The Role of Smartphone Applications as English Learning Tool among Chinese University Students

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Abstract: This study aims to explore the impact of smartphone applications on Chinese non-English majors' out-of-class English listening learning. The qualitative research method was adopted in this study. Four participants who attended the semi-structured interviews and five online diaries were selected to provide data for the research. The results demonstrate that the utilization of smartphone apps can indeed have a positive influence on Chinese non-English majors' out-of-class English listening learning, and change their listening learning styles to a great extent. Fragmented learning time and informal learning place were widely accepted by students due to the flexibility and portability of smartphone apps, which create more learning opportunities for them and in turn lengthens their learning time. Rich, authentic, high-quality, and up-to-date listening materials, English proficiency tests, and the function of recommendation offered by smartphone apps all provide a great convenience for students. However, this technology is not yet mature and can be further developed by ameliorating some negative factors, such as interference from other functions and applications of smartphones, small screens and reflected light, and lack of guidance and feedback.

Keywords: English listening, Out-of-class learning, Smartphone apps, Second language

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1. Introduction

As a recognized international language, English is still a required course for all Chinese college students. As such, mastering English is of great significance to the study and life of Chinese college students. In the process of learning English as a second language (L2), listening is one of the most important language skills and can be regarded as the foundation of other language skills (Krashen, 1985; Hassan, 2000; Cheung, 2010). One study suggests that L2 learners whose first language is Chinese need approximately 2200 class hours of learning to master English (Dörnyei and Kubanyiova, 2014). Listening, as "the gasoline in the engine of L2 acquisition" (Nunan, 2015, p. 34), also requires a lot of time to learn and practice. However, due to the lack of language context, limited class hours, and changed focus to output skills, Chinese college students do not have enough time to learn and practice English listening in conventional classroom teaching (Tan, 2019). In this case, out-of-class language learning as the extension of classroom instruction (Richards, 2015) has carried the expectation of educators and students to make up for this deficiency of classroom teaching (Shu, 2006; Huang, 2007; Cui, 2009).

Out-of-class learning is another critical context of language learning in addition to classroom instruction and can either be organized by schools or conducted spontaneously as additional learning without the guidance of teachers (Benson, 2011). Multiple studies have proven that out-of-class language learning plays a positive role in improving the English ability of L2 learners (Shen, et al., 2005; Sefton-Green, 2006; Inozu et al., 2010). However, since the English education reformation in Chinese colleges still focuses on improving classroom teaching with little attention paid to out-of-class learning, most colleges have not formed formal out-of-class English modules yet (Wang, 2011). Despite so, students who are interested in English or have practical needs are beginning to consciously seek out-of-class opportunities in their free time to improve their English listening skills (Huang, 2013). Xu and Zuo (2015) surveyed the current situation of out-of-class independent English learning for non-English majors in China. According to their data, 91.6% of their participants were aware of the importance of out-of-class English listening learning, and participants spent an average of more than 3.7 hours a week on independent English listening learning outside the classroom. Therefore, the out-of-class listening learning studied in this paper is a spontaneous and personalized act of students rather than a collective extracurricular activity organized by schools or teachers.

Compared with organized and planned classroom learning, the method of conducting independent out-of-class learning is always a question worthy of discussion. Due to the great academic pressure faced by students, it is difficult for traditional English extracurricular activities that are time-consuming, such as the English corner, to become a routine out-of-class English learning method (Li and Li, 2019). Access to listening materials is also a big problem for students' independent listening learning outside the class (Huang, 2013). It is hence very necessary to develop a more efficient way of out-of-class independent listening learning.

Currently, one popular way to learn English outside the class is to use smartphone applications (apps). In recent years, the advancement of network technology and increasing popularity of mobile devices have provided more possibilities for students to study independently in their spare time (Byrne and Diem, 2014). Fast-growing smartphone apps are the most popular platforms for students to learn through mobile devices. Some researchers (Wang et al., 2011; Bao, 2013) found that Chinese college students are accepting of this learning method and show strong interests in mobile learning. At the same time, the characteristics of mobile learning such as spontaneity, portability, connectivity, and individuality are highly consistent with the requirements of out-of-class language learning. This evidence proves that further utilization of mobile apps in Chinese college students' extracurricular listening learning is feasible.

Although researchers have been calling for more studies on extracurricular English learning from students' perspective (Kukulska-Hulme and Shield, 2008; Steel, 2012; Byrne and Diem, 2014), most existing studies still focus on improving classroom listening teaching with the help of mobile learning from teachers' perspective (Huang, 2016; Wang et al., 2017; Pan, 2019). Besides that, most studies pay more attention to the advantages and disadvantages of using mobile learning in the English learning process as a whole (Zhao, 2018; Tan, 2019) instead of emphasizing English listening learning. In short, there are still relatively few researches that specify the impact of smartphone apps on Chinese college students' out-of-class independent English listening learning. This article is expected to fill the gap to some extent. The main purpose of this study is to explore the impact of smartphone apps on Chinese college students' out-of-class independent English listening learning by investigating the time and place of students' out-of-class independent listening learning with smartphone apps and the factors of smartphone apps that may influence students' learning. The research questions are as follows:

Q1. What time and place do participants use smartphone apps to learn English listening in extracurricular time?

Q2. According to participants' learning experience, which factors of smartphone apps have influenced their out-of-class English listening learning?

2. Literature Review

2.1 Listening Skills

Listening, as emphasized in this article, is different from the hearing that people are born with. Listening here refers to a language skill that requires the learner to concentrate on analyzing, translating, understanding, and even remembering the information being heard (Kim, 2013). Listening accounts for 45-50% of all language skills used in daily life (Hedge, 2007). This proportion which is close to half is sufficient to portray the importance of listening.

Listening is not an easy skill, especially for L2 learners. Limitations of memory, deficiency of language ability, and unfamiliarity with background culture often cause L2 learners to miss or mishear many important contents in the listening process (Azmi et al., 2014; Renandya and Hu, 2018). Ineffective hearing can lead to a series of communication problems. Chinese college students' ability to use English is also deeply influenced by their problematical listening skills (Liu, 2018). The comprehensible input theory proposed by Krashen (1982) points out the root of this problem. Any learning should start from the input of knowledge because, without input, it is difficult to gain output. Listening is an input skill in language learning which lays foundations for other language skills especially speaking (Cheung, 2010). Without corresponding listening ability, learners are bound to lose the opportunity to learn an L2 (Rost, 2015). Therefore, listening learning which plays an important role in L2 acquisition deserves attention.

Scholars have made many different attempts to help L2 learners improve their English listening skills. According to the Schema theory, some scholars have suggested that students should try to categorize the information they listen to and make meaningful connections between new information and experience (Anderson, 2012). Rost (2011) believes that learners should actively seek appropriate listening materials according to their actual situation, in which Krashen (1985) defines the appropriate materials as materials with difficulty level slightly higher than the language level of learners. Otherwise, extremely difficult materials will affect the learning enthusiasm of learners while extremely easy materials or materials which difficulty level equals to learners' language level cannot offer learners new knowledge or further improve their level (Chapelle, 2001). Listening to materials which are consistent with learners' interests or relevant to learners' daily life will be more helpful in stimulating learners' enthusiasm for learning (Elkhafaifi, 2005). Authentic listening materials can also help learners apply what they have learned to real-life (Brown, 2004). In addition to these learning strategies, successful listening skills require extensive listening practice over a long period (Waring, 2010). Considering the difficulties in practicing extensive listening within the classroom, learners should be encouraged to seek more listening opportunities outside the classroom (Reinders and Cho, 2010). Fragmented time outside the classroom not only creates more study time but also helps learners relate what they have learned to their daily lives.

2.2 Out-of-class Language Learning

For a long time, classroom teaching is regarded as the main context of L2 learning, but some scholars have pointed out that this is a relatively narrow view (Benson, 2006; Gao, 2009). Learning occurs in multiple contexts with multiple sources, and classroom learning is only one of several ways in which learners participate in language learning (Barron, 2004). Some scholars (Sefton-Green, 2006) believe that educators should pay attention to a wider range of learning contexts to further strengthen the educational system, such as out-of-class language learning.

Out-of-class learning is another critical context of language learning in addition to classroom instruction which may be organized by schools or spontaneously as additional learning without the guidance of teachers (Benson, 2011). Studies have shown that out-of-class language learning is positively correlated with L2 acquisition outcomes (Thorne, Sauro, and Smith, 2015; Cole and Vanderplank, 2016). Some successful learners even attribute their language learning achievements mainly to their efforts outside the classroom (Lamb, 2002). Besides, compared with classroom learning, out-of-class learning seems to bring more fun to learners, thus maintaining their learning motivation and increasing their effective involvement in language learning (Pearson 2004). Studies have shown that college students in many regions of the world, such as China (Hyland, 2004; Xu and Zuo, 2015) and Turkey (Inozu et al., 2010), have begun to actively carry out out-of-class foreign language learning.

2.3 Out-of-class Language Learning with Smartphone Apps

When it comes to the method of conducting out-of-class language learning, technology serves as the main platform which provides resources for independent language learning (Steel and Levy, 2013). Scholars that have explored popular technologies for out-of-class language learning found that smartphone apps based on mobile devices rank highly. This high ranking may be attributed to several key advantages and features of mobile learning. First of all, mobile devices are highly portable. Having the size of a palm or even smaller, learners can take mobile devices anywhere (Ahonen et al., 2004). This portability allows students to utilize the unexpected free time to study since they almost always have their devices with them (Evans, 2008). Secondly, mobile learning is more spontaneous than any other type of learning (Cavus and Ibrahim, 2009). Next, the connectivity of mobile learning is remarkable (Mehdipour and Zerehkafi, 2013). Learners can learn online anytime through the wireless network. With offline functions emerging, mobile learning becomes more convenient without the shackles of the internet. Furthermore, mobile learning shows support for individuality (Mehdipour and Zerehkafi, 2013) as learners can adjust and control their learning progress according to their actual needs and personal abilities through mobile devices (Lan and Sie, 2010). The development of smartphone apps also promotes the integration and utilization of various multimedia, enabling learners to access a variety of rich learning resources (Huang et al., 2009). Therefore, Miangah and Nezarat (2012) characterized the usage of mobile devices in learning as individualized, spontaneous, and ubiquitous. Relevant research results (Tayan, 2017) also confirm this point; students who use mobile devices to learn the language are more willing to conduct independent language learning outside the classroom.

Studies also suggest that smartphone apps based on mobile devices have great support for ubiquitous multimedia language learning but relatively weak support for social connection and collaboration in language learning (Steel, 2015; Dashtestani, 2016). As such, many students who use smartphone apps to learn English are more inclined to study on their own and rarely cooperate with other students. Other known limitations of mobile learning include: 1) the palm-sized phone screen which cannot display enough learning material at once (Koole, 2009); 2) the light emitted on the screen and the small font which easily cause visual fatigue (Maniar et. al., 2008); and 3) other entertainment functions of mobile devices which may easily affect learners and distract them from their studies (Thornton & Houser, 2005).

These studies provide some preliminary insights and knowledge on out-of-class language learning with technology. However, to obtain an in-depth understanding of out-of-class language learning with technology, some scholars (Kukulska-Hulme & Shield, 2008; Steel, 2012; Byrne & Diem, 2014; Lai, et al., 2017) call for more studies to investigate out-of-class independent language learning from the perspective of learners and from the perspective of how technological resources promote or affect learners' learning experience.

2.4 Apps for English Listening Learning

As one of the most popular technologies in mobile learning, the number of English learning apps is growing exponentially (Teodorescu, 2015). The current mobile apps have covered many aspects of English learning, namely, vocabulary, listening, speaking, reading, writing, grammar, and translation (Steel, 2012). While relevant studies show that English learning apps positively affect each of these language skills (Klimova, 2015), listening is identified as the main language skill learned outside the classroom using technological resources (Trinder, 2016). Ramya and Madhumathi (2017) further suggest that listening skills are more easily acquired through apps compared to other language skills. English listening apps combine materials, exercises, explanations, feedback, and communication platforms, which are more convenient and usable compared with the learning method of searching for information on the web. Most mobile apps can be downloaded for free from the application store. For college students who are digital natives, operating mobile apps is fairly straightforward.

Sina Education conducted an assessment for English listening apps in China's application market on Weibo with more than 10,000 relevant users participating (Si, 2017). The assessment was carried out based on five aspects, including ease of use, interestingness, interactivity, content quality, and customization of the study plan. The final assessment results showed six English listening apps with practical value. Among them, Scallop Listening which ranked first with the highest comprehensive score can be regarded as one of the most representative English listening apps in China. Therefore, for better representativeness of the results, the research participants in this study were selected from college students who use Scallop Listening to practice English listening.

3. Methodology

3.1 Research Design

The qualitative research method was adopted for this study, with the model of case study chosen to "add rigor, breadth, complexity, richness and depth" of the results (Flick 1998, as cited in Denzin and Lincoln, 2000, P.5). Simons (2009) defines case study as an in-depth investigation of the complexity and uniqueness of a particular project, policy, institution, program, or system in real life from multiple perspectives. A case study is a

more suitable type of qualitative research method for this study as it helps researchers develop a deep understanding of their study and create high-quality results. According to Creswell (2009), a case study can be conducted using multiple sources such as questionnaires, interviews, observations, and document analysis. The selection of instruments in this study was guided by these sources.

3.2 Participants

In this study, purposeful sampling methods were used to select participants: participants that provided the most information for the research questions were chosen according to the research purpose (Chen 2000). As this approach usually begins with a criterion, LeCompte and Schensul (2010) named it 'criterion-based selection'. The following criteria were used for this study: 1) participants must be Chinese college students who have used Scallop Listening to learn English listening in their extracurricular time, and 2) participants should have some thinking, comments, or suggestions of using Scallop Listening to learn English listening in extracurricular time, and are willing to share their experience and thoughts.

In the built-in forums of Scallop Listening, the researcher got in touch with some potential participants who met the criteria for this study. After preliminary understanding, several active college students who used mobile apps frequently to practice English listening and showed goodwill to express themselves on this topic were selected. To provide the students freedom to choose whether they would want to participate in the study, as well as to protect their rights, two documents were sent via email to each student who showed interest: an information form containing a detailed explanation of the study, and a consent form for students to sign if they were interested to participate. As planned, eight students were interviewed to provide sufficient options for the selection of final cases. Based on the quality of data provided by participants and their English proficiency level, four examples (see Table 1) that best illustrate the phenomenon of this study were selected. These students had strong personal interests in English listening and believed that classroom instruction could not help to further improve their English listening skills. As such, they resorted to mobile apps for English listening learning in their extracurricular time.

Table 1. Basic information of the four selected examples.

Pseudonym	Gender	Age
Shirley	Female	21
Revan	Male	20
Joe	Male	21
Krista	Female	19

3.3.Qualitative Instrumentation

In qualitative research, many researchers encourage the use of triangulation to ensure the validity and reliability of the study (Patton, 2001; Morse, 2009). Triangulation refers to the use of multiple methods, theories, investigators, or data sources in qualitative research, where the reliability and validity of research data and findings are tested by analyzing the convergence of information from different sources (Carter et al., 2014). According to this definition, triangulation is divided into four types: method triangulation, investigator triangulation, theory triangulation, and data source triangulation. Method triangulation, which refers to the use of more than one data collection instrument in research (Polit and Beck, 2012), was adopted in this study.

The first instrument used in this study to collect data was a semi-structured interview. The semi-structured interview allows researchers to prepare interview guidelines and key questions in advance, ensuring that the interview is always on track and the collected data can answer the research questions (Robson, 2002). As the specific questions are not fixed, researchers can make appropriate adjustments to the questions according to the specific answers of the participants and the atmosphere of the interview. Semi-structured interviews also allow for the rise of new topics that are helpful for the study. Since participants can propose new topics based on their own experience and opinion, their thoughts can be understood better.

The second instrument used was the diaries method. This is also a relatively common data collection instrument that has already been introduced into the field of education (McAlpine, 2004). Jones (2000) divides diaries into solicited and unsolicited. Solicited diaries are usually highly structured based on the template given by the researcher, while unsolicited diaries are spontaneously written without special inducements and are therefore often unstructured. Based on the researcher's own user experience with smartphone listening apps, many learners shared their study diaries in the app's built-in forums. Since the users shared these diaries spontaneously, rather than for research or survey, these online diaries were all unsolicited diaries, and the contents of these diaries were more likely to be authentic and natural. Various aspects were usually covered in these diaries, such as specific

learning processes, problems, and challenges, as well as some suggestions of apps, giving great potential to provide meaningful data for this research.

3.4 Data Collection Procedure

In this study, semi-structured interviews were conducted through WeChat from October to November 2020 based on an interview guideline. The guideline was pilot tested with two non-English majors who were not included in the formal interview. Participants were asked to answer what time and place they use smartphone apps to learn English listening outside the classroom, and both the positive and negative factors that affect their learning experience. Participants were given minimal guidance throughout the interview, and they were encouraged to express their thoughts as freely as possible. After each question, some key points were reiterated, and participants were requested to judge the accuracy of the information as understood by the researcher. Field notes were also taken as evidence for better understanding and analysis of the data gathered for the study. The average length of interviews was about 40 minutes, and the interviews were conducted in Chinese according to the preferences of the participants. Interviews were audio-recorded with participants' permission.

While collecting interview data, learning diaries in the built-in forum of Scallop Listening uploaded by Chinese non-English majors were browsed. After getting permission from the diarists, five diaries (see Table 2) with comprehensive information on the research questions were selected. These diaries were all written in Chinese.

Table 2. Basic information of the five online diaries.

Serial Number	Author (Pseudonym)	Upload Day
Diary 1	Gina	March 2019
Diary 2	Lee	October 2019
Diary 3	Eason	June 2018
Diary 4	Jane	May 2020
Diary 5	Kim	October 2020

3.5 Data Analysis

Data analysis in qualitative research is a continuous process of inductive reasoning, thinking, and theorizing, which requires researchers to constantly review, compare, and integrate the collected data until the themes are fully explained (Creswell, 1998). The framework method of thematic analysis was adopted in this study to code and classify the collected data. It makes sense of a large amount of data by reducing the amount of raw information, identifying codes, categories, and themes, and finally establishing a logical chain of evidence to answer the research questions (Patton 2002).

In this study, data analysis consists mainly of three steps: transcribing and repeatedly reading, coding and categorizing, and finally theming. The interviews were transcribed word-for-word with the help of Express Scribe. The original transcripts of interviews in Chinese were returned to the participants to evaluate the accuracy, while field notes and online diaries were sorted out to make the fragmented contents clearer. The Chinese transcripts, field notes, and online diaries were then translated into English, and back-translation was performed by two of the researcher's colleagues to confirm the accuracy. After transcribing, sorting, and translating all the data, the content was read several times with notes and annotations written for a general understanding of the collected data. Codes used to label the data were classified into different categories according to their characteristics. These extracted codes and categories were finally presented in a coherent and meaningful way to answer the research questions.

4. Results

Data in this study was collected based on two research questions. This part presents the data collected according to the two research questions both in tables and in texts.

Question 1: What time and place do participants use smartphone apps to learn English listening in extracurricular time?

The data collected for this question shows distinct characteristics in both time and place of participants using smartphone apps to learn English listening outside the classroom (see Table 3). Detailed data is given in the text as follows.

Table 3. Themes and categories of Question 1.

Theme	Category
Time of App Use	Learning Anywhere
Place of App Use	Learning Anytime; Fragmented Time

Time of App Use: Learning Anytime and Taking Advantage of Fragmented Time

When participants were asked when they would use Scallop Listening to practice English listening, participants did not give any specific time. For example, Revan stated:

"I prefer to use Scallop Listening in fragmented time, like when I'm washing my face, brushing my teeth, riding home, waiting for someone, and even sleeplessness."

Krista stated:

"I was so busy in the student union that I don't have too much time to practice English listening. Before I used Scallop Listening, a lot of my fragmented time was wasted. Now, as long as I have my smartphone with me, I can use my free time to listen at any short period, even if it's just a 10-minute wait before a meeting."

Eason wrote in his diary:

"I can finally practice English listening anytime by using Scallop Listening. It increases my interest to practice listening."

Place of App Use: Learning Anywhere

In terms of the place of app use, participants still did not give a fixed location. For example, Joe stated:

"Maybe in a bus stop, on a bus or train, on the school path, in the meeting room, at home...Everywhere as long as I have my phone."

Different from writing and reading, listening practice does not require students to stare at the screen all the time. Thus, Kim gave interesting information in his diary:

"I go running in the park every night. I used to listen to songs, but now I will open Scallop Listening to play English news. Maybe I cannot understand all the things included in the news, but I think it provides a good language context for me."

Question 2: According to participants' learning experience, which factors of smartphone apps have influenced their extracurricular English listening learning?

By categorizing and theming, data collected for this research questions can be divided into two parts. Some factors of smartphone apps have positive impacts on students' out-of-class English listening learning, while others have negative impacts (see Table 4). Detailed data is given in the text as follows.

Table 4: Themes and categories of Question 2.

Theme	Category
Factors with Positive Impacts	• Flexibility and Portability • Rich, Authentic, High-quality, and Up-to-date Listening Materials • The Function of English Proficiency Test • The Function of Recommendation
Factors with Negative Impacts	• Interference from Other Functions and Applications • Small Screen and Reflected Light • Lack of Guidance and Feedback

Factors with Positive Impacts

The collected data suggests that there are four factors of smartphone apps that can positively influence students' out-of-class English listening learning, namely flexibility and portability; rich, high-quality, authentic, and up-to-date listening materials; the function of English proficiency test; and the function of recommendation.

Flexibility and Portability

Almost all participants mentioned this factor that was similar to the conclusion from their answers for Question 1. Their English listening learning became much more convenient since smartphones are lighter and easy to carry. They could also make use of fragmented time anywhere. This concludes that the mobility of English listening learning has been greatly improved with mobile apps. For instance, Shirley stated:

"I think the best thing about Scallop Listening is that they are convenient. I can use it whenever and wherever I want."

Smartphone apps can even support offline learning now, which make extracurricular English listening learning more flexible without the shackles of network. For example, Jane wrote in her diary:

"Listening materials can be downloaded and stored in my smartphone. I can study in places without the internet, like on the subway…".

Rich, Authentic, High-quality, and Up-to-date Listening Materials

All participants mentioned that the rich English listening materials in Scallop Listening saved a lot of time that was otherwise used to search for materials themselves. The materials are also often well classified, hence users with different needs can easily find the materials they wanted in specific categories. For example, Revan stated:

"One of the great advantages of using Scallop Listening is that I don't have to buy CDs or search the listening materials aimlessly on the internet. I can quickly find the materials I need in the detailed classification, such as daily English, news, IELTS listening, and so on."

From the categories listed by Revan, some listening materials provided by smartphone apps belong to authentic materials, such as daily English and news. Authentic materials greatly help students understand actual conversations in real situations (Kim, 2013).

As materials provided by Scallop Listening are audited before publishing to the users, these materials are usually of high quality. The use of smartphone apps effectively creates a high-quality listening context for participants. The materials provided by Scallop Listening are also up-to-date. Users have new materials to choose from every day, which is especially useful for students who like to listen to the news. For example, Gina wrote in her diary:

"The materials I used to find on the internet were often unclear or incomplete, but the materials in the Scallop Listening won't be like that. They are always clear and complete, and their materials are so up-to-date that I can listen to the latest news every day."

The Function of English Proficiency Test

Participants believed the personal English proficiency test provided by Scallop Listening was useful in laying the foundation for the learner's next step of learning. For example, Shirley stated:

"It will be difficult to find suitable listening materials if I do not know my real English proficiency level."

As this function is not one-time, learners can take the English proficiency test at any time according to their own needs. Joe stated:

"This function can be used repeatedly. I use it every other month to see if I'm making progress and I will test a few more times because I think the result of only one test cannot be trusted."

This not only helps to ensure the accuracy of test results but also allows learners to check their progress at any time conveniently in the continuous learning process.

The Function of Recommendation

The smartphone app recommends appropriate listening materials to the users according to their English proficiency level and interests. Recommended materials are usually one level higher than the user's level based on the English proficiency test. Users may find it a little difficult, but their improvement is noticeable. Recommendations based on users' preferences are set by the users themselves where they are free to make adjustments whenever they want. Participants believed that such materials increased their motivation and persistence to learn English listening through smartphone apps. For example, Lee wrote in his diary:

"My favorite function of Scallop Listening is the recommendation function. Sometimes I want to do some listening but I have no target. Scallop Listening can recommend listening materials that are a little more difficult than my English proficiency level. After a period of practicing, I found this very useful in accelerating my progress. The fact that this app will also recommend materials that I was interested in is fantastic."

Factors with Negative Impacts

Data shows that three factors bring negative influence on English listening learning with smartphone apps, including interference from other functions and applications, small screen and reflected light, and the lack of guidance and feedback.

Interference from other Functions and Applications

Participants expressed that when using smartphone apps to practice English listening, they were easily distracted by other functions of a smartphone, such as messages, phone calls, and social networking tools. For example, Joe stated:

"The worst thing about using a smartphone to practice English listening is that I am always distracted by calls. I will also sometimes have the desire to use other entertainment functions during listening practice."

Small Screen and Reflected Light

The small screen of smartphones, small font size, and reflected light which easily lead to visual fatigue, also negatively affect students' learning. Of course, this is a common problem with almost all electronic devices. For example, Gina wrote in her diary:

"Sometimes even when I can't understand what I was listening to, I don't like to read the materials shown on the screen. Small screen, small font and reflected light strain my eyes."

Physical exhaustion can sometimes lead to resistance to study. In the above case, if Gina does not read the materials that she cannot understand by listening, her studying efficiency will definitely be reduced, and she may gain nothing during the listening process.

Lack of Guidance and Feedback

As one of the technical means to support autonomous learning, the smartphone app lacks guidance and feedback for students' learning process. In the absence of timely guidance and feedback, students easily fall into confusion and learning mistakes. For example, Krista stated:

"I think one drawback of smartphone apps is that they can't provide me guidance and feedback. Sometimes I need this help, especially when I feel lost and confused in the learning process."

5. Discussion

Data suggests that students use the fragmented time to practice English listening outside the classroom via smartphone apps. As such, their learning behavior is no longer restricted to a certain place but extends to wherever they can carry their smartphone (Ahonen et al., 2004). The offline function provided by smartphone apps further promotes the flexibility of learning as learning can be conducted even in places without the internet. English listening learning has almost been integrated into the daily life of college students through mobile apps (Lan and Sie, 2010), and is no longer exclusive to classroom teaching. This undoubtedly increases the time for college students to practice English listening, hence the frequency of listening learning is likely to increase from two classroom instructions a week to many times a week (Furuya et al., 2004).

In addition to portability and mobility, the other important feature of students' out-of-class listening learning with smartphone apps is individuality (Mehdipour and Zerehkafi, 2013), as confirmed in this study. Smartphone apps support the individualization of English listening learning through functions like English proficiency tests and material recommendations. Students can choose suitable materials and make individual learning plans according to their English proficiency level and interests. These materials and plans can also be adjusted anytime, supporting the individualization of students' extracurricular English listening learning. Rich, authentic, high-quality, and up-to-date listening materials provided by smartphone apps also provide a great convenience for Chinese college students to learn English listening in extracurricular time. Students can get access to plenty of high-quality learning materials without searching on the internet (Lan and Sie, 2010). Different categories of rich materials ensure that students obtain various types of listening input (Elkhafaifi, 2005). Authentic listening materials allow students to relate their learning to their lives, making their learning process more meaningful (Brown, 2004). Up-to-date materials prevent their listening skills and knowledge from falling far behind. Besides that, the recommendation function follows the principle in which the level of listening materials should be a little higher than the language level of learners, tremendously helping to improve learners' English listening skills (Krashen, 1985). Recommended materials that are in line with the learner's interest will also help increase the learner's enthusiasm for learning (Elkhafaifi, 2005). These listening strategies are helpful to make students' extracurricular English listening learning to be more efficient. However, smartphones are not designed specifically for language learning; they also contain many other features and applications. Students, especially those with poor self-control, are easily disturbed by other functions and applications (Thornton and Houser, 2005). The screen of the smartphone which is too small easily causes visual fatigue. Limited amounts of materials on each page are also not conducive to improving the learning efficiency of students (Koole, 2009). The lack of guidance and feedback may also decrease students' learning enthusiasm. In this case, students with a poor English foundation may find it challenging to learn under such circumstances.

6. Conclusion and Implications

Being among the most popular technical tools at present, smartphone apps have great potential to support out-of-class English listening learning. The findings of this study suggest that smartphone apps offer positive effects on the out-of-class English listening learning of Chinese college students. The way Chinese college students learn English listening has changed tremendously using smartphone apps. Portable devices and easy access to listening materials have made up for the lack of language context to some extent, despite language context being quite crucial for L2 learners (Tavakoli, 2008). Functions such as English proficiency tests and recommendations provided by smartphone apps make it possible for students to carry out personalized and independent learning in extracurricular time. Rich, high-quality, authentic, and up-to-date listening materials not only improve the learning efficiency of students but also provide the possibility for students to relate listening learning to real life.

However, students are easily disturbed when using smartphone apps to learn English listening, and visual fatigue due to the inherent disadvantages of electronic devices is inevitable. Current smartphone apps are also not able to provide students with timely guidance and feedback. These factors will negatively influence students' English

listening learning such as the reduction of students' learning efficiency and learning enthusiasm. Therefore, further research should pay attention to these negative factors and try to improve them.

The above research conclusions can provide some implications for related groups. Above all, non-English majors should reasonably plan their extracurricular time and make good use of smartphone apps to learn English listening outside the classroom according to their actual needs to make up for the lack of classroom teaching. They should also cultivate a good habit of consciously resisting interruptions in the process of studying due to the inherent limitations of mobile learning. Besides that, educators should not remain aloof from students' independent learning outside the classroom. Instead, they should pay attention to students' independent learning of English listening outside the classroom and encourage students to use smartphone apps for English listening learning. They also need to provide students with higher-quality listening apps that maintain the advantages of current apps and improve the existing shortcomings.

Lastly, the research scope of this study is limited by factors such as the small size of participants, the same smartphone apps, and similar English proficiency. Further research that breaks through these limitations is required to tap the greater potential of using smartphone apps in learning English listening outside the classroom.

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