Relationships among Non-English Majors' EFL Listening Practice Time, Listening Proficiency, and Proficiency Change

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Abstract

This study aimed to explore the amount of time EFL learners spent practicing listening and to assess the relationships among time, proficiency, and proficiency change. The participants consisted of 142 Taiwanese non-English majors. For 15 weeks, a daily time log was used as the instrument to measure the time spent listening. The results revealed that most students spent little time on listening materials. There were significant proficiency changes for the whole sample and the three proficiency levels. In regards to the whole sample, the total time spent on all materials did not significantly correlate with either proficiency or growth. However, significant relationships were found among time, proficiency, and gains in terms of the types of materials and proficiency levels. The daily time log with a larger sample size is recommended for further studies for a clearer understanding of the role of practice time in EFL listening acquisition.

Key words: L2/EFL listening comprehension; Practice time; Time spent listening; Listening proficiency; Proficiency change

Introduction

Due to globalization trends, English has become the current lingua franca in the global village. English language teaching has always been of vital importance in higher education in Taiwan and around the world. The proficiency movement of the 1980s and the priority of developing communicative competence in L2 learning brings listening comprehension into central focus as a critical first step toward

communication and language acquisition (Faerch & Kasper, 1986; Feyten, 1991). Various theories of second language acquisition, such as the input hypothesis (Krashen, 1982), the information processing model (McLaughlin, Rossman, & McLeod, 1983), the intake model (Chaudron, 1985), and the interaction hypothesis (Long, 1985), all emphasize the keystone of listening in second/foreign language development (Long, 1985).

Second/foreign language listening, nevertheless, is often a source of frustration for most learners (Graham, 2006; Vandergrift, 2004). Most foreign language learners seem to face listening problems although the types and the extent of difficulty might differ (Goh, 2000). In this regard, the literature on practice in cognitive psychology and second language acquisition (SLA) may shed some light on solving EFL listening problems. The power law of practice by Newell and Rosenbloom's (1981) study states that improvement in performance is obtained by a power function of practice. Ericsson and Charness (1994) claimed that practice is the most important determinant of expert performance. In the SLA literature, DeKeyser (1997) provided evidence for the ubiquitous function of practice with data from learning L2 grammar skills. Moreover, DeKeyser suggests the need for research on the amount of consistent practice to establish conditions for promoting automatization.

In this vein, the quantity of practice has been operationalized as time devoted to learning EFL listening skills in this study. Time is a limited and fixed resource for achieving learning goals in the sense that there are only 24 hours in a day to make use of. Regarding the amount of practice, Carroll's (1963) model of school learning proposed that the degree of learning is 'a function of the ratio of the amount of time the learner actually spends on the learning task to the total amount he needs' (p. 730). Nevertheless, the role of practice time in learning tends to be controversial due to conflicting evidence in empirical research on subject-matter learning and L1 reading. The seminal work by Schuman, Walsh, Olson, and Etheridge (1985) revealed a very small to no relationship between study time and college grade point average (GPA). Michaels and Miethe (1989) reported a significant relationship between study time and college grades under certain conditions. Concerning first language reading, most studies found a significant relationship between practice time and proficiency (e.g., Allen, Cipielewski, & Stanovich, 1992; Anderson, Wilson, & Fielding, 1988; Guthrie, Wigfield, Metsala, & Cox, 1999).

In the SLA literature, however, the time factor in second language (L2) learning has not received much attention (Serrano, 2011). In the limited research on the time factor in SLA, Carroll (1967) found confirmation for his model of school learning showing strong correlations between time for learning and proficiency. Swain (1981), nevertheless, questioned the assumption that time spent studying in a second language is highly related to second language proficiency for the cognitive and academic aspect of language in bilingual education programs. Moreover, most studies have dealt with time distribution in classroom instruction or program choices (intensive vs. regular) (e.g., Serrano, 2011; Stern, 1985). Specifically in Taiwan's EFL listening, Lee's (2001) study of English majors found that time spent practicing was significantly associated with proficiency. Lee (2002) reported that regular practice was one of the major factors to differentiate six successful from six less-successful English majors.

Moreover, compared to English majors, most non-English majors tended to have more listening difficulties due to lower language proficiency and lack of enough opportunity to develop aural skills in class. Regarding very limited classroom English teaching, non-English majors received two or three hours per week and only a total of six credit hours in college life for most of regular universities. One solution is to engage in out-of-class practice; listening practice is particularly suitable for non-English majors because it can be readily carried out without the need to find English speakers in person in today's multimedia world. In Taiwan, however, it could be said that most college students spend more time on the Internet than studying. According to a survey conducted by the Ministry of Education of the Republic of China (Taiwan) (R.O.C. Department of Statistics, 2003), college students spent 2.80 hours (2 hours 48 minutes) per weekday on the Internet and 2.06 (2 hours 4 minutes) on schoolwork. Another survey of college students' digital lifestyle conducted by Chang's (2009) digital audience research group showed that students spent almost 5 hours per weekday and 6 hours on weekends on the Internet. Furthermore, time serves as a necessity, not a sufficient condition because it does not function alone, merely providing an opportunity for language learning (Stern, 1985). Consequently, with the need of out-of-class English listening practice and the challenge of limited time spent on schoolwork for Taiwanese college students, it would seem that research is needed to examine students' out-of-class EFL listening practice time or learning opportunities. Particularly, the practice time of non-English majors receiving only limited

English instruction remains totally unknown. Accordingly, the role of practice time in EFL listening for non-English majors needs exploratory investigations.

To recapitulate, the purposes of this study were to explore the amount of time non-English majors spent practicing EFL listening outside of class and to examine the relationships among practice time, listening proficiency, and proficiency change.

Literature Review

Theoretical Foundations of Listening Comprehension

Similar to L1 reading (Lee & Schallert, 1997), L2 listening comprehension is a meaning construction process involving lower-level linguistic or bottom-up processing and higher-order knowledge-based or top-down processing, which interact by means of parallel distributed processing (PDP) (Rumelhart, 1975). Thus, listening comprehension includes three major kinds of processing: bottom-up, top-down, and interactive processing. Based on the linguistic knowledge of a text, bottom-up processing refers to constructing meaning by accretion from the smallest units of phonological elements to increasingly larger units of meaning. Top-down processing concerns the use of context and background knowledge for comprehending a text. According to Rumelhart's PDP model, interactive processing synthesizes both bottom-up and top-down processing, which interact simultaneously at many levels of knowledge systems rather than a serial or hierarchical process.

The most influential language comprehension model tends to be Anderson's (1995) differentiation of three interconnected and recursive stages: perceptual processing, parsing, and utilization. In perceptual processing, the acoustic message in echoic memory is originally encoded. Due to capacity limitations, attention may be directed selectively to key words or phrases, aspects of the task (e.g., pauses and acoustic emphases), or contextual elements (e.g., the type of text being used). In the parsing process, the words and messages are converted to meaningful representations. Parsing involves segmentation and concatenation to formulate propositional representations. At the utilization stage, listeners relate a mental representation of the text meaning to prior knowledge in long-term memory through spreading activation. Learners make use of real world knowledge and linguistic knowledge of prior knowledge

to elaborate on new information, predict what will occur next, and infer the unstated.

Practice in Cognitive Psychology and in SLA

Listening comprehension has been recognized as playing a pivotal role in second language acquisition. The primary assumption is that language acquisition is an implicit process in which linguistic components are internalized by extensive exposure to authentic texts (Postovsky, 1981; Winitz, 1978) and particularly to comprehensible input (Krashen, 1981) and modified interaction (Long, 1985). The belief behind modified input and interaction is that they will enhance comprehension, and enhanced comprehension will facilitate acquisition. In fact, the assumption of 'extensive exposure' has illustrated the role of the quantity of exposure in language acquisition. Moreover, Byrnes (1985) claimed that the role of input is an internalization mechanism and stated that 'the only way to achieve such highly efficient processing was through lengthy exposure to a tremendous amount of language that enabled us to fully internalize its structure' (p. 79). The quantitative aspect of listening comprehension–extensive amounts of language input or exposure–has also been emphasized. In regards to the amount of exposure, Bialystok (1978) advocated practicing strategies and defined practice as 'a language learner's attempts to increase his exposure to the language (p. 76).'

Listening fluency involves building up a set of well-learned, automatic procedures for linguistic decoding including perceptual processes and parsing so that more attention-demanding, controlled processes are freed up for bringing relevant existing knowledge for utilization (Anderson, 1995). Concerning fluency or automaticity of cognitive skills in cognitive psychology, practice plays a crucial role in Anderson's (1976) ACT (Adaptive Character of Thought) production system. Knowledge is divided into declarative knowledge represented as a propositional network and procedural knowledge represented as the production system. In the ACT-R (R as an initial of Rational) model (Anderson, 1993), the declarative knowledge is represented as knowledge units such as schemata, whereas procedural knowledge is represented by production rules. The major assertion of the ACT-R theory is that 'cognitive skills are realized by production rules' (p. 1), which consist of if-then or condition-action pairs. With practice, the knowledge is converted from declarative to procedural form. Then, procedural learning for skill speedup or improvement also obeys the power law of practice (Anderson, 1982; Newell & Rosenbloom, 1981). Consequently, practice

has been the most critical determinant of expertise in many domains (Ericsson & Charness, 1994).

In the SLA literature, DeKeyser (2007) identified practice as 'specific activities in the second language engaged in systematically, deliberately, with the goal of developing knowledge of and skills in the second language' (p. 8). He advocated that L2 skill acquisition involves three stages of development — from declarative to procedural to automatized knowledge, and practice is the major underlying mechanism. He also pointed out that automaticity is the ultimate goal to be achieved by L2 practice activities because it frees up capacity for processing the meaning of the message instead of linguistic form (Segalowitz, 2003). Furthermore, DeKeyser appealed for more research on theoretical foundations of L2 practice because practice has received little attention in the SLA field in recent decades and remains remarkably unexplored.

The Time Factor in Learning

The educational psychologist John. B. Carroll has stood at the forefront of advocating the importance of the time factor in language learning. Carroll's (1963) model of school learning states that 'the learner will succeed in learning a given task to the extent that he spends the amount of time that he *needs* to learn the task' (p. 725). The formula consists of: 'Degree of learning = f (time actually spent / time needed)' (p. 730). Time needed in learning depends on aptitude (the amount of time needed to learn under ideal learning and instructional conditions), ability to understand instruction, and quality of instruction. Time actually spent in learning involves opportunity (the available time for learning), perseverance (the amount of time the learner is willing to engage actively in learning), and aptitude (the amount of time needed to learn after adjusting for quality of instruction and ability to understand instruction), which is also the denominator of the fraction. Specifically, perseverance is similar to Brandwein's (1955) persistence, consisting of three attitudes: a marked willingness to labor beyond one's ordinary time schedules in a given task, a willingness to withstand discomfort, and a willingness to face failure. Carroll's explicated model can be summarized as follows:

$$\text{Degree of learning} = f\left(\frac{\text{opportunity} + \text{perseverance} + \text{aptitude}}{\text{aptitude} + \text{ability to understand instruction} + \text{quality of instruction}}\right)$$

Empirical Research on Practice Time

Regarding empirical research on practice time, contrary to intuitive appeal, no absolute relationship exists between the amount of time spent in learning and achievement. Results from previous studies have been inconsistent: some researchers have found significant associations, while others have found significant relationships under certain conditions or no significant correlation.

Schuman et al. (1985) conducted a series of pioneering studies, four in total, that are regarded as the most extensive research on this issue. The studies first initiated using interviews with a random sample of 424 students at the University of Michigan investigating their general study time. Next, they used questionnaires to examine students' time studied for a specific course. In the third study, study time was measured by a time-use approach – a one-day 'time chart' of all daily activities, and in the fourth study, they determined time studied at three different points over the term. The results of the first study showed a weak but marginally significant relationship between study time and GPA. However, while taking into account SAT scores and class attendance, time studied failed to be a significant predictor of grades. Moreover, associations of the two measures could not be found in the following three studies.

Regarding conditional relationships between study time and grades, Plant, Ericsson, Hill, and Asberg (2005) used a questionnaire and a one-week daily time log to measure 88 college students' study time. The findings indicated that the questionnaire-reported study time was not associated with cumulative GPA prior to the current semester or current fall semester GPA. However, study time emerged as a significant predictor of cumulative GPA when previously acquired performance (SAT scores) and the quality of study (study environment) were taken into consideration. In addition, it is worth noting that the diary-reported study time was a significant predictor of the fall GPA for those participants reporting that the diary week was normal and representative. Moreover, Michaels and Miethe (1989) employed a questionnaire to measure 676 college students' study time per week and found that study time was a significant predictor of GPA even after controlling for factors indicating study habits and background variables. They also found that the relationship between study time and grades was conditioned by some factors such as study throughout the week and year in college.

In the field of first language reading, working with 155 fifth-grade students, Anderson et al. (1988) employed a daily

diary of out-of-school activities to examine the relationship between out-of-school activities and first language reading proficiency. They developed a daily activity form that divided activities into exhaustive and mutually exclusive categories to cover the full out-of-school period. The results showed that time spent reading books was fairly strongly associated with fifth-grade reading proficiency and was the best predictor of growth in reading proficiency from the second to the fifth grade. Allen et al. (1992) replicated these findings by borrowing from Anderson et al.'s activity form and improving the design of the diary sheet to make it easier for 63 fifth-grade children. Consistent with Anderson et al.'s findings, the results indicated a significantly unique contribution of book-reading time to reading ability. Furthermore, with a questionnaire to measure the reading amount in two studies, Guthrie et al. (1999) found that the reading amount significantly predicted text comprehension even after controlling for potentially confounding variables, such as past achievement, prior knowledge, and socioeconomic status.

Finally, in Taiwan's EFL listening, working with 307 Taiwanese English majors from nine universities, Lee (2001) used the questionnaire instrument to examine the relationship between practice time and listening proficiency. The results indicated that time spent practicing was significantly positively correlated with listening proficiency both among students and across schools. Moreover, Lee (2002) interviewed six successful and six less-successful English majors to explore their differences in practice behaviors. The findings indicated that the amounts of English aural exposure and regular practice were two of the major factors that differentiated the two groups of listeners. Regarding regular practice, five out of the six successful listeners had regularly practiced listening, particularly in high school, for at least 30 minutes almost everyday for a duration ranging from one to eight years. However, none of the six less-successful listeners reported regular practice for a period of over two months in high school and college.

In summary, L2 listening acquisition is characterized by proceduralization and automatization. Owing to the power law of practice, practice tends to be a vital change mechanism for proceduralizing and automatizing listening skills. Nevertheless, regarding the relationship between the amounts of practice (specifically, absolute amounts of time spent on learning activities outside the classroom) and proficiency, a gap still exists between theoretical frame-works and empirical research for the follow-

ing two major reasons: inconsistent findings of existing studies in the domains of college academic learning and L1 reading, and little empirical evidence in L2 listening. Thus, to fill the gap in empirical studies of EFL listening, the present study aims to explore the amount of time non-English majors spent practicing EFL listening and to investigate the relationships among practice time, listening proficiency, and proficiency change. The four major research questions are as follows:

1. How much time do non-English majors spend practicing English listening outside of class?
2. Is there a change in students' listening proficiency after a 15-week study period?
3. Is there a relationship among practice time, listening proficiency, and proficiency change?
4. How can practice time predict listening proficiency and proficiency change?

Method

Participants

The target subjects in this study were 253 university non-English majors in Freshman English courses in southern Taiwan. After 111 unusable cases (43.87%) were discarded, the final sample consisted of 142 subjects (56.13%) including 140 freshmen and two sophomores/repeaters; 110 (77.5%) were female and 32 (22.5%) were male ranging in age from 18 to 26, with an average age of 18.67. The students from the school's three colleges were recruited from levels A (two classes), B (three classes), and C (three classes) of the Freshman English course to voluntarily participate in this study. The students were taught by two instructors: Levels A and C were taught by one instructor, and Level B by the researcher. Due to the high discard rate of data collection, Table 1 presents the reasons why the data were unusable. There were seven students absent during the pretest, and 36 students (14.23%) were unwilling to participate in the study. There were 68 learners (26.88%) willing to join the study, but their data was incomplete for the following reasons: 1) Ten students did not take the posttest; 2) Ten students had taken the same test as either a pretest or posttest before the study; 3) 17 learners did not return any logs; 4) 18 learners turned in logs, but the logs were all empty; 5) 12 learners handed in logs, but they did not record times (although they filled out types/names of materials) or time entries were unclear or unspecific (e.g., 'all day,' '1/2 day,' or just put a √); and 6) one student

dropped out in the midst of the data collection process.

Instrumentation

The primary instruments for the study consisted of the Daily Listening Time Log (DLTL) (see Appendix) developed by the researcher, the Marlowe-Crowne Social Desirability Scale (M-CSDS) (Reynolds, 1982; Yang, 1992), and the intermediate-level GEPT listening proficiency test. The Daily Listening Time Log was intended to quantify the amounts of listening practice out of class, including class assignments and individual additional practice. The amount of listening practice has been operational-

Table 1

Descriptions of the unusable data

Class		A1	A2	B1	B2	B3	C1	C2	C3	Total N
Original students		27	29	32	34	36	31	30	34	253
Absent: No pretest		0	0	0	0	2	3	0	2	7
Unwilling		2	2	1	10	8	1	0	12	36
Willing, but… (N=68)	Absent: No posttest	1	2	2	0	1	2	1	1	10
	Having taken the same test as either a pretest or posttest before the study	1	4	0	1	0	1	0	3	10
	Not a log returned at all	3 (1)[a]	2	2	0	4	0 (1)[a]	1	5 (1)[a]	17
	Turning in logs, but all empty	1	4 (1)[b]	0	0	0	2 (1)[c]	9	2 (1)[d]	18
	Turning in logs, but no time (only entering types/names of materials), or unclear time (e.g., "all day," "1/2 day," or put a √)	3	0	1	2	2	3	1	0 (1)[e]	12
	Dropping out later	0	0	1	0	0	0	0	0	1
Total unusable cases		11	14	7	13	17	9	12	25	111
Valid data		16	15	25	21	19	19	18	9	142

Note. [a] The number in the parenthesis indicates that the number of students had more than one unusable condition and would not be counted repeatedly. In this case, one student did not take the posttest and did not return any logs.

[b] One student had taken the same test as a pretest before and returned all empty logs.

[c] One student did not take the posttest and returned all empty logs.

[d] One student had take the same test as a posttest before and returned all empty logs.

[e] One student had taken the same test as a pretest before and returned logs with unclear time entries.

ized as the time allocated to various types of media and materials for English listening activities. The design of the log was primarily inspired by Anderson et al.'s (1988) activity forms and Allen et al.'s (1992) daily-activity diaries. The types of sources and materials were adapted from Lee's (2001) Time Spent Practicing Listening Questionnaire. The DLTL consisted of eight primary types of media for English listening, 17 types of listening materials (including one type of other), times (dates and periods), one open-ended question for feedback, and a weekly schedule for the current semester. The subjects were asked to record the beginning, end, and total time of each listening task out of class on a daily basis. The immediate record of practice time in the log was intended to avoid the difficulty in the retrospective estimation of a questionnaire technique. In addition, the weekly schedule for the current semester was used at the beginning of data collection to avoid time-conflicting entries.

To circumvent social desirability confounds for the validity of subjects' self-reported entries, the Marlowe-Crowne Social Desirability Scale was used to detect response biases on self-report measures. The short form of the scale developed by Reynolds (1982) and translated into Chinese by Yang (1992) was employed in the study. Finally, the listening comprehension section of an intermediate-level General English Proficiency Test (GEPT) was used as a standardized measure of student listening proficiency. Proficiency change was operationalized as the difference between the pretest and posttest. The GEPT is a valid, reliable, and widely recognized EFL testing system supported by the Taiwanese government, developed by the Language Training and Testing Center (LTTC), and implemented in Taiwan, China, and Vietnam. To avoid a practice effect of tests, different versions of the GEPT pretest and posttest were used.

Data Collection Procedures

The study was first conducted in late February of the spring semester. First, participants took a GEPT listening pretest. Then, they filled in the Marlowe-Crowne Social Desirability Scale. Next, the researcher explained and demonstrated how to fill in the DLTL. The participants were asked to keep the log in minutes spent listening from March 1 to June 13 for a period of 15 weeks or 105 days. In the 16th week, the participants took a GEPT listening posttest.

Data Analysis

All the quantitative data analyses were computed using the SPSS release 17.0. In addition to descriptive statistics, the dependent-samples *t* test was employed to

examine the difference between the pretest and posttest listening scores. The Pearson product-moment correlation was used to examine the relationships among listening practice time, listening proficiency, and proficiency change. Finally, simple and stepwise multiple linear regression was performed to determine how time spent practicing listening could predict listening proficiency and proficiency gains.

Results

Validity and Reliability

In regards to the validity of the Daily Listening Time Log (DLTL), the correlation between log-listening time and the M-CSDS was only -.019 (p = .823). The correlation between the frequency of DLTL entries and the M-CSDS was also only .017 (p = .843). Therefore, the DLTL tended not to be confounded by the subjects' social desirability. Concerning internal consistency reliability, the split-half reliability of the measure (the Spearman-Brown formula), based on an odd/even day split, was modest .64, and *Cronbach's alpha* yielded strong .91.

Time Spent Practicing Listening

Table 2 illustrates the descriptive statistics and the wide variation in amounts of total listening time. The results indicated that students spent an average of 72.28 minutes per week (1.20 hours per week or 10.33 minutes per day) practicing English listening (SD = 64.93), ranging from 2.00 to 349.33 minutes. The log minutes would be looked at in the correlation and regression analyses section.

Table 2

Descriptive statistics of total listening time in minutes per week

	N	M	SD	Minimum	Maximum	Skewness	SE Skewness	Kurtosis	SE Kurtosis
Minutes per Week	142	72.28	64.93	2.00	349.33	2.149	.203	5.782	.404
Log Minutes per Week	142	1.70	.40	.30	2.54	-.575	.203	.901	.404

The number of students varied with listening materials and one student could use more than one type of material; therefore, the ranking of the sum of the minutes per week on different types of materials has been used instead of the mean. Table 3 presents the means and standard deviations for the time variables. Due to the small number of subjects using the 13 types of materials, only the top four types would be closely looked at in this analysis and the subsequent analyses. A majority of the subjects (N = 137) spent some time (mean 40.99 minutes per week) on library learning resources (interactive/computer-assisted multimedia) (SD = 29.96). Most of library learning resources referred to the school assignment *Issues in English 2*. Only 24 students spent an average of 43.53 minutes per week listening to English songs on CD/MP3 (SD = 68.74), followed by 32 students spending a mean of 28.16 minutes per week on films on DVD (SD = 25.38). When considering English instructional magazines on CD/MP3, only 30 students spent a mean of 27.54 minutes per week on the material (SD = 37.33).

Table 3

Descriptive statistics of minutes per week on various listening materials

Type No.	Materials	N	Rank	Minutes Per Week Sum	M	SD
1	Library learning resources (interactive or computer-assisted multimedia)	137	1	5615.80	40.99	29.96
5	Songs on CD/MP3	24	2	1044.80	43.53	68.74
11	Films on DVD	32	3	901.00	28.16	25.38
3	Instructional magazines on CD/MP3	30	4	826.33	27.54	37.33
4	Listening proficiency tests	14	5	407.53	29.11	40.86
9	Non-instructional TV programs	12	6	338.67	28.22	36.24
16	Talking with people in English	3	7	268.00	89.33	124.34
17	Other	6	8	227.33	37.89	48.45
13	Instructional materials on the Internet	5	9	197.53	39.51	50.80
6	Non-instructional radio programs	9	10	110.67	12.30	12.06
14	Non-instructional materials on the Internet	8	11	91.87	11.48	8.77
7	Songs on ICRT	2	12	55.80	27.90	6.46
15	Films in the theater	3	13	43.87	14.62	14.93
2	Textbook-related materials	4	14	43.67	10.92	11.62
8	Instructional TV programs	1	15	40.00	40.00	.
10	Songs on MTV	3	16	35.33	11.78	14.05
12	Songs on VCD/DVD	2	17	26.00	13.00	1.41

With the exception of Type 17 (other), which included additional English lessons beyond freshman English (e.g., Journalistic English, GEPT preparation courses, and cram school), the remaining 16 types of listening materials can be divided into instructional (Types 1, 2, 3, 4, 8, and 13) and non-instructional classes (Types 5, 6, 7, 9, 10, 11, 12, 14, 15, and 16). Regarding the non-instructional materials, Types 5, 7, 10 and 12 have been further grouped together as songs, and Types 11 and 15 as films. Table 4 presents the means and standard deviations for the categories of time variables. A majority of the subjects (N = 140) spent a mean of 50.93 minutes per week on English instructional materials (SD = 38.30). Regarding non-

instructional English materials, 57 students spent an average of 51.16 minutes per week (SD = 66.98). Specifically, 29 students spent a mean of 40.07 minutes per week listening to English songs (SD = 62.88), followed by 34 students spending a mean of 27.79 minutes per week on films (SD = 25.01).

Table 4

Descriptive statistics of the minutes per week on the categories of listening materials

	Minutes Per Week			
	N	Sum	M	SD
Instructional Materials	140	7130.87	50.93	38.30
Non-Instructional Materials	57	2916.00	51.16	66.98
Non-Instructional Songs	29	1161.93	40.07	62.88
Non-Instructional Films	34	944.87	27. 79	25.01

Pretest, Posttest of the GEPT Listening Scores

Table 5 presents the results of the GEPT listening subscores. These scores include the pretest, posttest, and differences between the pretest and posttest. The mean of the pretest was 65.58 (SD = 17.17), ranging from 26.70 to 114.81. The mean of the posttest was 76.08 (SD = 16.27), ranging from 40.05 to 114.81. The mean of the difference between the pretest and posttest was 10.49 (SD = 11.80), ranging from -26.70 to 37.38. With respect to the distribution of the data, normality can be rejected if the ratios of skewness and kurtosis statistics divided by their standard errors are less than –2 or greater than +2. The results indicated that the GEPT listening scores of the pretest, posttest, and the difference between them were all fairly close to normal distributions.

Table 5

Descriptive statistics of the GEPT listening scores for the whole sample

	N	M	SD	Min.	Max.	Skewness	SE Skewness	Kurtosis	SE Kurtosis
Pretest	142	65.58	17.17	26.70	114.81	.283	.203	-.441	.404
Posttest	142	76.08	16.27	40.05	114.81	-.004	.203	-.507	.404
Difference	142	10.49	11.80	-26.70	37.38	-.198	.203	.526	.404

The subjects were divided into three groups by their pretest scores. The 35 learners who scored 80 or higher were identified as the high level group because 80

is the passing score of the GEPT intermediate level. According to the LTTC, the maximum scaled score for the GEPT listening test was 120 with a mean of 60 points. In addition, 60 was the cutoff point to most evenly separate the subjects into two groups. Thus, the 50 students who scored 60-79 were the middle level group, and the 57 learners who scored lower than 60 were the low level group. Table 6 presents the means and standard deviations on the listening proficiency measures for the whole sample and the three proficiency levels. The low level listeners achieved the most gains in listening proficiency with an average of 14.38, while the high level listeners had the least growth with an average of 3.74. The middle level group had an average score improvement of 10.79 and the whole sample 10.49. The findings of the dependent-samples *t* test showed that there was a statistically significant difference between the pretest and posttest for the sample as a whole and the three proficiency levels.

Table 6

Descriptive statistics and difference tests of the GEPT listening scores

Subjects	N	Tests	M	SD	SEM	*t*	df	*p*
Whole Sample	142	Pretest	65.58	17.17				
		Posttest	76.08	16.27				
		Difference	10.49	11.80	.99	10.597	141	.000***
High	35	Pretest	89.18	7.59				
		Posttest	92.92	11.10				
		Difference	3.74	10.45	1.77	2.117	34	.042*
Middle	50	Pretest	67.44	5.70				
		Posttest	78.23	10.95				
		Difference	10.79	11.37	1.61	6.711	49	.000***
Low	57	Pretest	49.47	7.98				
		Posttest	63.85	12.36				
		Difference	14.38	11.28	1.49	9.625	56	.000***

Note: * $p < .05$; *** $p < .001$.

Correlation and Simple/Multiple Linear Regression Analyses

As presented in Table 2, since the distribution of the total time measure was highly positively skewed and leptokurtic, Log 10 was used to transform the data to normalize the time estimates and to linearize their relationships with listening proficiency and gains. Accordingly, the skew and kurtosis of the data have improved so that the time measures were nearly normally distributed. Table 7 presents the correlations of the transformed estimates including the total amount of time on all materials, and the

time on the two instructional respective types, two major classes, and two subgroups of non-instructional materials with the measures of listening proficiency and proficiency change. The results showed that there were some significant relationships for the whole sample and three proficiency levels. Concerning the whole sample, there were two significant relationships; one is between instructional magazines on CD/MP3 and the posttest, and the other is between songs and the posttest. Regarding the high level listeners, the total amount of time spent on all materials correlated significantly with the posttest. With respect to the middle level learners, the time spent on films was significantly negatively related to both the posttest and proficiency change. With regard to the low level students, instructional magazines on CD/MP3 were significantly associated with both the posttest and gains.

Table 7

Correlations of log minutes per week spent on listening materials with the measures of listening proficiency and proficiency change

		Whole Sample		High Level		Middle Level		Low Level	
		Posttest	Change	Posttest	Change	Posttest	Change	Posttest	Change
All Materials	r	.055	.025	.354*	.047	-.124	-.099	.109	.128
	N	142	142	35	35	50	50	57	57
Library learning resources	r	-.107	.131	-.030	.066	.003	-.002	.122	.154
	N	137	137	33	33	48	48	56	56
Instructional magazines on CD/MP3	r	.381*	.135	.367	-.119	.009	-.069	.898**	.783*
	N	30	30	10	10	11	11	9	9
Instructional Materials	r	.058	.026	.076	.017	-.051	.002	.144	.092
	N	140	140	34	34	49	49	57	57
Non-Instructional Materials	r	.109	-.082	.443	.011	-.277	-.179	-.067	-.245
	N	57	57	15	15	20	20	22	22
Non-Instructional Songs	r	.495**	.129	.491	.046	.109	.160	.443	.317
	N	29	29	7	7	9	9	13	13
Non-Instructional Films	r	-.027	-.148	.363	.135	-.774**	-.682*	-.116	-.085
	N	34	34	8	8	11	11	15	15

Note: $p < .05$; ** $p < .01$.

Table 8 displays the results of linear regression analyses predicting listening proficiency and gains for the whole sample and three proficiency levels. A stepwise multiple regression analysis was performed for the whole sample due to the two independent variables (i.e., instructional magazines on CD/MP3 and songs), and a simple regression analysis was conducted with the three proficiency levels with one predictor variable. Regarding the whole sample, instructional magazines on CD/MP3 had a multiple correlation of .755, with the squared multiple correlation of .569. The final beta was .755 which was significant, $F = 7.936$, $p < .05$. The time spent on instructional magazines was a significant predictor accounting for 56.9% of the variance in the posttest. In this analysis, although the time spent on songs alone could significantly predict the posttest ($R^2 = .245$, $\beta = .495$, $p < .01$), when the instructional magazines factor was included in the regression, songs did not reach significance ($t = .575$, $p = .59$).

Table 8

Regression of listening proficiency and proficiency change on log minutes per week spent on listening materials

Subjects	Independent Variable	Dependent Variable	*R*	R^2	*F*	Sig.	Beta (β)
Whole Sample	Instructional magazines	Posttest	.755	.569	7.936*	.030	.755
	Songs	Posttest	Excluded in the stepwise regression analysis				
High Level	All materials	Posttest	.354	.126	4.739*	.037	.354
Middle Level	Films	Posttest	.774	.599	13.466**	.005	-.774
	Films	Change	.682	.466	7.838*	.021	-.682
Low Level	Instructional magazines	Posttest	.898	.806	29.072**	.001	.898
	Instructional magazines	Change	.783	.613	11.075*	.013	.783

Note: * $p < .05$; ** $p < .01$.

The time spent on instructional magazines was not only a significant predictor of proficiency for the whole sample but also both proficiency and gains for the low level group. With a view to predict proficiency for the low level listeners, instructional magazines on CD/MP3 had a multiple correlation of .898, with the

squared multiple correlation of .806. The final beta was .898, which was significant, $F = 29.072$, $p < .01$. The time spent on instructional magazines predicted significantly 80.6% of the variance in the posttest. Moreover, when predicting proficiency growth, instructional magazines had a multiple correlation of .783, with the squared multiple correlation of .613. The final beta was .783, which was significant, $F = 11.075$, $p < .05$. The model explained 61.3% of the variance in the proficiency growth.

Concerning the high level group, the multiple *R* of the whole time spent on all materials was .354, and the R^2 was .126. The final beta was .354, which was significant, $F = 4.739$, $p < .05$. The variable predicted significantly 12.6% of the variance in the posttest. To predict listening proficiency for the middle level listeners, the multiple *R* of the time spent on films was .774, and the R^2 was .599. The final beta was -.774, which was significant, $F = 13.466$, $p < .01$. The predictor accounted for 59.9% of the variance in the listening ability. Finally, as to predicting proficiency change, the time estimate of films had a multiple correlation of .682, with the squared multiple correlation of .466. The final beta was -.682, which was significant, $F = 7.838$, $p < .05$. The time spent on films contributed a significant proportion (46.6%) of the variance in the proficiency change.

Discussion

Although studies have shown that the activity diary method is a valid and reliable instrument to measure absolute amounts of time spent reading (Allen et al., 1992; Anderson et al., 1988), the truthfulness of such self-report data, particularly the problem of making up or magnifying estimates, is still a major concern. In this study, no relationship existed between the M-CSDS and the two measures – the log time and frequency of log entries. Therefore, the log tended to be valid, not to be contaminated by the social desirability effects. Thus, this study supports Plant et al.'s (2005) suggestion that the relationship between study time and grades might be stronger when students complete diary reports of their real study time for the whole semester instead of using a questionnaire in the end. In fact, due to the demand of being 'time conscious' of when to start and stop practicing listening, some students reported in written form that they had forgotten to record the time. These responses revealed the opposite problem of inflating estimates – understating time entries.

The high rate (43.87%) of invalid data not only revealed the difficulty in

compliance with data collection but also affected the reliability of this study. In addition to the 36 students (14.23%) refusing to join the study and 27 cases (10.67%) with incomplete test scores due to absences or taking the same test twice, the remaining 48 (18.97%) cases were deleted due to log entry problems. In fact, completing the log over the rather extended 15-week duration (almost one semester) of this study tended to jeopardize subjects' cooperation. This difficulty could also be found in Plant et al.'s (2005) study. Although 88 subjects were requested to complete daily time logs for only one week, 40% of the participants still failed to comply with the log entries. Finally, the respectable split-half reliability of the DLTL in the present study might have been fairly increased if the problem of unusable cases had been improved.

The positively skewed distribution of the total time spent on all materials showed that most students did little listening with a few much-time outliers. A positive skew of first language reading time has repeatedly been found in activity-diary studies (Allen et al., 1992; Anderson et al., 1988; Greaney, 1980). Surprisingly, the positive skew has also been found in this study of EFL listening. The average 10.33 minutes per day in listening practice was also very similar to book reading time in Anderson et al.'s study (M = 10.1) and Allen et al.'s study (M = 10.2). The estimate of 10.33 minutes per day tends to be much less than almost 5 hours per weekday and even 6 hours on weekends spent on the Internet in Chang's (2009) survey. In effect, it might not be enough time for enhancing listening proficiency in reference to at least 30 minutes per day by successful EFL listeners in Lee's (2002) study. The findings suggest that the lack of enough time invested in listening practice might be associated with the assorted comprehension problems (Goh, 2000).

Concerning students' proficiency change after a 15-week study period, the findings showed that significant gains have been made for the whole sample and the three proficiency levels. The lower the proficiency level was, the more the proficiency improvement occurred. In this study, the low level listeners achieved the most gains (M = 14.38), followed by the middle level listeners (M = 10.79), while the high level listeners had the least growth (M = 3.74). The results appeared to comply with the law of diminishing returns, that is, the gains in proficiency were made rapidly at the low level, less rapidly at the middle level, and slowly at the high level.

In addition to the estimate of the total amount of time for the whole sample, the

results reported in this study indicated that the relationships among practice time, listening proficiency, and proficiency growth could vary depending on the types of listening materials and proficiency levels. Concerning the factor of types of materials, although the total time spent on all materials was not correlated with listening proficiency or proficiency change for the sample as a whole, the time spent on instructional magazines on CD/MP3 contributed significantly to listening proficiency for the 30 users across proficiency levels, and to both listening proficiency and proficiency change particularly for the nine low level listeners. The results seemed to be surprising because library learning resources, the most often used material by most of the students, was not related to listening proficiency or learning growth, while instructional magazines with much less users did predict listening ability for the whole sample and even both ability and ability improvement for the low level learners. The findings suggest the role of instructional magazines on CD/MP3 in EFL listening proficiency and the usefulness of this type of materials in improving listening proficiency, particularly for the low level learners. However, the small number of users in the current study (N=30, 21% of the subjects) was also found in Huang's (2006) study of vocational high school listeners (N=19, 6% of the participants). In fact, according to Lee's (2002) study of Taiwanese English majors, five out of the six successful listeners had regularly and persistently listened to instructional magazines, particularly in high school. Thus, teachers can encourage students to use instructional magazines on CD/MP3 for out-of-class listening practice and help them maintain a regular practice schedule for at least one year.

Other surprising findings were concerned with the negative correlations between the time spent on films and both listening proficiency and proficiency change for the 11 middle level users. The further results indicated that the 11 middle level film listeners achieved an average score improvement of 9.22. Thus, the more students spent time on films, the lower their proficiency and the less they made gains. In this regard, Vanderplank (1988,1993) reported that captioned/L2 TV programs were useful for language development (i.e., new and unfamiliar words and phrases). He suggested that captions benefited learners who were approximately at intermediate level or higher since learners below intermediate level might have problems with lexis, grammar, and reading speeds. As for proficiency levels, it is worth noting that indeed the high level group in this study was at intermediate level since they had passed

the intermediate-level GEPT listening test, and listeners at middle and low levels tended to be at elementary level. Thus, as suggested by Vanderplank (1988, 1993), one possible reason for the negative correlation between time spent on films and both gains and proficiency for the middle level listeners in this study might be that their L2 proficiency was below intermediate level. Moreover, based on the findings of captioning videos in Sydorenko's (2010) and Winke, Gass, & Sydorenko's (2010) studies, it was possible that the middle level group watched films with Chinese/L1 subtitles rather than English/L2 captions for language learning since authentic films tended to be too difficult for the middle level group at elementary level to parse the speech stream for comprehension. Even with captioning texts, they might still have problems with English vocabulary, grammar, and reading speeds (Vanderplank, 1988). In fact, using the American sitcom *Friends* on DVD for a self-access learning project, most of Taiwanese non-English majors in Guo's (2012) study reported that their biggest problem was insufficient English language proficiency that caused listening difficulties to rely heavily on Chinese subtitles.

Regarding the effectiveness of film watching, the results appeared to support Vanderplank's (1993) suggestion that captioned feature films are not beneficial to language development due to their entertainment overshadowing language learning. One possible explanation of the findings in this study is that most students watched films (including sitcoms in this study) with L1 subtitles for pleasure without repeating watching with L2 captions and without captions. As one female student reported on the open-ended question that she had the best time watching *Friends* and could eat food while viewing the sitcom, most students might pay much more attention to L1 meanings for comprehending interesting films (and sitcoms) than L2 listening comprehension and L2 aural and written word forms and meanings.

Finally, the total time spent on all materials was significantly correlated with listening proficiency, contributing significantly to listening ability for the high level listeners. The finding of the relationship is in line with the results of Lee's (2001) study of Taiwanese English majors, which yielded significant positive relationship between the whole time spent on all materials and listening proficiency. Vandergrift (2006) explored the relative contributions of L1 listening ability and L2 proficiency to L2 listening ability and concluded that both of them play significant roles in L2 listening ability, with L2

proficiency, particularly vocabulary knowledge, being a much better predictor. Consequently, the high level listeners in the present study could be inferred to have adequate English language proficiency, despite the fact that there was no direct measure of language proficiency in the study. While spending time on various kinds of materials, the high level listeners attaining a threshold level of L2 proficiency (Cummins,1979) tend to effectively make use of both top-down and bottom-up processing strategies instead of constantly bottom-up strategies struggling with lower level processes of many unknown words (O'Malley, Chamot, & Küpper, 1989) as is the case for the low level group. The findings suggest the intervening role of L2 proficiency in mediating the relationship between listening practice time and listening proficiency.

Conclusion

This article has described the amount of students' time spent practicing listening and the relationships among practice time, listening proficiency, and proficiency change. In the case of the correlational data, it must be remembered that correlation does not necessarily imply causation. The results of this study showed that most students spent little time in listening activities; they primarily spent very limited time on library learning resources, followed by songs, films, and instructional magazines on CD/MP3. There were significant listening proficiency changes for the whole sample and the three proficiency levels. Two factors were involved in the relationships among time, proficiency, and gains: types of materials and proficiency levels. For the sample as a whole, no significant relationship existed between the whole time spent on all materials and proficiency or growth. However, the time spent on instructional magazines significantly positively predicted proficiency for the whole sample, and both proficiency and gains particularly for the low level listeners. The only significantly negative predictor of both proficiency and proficiency change was the film-watching time for the middle level listeners. The total time significantly positively predicted proficiency only for the high level listeners. Moreover, the present findings suggest that daily time logs tend to be a more valid and reliable instrument to measure time although it is also a more difficult or demanding tool for subjects. Finally, except for library learning resources, the remaining songs, films, and instructional magazines all yielded a small number of users. Future research with a larger number of subjects is recommended for a clearer understanding

and better generalization of the role of practice time in EFL listening acquisition.

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Appendix

Daily Listening Time Log: Example

I. School assignments:

Media/Sources	Names/ Types of Materials	3/1 (Sun.)	3/2 (Mon.)	3/3 (Tues.)	3/4 (Wed.)	3/5 (Thur.)	3/6 (Fri.)	3/7 (Sat.)
Interactive/ computer-assisted multimedia	*Issues in English 2*	**Time Beginning – End (Total) 8:00 – 8:50 p.m. (50 min)**						

II. Your individual additional practice: If appropriate, please fill in the form with the code. If not, fill in with words.

A. Library learning resources (interactive or computer-assisted multimedia)

B. CD, MP3

B1 English instructional materials, such as textbook-related CD.

B2 English instructional magazines, such as *Studio Classroom* on CD/MP3.

B3 The listening section of the GEPT, TOEFL, or TOEIC on CD/MP3。

B4 English songs.

C. Radio

C1 Non-instructional radio programs, such as programs on the ICRT channel.

C2 English songs on ICRT.

D. TV

D1 Instructional English TV programs, such as *Studio Classroom*.

D2 Non-instructional English TV programs, such as HBO movies, CNN news, *Discovery* programs.

D3 English songs on MTV

E. VCD, DVD

E1 Non-instructional materials, such as films on DVD.

E2 English Songs on VCD/DVD.

F. Internet

F1 English instructional materials, such as *Dave's ESL Cafe*.

F2 Non-instructional English materials, such as ICRT or CNN。

G. Theater: English films.

H. Social interaction: Talking with people (e.g., native English speakers, teachers, classmates, or friends) in English.

I. Other (please specify)

Media/ Sources	Names/ Types of Materials	3/1 (Sun.)	3/2 (Mon.)	3/3 (Tues.)	3/4 (Wed.)	3/5 (Thur.)	3/6 (Fri.)	3/7 (Sat.)
A	*Study Skills Success*	**7:00 – 7:30 p.m. (30 min)**						