign language learning and achievements (Horwitz, Horwitz, & Cope, 1991). Among the many skills required to use a language (i.e., speaking, listening, reading, and writing), listening skills are considered important for communication with others. Language learners are expected to understand what the interlocutor is saying in order to continue the conversation. When learners have difficulty with listening comprehension, it is likely that their listening anxiety will increase, which in turn will negatively affect their performance.

Being exposed to a natural context and an authentic environment is claimed to be desirable for foreign language learning. Hadley (2001) asserted that learning and practicing language in meaningful contexts is more appealing; however, this way of practicing a foreign language is not always affordable or feasible. Some foreign language

learners may experience higher language anxiety when talking with native speakers face-to-face, and some may not have an opportunity for exposure to an authentic environment. Since it is not always affordable or feasible for foreign language learners to be exposed to an authentic environment, learning a foreign language through computer-based instruction may be a reasonable alternative. However, research on foreign language anxiety focuses mostly on classroom environments, and the impact of computer-based language instruction on language anxiety is not well known.

There has been ample research on using computers for foreign language learning. More specifically, some research claims that listening can be improved through computer-based instruction. Meskill (1996) claimed that a multimedia learning environment provides more information for learners and leads to better listening comprehension. Incorporating different forms of information through visual and aural presentations is one method of helping learners improve their listening comprehension skills. In addition to this strength of computer-based listening instruction, other reported learning benefits are immediate feedback, individualized learning, and lower cost (Brett, 1995; Hoven, 1999; Weinberg, 2002).

Notwithstanding the advantages of computer-based learning in general, an important element that computer-based learning may lack is social interaction (Kim, Wei, Xu, Ko, & Ilieva, 2007; Moreno, Mayer, Spires, & Lester, 2001; Ryokai, Vaucell, & Cassell, 2003). Subjects such as foreign language learning in particular require a great deal of social interaction (Hadley, 2001; Horwitz, 1986; MacIntyre, 1995); thus, adding a social context to multimedia may enhance computer-based foreign language learning.

Pedagogical agents are one way to provide such a social context to computer-based learning.

Pedagogical agents are computer-animated characters that have been shown to facilitate learning (e.g., Atkinson, 2002; Gulz, 2005; Koda & Maes, 1996; Lester et al., 1997). The most frequently discussed benefit of pedagogical agents is increased motivation, and improved learning is mentioned in some studies as well. The major rationale behind integrating pedagogical agents in learning is that the social presence of the agents may play an important role in students' learning (van Mulken, Andre, & Muller, 1998). Furthermore, how pedagogical agents appear to students may impact students' learning experience as well. Especially in a foreign language learning context, ethnicities of pedagogical agents may be an important factor affecting students' learning experience. Studies on pedagogical agents in foreign language contexts have rarely been conducted, and computer-based listening instruction integrating pedagogical agents has not yet been investigated. Thus it is the aim of this study to investigate the effects of pedagogical agents in computer-based listening instruction on learners' listening comprehension and listening anxiety.

Problem Statement

Although there has been research on using pedagogical agents in computer-based instruction for different content areas, few research studies have been conducted in the area of foreign language learning. Language researchers have attempted to apply various instructional methods to computer-based instruction, and the positive instructional impact

of computer-based instruction has been supported in a number of research studies. However, research on computer-based language instruction has focused on imparting language knowledge without providing a social context. Also, more emphasis has been placed on reading and writing in computer-based language learning, with less emphasis on speaking and listening.

Considering that language learning is a highly social activity (Ellis et al., 2000; Swain, 2000; Vygotsky, 1978), communicative skills such as speaking and listening are likely to improve when learners are involved in social interaction. This approach also extends to computer-based language learning where social interaction can also be facilitated. Moreover, the fact that foreign language anxiety has been documented as a detrimental factor intervening with language learners' performance (Horwitz, 1986; Hortitz, 2001; MacIntyre, 1995) necessitates further research on computer-based language instruction, taking foreign language anxiety into account. Whether the ability of pedagogical agents to enrich the social context in computer-based language learning and positively influence language learners' emotional as well as cognitive outcomes has not yet been examined.

Thus, the effects of using pedagogical agents in computer-based language learning are not yet known. Although positive learning outcomes derived from pedagogical agents are supported in some research, which is reviewed later in this paper, the instructional and emotional impacts of pedagogical agents on language learning are still to be discovered. More specifically, how pedagogical agents will affect the listening comprehension and listening anxiety of students learning English as a foreign language

(EFL) is still open to question. This study focuses on investigating the effects of pedagogical agents in computer-based listening instruction for college students in an EFL environment.

Purpose of the Study

The purpose of the study is twofold. As discussed in the following literature review, existing research on computer-based instruction for listening comprehension has been limited to computer-based learning environments with no social interaction. Furthermore, studies on computer-based learning environments integrating a pedagogical agent have focused on well-defined contexts, and there is little qualitative research on learners' experiences with these environments. This study attempts to (1) replicate studies involving multimedia for listening comprehension to determine whether the positive influence of multimedia for listening comprehension can be supported, and (2) to explore the potential benefits of a pedagogical agent in listening comprehension. Specifically, the study determines the extent to which pedagogical agents can help learners improve listening skills and reduce listening anxiety.

Research Questions

The general question for the proposed study is, what are the effects of pedagogical agents on foreign language listening anxiety and listening comprehension? The following questions are the detailed inquiries regarding foreign language learners' experiences with a pedagogical agent.

1. To what extent does a pedagogical agent reduce listening anxiety in computer-based listening instruction?
2. To what extent do the ethnicities of pedagogical agents reduce listening anxiety in computer-based listening instruction?
3. To what extent does a pedagogical agent improve listening comprehension skills in computer-based listening instruction?
4. How do EFL learners react differently to the learning environment with and without a pedagogical agent?

The next section provides a literature review on three topics that are the bases of this study, followed by the method, results, and discussion sections.

CHAPTER 2

LITERATURE REVIEW

This research aims to integrate three main issues related to computer-based language learning, including reducing foreign language anxiety, improving listening skills, and using pedagogical agents to provide a social context for computer-based language learning. The recent trend in the use of computer-based instruction for foreign language learning, coupled with the need for integrating social interaction into language instruction, provides a foundation for the study. Research on these three topics is reviewed below.

Foreign Language Anxiety

As the number of English learners is constantly increasing, concern over English education has also been growing. For the last few decades, communicative language teaching with its emphasis on oral skills has been the dominant focus in second-language classrooms, especially at the beginning level of language instruction (Celce-Murcia, 2001). However, the notion of communication proficiency has evolved into being competent in all four areas—speaking, listening, reading, and writing—and there has been an accompanying shift toward emphasizing reading and writing skills (Crerand, 1993). However, unlike English as a second language (ESL) instruction, EFL instruction in East Asian countries has focused on reading and writing for the last few decades

(Fotos, 1998). Nowadays, EFL curricula also emphasize the importance of oral and listening skills in English.

Because of the focus on reading and writing in EFL education, EFL learners are extremely nervous when they have to speak with and listen to English speakers, and this interferes with the learners' improvement in speaking and listening skills. The interference with the learning experience is also related to the "affective filter" theory suggested by Krashen (1988). This theory posits that when language learners have unpleasant and uncomfortable emotional attitudes or anxiety, it negatively affects their learning process. Reducing negative feelings while learning a language is likely to enhance learning achievements. Thus, it is important to take into consideration the language anxiety that many EFL learners experience, and teachers should help them manage such anxiety.

Language anxiety is distinguished from other types of anxiety by its association with interpersonal interactions in everyday life (Horwitz, 1986) and the social context in which people communicate with others (MacIntyre, 1995). This uniqueness of language anxiety has led language researchers to relate language anxiety and communication apprehension (Foss & Reitzel, 1988). Because language learning involves interaction with others, a language learner's communication ability is hindered in the presence of nervousness and fear when interacting with others. This relationship supports the argument that research on language anxiety should be in conjunction with communication apprehension, which is defined as having fear or anxiety when communicating with others. Furthermore, as Young (1991) asserted, knowing about

language anxiety helps educators understand how students learn language and how they can help students manage the stress that accompanies language anxiety.

Based on the association of language anxiety with communication apprehension and other general factors, three components of language anxiety have been identified: communication apprehension, test anxiety, and fear of negative evaluation of others (Horwitz, 1986). Because performance evaluation is typically part of the foreign language classroom, a number of students experience a high level of anxiety when taking tests. When this occurs, even students with a great deal of knowledge in a foreign language may perform at a considerably lower level than their true ability should allow. Moreover, students' fear of other people's negative evaluation of their performance in a foreign language plays a significant role in engendering foreign language anxiety. Although the combination of these components explains foreign language anxiety well, Horwitz further claims that it is not enough to attribute the foundation of language anxiety solely to these components because the language learning process involves unique and complex elements.

Language anxiety is frequently found in oral activities in foreign language classrooms, and a number of language researchers have focused on the relationship between oral proficiency and anxiety (Gregersen & Horwitz, 2002; Horwitz, 1986; Mejias, Applbaum, Applbaum & Trotter, II, 1991). However, other studies have revealed the effects of anxiety in other language skills such as reading (Saito, Garza & Horwitz, 1999; Seller, 2000), writing (Argaman & Abu-Rabia, 2002; Cheng, Horwitz & Schallert, 1999), and listening (Kim, 2000). Compared to speaking anxiety, other kinds of language

anxiety have rarely been studied. There is a particular paucity of research in listening anxiety (Elkhafaifi, 2005), defined as nervousness and fear of listening in a foreign language. This is mostly because current EFL instruction focuses on testing EFL learners' comprehension rather than helping them improve their language skills (Phillips, 1992).

In addition to the language anxiety associated with different language skills, different cultural contexts have also been found to account for language anxiety. According to *Inside Higher Ed* (as cited in Horwitz, 2001), although 33% of American students report anxiety, a lower percentage of European students report anxiety (28% to 30%), and a higher percentage (40% to 43%) of Asian students report anxiety. Studies also indicate high levels of language anxiety experienced by EFL learners in Asian countries (Jang, 2004; Park, 2008). This cultural dimension also influenced the selection of the participants of this study.

Ample research studies suggest a number of methods for overcoming language anxiety. Above all, the first strategy for helping students deal with language anxiety is for language teachers to acknowledge the presence of the problem (Onwuegbuzie et al., 1999). Such acknowledgment will help students confront the problem instead of avoiding it. Some research has suggested possible techniques for reducing students' anxiety, such as teaching students relaxation exercises and advising them to keep a journal (Horwitz, 1986; Young, 1991). However, certain techniques involving therapies such as relaxation exercises are beyond the knowledge and time frame of most teachers; thus it is recommended that teachers help students look for outside counselors or learning

specialists. Within classroom settings, teachers should try to create a supportive environment for students, and they also need to help students learn why anxiety arises. Onwuegbuzie et al. (1999) further claimed that foreign language anxiety can even affect students' selection of future careers if they continue to avoid learning a foreign language.

Despite the possible solutions for alleviating foreign language anxiety in classroom settings as suggested by language researchers, efforts have rarely been made to discover feasible solutions for reducing foreign language anxiety in computer-based language instruction. Lack of research in this area suggests a need for language researchers to study the use of computer-based instruction for reducing language anxiety. As discussed in the next section, computer-based language instruction seems to be a plausible way of providing a learning environment for foreign language learners. When foreign language anxiety can be controlled in computer-based learning environments, students are likely to be better prepared for face-to-face interactions with other people and to feel less nervous or afraid.

In summary, the uniqueness of language anxiety is corroborated in many research studies. Thus, it is recommended that language educators and researchers learn to recognize, cope with, and overcome foreign language anxiety among students. When students learn how to cope with and reduce language anxiety, they will be able to learn a foreign language more efficiently and demonstrate their language abilities more fully.

Improving Listening Skills Through Computer-Based Instruction

The last few decades have witnessed extensive advancement and endeavors in the use of technology for education, and this effort has led to the use of technology in language teaching as well. There is a vast body of research on the use of technology for computer-assisted language learning (CALL), but if the integration of technology into language instruction is to be proved effective, language educators must give careful consideration to the positive and negative effects of CALL (Warschauer & Meskill, 2000).

Among the most prominent benefits of CALL are authentic and meaningful interaction that occurs inside and outside the classroom (Levine, Ferenz, & Reves, 2000; Warschauer & Meskill, 2000), equal participation of second or foreign language learners (Warschauer, 1996), and student-centered instruction (Stakhnevich, 2002). However, research has found a few weaknesses, including the high cost of hardware (Salaberry, 2000), teachers' lack of time and effort for learning new technology (Balajthy, 2007; Sandholtz, Ringstaff & Dwyer, 1997), and the limited functions of computers (Lai & Kritsonis, 2006). Consideration of these characteristics of CALL is required for all language learning skills.

Specifically, for listening instruction, language educators and researchers have shifted their attention from audio technologies to multimedia technologies that integrate a wide range of materials in a lesson for listening comprehension (Brett, 1995; Hoven, 1999; Verdugo & Belmonte, 2007; Weinberg, 2002). The overarching rationale behind the use of computers for listening comprehension is that listening involves not only a

physiological process, but also a cognitive process (Hoven, 1999), and listening comprehension requires learners' active participation, which helps them handle the complexities of language learning (Meskill, 1996). Meskill further claimed that for this reason, the testing format of listening comprehension, which is still dominant in foreign language classrooms, is not very conducive to improving learners' listening comprehension. Some argue that face-to-face interaction is a highly effective way to practice and improve foreign language skills (Ur, 1984). This argument is found to be true in most cases; however, computer-based learning can be viewed as an alternative way of learning a language that entails positive learning outcomes (Warschauer, 2002). Freiermuth (2001) also contended that foreign language learners feel more comfortable and less concerned when using their target language with others through a computer than they do face-to-face. This is especially true for beginners because they feel nervous and anxious. Consequently, computer-based foreign language instruction is expected to help language learners become less anxious about language learning and more likely to improve their language skills.

The advantages of using computer-based instruction for listening comprehension include multiple forms of presentation for content, a controlled pace of learning, immediate feedback, less cost per hour of teachers' time, and listening support within the system. Weinberg (2002) asserted that the different modes of transmitting information in multimedia materials help learners understand the content better. Using computer-based learning for listening comprehension is supported because of its helpfulness in providing comprehension aids such as text, sound, or video (Brett, 1995; Jones, 2003). Weinberg

reported other useful features of computer-based listening instruction such as controlled learning and immediate feedback. Students usually wait for their teacher's feedback in classroom settings. In a multimedia learning environment, however, they do not have to worry about waiting for their teacher's feedback since a computer can assess their performance and provide feedback immediately. Receiving prompt feedback is regarded as an important aspect of education, as Dihoff, Brosvic, Epstein and Cook (2004) and Epstein (2002) claimed.

Furthermore, Brett (1995) explained that once a computer-based lesson has been developed and organized, learners experience less economic burden because they do not have to spend their money on a teacher. Especially in Korea, after-school tutoring costs are tremendously high, with parents often having to allocate a very large portion of their living expenses for their children's English education. In Korea, getting an education and being fluent in English are considered crucial for one's success. This results in excessive competitiveness in students and parents and the great expense of children's private tutoring (Rho, n.d.). Using a multimedia application may be one remedy for reducing this burden.

In addition to the strengths of computer-based learning for listening comprehension discussed above, computer-based learning can be used to teach listening strategies at the same time. One body of research examines enhancing listening skills by incorporating listening support activities (Brett, 1995). Listening support activities that have been used include previewing questions, listening to content again, previewing vocabulary, familiarizing learners with content, predicting the content, learning listening

strategies such as focusing on the overall content instead of individual words in the content or relating prior knowledge to unfamiliar content, providing graphics or videos while listening, and controlling the auditory material by rewinding or pausing (Jones, 2003).

Because foreign language learners are often not exposed to their foreign language in everyday life, responding directly to a listening comprehension task can be challenging for them, especially without any preparation (Chang, 2006). When learners experience this kind of difficult task, language anxiety can negatively affect their performance. Listening anxiety has been a less common topic in the foreign language anxiety realm than speaking anxiety or reading anxiety, but it has been investigated by a few foreign language researchers (Elkhafaifi, 2005; Lund, 1991). Studies have indicated that there is a negative relationship between listening anxiety and learners' performance, which is congruent with the relationship between general foreign language anxiety and learners' performance. Foreign language learners may have a higher level of listening anxiety when they communicate with native speakers in person because they do not think they are ready to understand the target language. Thus, reducing listening anxiety in computer-based listening instruction may help learners improve their listening comprehension skills in a non-anxiety-provoking way. Because learners can be more prepared for what they will listen to in a computer-based learning environment than in a real situation, they can relax and be ready for learning.

As discussed above, there are a multitude of advantages for foreign language learners in using computer-based learning for listening comprehension, and further

research in this area is needed to strengthen the validity of such research findings.

Whether computer-based learning can help mitigate learners' listening anxiety is another research topic that needs to be investigated because it is not well known in the foreign language education field. In addition, in reflecting upon claims by language researchers that language learning requires highly social activities such as face-to-face interaction with others, as discussed in the previous section (Hadley, 2001; Horwitz, 1986; MacIntyre, 1995), it seems that social interaction, or engaging in communication with others and building personal relationships, is a major constituent that should be integrated within computer-based listening instruction.

In this vein, what computer-based instruction can offer to foreign language learners seems more promising when social interaction is incorporated. Research on computer-based language learning (e.g., Lan, Sung, & Chang, 2007; Lee, 2004; Murphy, 2007; Warschauer, 1996) is based upon an integral perspective of second language learning, sociocultural theory (Vygotsky, 1978). Adding a social context in computer-based instruction in a non-anxiety-provoking way is important for language learners, and integrating pedagogical agents is suggested as a way to provide social interaction in computer-based instruction.

Pedagogical Agents

Pedagogical agents are defined as lifelike characters in computer-based environments that are designed to facilitate learning (Craig, Gholson, & Driscoll, 2002; Johnson, Rickel, & Lester, 2000). These pedagogical agents have been incorporated in a

variety of computer-based learning environments based on the premise that the agents facilitate learning because people tend to respond to computers much as they do to other people (Reeves & Nass, 1996), and pedagogical agents provide social interaction with learners (Kim, Baylor, & Shen, 2007; Moreno et al., 2001), which is an integral element in language learning (Horwitz, 1986; Swain, 2000; Swain & Lapkin, 1998). Based on the reported benefits of pedagogical agents in computer-based learning environments and the need for social interaction in computer-based language learning, a method for designing computer-based listening instruction is suggested below.

Advantages of Pedagogical Agents

The most frequently mentioned advantages of pedagogical agents are the positive impact of their presence on students' learning and the increase in students' motivation (Kim et al., 2007; Lester et al., 1997). Enhanced learning such as better understanding of materials and problem solving was also discussed in some research (Atkinson, 2002; Towns, FitzGerald, & Lester, 1998). How these benefits can affect computer-based language learning and what needs to be addressed are discussed in this section.

Persona Effect

The mere presence of pedagogical agents positively affecting the learning experience is referred to as the *persona effect* (Lester et al., 1997). Although pedagogical agents can have various features, research studies on pedagogical agents employ the visual presence of a character in computer-based instruction, and learners' positive learning experience is supported by previous research. For example, Lester et al. found

that the presence of an agent in an interactive learning environment for biology lessons positively affected students' perception of the learning experience while working on computer-based instruction. In addition, in Gulz's (2005) study, after experiencing the virtual environment, 80% of users expressed positive attitudes toward pedagogical agents in the instruction and described the agents as fun, interesting, and companionable. The persona effect was also found in a noneducation program in Koda and Mae's (1996) study where participants enjoyed an agent appearing in a Web-based game. Other studies have shown learning benefits from using pedagogical agents as well (e.g., Graesser, Lu, Jackson, Mitchell, Ventura & Olney, 2004; Gulz, 2005).

Although not all research has reported enhanced learning as a result of the presence of pedagogical agents in computer-based instruction (i.e., Andre, Rist & Muller, 1998; Towns et al., 1998; van Mulken et al., 1998), research in this area has assumed that pedagogical agents are conducive to students' learning (Moreno, 2005). More specifically, the instructional roles served by pedagogical agents in computer-based instruction, such as providing information and feedback, as well as features such as their appearance and voice are considered integral to learning benefits.

When the mere presence of a pedagogical agent positively affects the learning experience, does it make foreign language learners' experience more enjoyable? Whether the presence of a pedagogical agent could play a significant role in computer-based listening instruction is not known. A paucity of research on computer-based listening instruction necessitates more research in this area. Also, the notion that language learning needs to be centered on social interaction suggests that having a pedagogical agent to

guide and give feedback to learners may provide them with a sense of social presence, which in turn may reduce listening anxiety and promote learning outcomes. Research claims mentioned in the previous section regarding computer-based language learning make it plausible to apply the use of pedagogical agents in computer-based language learning to investigate their effects on students' learning experience.

Motivation

Motivation is an important contributing factor to successful learning (Ames, 1984; Ames & Ames, 1984; Keller, 1987) because it can help students work harder toward their goals. Pedagogical agents are claimed to increase learners' motivation in a learning environment. Studies have revealed the positive effects of pedagogical agents on students' motivation even when there is no positive effect on learning (Andre et al., 1998; Moreno & Flowerday, 2006; Towns et al., 1998; van Mulken et al., 1998). In these studies, students were more engaged in learning when they were motivated. Various factors may affect learners' motivation when using pedagogical agents. In a study by van Mulken, students rated the entertainment degree of the presentation of the material and expressed how they felt about the agent's help with concentration on the task. The results indicated a higher ranking of the entertainment degree of the learning material, and students felt the presence of the agent made the material less difficult to learn. In another study conducted by Baylor and Kim (2005), different roles of pedagogical agents were examined. When pedagogical agents served as a motivator, significant differences were revealed between groups with an agent who provided motivation and those with an agent

without motivation. The results demonstrated that working with pedagogical agents had an impact on participant motivation while working in a virtual learning environment.

The significance of motivation in language learning has also been well documented by language researchers (Ely, 1986; Gardner, 1991; Oxford & Shearin, 1994; Tremblay & Gardner, 1995). When pedagogical agents are employed in computer-based language learning, instruction should be designed in such a way that the agents keep company with learners (Gulz, 2005; Lester et al., 1997) and provide motivation (van Mulken et al., 1998), while at the same time promoting learning as much as possible. According to foreign language anxiety theory, learners in negative emotional states cannot demonstrate their language capabilities, and the aforementioned affective filter theory suggests that learners' negative attitudes interfere with their learning. Because language learning is closely related to learners' emotional conditions and interpersonal relationships with others, using pedagogical agents as a facilitator may help learners feel more at ease and encourage learning.

Enhanced Learning

How substantial and reliable, then, are the effects of pedagogical agents on learning? Towns et al. (1998) asserted that pedagogical agents should fulfill the dual roles of providing advice on clear problem-solving skills and motivating students while working, but the results of employing pedagogical agents have been mixed. Some studies suggest that students' learning is enhanced when pedagogical agents are employed in instruction. For instance, Atkinson (2002) discussed learning gains in a study in which students had a chance to interact with a pedagogical agent while working on math

problems. Atkinson argued that animated agents fostered participants' learning because the agents provided more accurate solutions to practice problems; thus participants felt the problems were less difficult. In a study conducted by Ryokai et al. (2003), children who interacted with an agent showed significant improvement in spatial expressions compared with those working without an agent, either alone or with a classmate. Ryokai et al. attributed the results to the agent's ability to elicit more literate language and to decontextualize language from children over time.

Despite studies reporting the positive instructional impact of pedagogical agents, the empirical evidence is inconsistent. A few studies (e.g., Andre et al., 1998, van Mulken et al., 1998) have revealed that student learning was not promoted even though students enjoyed the social interaction provided by pedagogical agents. Some studies have also cautioned that ascertaining the factors leading to enhanced student learning is important (Clark & Choi, 2007; Moreno et al., 2001). For example, even when students are engaged in social interaction with pedagogical agents while learning, it is important to determine whether students' learning is actually increased by social interaction with the agent itself or by other learning activities they are involved in. Therefore, whether pedagogical agents can positively affect students' language learning achievements needs to be further examined.

Features of Pedagogical Agents

Although it is important to consider the effects of pedagogical agents when designing computer-based instruction, the appearance of the pedagogical agents is also a significant consideration. Although many different types of pedagogical agents have been

used in previous studies such as animals (Atkinson, 2002; Koda & Maes, 1996), bugs (Lester et al., 1997), and robots (Lester, Voerman, Towns & Callaway, 1999), human-like characters have been the most commonly used type of pedagogical agent. In some studies, agents exhibited both verbal and nonverbal expressions (Craig et al., 2002; Lester et al., 1997; Moreno et al., 2001), whereas some agents only showed verbal expressions. Many studies revealed that participants performed better when they worked with agents that included verbal and nonverbal expressions such as gestures or facial expressions (Kim et al., 2007; Koda & Maes, 1996; Lester et al., 1997). Kim, Wei, Xu, Ko, and Ilieva (2007) and Moreno et al. (2002) also investigated the effectiveness of different ethnicities and genders of pedagogical agents.

People are inclined to expect humanlike interactions with computers (Reeves & Nass, 1996). Learners prefer certain features in pedagogical agents embedded in computer-based instruction, and they react to the agents just as they do to people. For example, Gulz (2005) investigated learner reactions to different agent appearances, such as realistic 3-D characters and iconized 2-D characters, and found that learners preferred the simplified character. In Kim and colleagues' (2007) study, participants showed different attitudes toward agents that expressed positive or negative emotions. Agents with positive expressions were considered more engaging and better able to facilitate learning.

Thus, the notion of people expecting to react to computers the same way they do to other people is an important consideration in designing computer-based instruction. Berscheid and Walster (1969) and Byrne and Nelson (1965) argued that people tend to be

attracted to others who are similar to themselves in terms of features such as demographics, gender, or interpersonal styles, a tendency called the *similarity-attraction theory*. A study conducted by Moreno and Flowerday (2006) supported the similarity-attraction theory in computer-based instruction among students of color, but not among White American students. Whether the similarity-attraction theory can be extended to computer-based listening instruction needs to be further investigated.

Given that foreign language learners tend to experience language anxiety while learning a foreign language, it is desirable that learners be exposed to a learning environment that is inviting and comfortable and that encourages them to learn. Considering the lack of research on pedagogical agents for computer-based listening instruction and the potential learning benefits produced by such agents, it seems highly plausible to include pedagogical agents in a computer-based learning environment to reduce listening anxiety and promote listening comprehension. In this light, if pedagogical agents are designed with care, they may help EFL students enjoy learning English and improving their language skills in a non-anxiety-provoking environment.

Research Questions and Hypotheses

The general question for the study is, what are the effects of pedagogical agents on foreign language listening anxiety and listening comprehension? The following questions are the detailed inquiries into learning a foreign language with a pedagogical agent. The hypotheses are based on previous research findings regarding pedagogical agents' educational and emotional benefits.

1. To what extent does a pedagogical agent reduce listening anxiety compared with computer-based listening instruction without a pedagogical agent?

Hypothesis. The persona effect (Lester et al., 1997) posits that students feel more at ease while working and perceive the learning environment to be more natural in the presence of a pedagogical agent. It is expected that students who work with a pedagogical agent will exhibit a lower level of listening anxiety than those who work without an agent.

2. To what extent do the ethnicities of pedagogical agents influence listening anxiety?

Hypothesis. The similarity-attraction theory contends that people are drawn to others who are similar to themselves (Abreu & Gabarain, 2000; Atkinson, Poston, Furlong, & Mercado, 1989; Goldberg, 2005; Lopez, Lopez & Fong, 1991). Based on this theory, it is likely that Korean students who work with a Korean agent will consider the learning experience more favorably and will have a lower level of listening anxiety than those who work with an American agent, and it is expected that students will prefer to work with the Korean agent.

3. To what extent does a pedagogical agent improve listening comprehension skills compared with computer-based listening instruction without a pedagogical agent?

Hypothesis. Since successful language learning is closely related to a non-anxiety-provoking learning environment, it is expected that students in the

agent conditions will feel less nervous and obtain learning gains and outperform the no-agent group. Students enjoyed learning and achieved learning gains after working with a pedagogical agent in computer-based instruction as they performed better on the given task (Atkinson, 2002; Ryokai et al., 2003). Based on the studies claiming positive learning experiences and outcomes produced by pedagogical agents, students may be able to attain better learning achievement when they work with a pedagogical agent in computer-based listening instruction.

4. How do EFL learners react differently to the learning environment with and without a pedagogical agent?

Hypothesis. Based on the claim that a pedagogical agent positively affects students' perception of a learning environment, students in the agent conditions will have more a positive learning experience when their listening anxiety levels are lowered than those in the no-agent condition.

CHAPTER 3

METHOD

The purpose of this study was to explore the impact of a pedagogical agent on students' listening anxiety and listening comprehension in an EFL context. The research involved an experimental study with additional sources of data, including survey data. Initially, students' scores on listening anxiety levels and listening comprehension skills were compared to examine: to what extent a pedagogical agent reduces listening anxiety in computer-based listening instruction (Research Question 1); to what extent the ethnicity of a pedagogical agent reduces listening anxiety in computer-based listening instruction (Research Question 2); and to what extent a pedagogical agent improves listening comprehension skills in computer-based listening instruction (Research Question 3). From an additional data source, how EFL learners react differently to computer-based listening instruction with and without a pedagogical agent were explored (Research Question 4) by obtaining students' reactions to the learning environment with and without a pedagogical agent.

Participants

Participants in this phase were 66 college students at a private university located in Seoul, Korea, who were taking a required English course called "College English I," and who ranged in age from 18 to 28. The mean age was 19.62 ($SD = 2.08$). Participants were recruited from four classes, which were composed of freshmen (94%, $n = 62$),

sophomores (1.5%, $n = 1$), juniors (1.5 %, $n = 1$), and seniors (3%, $n = 2$). The students were 79% males and 21% females. The majority of the students were from the College of Engineering, with others from the Colleges of Natural Sciences, Medicine, Dentistry, and Nursing. These students participated in the study as a part of their required English class, and signed a consent form prior to the implementation (see Appendix A). The students had studied English for at least 10 years from elementary school through college.

Study Setting

The study was conducted in May 2009 at a private university in Seoul. The school was one of the top schools and considered very desirable to attend. Korean people value education very highly, and they sacrifice many things to receive an education. Both students and parents become competitive even before the students enter elementary school. It is not unusual to find parents hiring private tutors for their 2- to 3-year-old babies to make them learn a few different things such as English and math. The competitiveness culminates when students go to high school because this is when they discover whether or not they will get accepted to prestigious universities. Students usually go to “cram schools” right after school or they work with private tutors, the cost of which is a big portion of their parents’ living expenses. However, the parents think spending money for their children’s education is a great investment that will pay off when their children enter famous universities. The participants in this study had experienced this kind of challenge.

The study took place in a computer lab near the classrooms where the students normally have classes. Thirty-six computers were available in the lab, and the researcher seated the students in front of every other computer to prevent them from talking to their classmates. The Web site for the program was ready on each computer before the students came in, so they had only to create a username to start the program. While students were working on the lesson, some students were observed who were not paying much attention to the lesson and were just clicking buttons, and some students who were talking to their classmates were advised to stop talking and go back to the lesson. In addition, the researcher had to ask some students to focus on the lesson when they were listening to music or searching the Internet at the same time.

Although a few distracted students were observed, the majority did not talk to their classmates until they had finished the given task. These serious students, who made up more than half of the total, took notes on a piece of paper provided by the researcher while listening to passages. Some students also used the repeat button to listen to passages again. Those students who took notes and listened to passages again while learning seemed very eager to practice and improve their listening skills. These serious students were observed from all three conditions. There were no observed instances, for example, of students laughing or smiling or making offhand remarks about the pedagogical agents. The fact that most students in all conditions were paying attention to the lesson may reflect that they were engaged in learning regardless of the condition they were assigned to. Indeed, if students assigned to the different conditions behaved differently, it was not observable at the classroom level.

Materials

Learning Environment

The computer-based listening program used for this study was a pedagogical agent-based learning program, which was developed by the Center for Research on Engaging Advanced Technology for Education (CREATE) lab (<http://www.create.usu.edu>) at Utah State University (USU). The two major goals of the program were to reduce EFL students' listening anxiety levels and to enhance their listening comprehension skills. As discussed further in the research design section, students were randomly assigned to one of three conditions: American agent condition, Korean agent condition, or no-agent condition. Then they were introduced to the program. In the agent conditions, a pedagogical agent greeted the students and introduced herself; however, the program greeted the students without a pedagogical agent in the no-agent condition. Everything in the lesson was explained in English. Figure 1 shows example screens of each condition below.

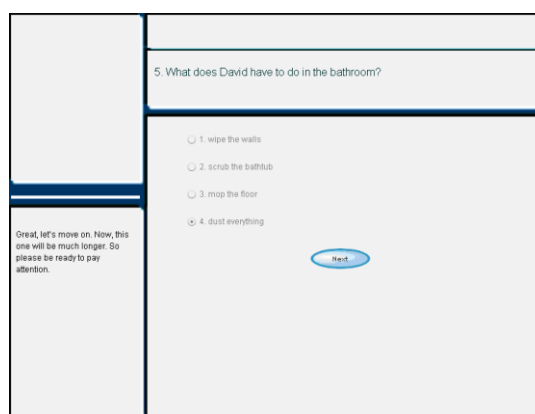
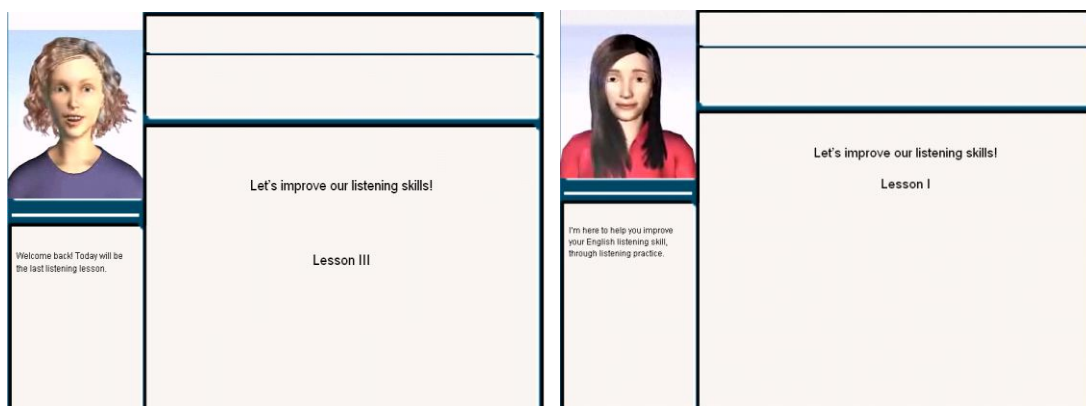


Figure 1. Example screens of three conditions.

In the program, the students were supposed to learn to gain direct information from listening passages and make inferences based on that information. The students first took pretests in listening anxiety and listening comprehension and then started learning how to improve listening skills. While learning, the students were provided with an introduction to each passage and tips on listening strategies to apply when they answered questions. There were both long passages and very short sentences. The passages were monologues that students listened to. The students were allowed to repeat the listening

passages as many times as they wanted by clicking on the repeat button. More details about the procedure are discussed later.

Each listening passage had related comprehension questions for the students to answer, and the students received feedback on their answers. When students answered correctly, they could move on to the next question; however, when they answered incorrectly, they had another chance to answer the question. If the second answer was again incorrect, the correct answer was provided, and then the next question appeared. Along with the feedback, motivating and encouraging comments were provided throughout the lesson.

Also, background images were inserted for different listening passages to familiarize students with the topics while listening. For example, a listening passage about watching a movie included an image of a movie theater in the screen background. However, no background images were provided on the screens for instructions and listening strategies because these screens did not contain listening passages. When the students finished all the questions for the passages, they were directed to the posttests (www.create.usu.edu/listening_create/listening.cfm).

Curriculum Content

Listening passages included a variety of topics that are commonly dealt with in college life such as traveling, dating, watching a movie, and working part-time. There were three lessons in total, and each lesson was 30–40 minutes long. In Lesson 1, students listened to passages about a U.S. college girl's life, a U.S. national park, and very short listening clips that consisted of only one sentence. In Lesson 2, topics such as

working at a convenience store, watching a commercial for carpet cleaning, watching movies, and taking a test were included. In Lesson 3, dating, spending time with family, and describing a lost boy at a department store were selected as topics for listening passages, and there were also a few short listening clips. Each lesson covered finding information contained in listening passages, including questions such as “Which item was not mentioned as a means of getting around in the park?” and making inferences from the given information, including questions such as “What would be the next movie we could see if we arrived at the movie theaters at 3:30 p.m.?”

The difficulty level of the listening passages was determined by the researcher, based on the observation of other “College English I” classes offered at the same university. The majority of participants’ listening skills, approximately 90% of the whole class, fit into the “intermediate” capability category according to the proficiency guidelines provided by the American Council on the Teaching of Foreign Languages (ACTFL), a national organization that provides information and resources for language teaching and learning.

Agent Development

The images of pedagogical agents were created using Poser 6 (www.curiouslabs.com), and real human voices were recorded for each agent. Voices of two female students were chosen for recording—one for the American agent and the other for the Korean agent. The American agent was a White female that looked like a college student. The rationale for selecting the White character as opposed to other ethnic groups was that previous studies have reported that English learners usually consider

American or native English speakers to be White (Amin, 1999; Norton, 1997; Phillipson, 1996). In the studies, English learners specifically expected a typical American stereotype with blond hair and blue eyes.

After the characters had been created, voices and images were synchronized using MIMIC 3.0. Facial expressions and blinking were added to make the agents look natural. Afterward, the images were rendered in Poser 6 to create video files, which were compressed to be cast via the Web.

Research Design

In the study, there were two independent variables—agent presence (with agent vs. without agent) and agent ethnicity (American agent vs. Korean agent). The effects of a pedagogical agent on listening anxiety and listening comprehension were examined in three experimental conditions in the study—a computer-based listening instruction with an American agent, with a Korean agent, and without any agent. In each of these conditions, two dependent variables were measured: listening anxiety level and listening comprehension skill. Also, as another dependent variable, students' learning experience was also explored by including an online open-ended survey.

Independent Variables

Agent presence. There were two types of conditions—with and without a pedagogical agent. In the presence of a pedagogical agent, there were two agent conditions throughout the lesson. In these conditions, the agents were present at all times and guided students, taught listening strategies, and encouraged students with spoken

messages and written text to be confident in their learning and performance. In the control group, which was the no-agent condition, students read text provided on the screen, and everything else was identical to the agent conditions.

Agent ethnicity. There were an American agent and a Korean agent. In the American agent condition, a pedagogical agent named Chris who looked like a Caucasian college girl was present in the lesson. In the Korean agent condition, an agent named Minjung who looked like a Korean college girl was present. Before the research was conducted, the researcher asked 15 Korean college students how the images of the two agents appeared to them in terms of their ethnicities, and all of them commented that the American agent's image looked Caucasian and the Korean agent's image looked Asian.

Dependent Variables

Listening anxiety. Students' listening anxiety levels were measured by using the Foreign Language Listening Anxiety Scale (FLLAS) developed by Elkhafaifi (2005), which was reported to be reliable, with a coefficient of .96 ($n = 233$) for internal consistency. Also, Elkhafaifi's study using this listening anxiety scale was published in *The Modern Language Journal*, one of the top journals in foreign language education, which ensures the face validity of the scale. For the present study, a 5-point Likert scale was used to measure students' listening anxiety, with 1 being *strongly disagree* and 5 being *strongly agree* for each question on the scale; thus a lower score indicated a lower level of anxiety whereas a higher score indicated a higher level of anxiety. There were 20 question items on the scale (Appendix B). The listening anxiety scale was administered to

all participants before and after the implementation. The pretest and posttest scores on the scale for each condition were then compared.

Listening comprehension. Students' learning was measured by comparing the pretest and posttest scores. The listening passages and questions for the tests were adapted from ESL and EFL materials that have been used for intermediate English learners. These materials for intermediate English learners were chosen to keep up with the participants' listening ability suggested by the ACFTL guidelines for listening skills (see Appendix C). Before the research was conducted, these selected questions were checked by a few Korean college students with intermediate listening skills to ensure that the difficulty of the questions was neither too high nor too low for intermediate-level Korean college students. The questions were in a multiple-choice format, with a total of 10 questions in each test. Each question was worth one point, so the maximum score that students could earn for the pretest and posttest was 10 points.

Survey for learning experience. An online open-ended survey was conducted to elicit participants' overall learning experience with and without a pedagogical agent. During the last week of the implementation, the open-ended survey was provided as part of the computer-based listening instruction. The fourth research question of this study was, how do EFL learners react differently to the presence and absence of a pedagogical agent in the computer-based listening instruction? This question was answered by four items, as follows:

1. How was the program?
2. What did you like/dislike about the lesson?

3. What did you think about the way it explained things to you?
4. If you had another chance, would you work with the program or work alone, and why?

Procedure

The researcher and the class instructor took students to a computer lab near the classroom where they normally had their English classes, where students were placed in every other seat. There were three lessons in total, and students worked on each lesson once a week for three consecutive weeks, with each lesson taking approximately 30–40 minutes. The procedure the students followed during each lesson consisted of the following:

1. During the first week, students were given a brief introduction to the lesson and instructions on how to use the program.
2. The students were asked to put on headphones and create their login IDs by entering their personal information such as name, birth date, major, and grade.
3. The students answered the pretest and preanxiety scale.
4. The students were provided with listening strategies and practiced listening by answering questions. They were given a whole class hour to finish the lesson, which was 50 minutes. They continued to practice listening during the second and third weeks after logging on to the program using the IDs they created the first week.

5. The students completed the postanxiety scale, the posttest, and an online open-ended survey for 10 minutes at the end of the lesson during the last week of the implementation.

Data Analysis

For the quantitative data analysis, violations of the assumptions for statistical analyses were tested. Students' scores on listening anxiety were then analyzed by comparing the pretest and posttest scores through an analysis of covariance (ANCOVA) with the significance level set at $\alpha < .05$. This study also compared the differences in students' scores on pretest and posttest listening anxiety between the American and Korean agent conditions through ANCOVA with the significance level set at $\alpha < .05$. Finally, students' scores on listening comprehension skills were analyzed by comparing the pretest and posttest scores through ANCOVA with the same α level. For each analysis, students' pretest scores were used as a covariate.

For the qualitative data analysis, students' responses on the open-ended survey were categorized by similar words to determine patterns. After the separate analyses of both sets of data, findings were compared to discover similar and different aspects of the students' reactions to the program, which led to a fuller picture of what was being studied.

CHAPTER 4

RESULTS

This chapter describes students' performance and students' learning experience separately. Students' performance was measured by testing their listening anxiety and listening comprehension; students' learning experience was measured by obtaining survey responses.

Students' Listening Anxiety and Comprehension

This section examines the effect of a pedagogical agent on students' listening anxiety and listening comprehension. Preliminary results and primary results are included.

Preliminary Results

The statistical assumptions of ANCOVA were met. The assumption of homogeneity of variance was met, and scatter diagrams of the regression slopes indicated that the covariates were linearly related to the dependent variables. Also, homogeneity of regression was supported by the test for the homogeneity of regression coefficients. The result from the Shapiro-Wilk's W test, however, supported the normality assumption only for listening anxiety levels. Although the normality assumption for listening comprehension skills was not supported by Shapiro-Wilk's W test, most psychology statistical texts report that ANCOVA is robust enough to deal with the violation of the normality assumption (e.g., Levy, 1980; Rutherford, 2001; Wildt & Ahtola, 1978); thus it was not considered a problem in the statistical procedure for the primary analysis.

Primary Analysis

Listening anxiety levels for three conditions. The ANCOVA results indicated that the mean differences between the three conditions (American, Korean, no-agent) were not significant, and the agent conditions had no significant effect on lowering listening anxiety more than the no-agent condition. Thus, Hypothesis 1, in which more listening anxiety reduction was expected in the agent conditions than in the no-agent condition, was not supported because the analysis revealed no statistically significant differences between the group means. There was no significant result, $F = .65$, $p < .05$, $\eta^2 = .02$ (see Table 1). The effect size was small; the partial eta-squared was .02.

Table 1

Analysis of Covariance for Listening Anxiety Levels of All Conditions

Source	F	df	p -value	η^2
All conditions	.65	2	.53	.02

Listening anxiety levels for agent conditions. The ANCOVA results revealed that there was no significant effect of the ethnically different agent conditions on listening anxiety levels. Hypothesis 2, in which more listening anxiety reduction was expected in the Korean agent condition than in the American agent condition, was not supported because the analysis revealed no statistically significant differences between the group means. There was no statistical significance, $F = 1.46$, $p < .05$, $\eta^2 = .03$ (see Table 2). The effect size was small; the partial eta-squared was .03.

Table 2

Analysis of Covariance for Listening Anxiety Levels of Agent Conditions

Source	<i>F</i>	<i>df</i>	<i>p</i> -value	η^2
Agent conditions	1.46	1	.23	.03

Listening comprehension skills for the three conditions. The ANCOVA results showed that there was no significant effect of conditions on listening comprehension skills. Hypothesis 3, in which higher posttest scores for listening comprehension were expected for the agent conditions than for the no-agent condition, was not supported because the analysis revealed no statistical significance between the group means. There was no statistical significance, $F = 1.28$, $p < .05$, $\eta^2 = .04$ (see Table 3). The effect size was small; the partial eta-squared was .04.

Table 3

Analysis of Covariance for Listening Comprehension Skills of All Conditions

Source	<i>F</i>	<i>df</i>	<i>p</i> -value	η^2
All conditions	1.28	2	.29	.04

A Closer Look at the Data

Because the primary analysis did not indicate any statistical significance of mean differences in dependent variables, the data were examined more closely by grouping each condition according to students' prior listening anxiety levels. In order to better

understand the impact of a pedagogical agent, students' listening anxiety levels were categorized into high, medium, and low according to their scores on the pretest for listening anxiety, because students' prior anxiety levels may have played a role in bringing about different results. This was done by placing students who scored one standard deviation or more below the mean in the low-anxiety group and those who scored one standard deviation or more above the mean in the high-anxiety group. The interaction effect between conditions and prior anxiety levels and the main effects of the two variables were examined.

The Effect of Conditions and Prior Listening Anxiety Levels

Listening anxiety. ANCOVA was conducted with pretest scores on the listening skills ($M = 59.82$, $SD = 11.84$) as a covariate to analyze students' listening anxiety levels on the posttest. Even after students in each condition were grouped according to their listening anxiety level, no statistically significant differences were found. This finding indicates that the interaction effect between conditions and prior listening anxiety levels and the main effects of each variable did not impact students' listening anxiety levels. The results of the analysis are shown in Table 4.

Table 4

Analysis of Covariance for Listening Anxiety Levels Based on Prior Anxiety Levels

Source	<i>F</i>	<i>df</i>	<i>p</i>	η^2
All conditions	.22	2	.81	.01
	.75	2	.48	.03

Prior anxiety levels				
Conditions × prior anxiety levels	.41	4	.80	.03

Listening comprehension. ANCOVA was conducted with pretest scores on the listening skills ($M = 4.7$, $SD = 1.52$) as a covariate to analyze students' listening comprehension skills on the posttest. Grouping students in each condition based on their prior anxiety level did not result in statistical significance. This indicated that the interaction effect between conditions and prior listening anxiety levels and the main effects of each variable did not impact students' listening comprehension skills. The results of the analysis are shown in Table 5.

Table 5

Analysis of Covariance for Listening Comprehension Skills Based on Prior Anxiety Levels

Source	<i>F</i>	<i>df</i>	<i>p</i>	η^2
All conditions	1.69	2	.19	.05
Prior anxiety levels	.98	2	.38	.03
Conditions × prior anxiety levels	.62	4	.65	.04

Because statistical significance was still not found from the second analyses including prior anxiety levels as another factor, the data were analyzed again by examining the difference between female and male students in the three conditions. For

this analysis, the interaction effect between conditions and student gender and the main effects of the two variables were analyzed.

The effect of conditions and student gender

Listening anxiety. ANCOVA was conducted with pretest scores on the listening skills ($M = 59.82$, $SD = 11.84$) as a covariate to analyze students' listening anxiety levels on the posttest. The analysis did not reveal any main effect or interaction effect of conditions and student gender on students' listening anxiety levels. Table 6 illustrates the results of the analysis.

Table 6

Analysis of Covariance for Listening Anxiety Levels Based on Conditions and Student Gender

Source	<i>F</i>	<i>df</i>	<i>p</i>	η^2
All conditions	.85	2	.92	.00
Student gender	.35	1	.56	.01
Conditions \times student gender	.48	2	.62	.02

Listening comprehension. ANCOVA was conducted with pretest scores on the listening skills ($M = 4.7$, $SD = 1.52$) as a covariate to analyze students' listening comprehension skills on the posttest. The analysis did not reveal any main effect or interaction effect of conditions and student gender on students' listening comprehension

skills. Table 7 illustrates the results of the analysis of covariance for listening comprehension skills.

Table 7

Analysis of Covariance for Listening Comprehension Skills Based on Conditions and Student Gender

Source	<i>F</i>	<i>df</i>	<i>p</i>	η^2
All conditions	2.60	2	.08	.08
Student Gender	4.59	1	.36	.07
Conditions \times student gender	1.27	2	.29	.04

Students' Learning Experience: Survey Data

Students were surveyed for their overall attitudes and reactions toward the presence and absence of a pedagogical agent in the computer-based listening instruction. The data may suggest some insights into why there were no significant differences in the experimental data. The following questions were on the survey:

1. How was the program?
2. What did you like/dislike about the lesson?
3. What did you think about the way it explained things to you?
4. If you had another chance, would you work with the program or work alone, and why?

Table 8

Students' Overall Learning Experience

Question 1: Students' overall learning experience		
	Agent conditions <i>n</i> (%)	No-agent condition <i>n</i> (%)
Positive	39 (87%) ^a	19 (90%) ^a
Neutral	6 (13%) ^a	4 (21%) ^a
Negative	3 (7%)	1(5%)

^aDenotes students responding both positively and neutrally.

Over 87% of the students in both the agent and no-agent conditions had positive impressions of the computer-based learning environment. While there were 39 students who had positive learning experience in the agent conditions, there were 19 students in the no-agent condition. There were also six students and four students from the agent conditions and the no-agent condition, respectively, who had a neutral position toward the program. No differences between the agent conditions and the no-agent condition were discovered, and students did not react differently to the presence or absence of a pedagogical agent in the computer-based listening instruction. For the first question, students in the agent conditions did not specifically comment on the agents they worked with, and students in all conditions just described how they felt about the program itself. Overall, students' answers showed that the presence or absence of an agent did not impact students' overall learning experience differently, which was consistent with the findings for students' performance. In the conclusion section, speculations about the reasons for the lack of differences in the different conditions are discussed further.

Table 9

Aspects Students Liked and Disliked about the Lesson

Question 2: Aspects they liked/disliked about the lesson	
Agent conditions <i>n</i> (%)	No-agent condition <i>n</i> (%)
The presence of the agent: 22 (49%) ^a	Technical issues/ design of the lesson: 15 (71%) ^a
Technical issues/ design of the lesson: 12 (27%) ^a	Tips/comments from the lesson: 3(14%) ^a
Others: 16 (36%) ^a	Others: 5 (24%) ^a

^aDenotes students mentioning more than one aspect.

Overall, students responded to this question differently than they did to the first question because there were more answers that were specific to each condition than there were common answers across conditions. Twenty-two students in the agent conditions and 15 students in the no-agent condition mentioned the presence of the agent while 12 students in the agent conditions and 3 students in the no-agent condition mentioned technical issues and tips or comments from the lesson. In particular, about half of the students in the agent conditions specifically mentioned the presence of the agent in their responses. Students' comments such as "I liked that the helper looked like a person and it was friendly," "It helped me focus more when I listened to passages while looking at the person," "It wasn't boring because it felt like having a conversation," and "I liked it because it felt like a real person was talking to me," indicate the positive impact of the presence of the agent. The biggest difference between the conditions was that comments from the no-agent condition mostly related to technical issues or the design of the program itself. For example, some students commented, "It provided information in

advance so I could get ready,” “It was annoying that I had to read text,” and “It gets boring quickly because the design of the website is too simple.”

It was concluded that there was a difference between the conditions in students’ reactions toward the presence or absence of a pedagogical agent. Although students’ overall learning experience was positive for the most part as found from the first question, students had different opinions as to what they liked or disliked about the lesson according to the condition to which they were assigned. How students reacted differently to the presence or absence of a pedagogical agent became apparent after comparing answers from the agent condition and the no-agent condition.

Table 10

Students’ Thoughts about How the Lesson Was Explained

Question 3: Students’ thoughts about how the lesson was explained		
	Agent conditions <i>n</i> (%)	No-agent condition <i>n</i> (%)
Positive	33 (73%)	15 (71%)
Neutral	9 (20%)	3 (14%)
Negative	3 (7%)	3 (14%)

As shown from the first question, the majority of students had a positive impression about the way the lesson was explained, and there were no significant differences between the agent and no-agent conditions. As can be seen in the table, 33 students in the agent conditions and 15 students in the no-agent condition thought

positively about how the lesson was explained while three students in each condition thought negatively about it. There were also nine students in the agent conditions and three students in the no-agent condition who were neutral. Most students from both groups answered positively about the lesson, and many students who responded positively mentioned the positive impact of encouraging comments; however, there were a few students from both groups who answered negatively about the way the lesson was explained, and one interesting finding was discovered from these negative answers. A few students from the no-agent condition were not satisfied with the way the lesson was explained, based upon certain aspects of the lesson such as the size of the text. In contrast, some students in the agent conditions commented negatively on the encouraging messages. These students described the lesson as being too focused on encouragement, which was the opposite of the majority of responses for this question.

When students in the agent conditions gave a negative assessment of how the lesson was explained, they were viewing the question from an emotional perspective by saying the lesson was too focused on encouraging students. This perspective differed from how students in the no-agent condition viewed the question because these students provided responses related to the design of the lesson. This contrasting view was also consistent with the findings from the second question, that respondents in the no-agent condition cared mostly about how the program was designed, and respondents in the agent conditions were more concerned about the emotional aspect of learning and the impact of the presence of a pedagogical agent.

In conclusion, students who commented positively on the lesson did not react differently to the presence or absence of a pedagogical agent in the computer-based listening instruction in terms of the way the lesson was explained to them. However, there was a difference in the way the students commented negatively on how the lesson was explained.

Table 11

Students' Preferred Learning Styles

Question 4: Students' preferred learning styles		
	Agent conditions <i>n</i> (%)	No-agent condition <i>n</i> (%)
Working with the program	31 (69%)	15 (71%)
Neutral/using both	10 (22%)	4 (19%)
Working alone	4 (9%)	2 (10%)

For the last question, students were asked if they would have liked to work with the program or without the program. The question meant working with the agent to those in the agent condition and working with the program itself without any agent to those in the no-agent condition because that was how the students perceived the program. Thirty-one students in the agent conditions and 15 students in the no-agent condition preferred working with the program while four in the agent conditions and two in the no-agent condition preferred working alone. There were 10 students in the agent conditions and two in the no-agent conditions who did not have preference. Overall, the majority of

students in both conditions favored working with the program when they were asked whether they would want to work with the program or work alone. Although many students' responses were positive, there was a difference in the way the students explained why they would like to work with the program. Students in the agent conditions expressed their opinions about the positive influence of the agent when they were asked why they would want to work with the program again. Comments such as "It felt like someone was with me" and "It felt like someone was there" reflected students' reactions to a pedagogical agent. This finding suggests that a pedagogical agent influenced students more positively by providing a form of companionship to them while working, which resulted in their remembering the program as learning with a pedagogical agent.

However, students in the no-agent condition did not supply any answers that were specific to their condition regarding why they would like to work with the program again. These students just mentioned that the program was fun and new, and such general descriptions of the program were also given by those in the agent conditions. In conclusion, students reacted differently to the presence and absence of a pedagogical agent when they were asked if they would like to try the program again.

A Closer Look at Students' Learning Experience: Interview Data

Rationale Behind Conducting Interviews

Research hypotheses expected the agent conditions to affect students' listening anxiety and listening comprehension more positively than the no-agent condition.

However, because the results revealed unexpected findings, the researcher decided to

conduct interviews to learn about the students with the most improved test scores in order to discover what contributed to their improvement in each condition. The student interviews were conducted to describe how high-performing students reacted differently to the presence or absence of a pedagogical agent in the computer-based listening instruction.

While the survey elicited more detailed descriptions of how students thought about the presence or absence of a pedagogical agent in the computer-based listening instruction compared to the results from the first analyses, findings from the interviews also provided insights into how high-performing students considered the program with or without a pedagogical agent differently. The interviews were conducted with the students who reduced their listening anxiety levels and improved their listening comprehension skills the most. The top nine students, three students from each condition, with the greatest reduction in listening anxiety and the most improvement in listening comprehension were purposely selected. For interview questions, see Appendix D.

Interview Findings

The same patterns were found from the interviews as from the survey. Students in the agent conditions mentioned how the presence of the agent positively affected their performance and how it helped them emotionally while working. Common responses from the agent conditions were related to the presence of the agent. Students also mentioned their increased ability to focus during the lessons caused by having the agent. Other students commented on the agent's role of providing directions.

Although these students enjoyed the presence of an agent, one interesting finding is that they seemed to care little about how the agent looked, because they could not remember how it looked when queried afterward. When students were asked to describe what they remembered about the agent, they said that they did not remember clearly how it had looked, and talked more about how they believed that the agent had helped them learn better. Some of them did not even remember whether the agent was American or Korean, or whether the agent appeared to be Caucasian or Asian. The students' statements showed that they were not particularly concerned about the ethnicities of the agents as long as the agents were helpful to them in accomplishing the learning task. When students were asked if they would like to work with the agent or without the agent if they had another chance to work with the program, all students from the agent conditions said they would prefer to work with the agent.

Reflecting on one of the survey questions that asked students what they liked or disliked about the lesson, two students in the agent conditions mentioned that they did not like how the agent looked, which was contradictory to the high-performing students' responses. Because the students who participated in the interviews were the ones who improved their test scores the most, they might have cared more about how helpful the agent was in helping them learn better, rather than about details of how the agent looked. In this respect, the scores of the two students who did not like the appearance of the agent were compared, and it was found from a comparison of pretest and posttest scores that these students did not reduce their listening anxiety or improve their listening skills on

the tests. This finding suggests that high-performing students were more concerned than those who did not perform as well about the helpfulness of the agent in their learning.

Contrary to the findings from the agent conditions, there were no unexpected answers from the no-agent condition. The answers were related to the design of the program itself and included comments on the helpfulness of the feedback and the functionality of the repeat button. These students also expressed their willingness to work with a person on the screen. All the reasons given by those in the no-agent condition for wanting to have an agent on the screen were previously mentioned by those in the agent conditions when they shared the fact that they liked the agent because it made the lesson fun and made it easier to learn and concentrate. The explanations the students in the no-agent condition gave for wanting to work with an agent were identical to those the students in the agent conditions gave for why they enjoyed working with an agent. On the other hand, one of the three students in the no-agent condition who did not want to work with an agent explained that having a person on the screen may have distracted him while working. This suggests that the absence of the agent did not negatively affect him while learning.

CHAPTER 5

DISCUSSION

Research Questions

This section discusses the findings from the analyses based on the proposed research hypotheses and other study results. The purpose of the study was to examine how a pedagogical agent would affect EFL students' learning experience. To achieve the purpose of the study, four research questions were investigated: (1) To what extent does a pedagogical agent reduce listening anxiety? (2) To what extent does the ethnicity of a pedagogical agent reduce listening anxiety? (3) To what extent does a pedagogical agent improve listening comprehension skills, and (4) How do EFL learners react differently to the learning environment with and without a pedagogical agent? This section also discusses implications, limitations and suggestions for future research.

Research Question 1: The Effect of Pedagogical Agents on Listening Anxiety

For Hypothesis 1, students in the agent conditions were expected to reduce their listening anxiety levels on the posttest more than students in the no-agent condition. Contrary to the expectation, the results did not support the hypothesis and indicated that the listening anxiety of students in the agent conditions was not statistically different from that of students in the no-agent condition. The lack of statistical significance raises a few questions: what is it that mitigated the advantages associated with a pedagogical agent on students' listening anxiety? How can we better understand the phenomena that

caused such results? Possible reasons for the results were considered, and several inferences were made based on the exploration of the data.

Looking at the survey data enabled the researcher to infer one possible explanation. What was discovered from the survey seemed to illuminate potential attributes of the lack of statistical significance. The survey findings revealed that students enjoyed learning with the program regardless of condition. The majority of students in all conditions commented that the program was “helpful,” “new,” and “fun,” and these positive remarks indicate that they enjoyed learning in all conditions. As the first survey question suggested, no difference was found between conditions with respect to how students thought about the overall learning experience through the program. Because students in both conditions reacted similarly to the overall learning experience, their listening anxiety might have been equally affected by both conditions. It may indicate that, given the setting in Korea and the novelty of the learning tasks, learning through a computer-based program itself was effective enough to arouse students in all conditions to be engaged in the learning activity.

Although students’ overall learning experience was not different across conditions, students in the agent conditions indicated that they enjoyed the presence of a pedagogical agent. The survey findings suggest that students in the agent conditions might need exposure to this kind of learning to display the anticipated level of differences. These findings call for more research on how to reinforce the positive effects of a pedagogical agent on learners’ anxiety.

Research Question 2: The Effect of Ethnicities of Pedagogical Agents on Listening Anxiety

For the second hypothesis, it was assumed that students in the Korean agent condition would reduce their listening anxiety level more than those in the American agent condition. The rationale for comparing students' listening anxiety when using the two ethnically different agents was based on the similarity-attraction theory that people are drawn to others who look similar to themselves (Abreu & Gabarain, 2000; Atkinson, et al., 1989; Goldberg, 2005; Lopez et al., 1991). However, no statistical difference was found between the Korean agent condition and the American agent condition. The language used by the two characters was the same, but the vocal message (i.e., tone, inflection, English accent) was not identical. This result may be explained by the different study settings in which previous research studies on the similarity-attraction theory were conducted. Most studies reporting the corroboration of the similarity-attraction theory were carried out in American educational settings. Although these studies were conducted in classroom-based settings, it was hypothesized that students would react similarly to the agents on the computer, based on the assertion of Reeves and Nass (1996) that people tend to apply the same social relations to computers as they do to people.

The results might indicate that the similarity-attraction theory cannot be applied to all educational settings. This study was conducted in a Korean educational setting, where enormous cultural differences exist, and various cultural differences may have influenced students' reactions. Whether the theory could be applied to other educational settings in different cultures needs to be investigated further.

An interesting finding from another study examining the similarity effect comes from Moreno and Flowerday (2006), who tested the similarity-attraction theory in a computer-based learning environment and found no effect on students' learning or affective outcomes. Unlike the aforementioned studies that were conducted in classroom settings, this study involved a computer-based learning environment, yet the similarity-attraction hypothesis was not supported. The result of Moreno and Flowerday's study is in line with this study's finding that there was no difference between ethnically different agents in a computer-based setting. Whether the similarity-attraction theory extends to computer-based settings necessitates further exploration.

The results may also be explained by reflecting on the survey findings. When students in the agent conditions commented on the pleasant learning experience caused by the presence of a pedagogical agent, they never made reference to the ethnicities of the agents. Moreover, from interview findings, it was learned that a few high-performing students in the agent conditions did not clearly remember how the agents looked when asked to describe their appearances. Some students did not even remember whether the agent was Caucasian or Asian. Thus, it is highly plausible that the students were not concerned about the ethnicities of the agents as long as the agents guided them well, which did not lead to a difference in listening anxiety.

Research Question 3: The Effect of Pedagogical Agents on Listening Comprehension

Hypothesis 3 anticipated that students in the agent conditions would make more progress on listening comprehension skills than those in the no-agent condition. Results

indicated no statistical difference between the conditions. One possible reason set forth above for Hypothesis 1 was that students' overall learning experience was positive, and no big difference was found between the conditions through the survey findings, either. The positive learning experience for students in all conditions may have diluted the effect of a pedagogical agent on listening comprehension; that is, students learned irrespective of condition.

The results may also be understood by speculating on a claim that the positive learning experience brought about by the presence of a pedagogical agent does not always induce learning gains, as is supported in some research (Andre et al., 1998; Moreno & Flowerday, 2006 ; Towns et al., 1998; van Mulken et al., 1998). The findings from the survey data supported the empirical evidence for the positive learning experience provided by pedagogical agents because students in the agent conditions shared their positive learning experience associated with the social presence of the agent (e.g., "It felt like someone was helping me," "I liked it because it felt like a real person was talking," "It wasn't boring because it was like having a conversation."). This finding supports the claim that the positive effect of a pedagogical agent is on affective outcomes, but not on learning outcomes.

The lack of statistical difference between students' learning in the agent conditions and the no-agent condition (despite the company of the agent being favored by those in the agent conditions) raises the question of the effectiveness of a pedagogical agent on learning. In studies that reported no statistical difference in students' learning (Andre et al., 1998; Moreno, Mayer, & Lester, 2000), the same instruction was delivered

to learners either through audio or audio combined with the visual presentation of a pedagogical agent, resulting in no statistical difference in learning between the groups. It may be that the information delivered by the audio alone was effective enough to help students grasp the necessary information, which may have masked the role of a pedagogical agent. The same information was given to the students in both the agent conditions and the no-agent condition in this study as well, so the text provided in the no-agent condition seems to have worked well enough to help the students understand the content well. Many students in the no-agent condition commented that they thought the lesson was explained well and they liked the encouraging messages on the screen. It seems that either audio or text is effective in delivering information to students. In this vein, how to extend the positive impact of a pedagogical agent to include learning gains is still open to question and needs to be investigated in order to explain the contradictory results of the effectiveness of a pedagogical agent on learning.

Research Question 4: Students' Reactions Toward the Presence or Absence of a Pedagogical Agent in the Program

Because the survey was intended to discover how students reacted to the presence or absence of a pedagogical agent, and to learn what was not found from the first quantitative results, both similar and different reactions from students could shed light on the comparisons of the two groups and the questions raised from the results. The findings from the survey can also provide suggestions regarding what aspects of the pedagogical agents implemented in this study should be kept or improved for language learners.

From the survey, a notable difference was found between the groups when they described the lesson. Responses from the agent conditions were very helpful in understanding the students' reactions toward a pedagogical agent. The presence of a pedagogical agent was emphasized by those in the agent conditions, although design and technical issues of the program were brought up by those in the no-agent condition. There were both positive and negative responses related to the presence of a pedagogical agent from those in the agent conditions, and all of these answers supported the assertion that the students were affected by the presence of an agent while working. The most common positive responses included enjoying the interaction with the agent that made it easier for students to focus, being able to understand the content better, and feeling that the lesson was fun. The common negative responses included comments from some students they did not like how the agent looked. From the students' responses and reactions toward the pedagogical agents, it can be inferred that these students in some way treated the agents the same way as they treat real people.

Specifically, these students' comments concerning a pedagogical agent were in line with the media equation theory proposed by Reeves and Nass (1996) that people treat computers the same way as they treat other people in developing relationships. This finding suggests that using a pedagogical agent in computer-based instruction could lend itself to creating a learning environment in which learners can be socially engaged and interact with a computer-animated character. This suggestion can be extended to include domains in which a pedagogical agent can be particularly effective, which will be discussed later.

Also, when all students were asked whether they would like to work with the program again, more than 70% expressed that they would choose to work with the program. As discussed in the results section, this finding indicates that the students enjoyed using the program regardless of condition mostly because they thought it was new and fun. Another noteworthy finding was that even though no big difference was found between the groups for this question, the reasons provided by those in the agent conditions for wanting to work with the program again were related to the presence of a pedagogical agent, but those in the no-agent condition mentioned only the design of the program. This finding also shows that students in the agent conditions were positively affected by the presence of a pedagogical agent.

Similar patterns were discovered from the interview findings as well, and students' responses conveyed that across listening anxiety levels and listening comprehension skills, they thought similarly about the presence and absence of a pedagogical agent. One finding from the survey was that students did not really remember the appearance of the pedagogical agent, implying that they were not very aware of the agents' ethnicities. The students using the pedagogical agents also offered suggestions for ways to improve the program. These suggestions may be helpful in improving the effectiveness of a pedagogical agent and will be discussed in the next section.

These findings suggest how a pedagogical agent can be effectively used in certain domains and what needs to be improved to reinforce the agent's effectiveness. The implications of the study findings are discussed below.

Implications

This study showed the potential benefits that pedagogical agents can provide to learners such as companionship. Based on the study findings and interpretations, a few implications can be derived from theoretical and practical perspectives.

First, students may be better able to take advantage of a pedagogical agent when it is incorporated in certain areas that require social interaction. Students in the agent condition enjoyed the companionship of the agents, which positively influenced their learning experience. Furthermore, it was found that the students treated the agents as human in this study by commenting that it felt like being with someone or they did not like how the agent looked, for example. One of the areas in which a pedagogical agent can play an important role is speaking for foreign language learners. For instance, foreign language learners can interact with a pedagogical agent by engaging in conversations because speaking requires a reciprocal relationship. This will help learners prepare for real conversations with speakers of their target language. However, in this case, development of a more sophisticated pedagogical agent that can understand and respond to learners' speaking is required. In this context, the findings of the study can provide meaningful implications for research in sociolinguistic areas such as what kind of language practice would be most beneficial for learners when pedagogical agents are available.

Another implication derived from the study findings is that some students tend to anticipate that the agent will conform to their expectations. As Reeves and Nass (1996) contended, people can relate socially to computers; thus it is important to take these

learner expectations into consideration. For example, some students may want to work with an agent that looks pretty and others may want to work with an agent that has a certain talking style. It suggests that allowing students to choose an agent they would like to work with may promote students' interest and engagement in learning, thus leading to better affective or cognitive attainments. As supported in some previous research, students' motivation and performance are likely to increase when students can make a choice (Hannafin & Sullivan, 1996; Yang & Chin, 1997). Teachers also believe in the learning benefits that come from allowing students to make choices (Flowerday & Schraw, 2000). For this study, students were not allowed to choose the agents, and this may have influenced their learning experience.

Next, the survey findings also provide meaningful implications as to how a pedagogical agent should be designed. Because there was a comment from a student in the agent condition that it would be better to see a bigger picture of the agent, the appearance of a pedagogical agent on the screen is important. This is also closely related to the first quantitative results. Because students in the agent conditions were not significantly different from the no-agent condition in spite of their positive experience with a pedagogical agent, something was lacking in the effect of the pedagogical agent. This lack might have been remedied by allowing the pedagogical agent to possess more components that resembled a real human such as gestures or varied facial expressions, because some research has reported the positive impact of such features of a pedagogical agent (Kim et al., 2007; Lester et al., 1999). In this context, designing how a pedagogical

agent will look on the screen will influence affective and learning outcomes and must be taken into account.

With these potential benefits of pedagogical agents in mind, researchers and educators should regard pedagogical agents as a supplementary aid for students' learning rather than as a substitute for human teachers. While these findings seem to provide meaningful implications, these implications should be viewed with caution because there were also limitations to this study. Limitations and recommendations for future research are provided next.

Limitations and Recommendations for Future Research

There were several limitations to this study. The first limitation was the small sample size due to the accessibility of classes. There were between 15 and 20 students in each class, and the researcher was able to work with only four classes. The small number of participants may have resulted in low statistical power. The second limitation was that students had a limited amount of exposure to the program. Because of the constraints imposed by the school curriculum, students worked on each lesson for about 30 minutes for three times. A longer exposure to the lesson may have produced different findings between the agent conditions and the no-agent condition. Third, the average age of the participants in this study was about 19. In the large body of research finding positive effects for pedagogical agents, participants were usually younger children. Fourth, this study was conducted in one of the elite schools in Korea, which means that the participants likely possessed better than average English skills.

Next, the Korean context may have affected the students' performance because Korean students are usually obedient to their instructors. The implementations were part of their English classes in which their instructor was also present. The students may have tried to behave nicely to the researcher as well. This means that the students' positive responses may have been affected by the situation. Also, participants in the study were mostly from the College of Engineering. Students with different majors may have reacted differently to the presence and absence of a pedagogical agent and may have performed differently on the test. For example, students from a language department may have reacted differently to agents because they are more sensitive to language learning. Finally, there were more male students than female in the study, and the students did not get to choose the agent they wanted to work with.

Given the implications and limitations of the study, a few directions for future research are suggested. First, because it takes time to establish a relationship between learners and agents, it would be interesting to examine whether a longer exposure to a pedagogical agent would positively affect learners more on affective and learning measures. Second, investigations with various learner characteristics would also provide interesting findings. Participants with different majors, ages, or language competencies could produce different results. Third, pedagogical agents with more social cues (e.g., gestures, varied facial expressions) could be used to test whether agents possessing more humanlike features can have a more positive affect on affective and learning measures. It would yield important implications to compare two types of pedagogical agents (with and without more social cues) and to compare a pedagogical agent

condition (with more social cues) with a no-agent condition. Fourth, the effectiveness of pedagogical agents could be examined in different cultures to find out whether culture plays an important role when pedagogical agents are embedded in computer-based listening instruction. Furthermore, learning different foreign languages such as Asian languages may bring different results. Because each language is unique, learning a different language could require different strategies. Finally, varying agent gender may also bring intriguing outcomes. This study involved only female agents in order to avoid a confounding factor associated with gender; however, comparing students' reactions toward male and female agents could provide interesting results.

Conclusion

The goal of the study was to explore the effects of a pedagogical agent on EFL students' listening anxiety and listening comprehension. The study is significant because it is the first exploration of the effects of a pedagogical agent on affective and cognitive measures of the English listening of EFL learners.

The results from this study indicate that students in the agent conditions did not reduce listening anxiety or improve listening comprehension significantly when compared with those in the no-agent condition. Students' anxiety levels were not statistically different between the Korean agent condition and the American agent condition, either. These results alone do not seem to support the hypotheses formed for this study, nor did they support the claims made by previous researchers who noted the positive effects of pedagogical agents.

However, when the findings are examined holistically, important aspects of students' learning experiences can be discovered. First, of particular importance in the survey data is the finding that students in the agent condition experienced the positive influence of the social presence of the agent. This finding is in line with previous empirical evidence revealing the positive learning experience brought about by the presence of pedagogical agents (Gulz, 2005; Koda & Mae, 1996; Lester et al., 1997; Katagiri, Takahashi & Takeuchi, 2001). Also, students in both the American and Korean agent conditions reported that they enjoyed learning with the agent, and from some indications, they did not really care about how the agent looked. The results indicate that the Korean agent did not impact them more positively than the dissimilar American agent even though the Korean agent looked more similar to the students. It appears that students in both conditions were positively influenced by the agents regardless of ethnicity. At least some of the students in the agent conditions thought of the agent as a real person accompanying them while learning.

Limitations of this study need to be considered when further research is to be conducted. Future research should take into account the limited access to the participants and the limited duration of the implementations. Also, it is important to consider cultural components when selecting participants and computer-based programs, especially for a study involving language learning, which is directly related to culture (Moran, 2000). Future research is needed to further investigate the use of pedagogical agents in EFL learning.

REFERENCES

- Abreu, J. M., & Gabarain, G. (2000). Social desirability and Mexican American counselor preferences: Statistical control for a potential confound. *Journal of Counseling and Psychology, 47*, 165-176.
- Ames, C. (1984). Competitive, cooperative, and individualistic goal structures: A cognitive motivational analysis. In R. Ames & C. Ames (Eds.), *Research on motivation in education: Student motivation* (Vol. 1, pp. 177-208). New York, NY: Academic Press.
- Ames, C., & Ames, R. (1984). Systems of student and teacher motivation: Toward a qualitative definition. *Journal of Educational Psychology, 76*, 535-556.
- Amin, N. (1999). Minority teachers of English: Negotiating white English. In G. Braine (Ed.), *Non-native educators in English language teaching* (pp. 93-104), Mahwah, NJ: Lawrence Erlbaum.
- Andre, E., Rist, T., & Muller, J. (1998). Guiding the user through dynamically generated hypermedia presentations with a life-like character. *International Conference on Intelligent User Interfaces, IUI '98*, San Francisco, CA, January 6-9, 1998, pp. 21-28.
- Argaman, O., & Abu-Rabia, S. (2002). The influence of language anxiety on English reading and writing tasks among native Hebrew speakers. *Language, Culture and Curriculum, 15*(2), 143-160.
- Atkinson, D. R., Poston, W. C., Furlong, M. J., & Mercado, P. (1989). Ethnic group

- preferences for counselor characteristics. *Journal of Counseling Psychology*, 36(1), 68-72.
- Atkinson, R. K. (2002). Optimizing learning from examples using animated pedagogical agents. *Journal of Educational Psychology*, 94, 416-427.
- Baylor, A. L., & Kim, Y. (2005). Simulating instructional roles through pedagogical agents. *International Journal of Artificial Intelligence in Education*, 15, 95-115.
- Balajthy, E. (2007). Technology and current reading/literacy assessment strategies. *Reading Teacher*, 61(3), 240-247.
- Berscheid, E., & Walster, E. H. (1969). *Interpersonal attraction*. Reading, MA: Addison-Wesley.
- Brett, P. (1995). Multimedia for listening comprehension: The design of a multimedia-based resource for developing listening skills. *System*, 23(1), 77-85.
- Byrne, D., & Nelson, D. (1965). Attraction as a linear function of proportion of positive reinforcements. *Journal of Personality and Social Psychology*, 1, 659-663.
- Celce-Murcia, M. (2001). *Teaching English as a second or foreign language*. Boston, MA: Heinle & Heinle.
- Chang, A. C. (2006). The effects of listening support on the listening performance of EFL learners. *TESOL Quarterly*, 40(2), 375-397.
- Cheng, Y., Horwitz, E., & Schallert, D. (1999). Language anxiety: Differentiating writing and speaking components. *Language Learning*, 49(3), 417-446.
- Clark, R. E. & Choi, S. (2007) The questionable benefits of pedagogical agents. *Journal of Educational Computing Research*, 36(4), 379-381.

- Craig, S. D., Gholson, B., & Driscoll, D. M. (2002). Animated pedagogical agents in multimedia educational environments: effects of agent properties, picture features, and redundancy. *Journal of Educational Psychology, 94*, 428-434.
- Crerand, M. E. (1993). *From first language literacy to second language proficiency to second language literacy: The act of writing in a foreign language context*. Paper presented at the AERA Convention, Atlanta, GA.
- Dihoff, D. E., Brosvic, G. M., Epstein, M. L., & Cook, M. J. (2004). Provision of feedback during preparation for academic testing: Learning is enhanced by immediate but not delayed feedback. *The Psychological Record, 54*(2), 207-231.
- Elkhafaifi, H. (2005). Listening comprehension and anxiety in the Arabic language classroom. *The Modern Language Journal, 89*(2), 206-220.
- Ellis, R., Fotos, S., He, Q., Heimback, R., Takashima, H., Tanaka, Y., & Zaki, H. (2000). *Learning second language through interaction*. Philadelphia, PA: John Benjamins.
- Ely, C. M. (1986). Language learning motivation: A descriptive and causal analysis. *The Modern Language Journal, 70*(1), 28-34.
- Epstein, M. L. (2002). Immediate feedback assessment technique promotes learning and corrects inaccurate first responses. *The Psychological Record, 52*(2), 187-201.
- Flowerday, T., & Schraw, G. (2000). Teacher beliefs about instructional choice. *Journal of Educational Psychology, 92*, 634-645.
- Foss, K., & Reitzel, A. C. (1988). A relational model for managing second language anxiety. *TESOL Quarterly, 22*(3), 437-454.

- Fotos, S. (1998). Shifting the focus from forms to form in the EFL classroom. *ELT Journal*, 52(4), 301-307.
- Freiermuth, M. R. (2001). Native speakers or non-native speakers: Who has the floor? Online and face-to-face interaction in culturally mixed small groups. *Computer Assisted Language Learning*, 14(2), 160-199.
- Gardner, R. C. (1991). Attitudes and motivation in second language learning. In A. G. Reynolds (Ed.), *Bilingualism, multiculturalism and second language learning*. Hillsdale, NJ: Lawrence Erlbaum.
- Goldberg, C. B. (2005). Relational demography and similarity attraction in interview assessments and subsequent offer decisions. *Group & Organization Management*, 30(6), 597-624.
- Graesser, C., Person, N. K., Harter, D., & The Tutoring Research Group. (2004). Teaching tactics and dialog in auto tutor. *International Journal of Artificial Intelligence in Education*, 12, 257-279.
- Gregersen, T., & Horwitz, E. K. (2002). Language learning and perfectionism: Anxious and non-anxious language learners' reactions to their own oral performance. *The Modern Language Journal*, 86(4), 562-570.
- Gulz, A. (2005). Social enrichment by virtual characters – differential benefits. *Journal of Computer Assisted Learning*, 21, 405-418.
- Hadley, A. O. (2001). *Teaching Language in Context* (3rd ed.). Boston, MA: Heinle & Heinle.
- Hannafin, R. D., & Sullivan, H. J. (1996). Preferences and learner control over amount of

- instruction. *Journal of Educational Psychology*, 88, 162-173.
- Horwitz, E. K. (1986). Preliminary evidence for the reliability and validity of a foreign language anxiety scale. *TESOL Quarterly*, 20, 559-562.
- Horwitz, E. K. (2001). Language anxiety and achievement. *Annual Review of Applied Linguistics*, 21, 112-126.
- Horwitz, E. K., Horwitz, M. B., & Cope, J. A. (1991). Foreign language classroom anxiety. In E. K. Horwitz and D. J. Young, *Language anxiety: From theory and research to classroom implications* (pp. 27-36). Englewood Cliffs, NJ: Prentice-Hall Inc.
- Hoven, D. (1999). A model for listening and viewing comprehension in multimedia environments. *Language learning & Technology*, 3(1), 88-103.
- Jang, J. (2004). Korean EFL learners' anxiety levels and cross-cultural learner differences. *The Linguistic Science Society*, 28, 257-274.
- Johnson, W. L., Rickel, J. W., & Lester, J. C. (2000). Animated pedagogical agents: face-to-face interaction in interactive learning environments. *International Journal of Artificial Intelligence in Education*, 11, 47-78.
- Jones, L. C. (2003). Supporting listening comprehension and vocabulary acquisition with multimedia annotations: The students' voice. *CALICO Journal*, 21(1), 41-65.
- Katagiri, Y., Takahashi, T., & Takeuchi, Y. Social persuasion in human-agent interaction, *Second IJCAI Workshop on Knowledge and Reasoning in Practical Dialogue Systems, IJCAI-2001*, Seattle, pp. 64-69, August, 2001.
- Keller, J. M. (1987). Strategies for stimulating the motivation to learn. *Performance &*

Instruction, 26(8), 1-7.

Kim, J. H. (2000). Foreign language listening anxiety: A study of Korean students learning English. *The Modern Language Journal*, 84, 256-259.

Kim, Y., Baylor, A. L., & Shen, E. (2007). Pedagogical agents as learning companions: The impact of agent emotion and gender. *Journal of Computer-Assisted Learning*, 23(3), 220-234.

Kim, Y., Wei, Q., Xu, B., Ko, Y., & Ilieva, V. (2007). *MathGirls: Increasing Girls' Positive Attitudes and Self-Efficacy through Pedagogical Agents*. Paper presented at the 13th International Conference on Artificial Intelligence in Education (AIED). Los Angeles, CA.

Koda, T., & Maes, P. (1996). Agents with faces: The effects of personification of agents. In *Proceedings of The 5th IEEE International Workshop on Robot and Human Communication (CRO-MAN)*, Tsukuba City, Japan.

Krashen, S. (1988). *Second language acquisition and second language learning*. Englewood Cliffs, NJ: Prentice Hall.

Lai, C. C., & Kritsonis, W. A. (2006). The advantages and disadvantages of computer technology in second language acquisition. *National Journal for Publishing and Mentoring Doctoral Student Research*, 3(1), 1-6.

Lan, Y., Sung, Y., & Chang, K. (2007). A mobile-device-supported peer-assisted learning system for collaborative early EFL reading. *Language Learning & Technology*, 11(3), 130-151.

Law, A., Logan, H., & Baron, R. S. (1994). Desire for control, felt control, and stress

- inoculation training during dental treatment. *Journal of Personality & Social Psychology*, 67, 926-936.
- Lee, L. (2004). Learners' perspectives on networked collaborative interaction with native speakers of Spanish in the US. *Language Learning & Technology*, 8(1), 83-100.
- Lester, J. C., Converse, S. A., Kahler, S. E., Barlow, S. T., Stone, B. A., & Bhogal, R. S. (1997). The persona effect: Affective impact of animated pedagogical agents. In *Proceedings of the SIGCHI conference on Human factors in computing systems* (pp. 359-366). Atlanta, GA.
- Lester, J. C., Voerman, J. J., Towns, S. G., & Callaway, C. B. (1999). Deictic believability: Coordinating gesture, locomotion, and speech in lifelike pedagogical agents. *Applied Artificial intelligence*, 13, 383-414.
- Levine, A., Ferenz, O., & Reves, T. (2002). EFL Academic reading and modern technology: How can we turn our students into independent critical readers? *TESL-EJ*, 4(4), 1-9.
- Levy, K. J. (1980). A Monte Carlo study of analysis of covariance under violations of the assumptions of normality and equal regression slopes. *Educational and Psychological Measurement*, 40(4), 835-840.
- Lopez, S. R., Lopez, A. A., & Fong, K. T. (1991). Mexican Americans' initial preferences for counselors: The role of ethnic factors. *Journal of Counseling Psychology*, 38(4), 487-496.
- Lund, R. J. (1991). A comparison of second language reading and listening comprehension. *Modern Language Journal*, 73, 32-40.

- MacIntyre, P. D. (1995). How does anxiety affect second language learning? A reply to Sparks and Ganschow. *The Modern Language Journal*, 79(1), 90-99.
- Mejias, H., Applbaum, R. L., Applbaum, S. J., & Trotter, II, R. T. (1991). Oral communication apprehension and Hispanics: An exploration of oral communication apprehension among Mexican American students in Texas. In E. K. Horwitz and D. J. Young, *Language anxiety: From theory and research to classroom implications* (pp. 87-98). Englewood Cliffs, NJ: Prentice-Hall.
- Meskill, C. (1996). Listening skills development through multimedia. *Journal of Educational Multimedia and Hypermedia*, 5(2), 179-201.
- Moran, P. (2005). *Teaching culture*. Boston, MA: Heinle & Heinle.
- Moreno, K. N., Person, N. K., Adcock, A. B., Eck, R. N. V., Jackson, G. T., & Marineau, J. C. (2002). *Etiquette and efficacy in animated pedagogical agents the role of stereotypes*. Paper presented at the AAAI Symposium on Personalized Agents, Cape Cod, MA.
- Moreno, R. (2005). Multimedia learning with animated pedagogical agents. In R. Mayer (Ed.), *Cambridge handbook of multimedia learning* (pp. 507-524). New York: Cambridge University Press.
- Moreno, R., & Flowerday, T. (2006). Students' choice of animated pedagogical agents in science learning: A test of the similarity hypothesis on gender and ethnicity. *Contemporary Educational Psychology*, 31, 186-207.
- Moreno, R., Mayer, R. E., & Lester, J. C. (2000). *Life-like pedagogical agents in*

constructivist multimedia environments: Cognitive consequences of their interaction. In J. Bourdeau & R. Heller (Eds.), *Proceedings of the World Conference on Educational Multimedia, Hypermedia & Telecommunications (ED-MEDIA 2000)* (pp. 741-746). Charlottesville, VA: Association for the Advancement of Computing in Education.

- Moreno, R., Mayer, R. E., Spires, H. A., & Lester, J. C. (2001). The case for social agency in computer-based teaching: Do students learn more deeply when they interact with animated pedagogical agents? *Cognition and Instruction, 19*(2), 177-213.
- Murphy, P. (2007). Reading comprehension exercises online: The effects of feedback, proficiency and interaction. *Language Learning and Technology, 11*(3), 107-129.
- Norton, B. (1997). Language, identity, and the ownership of English. *TESOL Quarterly, 31*(3), 409-429.
- Onwuegbuzie, A. J., Bailey, P., & Daley, C. E. (1999). Factors associated with foreign language anxiety. *Applied Psycholinguistics, 20*, 217-239.
- Oxford, R., & Shearin, J. (1994). Language learning motivation: Expanding the theoretical framework. *The Modern Language Journal, 78*(1), 12-28.
- Park, E. (2008). A case study of five Korean university students' English language anxiety in English classroom. *Modern English Education, 9*(1), 108- 127.
- Phillips, E. M. (1992). The effects of language anxiety on students' oral test performance and attitudes. *The Modern Language Journal, 76*(1), 14-26.

- Phillipson, R. (1996). ELT: The native speakers' burden. In T. Hedge & N. Whitney (Eds.), *Power, pedagogy and practice* (pp. 23-30). Oxford, UK: Oxford University Press.
- Reeves, B., & Nass, C. (1996). *The media equation: How people treat computers, television, and new media like real people and places*. Stanford, CA: CSLI Publications.
- Rho, J. (n.d.). Parental pressures. In *Korean Versus American Elementary Education*. Retrieved from http://sitemaker.umich.edu/rho.356/parental_involvement
- Rutherford, A. (2001). *Introducing ANOVA and ANCOVA: A GLM Approach*. Thousand Oaks, CA: Sage Publications.
- Ryokai, K., Vaucelle, C., & Cassell, J. (2003). Virtual peers as partners in storytelling and literacy learning. *Journal of Computer Assisted Learning*, 19, 195-208.
- Saito, Y., Garza, T. J., & Horwitz, E. K. (1999). Foreign language reading anxiety. *The Modern Language Journal*, 83(2), 202-218.
- Salaberry, M. R. (2000). Pedagogical design of computer mediated communication tasks: Learning objectives and technological capabilities. *The Modern Language Journal*, 84, 28-37.
- Sandholtz, J. H., Ringstaff, C., & Dwyer, D. C. (1997). *Teaching with technology*. New York, NY: Teachers College Press.
- Seller, V. D. (2000). Anxiety and reading comprehension in Spanish as a foreign language. *Foreign Language Annals*, 33(5), 512-21.
- Stakhnevich, J. (2002). Reading on the Web: Implications for ESL professionals,

Reading Matrix, 2(2), 1-8.

Swain, M. (2000). *Sociocultural theory and second language learning*. J.P. Lantolf (Ed.). New York, NY: Oxford.

Swain, M., & Lapkin, S. (1998). Interaction and second language learning: Two adolescent French immersion students working together. *The Modern Language Journal*, 82(3), 320-337.

Towns, S. G., FitzGerald, P. J., & Lester, J. C. (1998). *Visual emotive communication in lifelike pedagogical agents*. Paper presented at the 4th International Conference of Intelligent Tutoring Systems Lecture Notes for Computer Science, San Antonio, TX.

Tremblay, P.F., & Gardner, R. C. (1995). Expanding the motivation construct in language learning. *The Modern Language Journal*, 79(4), 505-518.

Ur, P. (1984). *Teaching listening comprehension*. Cambridge, UK: Cambridge University Press.

van Mulken, S., Andre, E., & Muller, J. (1998). The persona effect: How substantial is it? In *Proceedings of Human Computer Interaction, HCI 1998* (pp. 53-66), San Francisco, CA.

Verdugo, D. R., & Belmonte, I.A. (2007). Using digital stories to improve listening comprehension with Spanish young learners of English. *Language Learning & Technology*, 11(1), 87-101.

Vygotsky, V. (1978). *Mind in society*. Cambridge, MA: Harvard University Press.

Warschauer, M. (1996). Comparing face-to-face and electronic discussion in the second

- language classroom. *CALICO Journal*, 13(2), 7-26.
- Warschauer, M. (2002). A developmental perspective on technology in language education. *TESOL Quarterly*, 36(3), 453-475.
- Warschauer, M., & Meskill, C. (2000). Technology and second language learning. In J. Rosenthal (Ed.), *Handbook of undergraduate second language education* (pp. 303-318). Mahwah, NJ: Lawrence Erlbaum.
- Weinberg, A. (2002). Virtual misadventures: Technical problems and student satisfaction when implementing multimedia in an advanced French listening comprehension course. *CALICO Journal*, 19(2), 331- 357.
- Wildt, A. R., & Ahtola, O. T. (1978). *Analysis of Covariance*. Thousand Oaks, CA: Sage Publications.
- Yang, Y. C., & Chin, W. K. (1997). Motivational analysis of the effects of type of instructional control on learning from computer-based instruction. *Journal of Educational Technology Systems*, 25, 25–35.
- Young, D. J. (1991). Creating a low-anxiety classroom environment: What does language anxiety research suggest? *The Modern Language Journal*, 75(4), 426-439.

APPENDICES

APPENDIX A. Informed Consent Form



Department of Instructional Technology
 2830 Old Main Hill
 Logan, UT 84322-2830
 Voice: (435) 797-2694
 Fax: (435) 797-2693

Date Created: October 10, 2008; Page 1 of 2
 USU IRB Approved: 10/13/2008
 Approval terminates: 10/12/2009
 Protocol Number: 2188
 IRB Password Protected per IRB Administrator

Informed Consent for Participants
 EFL students' use of a computer-based listening lesson

Introduction/Purpose: Assistant Professor Yanghee Kim in the Department of Instructional Technology at Utah State University (USU) and Young-Ah Ko, a Ph.D. student are conducting a research study on the use of computers for English language learning and how computers can be helpful for English language learners.

Procedures: If you agree to participate in this research, you will be asked to fill out a questionnaire regarding your listening anxiety, which will take approximately 10 minutes. You will be asked to answer questions about how you feel about listening in English. Then you will be asked to solve problems on a computer-based lesson which will be a lesson on listening comprehension in English.

Some of you will be asked to participate in an audio recorded interview which will take approximately 15 minutes. During the interview, you will be asked to choose a pseudonym that will be used in the study instead of your name. You will be asked about your experience with the computer-based listening instruction. Also, you will be asked about what you think are the strengths and weaknesses of the computer-based instruction you have used, why you think those were strengths and weaknesses, and how these affected your English learning.

Risks: There are no anticipated risks involved in this study. Your instructor is supportive of this study and does not mind you sharing your opinions with the researcher. You might feel uncomfortable or shy during the interviews, but please be assured that your comments will greatly contribute to the purpose of the study, which can improve English language learning. Also, please be assured that everything you say will be kept confidential.

Benefit: By reflecting on your own experiences and thoughts regarding the use of computers for English learning, you may be able to understand how you prefer to learn English better and what you have been doing to learn English. This research study may also help future English learners by examining useful computers that may help them learn English better.

Explanation & Offer to Answer Questions: If you have more questions about the study, please feel free to contact Young-Ah Ko at USU or through email at ichris0913@yahoo.com. She will be happy to talk to you about the study. You can reach her at the phone numbers and addresses below.

Voluntary Participation and Right to Withdraw without Consequence: Participation in this research study is completely voluntary. You may refuse to be in this study or you may withdraw at any time. If you change your mind during the participation in the study and decide to withdraw from the study, please let Young-Ah know. Once you decide to withdraw from the study, the data collected from you will be destroyed. It will not be a problem. There is no penalty for withdrawing or preferring not to participate.



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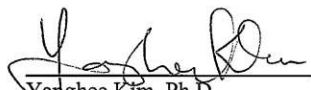
Informed Consent for Participants
 EFL students' use of a computer-based listening lesson

Confidentiality: All information gathered from you will be completely confidential. It is an independent research project conducted by Young-Ah Ko. Consequently, your opinions will not be presented to anyone in a verbatim manner. Information from this study will be compiled into a research paper where pseudonyms are used and everyone who participates in this study will be disguised. Tape recordings of interviews and interview transcriptions done by Young-Ah Ko will be kept in Young-Ah's own desk drawer in her office, and no one will have access to the data. One year after the study has been completed, the pseudonyms and audio tapes will be destroyed.

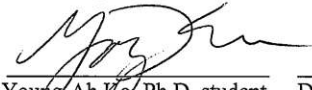
IRB Approval Statement: Utah State University has an Institutional Review Board (IRB) that checks research studies to make sure that they are safe for participants. The IRB at USU has approved this study. If you have any questions or concerns about your rights in this study, please feel free to contact USU's IRB Office at IRB@usu.edu

Copy of Consent: You have been given two copies of the Letter of Informed Consent. Please sign both copies. Please return one signed copy to Young-Ah and keep the other signed copy for yourself.

Investigator/ Statement: The research has been explained to the participant by a researcher and the participant understands the study, its possible risks and benefits, and that taking part in the study is completely voluntary. The participant has had a chance to ask questions and have them answered.

 10/13/08

 Yanghee Kim, Ph.D. Date
 Department of Instructional Technology
 (435) 797-2653

 10/13/08

 Young-Ah Ko, Ph.D. student Date
 Department of Instructional Technology
 ichris0913@yahoo.com

Permission: By signing below I agree to participate in this study.

 Signature

 Date

참가자 동의서
EFL 학생들의 컴퓨터로 하는 듣기 레슨

연구의 목적

유타주립대학의 교육공학과 김양희교수와 박사과정학생인 고영아가 영어배우는데 쓰이는 컴퓨터에 대한, 영어배우는 사람들에게 어떻게 컴퓨터가 도움이 될수 있는지 연구하려고 합니다.

순서

여러분이 이연구에 참가하기로 동의한다면 약 10 분동안 영어듣기 불안에 관한 질문지를 작성할게 될것입니다. 영어를 들을때 어떤지에 대한 질문을 받을것입니다. 그리고나서 컴퓨터 베이스드 영어듣기 이해에 관한 레슨에서 문제를 풀것입니다.

여러분중에 몇명은 연구를 위해서 약 15 분간 인터뷰에 참가하도록 부탁받을 것입니다. 인터뷰동안, 여러분의 이름대신 익명이 사용될것입니다. 인터뷰는 녹음이 될것입니다. 인터뷰할때 컴퓨터 베이스드 듣기 레슨에 대한 경험에 대해서 질문을 받을것입니다. 또한 사용한 컴퓨터 레슨의 장점과 단점에 대한 질문도 받을것입니다. 그 장점과 단점이 어떻게 여러분의 영어배우는데 영향을 끼쳤는지에 대해서도 질문을 받을 것입니다.

위험부담

이연구에는 아무런 위험이 관련되어 있지 않습니다. 여러분의 강사는 이 연구에 대해 협력적이며 연구자에게 여러분의 의견을 나누는데 대해서 괜찮다고 생각합니다. 여러분은 인터뷰하는동안 불편할수 있지만 여러분의 의견이 이 연구목적인 영어배움을 향상시키는데 크게 도움이 된다는 사실을 아시기 바랍니다. 또한 여러분이 말하는 모든것은 알려지지 않을것이라는 것을 아시기 바랍니다.

이연구를 통한 이익

컴퓨터를 이용한 영어배우기에 대한 여러분의 경험과 생각을 통해서 여러분이 영어를 어떻게 배우기를 원하는지와 영어배우기 위해서 어떤것을 해왔는지에 대해서 이해하는데 도움이 될것입니다. 이 연구는 또한 영어를 컴퓨터를 이용해서 어떻게 더 잘 배울수 있는지 시험해봄으로써 미래에 영어배우는 사람들에게 도움이 될수도 있습니다.

질문에 대한 설명과 답

이 연구에 대한 질문에 더 있다면 유타주립대의 고영아, 또는 이메일 ichris0913@yahoo.com 으로 연락하시기 바랍니다. 연구자는 이연구에 대해서 설명해줄것입니다. 아래의 전화번호나 주소로 연락주시기 바랍니다.

이 연구에 참여와 그만둘수 있는 권리

이 연구는 자발적인 참여에 의해서 이루어집니다. 만일 여러분이 참여하고 싶지 않다면 하지 않아도 됩니다. 또한, 연구에 참여하는 동안에 생각이 바뀌고 그만 참여하고 싶다면 연구자에게 알리기만 하면 됩니다. 그만 두게 된다면 여러분에게서 얻은 데이터는 폐기될것 입니다. 그것이 문제가 되지 않습니다. 연구에서 참여하지 않거나 빠져나오는 것에 대해 따르는 것은 아무것도 없습니다.

비밀 보장

여러분에게서 나온 모든 정보는 비밀이 보장됩니다. 이연구는 고영아에 의해서 진행되는 독립적 연구과제입니다. 그러므로 여러분의 의견은 다른사람들에게 그대로 전해지지 않을 것입니다. 이연구의 정보는 익명을 사용한 연구논문에 쓰여질 것이며 이연구에 참여한 모든 사람들은 위장될것입니다. 연구자가 얻은 데이터로 녹음된 인터뷰와 인터뷰 사본은 고영아의 사무실 책상서랍에 보관될것이며, 아무도 데이터에 접근할수 없을 것입니다. 연구가 끝난뒤 일년후에 데이터는 폐기될것입니다.

IRB 승인

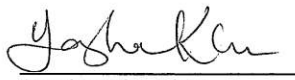

유타주립대학은 IRB 라고 하는 곳에서 연구가 참가자들에게 안전한지 확인하는 곳이 있습니다. 유타주립대학의 IRB 는 이 연구를 승인했습니다. 만일 이 연구에 대한 여러분의 귀리에 대한 질문이나 걱정이 있다면 유타주립대학의 IRB 사무실로 연락을 하셔도 좋습니다. IRB@usu.edu 로 연락하십시오.

참가동의서

여러분은 참가자 동의서를 두장 받았습니다. 두장 모두에 싸인을 하고 한장은 여러분이 보관하고 한장은 연구자에게 주십시오.

연구자/진술

이 연구는 참가자들에게 설명이 되었고 참가자들은 연구에 관한 일어날수 있는 위험이나 이익, 이 연구에 참가하는것은 자발적이라는것을 이해합니다. 참가자들은 질문할수 있는 기회를 가졌고 질문에 대한 답을 들었습니다.

	10/13/08		10/13/08
Yanghee Kim, Ph.D.	Date	Young-Ah Ko, Ph.D. student	Date
Department of Instructional Technology		Department of Instructional	
Technology			
(435) 797-2653		ichris0913@yahoo.com	

Permission: By signing below I agree to participate in this study.

Signature

Date

APPENDIX B. Foreign Language Listening Anxiety Scale (FLLAS)

Describe how you feel about listening to English. Please indicate whether you (1) strongly disagree, (2), disagree, (3) neither agree nor disagree, (4) agree, or (5) strongly agree. Please read each statement carefully, give your first reaction to each statement, and mark an answer for every statement.

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|--|---|---|---|---|---|
| 1. I get upset when I'm not sure whether I understand what I'm hearing in English. | 1 | 2 | 3 | 4 | 5 |
| 2. When I listen to English, often understand the words but still can't quite understand what the speaker is saying. | 1 | 2 | 3 | 4 | 5 |
| 3. I enjoy listening to English. | 1 | 2 | 3 | 4 | 5 |
| 4. I feel intimidated whenever I have a listening passage in English to listen to. | 1 | 2 | 3 | 4 | 5 |
| 5. I am nervous when I am listening to a passage in English when I'm not familiar with the topic. | 1 | 2 | 3 | 4 | 5 |
| 6. I get upset whenever I hear unknown grammar while listening to English. | 1 | 2 | 3 | 4 | 5 |
| 7. I feel confident when I am listening to English. | 1 | 2 | 3 | 4 | 5 |
| 8. It bothers me to encounter words I can't pronounce while listening to English. | 1 | 2 | 3 | 4 | 5 |
| 9. I usually end up translating word by word when I'm listening to English. | 1 | 2 | 3 | 4 | 5 |
| 10. By the time you get past the strange sounds in English, it's hard to remember what you're listening to. | 1 | 2 | 3 | 4 | 5 |
| 11. I am worried about all the new sounds you have to learn to understand spoken English. | 1 | 2 | 3 | 4 | 5 |
| 12. When I'm listening to English, I get so confused I can't remember what I've heard. | 1 | 2 | 3 | 4 | 5 |
| 13. When listening to English I get nervous and confused when I don't understand every word. | 1 | 2 | 3 | 4 | 5 |

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|--|---|---|---|---|---|
| 14. Once you get used to it, listening to English is not so difficult. | 1 | 2 | 3 | 4 | 5 |
| 15. The hardest part of learning English is learning to understand spoken English. | 1 | 2 | 3 | 4 | 5 |
| 16. I would be happy just to learn to read English rather than having to learn to understand spoken English. | 1 | 2 | 3 | 4 | 5 |
| 17. I don't mind listening to English by myself but I feel very uncomfortable when I have to listen to English in a group. | 1 | 2 | 3 | 4 | 5 |
| 18. I am satisfied with the level of listening comprehension in English that I have achieved so far. | 1 | 2 | 3 | 4 | 5 |
| 19. English culture and ideas seem very foreign to me. | 1 | 2 | 3 | 4 | 5 |
| 20. You have to know so much about English history and culture in order to understand spoken English. | 1 | 2 | 3 | 4 | 5 |

Translation of the listening scale

1. 나는 영어를 들을때 잘 이해가 안되면 기분이 안좋다.
2. 나는 영어를 들을때 단어들은 자주 이해하지만 말하는 사람이 무슨말을 하는지는 잘 이해가 가지 않는다.
3. 나는 영어를 듣는것을 즐긴다.
4. 나는 영어로 들어야할 듣기 구절들이 있을때 두렵다.
5. 영어 구절을 들을때 내가 모르는 토픽에 관한거일때 긴장이 된다.
6. 영어를 들을때 모르는 문법이 나올때마다 기분이 안좋다.
7. 영어를 들을때 나는 자신감이 있다.

8. 영어를 들을때 발음할줄 모르는 단어가 나오면 신경이 거슬린다.
9. 영어를 들을때 나는 주로 단어 하나하나를 해석한다.
10. 모르는 영어를 들을때 내가 무엇을 듣고 있는지 기억하기 어렵다.
11. 나는 영어를 알아 듣기 위해서 배워야 하는 새로운 소리들에 대해 걱정이 된다.
12. 나는 영어를 들을때 너무 혼동이 돼서 내가 무엇을 들었는지 기억할수 없다.
13. 나는 영어를 들을때 매 단어를 이해하지 못하면 긴장이 되고 혼동이 된다.
14. 영어를 듣는것은 익숙해지기만 하면 매우 어려운것이 아니다.
15. 영어를 배울때 가장 어려운것은 영어를 알아듣는것이다.
16. 나는 영어를 알아듣는것을 배우기 보다는 영어읽기를 배우는것이 더 좋다.
17. 나는 혼자 영어듣기를 하는것은 괜찮은데 그룹안에서 같이 영어를 듣는것은매우 불편하게 느껴진다.
18. 나는 여태까지 쌓아온 내 영어듣기 이해실력에 만족한다.
19. 영어권의 문화와 사고방식은 나에게 아주 생소하다.
20. 영어듣기를 이해하기 위해서는 영어권의 역사와 문화를 아주 많이 알아야 한다.

APPENDIX C. ACTFL Guidelines for Listening

Intermediate-Mid

Able to understand sentence-length utterances which consist of recombinations of learned utterances on a variety of topics. Content continues to refer primarily to basic personal background and needs, social conventions and somewhat more complex tasks, such as lodging, transportation, and shopping. Additional content areas include some personal interests and activities, and a greater diversity of instructions and directions. Listening tasks not only pertain to spontaneous face-to-face conversations but also to short routine telephone conversations and some deliberate speech, such as simple announcements and reports over the media. Understanding continues to be uneven.

APPENDIX D. Interview Questions

For Agent-Condition

1. Have you tried any computer-based instruction for listening comprehension before?
2. How was the learning activity on a computer?
3. What do you remember about the person on the screen?
4. How did you like the person and why?
5. Did you think that it was feel easy to work with the person in the lesson? If so, what do you think made it easy (or difficult) to work with him? If not, why?
6. Did you think the person on the screen was helpful?
7. How did you like the way the person explained things to you? What did you think about the way the person provided feedback when you solved the problems?
8. Did you think the person was smart?
9. How did you find the person similar to a peer? (How did you find the person similar to a teacher?)
10. Some of your classmates didn't have a person on the screen. Next time, if you were to use this type of program again, would you prefer to have the person working with you or work alone without the person?
11. What would you suggest to make the person help you learn better?
(To make it funner? Any suggestions for improving the person?)
12. If you were the designer of this program, what would you change or what would you want to keep in the person?
13. Based on your experience, do you think it is a good idea to use this program once in while to supplement your English class?
14. How will you explain this program to a new student who is about to use it? Do you have any suggestions about how to use it best?

Translation of the interview questions

1. 듣기이해를 위한 컴퓨터 프로그램을 이용해본적이 있습니까?
2. 컴퓨터로 배우는 듣기레슨이 어땠습니까?
3. 스크린에 있던 사람에 대해서 기억나는 것이 무엇입니까?
4. 그 사람에 대해서 어떻게 생각합니까? 그 이유는?
5. 레슨중에 그 사람과 같이 배우는 것이 편하게 느껴졌습니까? 그렇다면 왜 그 사람과 배우는 것이 쉬웠습니까/ 어려웠습니까?
6. 그사람이 도움이 되었다고 생각합니까?
7. 그 사람이 설명한 방법에 대해서 어떻게 생각합니까? 문제를 풀때 그 사람의 의견을 준 방법에 대해서 어떻게 생각합니까?
8. 그 사람이 똑똑하다고 생각합니까?
9. 그 사람이 친구들/ 선생님과 어떤점이 비슷하다고 생각합니까?
10. 반친구들중에는 그 사람이 스크린에 없었던 학생도 있었습니다. 다음에 이와 같은 종류의 컴퓨터 프로그램을 사용한다면 그 사람과 같이 배우고 싶습니까, 그 사람 없이 혼자 배우고 싶습니까?
11. 그 사람이 더 잘 배우는 것을 도와주기 위해 어떻게 만들수 있다고 생각합니까?
(더 재미있게? 그 사람이 더 나아지게 하기 위한 제안은?)
12. 만약 이 컴퓨터 프로그램의 디자이너라면 그 사람을 어떻게 바꾸고 싶습니까?
그 사람의 어떤 점을 바꾸지 않고 그대로 갖고 있겠습니까?
13. 경험을 바탕으로, 이 프로그램을 가끔 사용하는것이 영어수업을 보충해주는데 좋다고 생각합니까?
14. 이 프로그램을 새로 이용해보는 학생에게 이 프로그램이 어떻다고 설명해주겠습니까? 이 프로그램을 사용하는 가장 좋은 방법으로 제안하고 싶은것이 있습니까?

For No-Agent Condition

1. Have you tried any computer-based instruction for listening comprehension before?
2. How was the learning activity on a computer?
3. Did you feel easy to work in the lesson? If so, what do you think made it easy (or difficult) to work with him?
4. Did you think the lesson was helpful?
5. How did you like the way the program explained things to you? What did you think about the way the program provided feedback when you solved the problems?
- 6 How did you find the program similar to a peer? (How did you find the program similar to a teacher?)
7. Some of your classmates had a person on the screen. Next time, if you use this type of program again, do you prefer to have the person working with you or work alone without the person?
8. How would you make the program help you learn better?
(To make it funner? Any suggestions for improving the program?)
9. If you were the designer of this program, what would you change or what would you want to keep in the program?
- 10 Based on your experience, do you think it is a good idea to use a program like this one once in while to supplement your English class?
11. How will you explain this program to a new student who is about to use it? What are some suggestions you would give about how to use it best?

Translation of the interview questions

1. 듣기이해를 위한 컴퓨터 프로그램을 이용해본적이 있습니까?
2. 컴퓨터로 배우는 듣기레슨이 어땠습니까?
3. 레슨을 배우는 것이 편하게 느껴졌습니까? 그렇다면 왜 쉬웠습니까/어려웠습니까?

4. 이 레슨이 도움이 되었다고 생각합니까?
5. 이 프로그램이 설명한 방법에 대해서 어떻게 생각합니까? 문제를 풀때 프로그램이 의견을 준 방법에 대해서 어떻게 생각합니까?
6. 이 프로그램이 친구들/ 선생님과 어떤점이 비슷하다고 생각합니까?
7. 반친구들중에는 어떤 사람이 스크린에 있었던 학생도 있었습니다. 다음에 이와 같은 종류의 컴퓨터 프로그램을 사용한다면 그 사람과 같이 배우고 싶습니까, 그 사람 없이 혼자 배우고 싶습니까?
8. 이 프로그램을 어떻게 더 도움이 되게 만들겠습니까? (더 재미있게? 이 프로그램을 더 나아지게 하는 데에 대한 제안은?)
9. 만약 이 컴퓨터 프로그램의 디자이너라면 이 프로그램을 어떻게 바꾸고 싶습니까? 이 프로그램의 어떤점을 바꾸지 않고 그대로 갖고 있겠습니까?
10. 경험을 바탕으로, 이 프로그램을 가끔 사용하는것이 영어수업을 보충해주는데 좋다고 생각합니까?
11. 이 프로그램을 새로 이용해보는 학생에게 이 프로그램이 어떻다고 설명해주겠습니까? 이 프로그램을 사용하는 가장 좋은 방법으로 제안하고 싶은것이 있습니까?