# Self-efficacy and Time Spent Learning English: Differences among Taiwanese Students from Medical, Arts, and Comprehensive Universities

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## Abstract

The purpose of this study is to examine the relationship between self-efficacy and time spent learning English by students in different majors in Taiwan. The participant sample was comprised of 375 students from 20 academic departments at 8 colleges in 3 universities in Taiwan. Eighty-eight students studied at an arts university, 75 at a medical university and 212 at a comprehensive university. The EFL Learner Self-Efficacy Scale (ELSS) questionnaire was used. It was divided into three sections covering the cognitive aspect (11 items), affective aspect (13 items), and ability aspect (17 items). The results indicate that the self-efficacy level of medical students was the highest of the 3 aspects. The self-efficacy level of arts students in the cognitive and ability aspects was higher than those of comprehensive university students. Also, a two-way ANOVA indicated a significant interaction between learning time and students' schools in the three aspects of self-efficacy.

**Keywords:** self-efficacy, EFL, learning strategies, Taiwanese students

## Introduction

Self-efficacy has been examined and applied in various fields such as education, health, business, sports, and interpersonal relations. In recent years, it has begun to shed some light on language teaching and learning. In the Taiwanese context, learning English is an important task for college students. English is one of the required subjects on the college entrance exam, and students' English proficiency levels one of the benchmarks used for university graduation; therefore, students cannot neglect or abandon learning English. According to Bandura (1986), self-efficacy is the belief that a person can succeed in performing a given task. Specifically, they defined self-efficacy as, "students' judgment of their capabilities to organize and execute courses of action required to attain designated types of performance" (p. 391). Self-efficacy plays a critical role in the language learning process; it can either facilitate or hinder learners' progress (Bandura, 1984). EFL (English as a Foreign Language) students often have problems with learning English not because they are incapable of learning successfully, but because they do not believe that they can do it (Bandura, 1986); in other words, they often learn to perceive themselves as incapable of using English. Based on the literature justifying the role of positive self-efficacy as one of the essential indicators of, and contributors to, effective EFL learning, this study examines differences in self-efficacy beliefs in learning English among students with different majors in Taiwan.

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Taiwanese students learn English from elementary school until senior high school. During these years of studying English, endless tests and exams occupy students' school lives. They have been spoon-fed with lectures and provided with model answers which are only vaguely connected with independent study skills, problem-solving skills, or critical thinking skills (Yong, 2010). University English classes are usually four to six credits. According to the Annual Report by the Ministry of Education in Taiwan, approximately 93% of universities have established an English threshold for graduation (Her, Chou, Su, Chiang, & Chen 2013), so it is a specific academic task that university students must achieve. A significant amount of self-efficacy is required to overcome problems associated with language requirements, assessments from specific majors, and study skills. This study seeks to help university teachers understand the nature of students' self-efficacy, and to shed light on the importance of the factors that have contributed to the development of students' self-efficacy beliefs. Finally, it will help teachers use the results of students' learning strategies or techniques and motivate learners to try their best to complete tasks.

## Self-Efficacy

Self-efficacy was conceptualized by Bandura (1977) based on clinical work with phobic patients from a cognitive-behaviorist perspective, the purpose was to help patients overcome a fear of snakes and enhance their self-belief in their ability to do so. Bandura (1986) stated that unless people believe their actions can lead to the outcomes they desire they have little incentive to engage in an activity, or they may not persevere when they are facing difficult tasks. Self-efficacy has proved to be a powerful element influencing students' motivation, achievement, and self-regulation (Bandura, 1997; Pajares, 1997). In the language classroom, self-efficacy can be defined as students' judgments of their capabilities to perform certain tasks in specific situations (Bandura, 1986; Pajares, 1996). When students believe they can do a certain task, they are more likely to engage deeply and persist with the task, and they will likely put in more effort during the task (Urdan & Turner, 2005).

Self-efficacy can be said to be a powerful predictor of achievement in measuring cognitive ability (Pajares & Kranzler, 1995). Self-efficacy beliefs regulate human functioning through cognitive, motivational, affective, and decisional processes. They can affect how students motivate themselves and persevere when they are faced with difficulties in learning English, and they can also affect the quality of their emotional lives and vulnerability to stress. Many students possess knowledge and skills that are not used in the right way. Therefore, knowledge alone does not ensure effective study. Students must also be guided by a belief in their ability to effectively use their knowledge within a given context (Bandura, 1997).

Why is self-efficacy imperative? Bandura (1997) stated that it influences the way people make choices, the courses of action they pursue, the effort they will expend, how long they will persist in the face of problems, and how resilient they are when facing different situations. The higher the sense of efficacy people have, the greater the effort, persistence, and resilience they show. Self-efficacy also affects people's thought patterns and emotional reactions. People with high self-efficacy are often calm and peaceful when approaching difficulties. Conversely, people with low self-efficacy may believe things are tougher than they really are; they start to nurture a notion that feeds anxiety, stress, depression, and which creates obstacles for themselves in how best to solve problems (Bandura, 1986). Time spent learning an academic subject also accounts for a large portion of students' lives (Alsaker & Flammer, 1999; Csikszentmihalyi & Larson, 1984). Bassi, Steca, Fave, and Caprara's (2007) study found that students with high self-efficacy spent more time doing homework, and mainly associated learning activities with optimal experiences, which means a state of high concentration, involvement, control of the situation, clear goals and feedback, and satisfaction and intrinsic reward (Csikszentmihalyi & Csikszentmihalyi, 1988). The study also examined how time spent learning English correlated with students' self-efficacy levels, which means that students with high self-efficacy spend more time engaging with English learning activities.

Judgments of self-efficacy differ from performance in three ways (Bruning, Schraw, & Norby, 2011). The first is the level of task difficulty. Even students with high self-efficacy in one domain may not be willing to take another challenging class. Lack of prior knowledge or strategies necessary to do well in that class may also hinder students from doing well. The second difference identified by Bruning et al. (2011) is the generality of students'

self-efficacy. This means some students feel able to perform well in almost any academic setting, while others feel confident in only one or two settings, and others have little self-efficacy in any domain. The third difference is the strength of students' self-efficacy judgments. Students with weak perceptions of self-efficacy may doubt their ability to perform a task when observing poor performance. However, students with a strong sense of self-efficacy will likely persevere in the face of difficulties.

Self-efficacy is students' judgments of their ability to perform a task within a specific domain (Schunk, 1991). Accordingly, high self-efficacy in one academic subject does not guarantee high self-efficacy in another subject. However, Wolters and Pintrich (1998) stated that self-regulation may not vary according to context. They compared the self-regulated learning of 545 students in mathematics, English, and social studies, and the results revealed no mean level differences in regulatory strategy use among the subjects. Miller (2000) explored the sources of self-regulated learning in English and math, and determined that these two subjects exhibit a strong positive correlation. Other studies (Buehl & Alexander, 2005; McClelland et al., 2007; Pintrich & De Groot, 1990; Stodolsky & Grossman, 1995) have supported this viewpoint. While it appears that self-efficacy does not vary according to context, the nature of the relationship between self-efficacy and time spent learning a foreign language across student populations remains to be empirically found out.

## Research Questions

This paper aims to address these research questions:
1.  Does the time that university students in Taiwan spend on English activities outside the classrooms correlate with the students' self-efficacy?
2.  What are the students' EFL self-efficacy levels in cognitive, affective, and ability aspects among students in different fields?

## Methodology

### Participants
A total of 375 students in 20 academic departments at eight colleges in three universities—an arts, comprehensive, and medical university—in Taiwan participated in this study. Eighty-eight students from the arts university (23.47%), 75 students from the medical university (20%), and 212 students from the comprehensive university (56.53%) were invited to complete questionnaires (see Table 1). All invited students were first-year students who took General English classes which were required courses at all three universities.

### Materials
The EFL Learner Self-Efficacy Scale (ELSS) questionnaire was adopted and revised from Gorsuch's study (2009). The questionnaire consisted of two sections. Section I surveyed participants' background information and the questions regarding how much time students estimated they spent, or provided an amount of time in hours or by minutes, when engaging in relevant English activities: reading textbooks, watching movies or television programs, listening to radio programs, chatting online, or engaged in authentic conversation. Section II adopted questions from Gorsuch's questionnaire and included three sections: a cognitive aspect, an affective aspect, and a future expectancy. Gorsuch's four-stage self-efficacy scale was used to generate, refine, and merge items with the three constructs. A 6-point Likert scale was used to answer all questionnaire items (6 = *this very much fits me*, 5 =*this fits me*, 4 = *this fits me a little*, 3 = *this does not fit me very much*, 2 = *this does not fit me*, and 1 = *this does not fit me at all*). In Gorsuch's questionnaire, there were three sections: a cognitive aspect, an affective aspect, and future expectancy. Zimmerman and Schunk (2008) argue that students with high self-efficacy persist longer when they face difficult tasks and activities, but that this does not mean that they feel no emotions such as anxiety. Bandura (1997) states that emotions that might affect a learners' performance may be deferred, controlled, or channeled. Therefore, learners have both cognitive and emotional responses when encountering different tasks and making cognitive and emotional judgments about their abilities to do these tasks or activities. In this study, the "future expectancy"

section was changed into the "ability" aspect and the phrasing of the questions was modified accordingly. The meaning of the questions was not changed, only the tense was altered into the present tense. Therefore, the use of "future expectancy" was not suitable and thus changed to "ability" because self-efficacy is concerned with students' beliefs in their abilities to do a task (Bandura, 1994). For example, the initial phrase of original questions concerning future expectancy, "I will be able to..." was revised as, "I am able to …" to indicate that students were able to perform certain tasks. Question 1 on Gorsuch's self-efficacy scale, which originally stated, "I will be able to use the L2 to greet people who are the same age as I" was changed to, "I am able to use English to greet people who are the same age as I." The cognitive aspect was comprised of 11 items, the affective aspect of 13 questions, and the ability aspect of 17 questions, constituting a total of 41 questions.

Table 1

*Structure of Students from 20 Academic Departments*

| Major | Numbers of Students | Percentage | Schools |
|---|---|---|---|
| Crafts & Design | 6 | 1.6 | Arts Univ. |
| Public Administration | 1 | 0.3 | Comprehensive Univ. |
| Bio-Technology | 31 | 8.2 | Medical Univ. |
| Multimedia & Animation Arts | 9 | 2.4 | Arts Univ. |
| Fine Arts | 7 | 1.9 | Arts Univ. |
| Music | 2 | 0.5 | Arts Univ. |
| Banking & Finance | 1 | 0.3 | Comprehensive Univ. |
| International Business | 30 | 7.9 | Comprehensive Univ. |
| Chinese Music | 2 | 0.5 | Arts Univ. |
| Educational Technology | 54 | 14.3 | Comprehensive Univ. |
| Visual Communication Design | 7 | 1.9 | Arts Univ. |
| Motion Pictures | 9 | 2.4 | Arts Univ. |
| Electrical Engineering | 71 | 18.8 | Comprehensive Univ. |
| Graphic Communication Arts | 19 | 5.0 | Arts Univ. |
| Management Sciences | 55 | 14.6 | Comprehensive Univ. |
| Dance | 2 | 0.5 | Arts Univ. |
| Radio & Television | 10 | 2.6 | Arts Univ. |
| Sculpture | 1 | 0.3 | Arts Univ. |
| Drama | 14 | 3.7 | Arts Univ. |
| Medicine | 44 | 11.6 | Medical Univ. |

The reliability of the questionnaire was verified by using an SPSS reliability test. The Cronbach's alpha of the overall questionnaire was .902, indicating high reliability. The three aspects of the questionnaire, cognitive, affective, and ability, exhibited Cronbach's alpha values of .861, .822, and .910 respectively.

**Procedure**

During regular class hours, the questionnaires were distributed in classrooms and explained to students. The students granted their permission and were told that they had the choice not to complete the questionnaires or to withdraw at any time. The students completed them anonymously and any incomplete questionnaires were regarded as invalid and not included in the study.

## Results

Section I of the questionnaire addressed basic information and activities relevant to English. Of the students, 174 were female and 201 were male. Moreover, 197 students were 18 years old, 178 students were 19 years old,

and the average age was 18.65. When asked in Q3 how many years they had been studying English, the students indicated that, on average, they had learned English for 10.35 years.

The students were asked to estimate the time, either by hours or by minutes, that they engaged in activities relevant to English outside of the classroom per week. They reported to spend approximately 10.69 hours per week (see Table 2). Although one student each from medicine and electrical engineering spent about 100 hours reading English novels and books, on average, students reported reading in English for 2.91 hours per week. Most students reported watching English TV programs and movies for an average of 3.65 hours per week, but one student from international business indicated that they watched TV programs and movies for about 42 hours per week. In addition, students reported browsing English web pages for approximately 1.71 hours a week, and spending 0.59 hours per week listening to English radio programs, with the exception of two students from public administration and electrical engineering who reported listening to English radio programs for more than 15 hours per week. Also, students reported chatting in English with friends and classmates online for approximately 1.11 hours per week. However, students did not report chatting entirely in English, instead favoring a mix of Mandarin and English. They reported speaking in English with Taiwanese or international acquaintances for 0.75 hours a week.

Table 2
*Reported Hours of English Learning and Using Per Week*

| Items | *M* | *SD* | Maximum hours |
|---|---|---|---|
| Total hours spent doing activities in English | 10.35 | 3.07 | 128 |
| Reading Books written in English | 2.42 | 3.6 | 100 |
| Watching English TV programs and movies | 3.65 | 5.45 | 42 |
| Browsing English web pages | 1.71 | 2.55 | 14 |
| Listening to English radio programs | .59 | 1.57 | 15 |
| Doing online chat in English | 1.11 | 2.99 | 21 |
| Making English Conversation | .75 | 1.04 | 6 |

The students at the three universities were compared with the differences listed in Table 3. The medical students spent approximately 13.88 hours every week performing English-related activities, namely reading books (6.19 hours), watching English TV programs and movies (3.37 hours), browsing English web pages (2.30 hours), listening to English radio programs (0.44 hours), online chatting in English (0.70 hours), and conversing in English (0.87 hours). Arts students spent 6.87 hours every week engaged in English activities, devoting 0.73 hours to reading books, 2.71 hours to watching English TV programs and movies, 1.19 hours to browsing English web pages, 0.51 hours to listening to English radio programs, 1.04 hours to chatting in English online, and 0.66 hours to speaking in English. Comprehensive university students spent 11.12 hours performing English-related activities; specifically, they read books for 2.64 hours, watched English TV programs and movies for 4.14 hours, browsed English web pages for 1.72 hours, listened to English radio programs for 0.67 hours, chatted in English online for 1.29 hours, and spoke English for 0.74 hours.

Table 3
*Results of Basic Information and Relevant English Activities of the Three Universities*

| Items | Schools | *M* | *SD* |
|---|---|---|---|
| Total hours in English activities | Medical University | 13.88 | 17.22 |
| | Arts University | 6.87 | 6.25 |
| | Comprehensive University | 11.12 | 13.99 |
| Reading Books written in English | Medical University | 6.19 | 11.87 |
| | Arts University | .73 | 1.20 |
| | Comprehensive University | 2.64 | 7.58 |
| Watching English TV programs and movies | Medical University | 3.37 | 5.44 |
| | Arts University | 2.71 | 2.41 |
| | Comprehensive University | 4.14 | 6.26 |
| Browsing English web pages | Medical University | 2.30 | 3.00 |
| | Arts University | 1.19 | 1.52 |
| | Comprehensive University | 1.72 | 2.68 |
| Listening to English radio programs | Medical University | .44 | .96 |
| | Arts University | .51 | 1.20 |
| | Comprehensive University | .67 | 1.86 |
| Performing online chat in English | Medical University | .70 | 1.72 |
| | Arts University | 1.05 | 3.72 |
| | Comprehensive University | 1.29 | 2.99 |
| Making English Conversation in real daily life | Medical University | .87 | 1.04 |
| | Arts University | .66 | 1.08 |
| | Comprehensive University | .74 | 1.02 |

A one-way ANOVA was conducted to measure significant differences in the time that students at the three universities spent performing activities in English (Table 4). Significant differences were observed in the total number of hours spent performing activities in English (F=6.924*, p = .001 < .05), and especifically reading books written in English (F= 10.08*, p = .000 < .05) and browsing English websites (F= 3.89*, p = .021 < .05).

A post hoc was used to further investigate the differences between the three schools. Significant differences are shown in Table 5. For the total hours spent engaged in English activities, significant differences existed between arts and medical students, and arts and comprehensive university students, but no significant differences were detected between medical and comprehensive university students.

Students from the three universities spent different amounts of time engaging in English-related activities. To determine whether the time spent correlated with student self-efficacy, a correlation test was conducted. The results revealed an overall significant correlation (r = .113, p = .039< .05). Significant correlations were also observed in the cognitive (r = .112, p = .034< .05) and affective (r = .114, p = .030 < .05.) aspects. However, no significant correlation was observed in the ability aspect.

The cognitive, affective, and ability aspects are itemized in Table 6. The mean scores were 37.61 (S.D. = 8.64) in the cognitive aspect, 43.44 (S.D. = 9.50) in the affective aspect, and 60.18 (S.D. 2.54) in the ability aspect. The medical students exhibited the highest self-efficacy levels in all three aspects. The self-efficacy levels of the arts students in the cognitive and ability aspects was higher than that of the comprehensive university students.

When the three aspects were compared using an ANOVA, significant differences were observed in the cognitive aspect (Table 7). However, no significant differences were noted in the affective or ability aspects.

Table 4
*One-way ANOVA of the Time Spent on English activities by Students from the Three Universities*

| Items | Source | SS | df | MS | F | Sig. |
|---|---|---|---|---|---|---|
| Total hours doing activities in English | Treatment | 1994.12 | 2 | 997.06 | 6.92* | .001 |
| | Error | 52268.57 | 363 | 143.99 | | |
| | Total | 54262.69 | 365 | | | |
| Reading books written in English | Treatment | 1233.47 | 2 | 616.73 | 10.08* | .000 |
| | Error | 22400.70 | 366 | 61.20 | | |
| | Total | 23634.17 | 368 | | | |
| Watching English TV programs and movies | Treatment | 131.99 | 2 | 65.99 | 2.24 | .108 |
| | Error | 10851.03 | 368 | 29.49 | | |
| | Total | 10983.03 | 370 | | | |
| Browsing English web pages | Treatment | 49.63 | 2 | 24.82 | 3.89* | .021 |
| | Error | 2357.02 | 369 | 6.39 | | |
| | Total | 2406.65 | 371 | | | |
| Listening to English radio programs | Treatment | 3.51 | 2 | 1.76 | .71 | .492 |
| | Error | 911.13 | 369 | 2.47 | | |
| | Total | 914.64 | 371 | | | |
| Doing online chat in English | Treatment | 19.92 | 2 | 9.96 | 1.12 | .329 |
| | Error | 3291.56 | 369 | 8.92 | | |
| | Total | 3311.48 | 371 | | | |
| Making English Conversation | Treatment | 1.89 | 2 | .94 | .867 | .421 |
| | Error | 397.84 | 366 | 1.09 | | |
| | Total | 399.73 | 368 | | | |

*Note.* $* p < .05$.

Table 5
*Post-hoc Test of the Three Schools*

| Items | Group Comparison | Mean Difference | Sig. |
|---|---|---|---|
| Total hours in English activities | Medical university Arts university | 7.01 | .001*** |
| | Comprehensive university Arts university | 3.81 | .037* |
| Reading Books written in English | Medical university Arts university | 5.46 | .000*** |
| | Medical university Comprehensive university | 3.98 | .000*** |
| Browsing English web pages | Medical university Arts university | 1.11 | .015* |

*Note.* $* p < .05$. $*** p < .005$

Table 6
*Summary of the Three Self-Efficacy Aspects*

| Items | Schools | M | SD |
|---|---|---|---|
| Cognitive Aspect | Medical University | 39.81 | 9.17 |
| | Arts University | 37.83 | 7.15 |
| | Comprehensive University | 36.74 | 8.89 |
| Affective Aspect | Medical University | 44.25 | 10.11 |
| | Arts University | 41.14 | 7.96 |
| | Comprehensive University | 42.66 | 9.69 |
| Ability Aspect | Medical University | 85.00 | 12.63 |
| | Arts University | 61.32 | 10.96 |
| | Comprehensive University | 58.85 | 12.98 |

Table 7
*One-way ANOVA of the Cognitive, Affective, and Ability Aspects*

| | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Cognitive | Treatment | 494.874 | 2 | 247.437 | 3.388* | .035* |
| | Error | 26803.569 | 367 | 73.034 | | |
| | Total | 27298.443 | 369 | | | |
| Affective | Treatment | 271.265 | 2 | 135.633 | 1.520 | .220 |
| | Error | 32827.479 | 368 | 89.205 | | |
| | Total | 33098.744 | 370 | | | |
| Ability | Treatment | 794.436 | 2 | 397.218 | 2.578 | .077 |
| | Error | 53473.933 | 347 | 154.104 | | |
| | Total | 54268.369 | 349 | | | |

A post hoc test was again used to further investigate the differences between the three schools (see Table 8). A significant difference was shown in the cognitive aspect between medical and comprehensive university students.

Table 8
*Post-hoc Test of the Three Schools*

| Items | Group Comparison | Mean Difference | Sig |
|---|---|---|---|
| Cognitive | Medical university Comprehensive university | 2.99 | .027* |

*Note.* * $p < .05$.

A two-way ANOVA was implemented to determine the main effects and interactions between the two independent variables: time and school (See Table 9). In the cognitive aspect, there was no time main effect ($F = 2.54$, $p = .112$) and no school main effect on mean cognitive scores ($F = 1.71$, $p = .183$). However, there was a significant interaction between time spent on English learning activities and different schools in the cognitive aspect of self-efficacy ($F = 4.18$, $p = .016$). In the affective aspect, there was no time main effect ($F = 1.00$, $p = .317$) and no school main effect on mean affective scores ($F = .84$, $p = .433$). A significant interaction was found between time spent on English learning activities and different schools in the affective aspect of self-efficacy ($F = 4.04$, $p = .018*$). In the ability aspect, there was no time main effect ($F = 2.88$, $p = .091$) and no school main

effect on mean cognitive scores ($F = .782$, $p = .458$). A significant interaction was revealed between time spent on English learning activities and different schools in the ability aspect of self-efficacy ($F = 4.98$, $p = .007*$).

Table 9
*A Two-way ANOVA of the Cognitive, Affective, and Ability Aspects by Time and School*

|  | Source | SS | Df | MS | F | P |
|---|---|---|---|---|---|---|
| Cognitive | Time | 182.72 | 1 | 182.72 | 2.54 | .112 |
|  | Schools | 245.49 | 2 | 122.745 | 1.71 | .183 |
|  | Time * Schools | 600.77 | 2 | 300.384 | 4.18 | .016* |
|  | Error | 25567.70 | 356 | 71.819 |  |  |
|  | Total | 538742.00 | 362 |  |  |  |
| Affective | Time | 87.07 | 1 | 87.07 | 1.00 | .317 |
|  | Schools | 145.414 | 2 | 72.71 | .84 | .433 |
|  | Time * Schools | 700.35 | 2 | 350.18 | 4.04 | .018* |
|  | Error | 30961.99 | 357 | 86.73 |  |  |
|  | Total | 714970.00 | 363 |  |  |  |
| Ability | Time | 435.09 | 1 | 435.09 | 2.88 | .09 |
|  | Schools | 236.32 | 2 | 118.16 | .78 | .458 |
|  | Time * Schools | 1502.95 | 2 | 751.48 | 4.98 | .007* |
|  | Error | 50905.78 | 337 | 151.06 |  |  |
|  | Total | 1293447.00 | 342 |  |  |  |

*Note*. * $p < .05$.

As shown in Figure 1, the more time medical students spent on learning English, the higher their self-efficacy attitudes in the cognitive, affective, and ability aspects increased. For arts students, no matter how long they studied English, no significant correlations were found within the cognitive and affective aspects, but in the ability aspect, the more time they spent, the higher their ability aspect was. For students from a comprehensive university, the longer they spent learning English, their self-efficacy levels decreased in the cognitive, affective, and ability aspects.
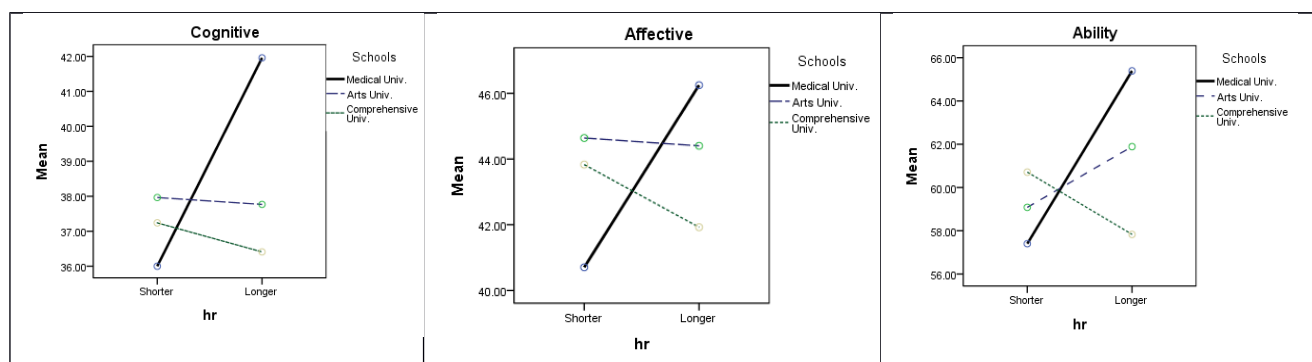


*Figure 1.* Relationship between studying time and self-efficacy.
*Note*. The solid line refers to the medical university, the dashed line the arts university, and the dotted line the comprehensive university.

Table 10
*Descriptive Statistics for Self-Efficacy*

|  |  | Med. | A | C | All |  |  | M | A | C | All |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Q1 | M | 3.64 | 3.49 | 3.37 | 3.45 | Q21 | M | 3.49 | 3.49 | 3.14 | 3.30 |
|  | SD | 0.88 | 0.82 | 1.06 | 0.96 |  | SD | 1.03 | 0.81 | 1.04 | 1.00 |
| Q2 | M | 3.75 | 3.59 | 3.44 | 3.54 | Q22 | M | 3.53 | 3.51 | 3.26 | 3.37 |
|  | SD | 0.87 | 0.77 | 0.98 | 0.92 |  | SD | 0.98 | 0.93 | 1.04 | 1.01 |
| Q3 | M | 3.81 | 3.76 | 3.65 | 3.71 | Q23 | M | 3.76 | 3.64 | 3.52 | 3.60 |
|  | SD | 0.85 | 0.74 | 0.98 | 0.91 |  | SD | 0.84 | 0.86 | 0.97 | 0.92 |
| Q4 | M | 3.48 | 3.23 | 3.21 | 3.27 | Q24 | M | 3.21 | 3.21 | 3.07 | 3.13 |
|  | SD | 0.96 | 0.85 | 1.06 | 1.00 |  | SD | 0.99 | 0.82 | 0.99 | 0.95 |
| Q5 | M | 3.40 | 3.27 | 3.24 | 3.28 | Q25 | M | 4.01 | 3.85 | 3.77 | 3.84 |
|  | SD | 1.08 | 0.89 | 1.01 | 0.99 |  | SD | 0.83 | 0.83 | 0.90 | 0.88 |
| Q6 | M | 4.05 | 3.81 | 3.56 | 3.72 | Q26 | M | 3.61 | 3.36 | 3.34 | 3.32 |
|  | SD | 0.59 | 0.72 | 0.94 | 0.85 |  | SD | 0.96 | 0.88 | 2.21 | 0.97 |
| Q7 | M | 3.99 | 3.93 | 3.70 | 3.81 | Q27 | M | 3.58 | 3.40 | 3.25 | 3.35 |
|  | SD | 0.74 | 0.60 | 0.84 | 0.78 |  | SD | 0.95 | 0.77 | 0.99 | 0.94 |
| Q8 | M | 3.69 | 3.48 | 3.52 | 3.54 | Q28 | M | 3.43 | 3.24 | 3.10 | 3.20 |
|  | SD | 0.97 | 0.91 | 1.02 | 0.99 |  | SD | 1.09 | 1.00 | 1.02 | 1.04 |
| Q9 | M | 2.99 | 2.83 | 2.90 | 2.90 | Q29 | M | 3.60 | 3.50 | 3.26 | 3.38 |
|  | SD | 0.91 | 0.84 | 1.03 | 0.96 |  | SD | 1.08 | 0.89 | 1.02 | 1.01 |
| Q10 | M | 3.23 | 3.30 | 2.95 | 3.09 | Q30 | M | 3.89 | 4.24 | 3.92 | 3.99 |
|  | SD | 1.17 | 0.86 | 1.09 | 1.07 |  | SD | 0.92 | 0.70 | 0.89 | 0.86 |
| Q11 | M | 3.79 | 3.19 | 3.07 | 3.16 | Q31 | M | 3.80 | 3.76 | 3.53 | 3.64 |
|  | SD | 3.68 | 0.90 | 1.03 | 1.01 |  | SD | 0.89 | 0.85 | 0.97 | 0.93 |
| Q12 | M | 3.40 | 3.62 | 3.57 | 3.55 | Q32 | M | 3.64 | 3.45 | 3.21 | 3.35 |
|  | SD | 1.03 | 0.81 | 0.97 | 0.95 |  | SD | 0.83 | 0.82 | 0.99 | 0.94 |
| Q13 | M | 3.89 | 3.77 | 3.62 | 3.71 | Q33 | M | 3.89 | 3.79 | 3.65 | 3.73 |
|  | SD | 0.75 | 0.76 | 0.92 | 0.85 |  | SD | 0.85 | 0.73 | 0.89 | 0.85 |
| Q14 | M | 3.16 | 3.21 | 3.17 | 3.18 | Q34 | M | 3.69 | 3.78 | 3.70 | 3.71 |
|  | SD | 0.92 | 0.84 | 1.02 | 0.96 |  | SD | 0.87 | 0.72 | 0.94 | 0.88 |
| Q15 | M | 3.07 | 3.32 | 3.23 | 3.22 | Q35 | M | 3.70 | 3.62 | 3.59 | 3.62 |
|  | SD | 1.03 | 0.88 | 0.93 | 0.94 |  | SD | 0.93 | 0.80 | 0.96 | 0.92 |
| Q16 | M | 3.19 | 3.51 | 3.33 | 3.34 | Q36 | M | 3.52 | 3.41 | 3.25 | 3.34 |
|  | SD | 1.09 | 0.89 | 0.95 | 0.97 |  | SD | 0.86 | 0.88 | 0.96 | 0.93 |
| Q17 | M | 3.49 | 3.33 | 3.05 | 3.20 | Q37 | M | 3.65 | 3.48 | 3.43 | 3.48 |
|  | SD | 1.08 | 0.83 | 1.05 | 1.03 |  | SD | 0.91 | 0.88 | 0.99 | 0.95 |
| Q18 | M | 2.96 | 2.90 | 2.83 | 2.87 | Q38 | M | 3.55 | 3.49 | 3.39 | 3.45 |
|  | SD | 1.07 | 0.81 | 1.07 | 1.02 |  | SD | 1.04 | 0.87 | 1.04 | 1.00 |
| Q19 | M | 3.41 | 3.49 | 3.25 | 3.34 | Q39 | M | 3.38 | 3.32 | 3.22 | 3.27 |
|  | SD | 0.95 | 0.76 | 0.96 | 0.92 |  | SD | 1.00 | 0.93 | 1.04 | 1.00 |
| Q20 | M | 3.68 | 3.63 | 3.48 | 3.55 | Q40 | M | 3.87 | 3.87 | 3.71 | 3.78 |
|  | SD | 1.00 | 0.93 | 0.93 | 0.95 |  | SD | 0.88 | 0.71 | 0.86 | 0.83 |
|  |  |  |  |  |  | Q41 | M | 3.79 | 3.67 | 3.59 | 3.65 |
|  |  |  |  |  |  |  | SD | 0.83 | 0.82 | 0.97 | 0.91 |

*Note*. Med. = Medical Students, A = Arts Students, C = Comprehensive university students.

Table 10 shows the mean scores, using a Likert scale, regarding the 41 questions which indicated students' opinions towards self-efficacy. The question with the highest mean score was Q30 (M=3.99, SD = 0.86), which asked whether students planned to continue studying English. Q25, which was used to determine whether the students were able to use English to greet their classmates, exhibited the second highest mean score (M=3.84, SD = 0.88), and Q40, which asked the students whether they could use simple words when they could not remember certain vocabulary terms, exhibited the third highest mean score (M=3.78, SD = 0.83). Q18 (M=2.87, SD = 1.02), which asked whether the students liked to describe an experience to their teachers, received the lowest mean score. Students liked to speak English to their classmates, but not to their teachers because they felt nervous and feared making mistakes. This was consistent with the finding regarding the question with the second lowest mean score, Q9 (M=2.90, SD = 0.96); students were not confident enough to take an oral English test. Q24, which was used to determine whether students liked to use English to communicate with teachers or classmates to help them understand their perspectives, received the third lowest mean score. For medical students, Q6, Q25, and Q7 received the top three highest mean scores. These students believed that they could understand English public notices, read or write emails in English, and greet their classmates in English. By contrast, Q18, Q9, and Q15 obtained the bottom three lowest mean scores, indicating that students did not like to speak to teachers, take an oral test, or answer questions in English. For arts students, Q30, Q7, and Q40 received the top three mean scores. Arts students exhibited the strongest desire to continue studying English out of all participants, and had various opportunities to travel abroad to participate in performances, exhibitions, and competitions; English was considered a survival skill for them. Q9, Q18, and Q11 received the three lowest mean scores, indicating that the arts students did not like to speak in English. For comprehensive university students, Q30, Q25, and Q40 received the top three mean scores. Students liked to study English and used it to talk with their classmates. The three questions with the lowest mean scores were Q18, Q9, and Q10. Like medical and arts students, comprehensive university students did not like to use English in the classroom or for tests. They did not believe that they would have to do much class work in English or sit in lectures that were conducted entirely in English.

## Discussion

In answering the first research question, *does the time that university students in Taiwan spend on English activities after class correlate with the students' self-efficacy?* English education in Taiwan begins in elementary school, except in remote areas, where it begins in junior high school. Students spend an average of 10.35 years learning English. At universities, freshman English classes last from 4 to 6 hours per week. According to Table 2, all participants spent approximately 10.69 hours engaging in English-related activities outside of the classroom; activities such as reading, listening to radio programs, and watching TV or movies. Medical students spent 13.88 hours performing English activities, whereas arts students only devoted 6.87 hours to English activities. In medical school, textbooks, journal papers, and medical terms are usually written in English, affording students opportunities and incentives to study English. However, the textbooks and student reports of arts students are normally written in Chinese. Table 3 shows that medical students spent 6.19 hours studying books written in English, whereas arts students spent only 0.73 hours. Arts students used their time engaging in professional training for dance, painting, or music rather than studying English because studying English was unnecessary for their academic domain and would require sacrificing practice time. In other words, if they spent time on academic work, then they would not have enough time to practice their specialties. However, arts students browsed English web pages to search for current information related to their fields. Therefore, according to ANOVA results, significant differences were observed in these two categories.

Regarding the question concerning whether time spent on English activities was correlated with self-efficacy, significant and positive correlations were observed. This means students with high self-efficacy are willing to spend more time using English; this finding is consistent with the results reported by Bassi, Steca, Fave, and Caprara (2007) which indicated that students with high self-efficacy spend more time on activities with optimal learning experience. In addition, this finding is also consistent with the results of Schunk and Pajares (2009) which indicate that self-efficacy can influence the choices students make and the courses of action they

pursue. Students are inclined to select tasks and activities in which they feel confident and competent and avoid tasks in which they do not. Unless students believe that activities will produce desired outcomes, they have little motivation to spend time engaging in them. Self-efficacy enables students to decide how much effort to expend on certain activities and how long to persevere when encountering obstacles (Schunk & Pajares, 2009). The current study verified that self-efficacy correlates with time spent learning English. Medical students are required to read numerous textbooks and journal papers written in English as well as being required to attend numerous international conferences and write English on medical charts when working in hospitals, in addition to their required General English classes. However, for arts students, time results in no significant differences on the cognitive and affective aspects, but it results in a significant difference in the ability aspect. Also, for comprehensive university students, their self-efficacy in the cognitive, affective, and ability aspects decreases when their time engaging in English activities after class increases; these results were unusual. A possible interpretation could be that comprehensive university students were the majority of the participants, and their academic preferences were the lowest among the three schools. Nevertheless, the odd data for arts students and comprehensive university students suggests a need for further investigation.

Regarding the second research question (What are EFL students' self-efficacy levels regarding cognitive, affective, and ability aspects?), the results revealed that the item with the highest mean score was Q30, which asked whether the students wanted to continue studying English. These results surprised all the students' English teachers, indicating that university students care about learning English because they must receive a certain score on an English proficiency test to graduate and are aware of the importance of English in the job market. As mentioned, the average length of English education is 10.35 years; because students had already taken English exams for approximately 10 years, they wanted to begin to understand how to use English in their daily lives. The results regarding the questions that received the three lowest scores indicated that students preferred to speak everyday conversational English rather than to take an oral test or speak to English teachers. That students like to learn and practice conversational rather than formal English is a helpful reference for teachers who teach general English in Taiwan.

There is, however, a gap between students' preferences and needs. Balancing these two aspects is a major challenge for teachers. Reading and writing are the two main skills that medical students must learn because they must read English textbooks, papers, and journals and write medical charts. Speaking is the least essential skill that the students require for their futures because they will not be required to speak English with patients. The arts students desired to study English even though they did not like to speak it. However, speaking is the most crucial skill for them at the present and in the future because they may need to explain their artwork or performances to audiences in English. The comprehensive university students knew the importance of English, but did not have the ability to use it to talk to teachers or for class work. The results regarding the students from three types of university illustrate that the students know that English is imperative and would like to study it, but are afraid of speaking it in formal settings, such as with teachers or during presentations.

The medical students exhibited the highest scores in the cognitive, affective, and ability aspects of self-efficacy, thus answering the third research question (Does self-efficacy vary among students from medical, arts, and comprehensive universities?). Although Bandura (1997) suggested that high self-efficacy in an academic subject does not guarantee high self-efficacy in another subject, this suggestion was not supported in this study. Medical students are at the top of their classes upon entering university. To gain admittance to medical school, students must have received top scores in every subject, including Chinese, English, Science, and Math. This study indicated that medical students gain high self-efficacy by comparing themselves with students from the other two types of university. An ANOVA was used in this study and it revealed a significant difference in the cognitive aspect, but not in the affective or ability aspects for the three universities. Bandura (1982) proposed that students with high self-efficacy and high expectations regarding outcomes are confident in their ability to perform a task; they take opportune action and exhibit high cognitive engagement. This conforms to Pajares and Kranzler's (1995) point of view that self-efficacy is an effective predictor in measuring students' cognitive abilities. By contrast, although the arts students were regarded as low academic achievers because of the substantial amount of time they invested in professional practice, their self-efficacy levels were not the lowest; this result

engendered two questions that could be addressed in a future study. First, is time invested in learning English a crucial factor for arts students? If arts students spend the same amount of time learning English as other university students, will their English proficiency levels differ markedly? Second, when arts students are highly confident and self-efficacious within their professions, can that confidence and self-efficacy be transferred to learning English? The results show that arts students received the lowest mean score in the affective aspect, so teachers should be aware that when preparing classes, it is critical to encourage arts students to interact with teachers and their classmates. The result also conforms to one of the author's previous findings (Tseng, 2014a) that speaking is the weakest skill for arts students and the one they wish to practice more.

## Pedagogical Implications

This study reveals that students spend approximately 10 hours per week involved in English activities aside from general English class. They all wish to continue studying English even when their required language classes have been completed, and for arts students, time makes no difference in the cognitive and affective aspects, but it does make a difference in the ability aspect. It is suggested to provide a space such as an online learning website, a language learning resource center, or an open access center for students to gain access to sufficient English learning materials. Also, the study verifies that some EFL students dislike making conversation and they are not confident speaking English. More elective courses such as conversation, oral presentation, or speech should be provided for students.

## Further Suggestions and Conclusion

When investigating the relationship between time spent in relevant English activities and the cognitive, affective, and ability aspects, the results that appear for arts students and comprehensive university students are not as predicted. In the future, this peculiarity merits further investigation, especially for arts students. In one of the author's previous studies, a similar situation occurs in contradiction to the present theory. For example, Tseng (2013) investigated the relationship between arts students' English proficiency levels and self-efficacy. The results revealed no significant correlations, indicating that arts students' English proficiency levels have nothing to do with their self-efficacy capacities. Tseng (2014b) compared students of different English proficiency levels with their self-regulatory capabilities, finding no significant differences between high and low English proficiency levels of arts students, meaning that students' self-regulatory capabilities had no apparent relationship with their English proficiency levels. Are arts students' learning styles really different from other EFL students? Further studies should be conducted to resolve this phenomenon. Regarding the research method, a triangulation could be applied in a future study to get a better picture to evaluate and examine the differences in students' self-efficacy levels. Triangulation is a research tool of the social sciences and it is a process used to combine two or more theories, data sources, methods, or researchers in one study; it can be employed in both quantitative and qualitative studies (Yeasmin & Rahman, 2012).

Self-efficacy is a powerful predictor of achievement and a measure of academic success. This study revealed that self-efficacy levels in English learning were the highest among medical students. A positive, and significant, correlation between time spent using English and self-efficacy was observed; students with higher self-efficacy were willing to spend more time learning English. Being proficient in English is an advantage when job seeking or pursuing further education, and therefore students continue to study English even outside of their English classes. This study determined that although student self-efficacy levels differed among majors, all students exhibited strong motivation to continue studying English.

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