# THE EFFECTS OF EXTENSIVE READING VIA E-BOOKS ON TERTIARY LEVEL EFL STUDENTS' READING ATTITUDE, READING COMPREHENSION AND VOCABULARY

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**ABSTRACT**
This study investigates the effects of extensive reading of e-books on tertiary level EFL students' English reading attitude, reading comprehension and vocabulary. Eighty-nine participants were assigned in two groups, with 46 students in the experimental group and the other 43 students in the control group. In addition to a traditional curriculum for both groups, a ten-week e-book extensive reading program was conducted for the experimental group by encouraging students to read the materials freely from three e-book library collections categorized on the basis of level of difficulty. In contrast, the control group did not engage in any extensive reading program. Stokmans's Reading Attitude questionnaire and TOEFL reading comprehension and vocabulary test were employed to collect the data. The findings of the study showed that the experimental group exhibited significantly better reading attitude, reading comprehension and vocabulary than the control group. Therefore, integrating e-books extensive reading program into EFL teaching program helps improve tertiary level EFL students' reading attitude, reading comprehension and vocabulary learning.
**Keywords**: Extensive reading, e-books, reading attitude, reading comprehension, vocabulary,

**INTRODUCTION**
Extensive reading, sometimes for pleasure reading (Day & Bamford, 1997; Dungworth, Grimshaw, McKnight, & Morris, 2004), sustained silent reading (Garan, & DeVoogd, 2008; Kelley, & Clausen-Grace, 2006; Reutzel, Fawson, & Smith, 2008), or free reading (Krashen, 1996; 2004), has been drawing increasing attention from ESL and EFL researchers and educators as an effective reading instruction in teaching English as a second/foreign language (Grabe, 2009, 2010; Lems, 2005; Mason, 2003; Nation, 2009; Yamashita, 2004). Extensive reading is relaxing, informal, and allows students to choose materials based on their English proficiency level and their interests. Also, it involves reading large quantities of text for general understanding of content with the purpose of having pleasure, and includes individualized and independent reading, which gives students the chance to select the materials based on their own interest without the discussion of texts in class (Bamford & Day, 2004; Brown, 2009; Chun, Choi, & Kim, 2012; Green, 2005; Hashimoto, & Okazaki, 2012; Kirin, Poolsap, & Plongthong, 2012; Lituanas, Jacobs, & Renandya, 2001; Safaeia, & Bulca, 2013; Susser & Robb, 1990; Takase, 2007; Yamashita, 2008).

Theoretical support for extensive reading in the field of L2 research comes from the input hypothesis (Krashen, 1982) arguing for comprehensible input as the sufficient condition for L2 acquisition and/or the reading hypothesis (Krashen, 1993). This trend in line with the recent popularity of computer assisted language learning (CALL) had led educators and researchers to believe that the interactive and lively nature of reading on Web and e-books, which may contain multimedia elements and animated content impossible to be shown on printed papers, can evoke better reading comprehension and vocabulary acquisition than traditional printed medium (Grimshaw, 2007; Groot, 2000; Korat, 2010; Korat & Shamir, 2012; Lai, Tsai & Yu, 2009; Liu, Chen, & Chang, 2010; Liu, Moore, Graham, & Lee, 2003; Marzban, 2011; Maynard, 2005; Moody, 2010; Rhodes & Milby,

2007; Rusanganwa, 2013; Smeets & Bus, 2012; Stakhnevich, 2002).

Thus, introducing e-books into extensive reading program proved to be useful for supporting young children's literacy and language development (De Jong & Bus, 2003; Lefever-Davis & Pearman, 2005). The facilitative effect of e-book extensive reading (ER) for both first and second language learners on various abilities/skills such as vocabulary development and writing skill has also been reported (Adamson, 1995; Day & Bamford, 1997; Elley, 2000; Krashen, 1993). For instance, Huang and Liou (2007) selected sixteen articles from the computer corpus of a local English magazine and used them to construct an online English extensive reading program. The reading program was conducted with 38 college students over twelve weeks, based upon vocabulary gains from a pretest to a posttest. The results showed that learners improved their vocabulary scores after participating in the reading program. Also, Hou (2006) investigated the impacts of using alternative learning strategy on improving students' reading and writing skills in an extensive reading program. Participants were forty college students of an EFL class in southern Taiwan, and were expected to implement extensive reading from both traditional print and web-based reading materials. It was found that this activity did improve their writing skills. In particular, half of the students who had failed in the General English Proficiency Test (GEPT) finally passed the test after the extensive reading program training required for writing class.

**Studies on learners' reading attitude in e-books extensive reading**
The section reviews relevant previous literature on learners' reading attitude as a result of the implementation of extensive reading via e-books extensive reading program. A number of studies have reported that in addition to skills or literacy improvement on ESL/EFL learners, extensive reading program can also help enhance learners' English reading attitude in affective domain. For instance, Safaeia and Bulca (2013) reported that after participating in the extensive reading program, students could read as they like, and had stronger self-confidence to internalize what they had read. Also, their creativity in second language skills was highly improved.

Similarly, Matthew (1996) proposed that "reading and interaction with a book on a computer screen has the potential to be a powerful motivating force for even the most reluctant readers" (p. 380). Chu (1995) invited three first graders to read five stories in electric versions and documented their performance in their hands-on interactions, spontaneous/kinesthetic responses, and group discussions. The results showed that participants demonstrated high interest in reading e- books. She concluded that "reading computer books was exciting, meaningful, and most of all, enjoyable" (p. 361).

Traditionally, the implementation of extensive reading studies were reported by using print (Asraf & Ahmad, 2003; Bell, 2001; Hayashi, 1999; Hitosugi & Day, 2004; Horst, 2005; Mason & Krashen, 1997; Powell, 2005; Robb & Susser, 1989; Rodrigo, Greenberg, Burke, Hall, Berry, Brinck, Joseph, & Oby, 2007; Sheu, 2004; Taguchi, Takayasu-Maass, & Gorsuch, 2004), on-line (Arnold, 2009; Pino-Silva, 2006; Sun, 2003), or the combination of both (Rankin, 2005). When compared with traditional print text medium, integrating online text material into extensive reading program is less represented.

Among the three programs using electronic texts as reading material (Arnold, 2009; Pino-Silva, 2006; Sun, 2003), Sun (2003), for instance, conducted the study to investigate 59 university students' attitude toward Extensive Reading Online (ERO). Data were collected, including 1,770 reflection entries, 2,852 annotated words in one semester, and 44-item 5-Point-Likert Scale questionnaire was embedded with the constructs of system interface design, language learning benefits, perceived progress and learner attitude. The results showed that the participants had a positive attitude toward the extensive reading program and the system in enhancing their language skills. Also, students' Internet reading ability was improved and they became more capable of finding reading materials. These were all important for establishing learners' independence and autonomy in L2 reading.

Also, Arnold (2009) conducted an online extensive reading program on learners in learning German as a foreign language. Participants were seven undergraduates (including two freshmen) and one graduate student, including three male and five female students. All of them were English native speakers aged from 18 to 23, and had formally studied German for two to seven years. These students had mixed proficiency levels and were instructed to read German reading material according to their own interest. Data were collected from learners' self-report data including a reading questionnaire at the beginning of the semester, reading reports for each extensive reading session, two student reflections about the reading sequence and their progress, and end-of-semester questionnaire about the program. Overall, this modified extensive reading program did increase students' reading motivation, attitude, confidence in L2 reading, reading ability, and reading pleasure outside class.

**Extensive reading as a support for reading comprehension and vocabulary**

In addition to the influence on learners' reading attitudes, extensive reading has been recognized as one of the most effective ways to enhance reading rate, comprehension and vocabulary due to large amount of repeated exposure to interesting and meaningful L1/L2 reading materials (Asraf & Ahmad, 2003; Davis, 1995; Ellis, 1995; Elley, 2000; Elley & Mangubhai, 1983; Hitosugi & Day, 2004; Kirin, Poolsap, & Plongthong, 2012; Mason & Krashen, 1997; Yamashita, 2008). For instance, Lefever-Davis and Pearman (2005) stated that "e-books can indeed be a powerful tool and an asset to the teaching of reading". (p. 453). It has also been indicated that the e-books can facilitate students' learning by reading more actively with simultaneous audio and visual input (McFall, 2005). Hayashi (1999) also confirmed the benefits of ER (i. e., extensive reading) by examining 100 Japanese sophomores' reading methods and the relationship between reading ability and the reading quantity. In a word, extensive reading effectively helped improve reading comprehension and vocabulary ability. It corresponded with Krashen's (1985) "Input Hypothesis" the lower Affective Barrier set, the more Comprehensive Input got, and the more language acquisition developed, learners' vocabulary could be improved by extensive reading, which is emphasized in reading for pleasure without pressure.

Cho and Krashen (1994) investigated four Koreans immigrated into the U.S ranging from five months to seven years, and they had little or no pleasure reading in English before the study. After finishing 8 through 23 books, the subjects showed an increase in their vocabulary development and general improvement in their second language proficiency. Similarily, Yamashita (2008) explored the effects of extensive reading on different aspects of foreign language ability, including the general reading ability and lower-level linguistic ability. Thirty-one Japanese university freshmen participated in the extensive reading study. Though learners' linguistic ability like spelling and morphosyntax did not exhibit significant improvement, learners had great improvement for reading ability. In a two- year "Book Flood" experiment (Elley & Mangubhai, 1983), eight rural Fijian elementary schools were invited to join the program. Fourth- and fifth- graders were assigned to three groups, including the traditional audio-lingual method group, free reading group, and the shared reading group. The latter two were the "book flood" groups. Results showed that the Book Flood groups did better in reading comprehension, vocabulary recognition, and listening competence.

A review of related literature has shown that there is still conflicting evidence or inadequacy in previous research. For instance, previous extensive reading studies mostly placed emphasis on how much students could read instead of emphasizing the extent to which students could read voluntarily (Yamashita, 2004). Furthermore, using online material or e-books is less representative in extensive reading program literature. Also, the research design in previous extensive reading studies was often criticized for the drawback of lacking a control group (Lin, 2010). Without a control group, it is hard to rule out those factors that might confound the result of the experiment.

In order to fill the gap, this study attempts to investigate the effect of English e-book extensive reading on the attitude and reading comprehension of tertiary level EFL students, a less represented population. This is because in previous studies, the participants participating in extensive reading programs were mostly either 5-year junior college students (Sun, 2003; Yang, 2001) or high school students (Lin, 2010; Krashen, 2008); so far, limited studies were conducted to investigate tertiary level EFL students with technology-related majors. Evidence from the literature suggests that the underlying cognitive processing in different culture, disciplines, or age, by implication, may be tapped differently due to socio-cultural, environmental and processing factors, which, in turn, may affect the learning style language learners prefer to use in discovering the meaning in language use (Dunn & Griggs, 1995). Technological university students represent a population who may possess specific learning style in language use. In view of cultural, disciplinary and age specificity, the findings from English speaking L1 children may not be generalized to tertiary level EFL students. Hence, the present study which intends to investigate whether extensive reading via e-books will help enhance tertiary level EFL students' reading attitude, reading comprehension, and vocabulary is valuable and significant.

The research questions of this study were: (1) Does the e-books extensive reading program used in this study affect tertiary level EFL students' English reading attitude, including utility, development, enjoyment, and escape construct? (2) Does the e-books extensive reading program used in this study affect tertiary level EFL students' English reading comprehension (3) Does the e-books extensive reading program used in this study affect tertiary level EFL students' English vocabulary? The hypothesis is that extensive reading of e-books will help enhance tertiary level EFL students' reading attitude, reading comprehension, and vocabulary.

**METHODOLOGY**
**Participants**
To ensure the homogeneity of learners' background, all 89 (58 male and 43 female) technological university freshmen aged from 18 to 19 from two classes participated in this study. A total of 46 freshmen was in the

experimental group while the other 43 students in the control group. The participant background questionnaire was administered to collect demographic information of the participants. These students majored in management and engineering, and have learned English as a required subject for 10 years at school. Based on their performance of the Mock TOEIC test administered to the participants at the beginning of a semester, the participants scored around 446 in average.

**Experimental training program**
This study took place during the first semester of 2010. The extensive training program was administered to the experimental group in the third week in September in 2010, and lasted for the subsequent ten weeks.

In this study, while the control group receives only regular English classes, the experimental group receives supplementary extensive reading program via e-books in addition to regular English classes. The experimental group was encouraged to read articles from the categorized library collections in selected websites. In an orientation toward the e-book extensive reading program (ERP) for students, introduction of the extensive reading program and the demonstration of finding the e-books from the categorized collections in selected websites were provided. According to Coady (1997, p. 234), it is crucial to choose the extensive reading materials matching the reader's interest, background knowledge so that it could benefit and encourage the readers to read large amount with successful comprehension. Therefore, in order to choose books with convenience according to our participants' reading level, the researcher categorized the e-books into three library collections named Green Hill, Blue Ocean, Brown Volcano, arranged from the easiest to the most difficult based on authenticity (Bamford & Day, 1997; Nuttall, 1996) and simplification (Day & Bamford, 1998; Cho & Krashen, 1994; Nuttall, 1996). In addition, Coady (1997) also proposed that after reading, the short reviews, summaries or responses to the reading content could check readers' reading comprehension in process. Therefore, for checking their progress and encouraging them to challenge themselves to obtain better achievements, the students were asked to complete some tasks like finding out key words/ phrases worth studying in this reading and guessing the meaning from the context, connecting the contents of the reading selection to current or past real world events and experiences, finding passages they would like to/should hear, and their reflection toward the reading text in the weekly individual reading journals as well as groups' reading worksheets.

Also, it was made clear that students could choose any book according to their interest and proficiency after the diagnosis pretest. However, the participants were allowed to read beyond their level if they liked the challenge. Also, they could read for the overall meaning of the content at their own speed, and were encouraged to read as much as possible in their free time outside the class. The suggested least amount of reading time for the participants was two hours a week, as recommended by Susser and Robb (1990) so as to achieve the benefits of extensive reading.

Before the experiment, pretests assessing students' reading attitude, reading comprehension, and vocabulary were conducted in the first and the second weeks of September in 2010. After the experiment, posttests were conducted in the same semester with another version of Reading Comprehension Tests adapted from the TOFEL 2000 reading test, the same Stokmans's Reading Attitude Scale and another version of Schmitt et al. (2001) vocabulary test. The following section describes the instruments that were used for the pretests and the posttests in this study.

**Instruments**
The instruments that were employed in this study included Stokmans's Reading Attitude Scale (1999), the TOEFL reading test (2000), and the vocabulary test developed by Schmitt et al. (2001), which were administered both in the pretests before intervention and the posttests after intervention.

The same version of Stokmans's Reading Attitude Scale (1999) was used before and after the intervention of extensive reading via e-books to determine the participants' reading attitude. It contained twenty-four items with the format of 5-point Likert scale ranging from strongly agree (5) to strongly disagree (1). The 24 items were designed to explore how participants' reading attitude reflected on four dimensions including utility (6 items), development (6 items), enjoyment (6 items) and escape (6 items) respectively. With regard to the reliability of the test, the Cronbach's α values of the four constructs were 0.78, 0.8, 0.87 and 0.82 respectively. This confirms that the questionnaire had high reliability.

Two versions of English reading comprehension tests adapted from the TOFEL 2000 reading test were administered to determine the participants' reading comprehension before and after the experiment in the pretest and the posttest. Each version was composed of 20 multiple choice questions with different reading topics. They

were in the same format.

Two versions of vocabulary level tests, developed by Schmitt et al. (2001), were given to both groups to assess their vocabulary size before and after the 10-week training period. The vocabulary test is highly recommended by Cameron (2002), and is the most commonly used test to measure readers' vocabulary size (Zhou, 2010). The tests were divided into five levels including the 2,000 word level, the 3,000 word level, the 5,000 word level, the 10,000 word level, and the academic vocabulary. Each level contains 60 words, and was further divided into 10 categories. The total number of words in each version of the vocabulary level test is 300 words. In addition, two versions of the vocabulary test were used in the pretests and the posttest. Both versions of tests were in the same test format. Finally, the researcher calculated the sum of correct choice in every test.

**Data Analysis**
To address the three research questions, an independent and a paired samples *t*-tests were conducted to examine any difference before and after the implementation of the training program in students' English reading attitude, reading comprehension and vocabulary size. Also, ANCOVA analysis with pretest as a covariate was used if there was any significant group difference in the pretest of attitude, reading comprehension or vocabulary test. After neglecting the by group effect from the pretest, we analyzed the result by using ANCOVA to determine if there was significant difference in the two groups' posttest of reading attitude, English reading comprehension and vocabulary.

**RESULT AND DISCUSSION**
In this section, the results of the statistical analysis are presented to answer the three research questions of the study.

**The effect of e-books extensive reading on tertiary level EFL students' English reading attitude**
The results of pretests showed (see Table 1) that no significant group differences were found in reading attitude, and reading comprehension tests before we implemented the training program in this study, but significant group difference was found in vocabulary.

Table 1 *Group Comparison for the Pretest in Reading Attitude, Reading Comprehension and Vocabulary*

| Pretest | Experimental group (N = 46) | | Control group (N = 43) | | | |
|---|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | *t* | *p* |
| Reading attitude | 3.35 | 0.62 | 3.31 | 0.51 | 0.62 | 0.54 |
| Reading comprehension | 36.07 | 12.61 | 37.81 | 12.84 | 0.87 | 0.62 |
| Vocabulary size | 15.7 | 4.39 | 13.39 | 3.92 | -3.68 | 0.04* |

*Note. *p< .05*

Table 2 showed the positive significance of the posttest on learners' overall attitude rating, the Utility and Development constructs of reading attitude between the experimental group (EG) and the control group (CG). These results suggested at least two possible interpretations. Firstly, e-book extensive reading influenced EFL university students' overall English reading attitude. Secondly, among the constructs, students' had significant changes in the Utility and Development construct, but no differences were found in the construct of Enjoyment or Escape.

Table 2 *Between-Group Comparison for Posttest in Reading Attitude*
*Note. ***p < 0.001; **p < 0.01; *p < 0.05*

| Constructs | test | EG | CG | *p-value* |
|---|---|---|---|---|
| Utility | posttest | 4.05 | 3.68 | 0.001** |
| Development | posttest | 3.77 | 3.56 | 0.011* |
| Enjoyment | posttest | 3.37 | 3.17 | 0.149 |
| Escape | Posttest | 2.61 | 2.60 | 0.730 |
| Overall Performance | posttest | 3.45 | 3.25 | 0.000*** |

The findings were consistent with those reported in some previous studies (Arnold, 2009; Sun, 2003) in that extensive reading had positive effect on EFL learners' reading attitude. According to Day and Bamford (1998), previous second language reading experiences had positive or negative influence on students' attitudes toward reading in the target language. In the case of successful experiences, learners may be motivated to the new

experience of reading in L2. In the present study, by respecting the readers' choice, providing a private and easy environment for reading on internet and providing the contents with more interesting, and efficient features of e-books, the successful and pleasurable reading experience seems to be easier to motivate the L2 learners' positive attitude to read.

**The effects of e-books extensive reading on tertiary level EFL students' English reading comprehension**
In order to answer the question, we used two English reading tests adapted from TOFEL 2000 to examine the participants' English reading comprehension. An independent sample t-test was performed to investigate between group differences in regard to reading comprehension. Significant difference ($p <. 05$) was recognized between the experimental group (M = 55.78, SD = 23.88) and the control group (M = 43.78, SD = 14.21). The findings were consistent with those in some previous studies (Elley & Mangubhai, 1983; Foertsch, 1992; Krashen, 1993), suggesting that extensive reading is effective for the development of learners' reading comprehension. The experimental group did outperform the control group because the former may have more comprehensible input than the latter. As Krashen (1985) highlighted, given comprehensible input, and a lack of affective barriers, language acquisition will take place. In this study, e-book extensive reading program provides the experimental group with comprehensible input in a low anxiety environment associated with unconscious acquisition of the target language.

**The e-books extensive reading on tertiary level EFL students' English vocabulary**
The effect of E-book extensive reading program on vocabulary size was examined on five different word levels. The ANCOVA analysis was used to eliminate the pre-test by group effect of interference on the model since significant group difference in the pretest was observed.

After neglecting the interference effect from the pretest, significant between group differences were found on the 2000-word level (MD = -2.531, std. error = .854, $p < .05$), the 3000-word level (MD = -1.830, std. error = .843, $p < .05$), the 10000-word level (MD = -1.428, std. error =.558, $p < 0.05$) and the academic-word level (MD = -4.186, std. error =1.485, $p < 0.05$) in the posttests. However, no significant difference was observed in the 5,000 word level test ($p > .05$). Possible reasons for the insignificant difference in the 5,000 word level test might be related to unequal difficulty levels in two versions of the 5,000 word level vocabulary test. As cautioned by Xing and Fulcher (2007), although Version A and Version B of the 5,000 word level vocabulary test were highly correlated and highly reliable, the item analysis showed that the facility values of Version B contained a number of more difficult words. Thus, the performance of both groups in the posttests did not vary greatly enough to yield significant difference.

The finding about the effect of e-book ERP on vocabulary size corresponds with the Input Hypothesis (Krashen, 1985) ─ the lower Affective Barrier set, the more Comprehensive Input got, and the more language acquisition developed. In addition, the result which showed the significant differences of the scores in almost all levels of the vocabulary tests for two groups is also consistent with those of previous studies (Alley, 1991; Cohen, 1968; Krashen, 1989; Polak & Krashen, 1988), suggesting that proposed students exposed to pleasure reading can effectively improve their vocabulary growth.

**CONCLUSION**
The findings in the present study provide strong support for the hypothesis that the extensive reading of e-books facilitates Taiwanese tertiary level EFL technological students' English reading attitude, reading comprehension, and vocabulary growth. Secondly, the better performance of the experimental group confirmed our hypothesis that the extensive reading via e-books could improve tertiary level EFL students' L2 learning. Possible reasons may be related to the fact that the experimental group was exposed to a low anxiety environment, and rich comprehensible input so that the group achieved larger gains in reading attitude, comprehension and vocabulary growth, and their unconscious acquisition of the target language was accelerated. These results also suggested that certain tasks used in the extensive reading may help development of learners' reading comprehension and vocabulary growth, such as finding out key words/ phrases worth studying in this reading; guessing word meaning from context; connecting the contents of the reading selection to current or past real world events and experiences; finding passages they would like to/should hear; writing their reflection toward the reading text in the weekly individual reading journals as well as groups' reading worksheets.

To conclude, the findings point to a powerful role of e-books extensive reading in stimulating reading attitude, reading comprehension and vocabulary growth with EFL technological university level learners. With freedom to select material according to their interest, associated with positive attitude, these learners achieve not only substantial improvements in their reading comprehension, but also a greater growth in vocabulary.

Based on the result of the present study, pedagogical implications could be drawn. First of all, the result of the study indicated that E-book ERP training played an important role to enhance EFL learners' reading attitudes. Therefore, the school authority or language teacher could provide more convenient and interactive e-book or other online resources for their students. Also, well-developed and easy-access websites might support teachers' design in curricula and promote students' integrated motivation. In addition, more training toward extensive reading could be provided for language teachers so that the innovated teaching might stimulate the whole learning environment more effectively.

The significant improvement of English reading comprehension through e-book ERP was confirmed in this study. However, in real situation, the grammar-translation method still dominates the English teaching in Taiwan. Although it is hard to change the English learning environment in short time, by building a supportive environment for language teachers to implement extensive reading seems to create a path for approaching the target language and building readers the habit for pleasant reading.

There were some limitations of this study, despite some valuable findings. Firstly, in terms of the scope of the present study, only 89 students were chosen from one university, which might not represent the whole population. Therefore, the finding of this study may not be generalized to EFL population. In future studies, researchers could replicate the study by including a lager sample and see to what extent the findings would be generalized. To achieve this, researchers could also recruit the participants from more tertiary level EFL students with different L1 background. Furthermore, the effect of e-book ERP could not be manifested more significantly given the duration of this study, especially in vocabulary development. Researchers could conduct the study for longer duration in future studies to enhance the effects of e-book ERP more significantly. Also, although the quantitative research method was an efficient and objective approach, it was not adequate without taking account of the individual thoughts and feeling toward the project. In addition, some of the data were collected from self-report questionnaires, which might contain incomplete information due to dishonest responses. Therefore, further research could be conducted by incorporating both qualitative (such as interview, classroom observation, etc.) and quantitative method to investigate the subtle changes in students' affection, and to gather a more complete profile of participants' English learning motivation and reading attitude. Such enriched and triangulated data could help make the interpretation of the results more validly and reliably. Furthermore, variation in the study for the research questions was not subjected to the gender differences. In future studies, in order to examine gender differences, researchers may make an even division for genders and replicate the present study.

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