

**THE JOINT EFFECTS OF READING MOTIVATION AND READING ANXIETY ON ENGLISH READING COMPREHENSION: A CASE OF TAIWANESE EFL UNIVERSITY LEARNERS**

Po-Hsuan Chen

**ABSTRACT**

The present study aimed at exploring the joint effects of reading motivation and reading anxiety on English reading comprehension in the Taiwanese English as a foreign language (EFL) context. To this end, a total of 140 (26 males, 114 females) EFL freshmen from required General English I courses at a university in southern Taiwan satisfactorily completed the English Reading Comprehension Test, the Motivation for Reading Questionnaire, and the Foreign Language Reading Anxiety Scale. The results revealed that reading anxiety was found to be the best predictor of reading comprehension, followed by extrinsic reading motivation, while intrinsic reading motivation failed to predict reading comprehension directly. Intrinsic reading motivation had an indirect effect on reading comprehension through the mediation of extrinsic reading motivation. Moreover, EFL learners having high reading motivation (intrinsic and extrinsic motivation together) and low reading anxiety were more likely to receive the best reading results, while EFL learners having low reading motivation and high reading anxiety tended to receive the worst reading results. Finally, for successful reading, high reading motivation tended to compensate for the reading ineffectiveness caused by high reading anxiety, and low reading anxiety had a tendency to compensate for the reading ineffectiveness caused by low reading motivation. To help EFL learners effectively cope with their reading difficulties, EFL instructors should adopt an appropriate teaching methodology to enhance learners' reading motivation and to alleviate their reading anxiety while delivering reading instruction.

**Key words:** reading motivation, reading anxiety, English reading comprehension

**INTRODUCTION**

In the Taiwanese English as a foreign language (EFL) context, the

extensive use of academic materials written in English across various disciplines at most universities has been increasingly fostering the need to master English, especially reading skills (Tsai, 1997). Inability to read English materials may hinder learners' academic success and future professional development and limit their global mobility (Alderson, 2000). Although reading plays an important role in Taiwanese English learning in higher education, EFL reading is not an easy process because it is a highly self-motivational activity, and the inability to read well may lead to a loss of motivation and increased levels of frustration (Oliver & Young, 2016). In addition, under the pressure of becoming proficient EFL readers, students also perceive EFL reading as being a source of difficulty and anxiety (Amiryousefi, Dastjerdi, & Tavakoli, 2012). In fact, the relations of motivation and anxiety to second language (L2) reading have been documented extensively. For example, research has pointed out that some students may have the skills to read, but without the will (motivation) to read, they are not likely to become proficient readers (e.g., Cambria & Guthrie, 2010). Hence, reading motivation should not be neglected regardless of developing the first language (L1) or L2 reading skills (Khan, Sani, & Shaikh-Abdullah, 2017). Also, research has repeatedly indicated that reading anxiety has an important effect on students' L2 reading performance (e.g., Sellers, 2000; Zhao, Guo, & Dynia, 2013). Although the unique contribution of reading motivation or reading anxiety to explaining L2 reading comprehension has been extensively explored separately in previous reports in the literature, reading motivation and reading anxiety have rarely been studied simultaneously in relation to L2 reading comprehension. Additionally, research has suggested that motivation and anxiety do not exist separately, but rather they might be in an interactive relationship with each other (Hiromori, Matsumoto, & Nakayama, 2012). Consequently, it would be possible to gain a more precise understanding of L2 reading performance if these two variables can be examined together rather than in isolation. For this reason, the present study aimed at investigating the joint effects of reading motivation and reading anxiety on English reading along with the mutual compensation between these two variables toward English reading among Taiwanese EFL university learners. The contributions of the present study are unique because the joint effects and the mutual compensation identified here have not previously been addressed in Taiwan.

## **LITERATURE REVIEW**

### **Reading Comprehension**

Reading comprehension can be defined as “the process of simultaneously extracting and constructing meaning through interaction and involvement with written language” (Snow, 2002, p.11). According to Gilakjani and Ahmadi (2011), reading can be done through two processes: bottom-up processing and top-down processing. Bottom-up processing refers to the reader’s ability to reconstruct meaning from letter to word to phrase to sentence, and finally to the text (Gamboa González, 2017; Tsai, 1997). On the other hand, top-down processing refers to the reader’s ability to look at a text as a whole and to connect and relate it to his/her expectations and existing prior knowledge (Angosto, Sánchez, Álvarez, Cuevas, & León, 2013; Gilakjani & Ahmadi, 2011). In addition to reading processing models, to comprehend, a reader must have a positive disposition, which contains motivation, goals, and anxiety (Snow, 2002). For the purpose of the present study, the following sections focus on the studies specifically describing the relations of reading motivation and reading anxiety to reading comprehension. Before reviewing the relevant empirical studies, it is necessary to make a clear distinction between the terms first language, second language, and foreign language. According to Crystal (2010), first language refers to the language which is first acquired by a child, while second language refers to any language acquired by a learner other than the first language. On the other hand, Ellis (2008) made a distinction between second and foreign language by pointing out that second language plays an institutional and social role in the community, whereas foreign language plays no major role in the community and is primarily used only in a classroom. In the present study, both foreign and second language learning are referred to as second language acquisition.

### **Reading Motivation and L1/L2 Reading Comprehension**

Reading motivation is defined as “the individual’s personal goals, values, and beliefs with regard to the topics, processes, and outcomes of reading” (Guthrie & Wingfield, 2000, p. 405). “This motivation to read can create the drive of readers to engage in a persistent reading process” (Eccles, Wigfield, & Schiefele, 1998, as cited in Torudom & Taylor, 2017, p. 49).

To conceptualize different motivational constructs, five well-developed motivation theories have emerged: the self-determination theory, social-cognitive theory, attribution theory, achievement theory, and goal orientation theory (Schunk & Zimmerman, 2006). Among these theories, the self-determination theory has been extensively used in both L1 and L2 contexts (Dhanapala & Hirakawa, 2015). This theory distinguishes different constructs of motivation based on different reasons or goals that give rise to an action (Deci & Ryan, 1985). The most basic distinction is between intrinsic and extrinsic motivation (Dhanapala & Hirakawa, 2015). Intrinsic motivation occurs when the action is performed simply for the inherent pleasure and satisfaction induced by the activity, not for external rewards; on the contrary, actions with extrinsic motivation are performed for instrumental reasons, such as getting rewards or avoiding punishments (Deci & Ryan, 1985). In line with this theoretical dichotomy between intrinsic and extrinsic motivation, Wang and Guthrie (2004) proposed an “intrinsic and extrinsic L1 reading motivation model”. This model contains eight constructs, and three of them are related to intrinsic motivation: curiosity, involvement, and preference for challenge, indicating that “intrinsically-motivated readers would read because they want to learn about topics of personal interest, to experience pleasure from reading interesting materials, and to gain satisfaction from tackling challenging ideas presented in text” (Komiyama, 2013, p. 150). The five remaining constructs of Wang and Guthrie’s model are linked to extrinsic motivation: competition, compliance, recognition for reading, grades, and social sharing. “Extrinsically- motivated readers, therefore, are thought to read to fulfill requirements, outperform peers, obtain good evaluations and recognition from others, and share what they read with others” (Komiyama, 2013, p. 150). As the bases for assessing and interpreting EFL learners’ reading motivation, Wang and Guthrie’s model was adopted in the present study.

In L1 contexts, the research has generally indicated that intrinsic motivation is positively related to better reading comprehension (Ryan & Deci, 2000; Schaffner & Schiefele, 2013; Wang & Guthrie, 2004), larger reading amount (Schiefele, Schaffner, Möller, & Wigfield, 2012), effective application of reading strategies (Froiland, Oros, Smith, & Hirschert, 2012), making connections with prior knowledge (Becker, McElvany, & Kortenbruck, 2010), and high satisfaction with reading experiences (Froiland et al., 2012; Mol & Bus, 2011). In contrast,

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extrinsic motivation has been found to be negatively associated with reading comprehension (Ryan & Deci, 2000; Wang & Guthrie, 2004) and employing complex learning strategies (Akin-Little & Little, 2004). However, some L1 research (e.g., Deci & Ryan, 1991; Wang & Guthrie, 2004) has reported that students may possess simultaneous intrinsic and extrinsic motivational goals to satisfy their own interests and school requirements. To illustrate, Guthrie, Wigfield, Methsala, and Cox (1999) revealed that the combination of intrinsic and extrinsic motivation explained a larger proportion of variance in children's amount of L1 reading than either intrinsic or extrinsic motivation alone, supporting the view that L1 reading is influenced by the integration of intrinsic and extrinsic motivation (Dhanapala, 2008).

Although L1 reading motivation has been widely studied, the research on L2 reading motivation has just begun to grow (Komiya, 2013). Several L2 studies have sought motivation constructs unique to L2 readers. For instance, in Mori's (2002) study, Japanese female university students' motivation to read in English was divided into four subcomponents: intrinsic value of reading, extrinsic utility value of reading, importance of reading, and reading efficacy. Moreover, in Kim's (2011) study, Korean EFL college students' underlying factors of L2 reading motivation included learning goal-oriented motivation, utility value of reading, intrinsic motivation, and avoidance of reading. Furthermore, in a study with foreign students from 92 countries learning English in the USA, Komiya (2013) extracted a 5-factor model of L2 reading motivation, which consisted of one intrinsically-oriented factor and four extrinsically-oriented factors (drive to excel, academic compliance, test compliance, and social sharing). As a whole, L2 study findings seem to affirm that the underlying structure of L2 reading motivation is multidimensional and that intrinsic motivation and extrinsic motivation are valid concepts for measuring L2 reading motivation.

Although research on L2 reading motivation has also provided evidence that different types of reading motivation influence reading performance in various ways, no consistent picture has emerged. On the one hand, some studies have identified the importance of both intrinsic and extrinsic motivation in L2 reading. For example, adopting Wigfield and Guthrie's (1997) eleven-dimensional framework, Tercanlioglu (2001) demonstrated that Turkish EFL high school students endorsed both high intrinsic and high extrinsic motivation while reading English. Similarly,

exploring the relationship between reading motivation and achievement in English reading with EFL university students, Jung (2009) found that self-confident engagement in English reading (intrinsic motivation) and perceived usefulness of reading in English (extrinsic motivation) were positively related to reading achievement. On the other hand, other studies have emphasized the primacy of extrinsic motivation in L2 reading. For instance, employing Wang and Guthrie's (2004) eight dimensional model, Dhanapala (2008) investigated L2 reading motivation of EFL college students in Japan and in Sri Lanka. Her results showed that both Japanese and Sri Lankan students had a tendency to read for extrinsic reasons, and extrinsic motivation was positively correlated with reading amount. Likewise, in their study with fifth-grade bilingual students in Hong Kong, Lin, Wong, and McBride-Chang (2012) revealed that students' L2 reading comprehension was predicted only by an extrinsically oriented dimension (i.e., Instrumentalism). In the same vein, examining the predictive value of the eleven motivational constructs on English reading comprehension among Turkish EFL ninth grade students, Bush (2014) discovered that only extrinsic motivation was a significantly contributing factor ( $p = .032$ ), while intrinsic motivation was nearly significant ( $p = .073$ ). Finally, Sirin and Saglam (2012) concluded that it was mostly extrinsic motivation factors that affect L2 reading. However, Dhanapala and Hirakawa's (2015) study with Sri Lankan university students revealed contradictory evidence discrediting the positive association between extrinsic motivation and L2 reading comprehension. The results of this study indicated that intrinsic motivation had a positive relationship, while extrinsic motivation had a negative relationship with L2 text comprehension. Although the existing research findings do not point to a definite association between types of reading motivation and L2 reading comprehension, the majority of the studies reviewed above mainly support the idea that the importance of extrinsic motivation in L2 reading seems to outweigh that of intrinsic motivation. Additionally, the close relationships between intrinsic motivation and reading outcomes identified by L1 reading researchers cannot be fully supported in L2 reading contexts (Komiya, 2013), suggesting the need for much more detailed research in this area.

#### **Reading Anxiety and L2 Reading Comprehension**

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In general, foreign language anxiety (FLA) is the subjective feeling of tension, apprehension, nervousness, and worry occurring when a learner is expected to perform in a foreign language (MacIntyre & Gardner, 1994). FLA can start as transitory episodes of fear; at this time FLA is simply a passing state (Arnold, 1999). Once FLA has evolved into a lasting trait, it can have pervasive effects on language learning and language performance (Oxford, 1991). FLA can occur in any aspect of language learning (e.g., reading, listening, speaking, and writing) (Lu & Liu, 2015). Of particular interest to the present study was foreign language (FL) reading anxiety. In L2 reading contexts, reading anxiety can be seen as the feeling of apprehension and worry when learners have to read in L2 (Rajab, Wan Zakaria, Rahman, Hosni, & Hassani, 2012). This type of anxiety varies depending on levels of vocabulary difficulty, levels of text difficulty, unfamiliar cultural materials, and unfamiliar writing systems. Regarding vocabulary difficulty, Ahmad et al. (2013) found that students expressed increased anxiety as the L2 vocabulary became increasingly difficult and unknown. Concerning text difficulty, Talebinezhad and Rahimi (2013) reported that when students perceived the target language reading to be more difficult, their level of anxiety increased, which then lowered their comprehension of the text. Turning to unfamiliar cultural materials, Muhlis (2017) found that unfamiliarity with the culture implied in the text could hinder L2 reading comprehension and elicit reading anxiety. As for unfamiliar writing systems, Zhao et al.'s (2013) study with native English speakers learning Chinese confirmed that the level of FL reading anxiety was exacerbated by the use of an unfamiliar writing system. Zhao et al. proposed that the complexity of written Chinese would increase FL reading anxiety because written Chinese does not constitute an alphabet, but instead uses syllabic pictographs to represent abstract ideas, physical objects, or even pronunciation.

Reading anxiety can hamper readers' reading comprehension through diminishing the capacity and function of their mental skills such as logical thinking, questioning, and evaluation (Mohammadpur & Ghafournia, 2015; Mohd Zin & Rafik-Galea, 2010). As a matter of fact, many studies have consistently identified the negative effects of reading anxiety on L2 reading comprehension across different language or cultural groups. For example, in their study with native English speakers studying introductory courses of French, Russian, and Japanese, Saito, Horwitz, and Garza (1999) found that FL reading anxiety did exist and

that it was distinct from general FL anxiety concerning oral performance. More specifically, they found that levels of reading anxiety varied by target language and seemed to be related to writing systems; learners of Japanese were found to be most anxious, followed by French and then Russian. In addition, they reported that students' reading anxiety levels increased with their perceptions of the difficulty of reading in their particular target language and that the higher the self-reported level of FL reading anxiety, the lower the course grade, and vice versa. Likewise, Sellers (2000) used 89 subjects learning Spanish as a foreign language as a sample in the United States and divided them into high-anxiety and low-anxiety groups. The results indicated that more highly anxious readers tended to recall less passage content than low anxious readers because highly anxious readers were more distracted by interfering thoughts and were less able to focus on the task at hand, which in turn affected their comprehension of the reading passage. Similarly, the detrimental effects of reading anxiety on L2 reading have also been reported among Iranian EFL students studying English at intermediate levels (Aeen & Sadighi, 2017), among Chinese EFL university learners from various disciplines (Lu & Liu, 2015), among Taiwanese EFL college freshmen enrolled in Freshman English (Tsai & Li, 2012), among Malaysian low proficiency ESL university learners (Zuhana, 2007), and among English-speaking university students learning Chinese or Korean as a foreign language in the United States (Joo & Damron, 2015; Zhao, 2009). Overall, the above findings seem to be congruent with MacIntyre's (1995) statement that "when learners feel anxious during reading task completion, cognitive performance is diminished, performance suffers, leading to negative self-evaluations and more self-deprecating cognition which further impairs performance and so on" (p. 92).

Briefly, two conclusions can be derived from the majority of investigations reviewed above. First, anxiety is often debilitating, while motivation is largely helpful in L2 reading.

Second, although L2 readers generally endorse both intrinsic and extrinsic motivation while reading, the importance of extrinsic motivation in L2 reading seems to outweigh that of intrinsic motivation. However, what remains unclear are the joint effects of reading motivation and reading anxiety on English reading comprehension and the mutual compensation between reading motivation and reading anxiety for successful English reading. The present study aimed at filling



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this gap by answering the following research questions:

1. What are the relative contributions of intrinsic reading motivation, extrinsic reading motivation, and reading anxiety in the prediction of English reading comprehension?
2. Does extrinsic reading motivation mediate the relationship between intrinsic reading motivation and English reading comprehension?
3. Are there any differences in English reading comprehension among the high motivation (intrinsic and extrinsic motivation together)/high anxiety, the high motivation/low anxiety, the low motivation/high anxiety, and the low motivation/low anxiety EFL university learners?
4. Does high motivation compensate for high anxiety for successful English reading?
5. Does low anxiety compensate for low motivation for successful English reading?

The present study appears to go beyond previous studies by focusing on the joint effects of reading motivation and reading anxiety on English reading comprehension along with the mutual compensation between these two variables towards English reading comprehension. The present study may bring insights into the direct and indirect relationships of intrinsic reading motivation, extrinsic reading motivation, and reading anxiety to English reading comprehension. Additionally, EFL instructors could apply these insights to helping learners enhance their reading motivation and reduce their reading anxiety.

## **METHOD**

### **Participants**

The participants for the present study were 140 EFL undergraduate freshmen (26 males, 114 females) from required General English I courses at a university in southern Taiwan. They were from four different majors, including nursing (49, 35%), social work (42, 30%), child care (28, 20%), and tourism (21, 15%), and they had been learning English for seven years on average at the time of the study. They satisfactorily completed the English reading test, the reading motivation questionnaire,

and the reading anxiety scale.

### **Instruments**

Three instruments were used in the present study, including English Reading Comprehension Test (ERCT, adapted from Kuo, 2002; Lai, 2003, see Appendix A), Motivation for Reading Questionnaire (MRQ, adapted from Wigfield & Guthrie, 1997, see Appendix B), and Foreign Language Reading Anxiety Scale (FLRAS, adapted from Saito et al., 1999, see Appendix C).

#### **English Reading Comprehension Test (ERCT)**

The adapted version of ERCT had 22 multiple-choice questions measuring students' reading comprehension on seven different texts. Four texts were cited from the Basic Competence Tests (BCT) of 2001 and 2002 (Kuo, 2002), and three were from GEPT authentic simulated tests for intermediate level (Lai, 2003). Both BCT and GEPT are standardized tests developed in Taiwan. The former is an exam used to apply for admissions to senior high schools in Taiwan, and the latter is used to measure learners' general English proficiency. The reading texts used in the present study consisted of four types: short reading, long reading, dialogue, and letter. As for short reading, it had six to nine lines in the reading, and it was not hard for students to understand. With respect to long reading, it was harder and more complex in the structure of sentences and text. It might involve reading strategy use, grammar analysis, and vocabulary solution (Kuo, 2002). It had ten to thirteen lines. Regarding dialogue, it was an easy text type owing to its loose structure and ease of grammar. It was designed to test if students could use the contextual clues to infer the meaning. Concerning the letter, it was about telling something to somebody. The reading questions were intended to ask about the details or to draw inferences from the letter (Kuo, 2002). Scoring for the ERCT was straightforward: 1 point for correct answers and 0 for incorrect answers, with total scores ranging from 0 to 22 points. Chen (2018) found that the items on the ERCT had an ideal level of difficulty ( $M = .64$ ,  $SD = .12$ ), a very good level of discrimination ( $M = .42$ ,  $SD = .13$ ), and a satisfactory level of the KR-20 reliability coefficient (.82) (Kuder & Richardson, 1937, as cited in Tan, 2009). Obviously, the ERCT is an effective and reliable tool for measuring EFL

learners' reading comprehension.

**Motivation for Reading Questionnaire (MRQ)**

The modified Chinese version of the MRQ included eight items for detecting readers' intrinsic motivation and eight items for extrinsic motivation. All the items were adapted from Wigfield & Guthrie's (1997) original 53-item MRQ, with modifications made to reflect the unique situations in which EFL reading occurred. For instance, the item "I like being the best at reading" was modified into "I like being the best at reading in English". Items of intrinsic motivation or extrinsic motivation occurred randomly in the questionnaire. The MRQ used a 6-point Likert-type scale ranging from "strongly disagree" (1 point) to "strongly agree" (6 points). The questionnaire yielded scores from eight to 48 for reading motivation, with higher scores representing higher levels of intrinsic reading motivation or extrinsic reading motivation. The MRQ was validated in the present study (see Table 1). The principal component analysis (PCA) with a Varimax rotation was conducted to examine the construct validity. Items 1, 4, and 12 were deleted in the first run of factor analysis. Factor analysis was repeated and two factors with eigenvalues larger than one were extracted from the 13 remaining items (i.e., extrinsic reading motivation and intrinsic reading motivation). These two factors accounted for 57.41% of the variance, revealing that the MRQ possesses good construct validity (Hair, Black, Babin, & Anderson, 2010). Moreover, the reliability (alpha) coefficients for the two subscales respectively were .86 and .84, and the alpha for the entire measure was .88, indicating that the MRQ has good reliability (Bryman & Cramer, 2011).

**Foreign Language Reading Anxiety Scale (FLRAS).**

The modified Chinese version of the FLRAS included 14 items for measuring readers' anxiety. All the items were adapted from Saito et al.'s (1999) original 20-item FLRAS, which was designed to elicit students' self-reports of anxiety over various aspects of reading and their perceptions of reading difficulties in their target language. To make the items appropriate for the EFL learners in the present study, minor modifications were made. For example, the words "French, Russian, and Japanese" in each item were replaced by the word "English". Items 8, 9,

and 10 were key-reversed (i.e., negatively worded). The FLRAS uses a 6-point Likert-type scale ranging from “strongly disagree” (1 point) to “strongly agree” (6 points). The scale yielded scores from 14 to 84, with higher scores representing higher levels of reading anxiety. The FLRAS was validated in the present study (see Table 2). The principal component analysis (PCA) with a Varimax rotation resulted in a two-factor (i.e., reading anxiety and reading difficulty) solution with eigenvalues larger than 1. The two-factor solution accounted for 53.18% of the variance, showing that the FLRAS possesses good construct validity (Hair et al., 2010). In addition, the reliability (alpha) coefficients for the two subscales respectively were .80 and .77, and the alpha for the entire measure was .85, demonstrating that the FLRAS has good reliability (Bryman & Cramer, 2011).

#### **Procedure**

The tests were administered in four different classes by the present researcher during regular class periods. Before administering each test, the researcher gave the students a brief overview of the test and encouraged them to answer all the questions sincerely. All the participants were administered the ERCT first and then the MRQ and the FLRAS during regular class periods. It took 40 minutes to complete the ERCT and 20 minutes to complete the MRQ and the FLRAS. Students' participation was voluntary and the students were informed that their responses would not influence their final grades and that their confidentiality would be ensured.

#### **Data Analysis**

The data were computed by using the SPSS (Statistical Package for the Social Sciences) 18.0 software for Windows. The correlation analysis, multiple regression analysis, a one-way MANOVA, and one-way ANOVA were conducted to answer each of the research questions, respectively.

### **RESULTS AND DISCUSSION**

#### **Results and Discussion of Research Question 1**

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Research Question 1 investigated the relative contributions of intrinsic reading motivation, extrinsic reading motivation, and reading anxiety in the prediction of English reading comprehension. To answer this question multiple regression was used. To verify that the data in the present study had met the regression assumptions, a P-P plot was first generated to assess the assumption of normality. Since the plotted values fell closely along the diagonal line, the residuals are considered to represent a normal distribution (Garson, 2014). Second, the Durbin-Watson Statistic was used to assess serial correlation. The value of 1.55 indicates that the data are not autocorrelated (Garson, 2014). Finally, VIF values were employed to detect the multicollinearity among predictor variables. The maximum VIF value was 1.62, suggesting that the possibility of a multicollinearity problem between predictor variables is low (Garson, 2014). After examining the regression assumptions, a correlation analysis was run to identify all possible simple correlation coefficients among the variables.

As shown in Table 3, both intrinsic and extrinsic reading motivation were significantly positively correlated with reading comprehension, while reading anxiety was significantly negatively correlated with reading comprehension. Moreover, it can be seen that predictor variables (i.e., intrinsic motivation, extrinsic motivation, and anxiety) did not have high correlations (about .80 or higher) among themselves, reconfirming that multicollinearity is not a problem in the present study (Field, 2013).

As noted from Table 4, the multiple regression model with all three predictors produced  $R^2 = .28$ ,  $F(3, 136) = 17.72$ ,  $p < .001$ , signifying that approximately 28% of the variance in reading comprehension can be accounted for by the linear combination of intrinsic reading motivation, extrinsic reading motivation, and reading anxiety. Looking at the regression weights, the extrinsic reading motivation had a significant positive regression weight ( $\beta = .36$ ,  $t = 3.90$ ,  $p < .001$ ), suggesting that EFL learners with higher scores on extrinsic reading motivation are expected to have higher reading comprehension scores after controlling for the other variables in the model. On the contrary, reading anxiety had a significant negative weight ( $\beta = -.37$ ,  $t = -4.91$ ,  $p < .001$ ), implying that EFL learners with higher reading anxiety scores are expected to have lower reading comprehension scores after controlling for the other variables in the model. Surprisingly, intrinsic reading motivation did not contribute to the multiple regression model ( $\beta = .04$ ,  $t = 0.51$ ,  $p = .615$ ), meaning that if extrinsic reading motivation and reading anxiety

are in the model, intrinsic reading motivation does not provide significant predictive value. The beta values also suggest that reading anxiety ( $\beta = -.37$ ) is the best predictor of reading comprehension, followed by extrinsic reading motivation ( $\beta = .36$ ) (Field, 2013). Overall, the present findings suggest that high proficiency readers are highly extrinsically motivated and less anxious.

The finding that reading anxiety had a significant negative effect on reading comprehension is consistent with previous studies revealing that reading anxiety has detrimental effects on L2 reading among university students from different countries (Joo & Damron, 2015; Lu & Liu, 2015; Tsai & Li, 2012; Zhao, 2009; Zuhana, 2007). This finding can be explained by considering that human beings are limited in their attention and processing capacity (McLaughlin, Rossman, & McLeod, 1983; Shiffrin & Schneider, 1977), and anxiety takes up processing capacity and thereby diminishes the amount of attention that the learner has to dedicate to the learning task itself (Eysenck, 1992; Sarason, 1988). In other words, anxiety increases attention to task-irrelevant stimuli and decreases students' attention on task relevant stimuli (Yamaç & Sezgin, 2018); also, anxiety can interfere with encoding, storage, and retrieval processes (Eysenck, 1992; Sarason, 1988). Thus, reading comprehension does not occur in anxious students (Yamaç & Sezgin, 2018).

Another possible explanation for the present finding is suggested by the affective filter hypothesis (Krashen, 1982). This hypothesis describes foreign language anxiety as an "affective filter", which makes the learner unreceptive to language input and thus blocks acquisition. Learners with low affective filters are more receptive to the input they receive. When reading a text, a student accesses background knowledge or other strategies to decode and interact with a text (Kress, 2015). If a student has anxiety, this process is blocked or the affective filter is raised and the student is unable to interact with the reading (Kress, 2015). The student's focus is entirely set on the anxiety instead of tackling the text at hand (Boonkongaen, 2014; Krashen, 1983; Saito et al., 1999). Thus, it is reasonable to infer that as reading anxiety increases, English reading comprehension decreases (Krashen, 1983).

Although both intrinsic and extrinsic reading motivation were correlated significantly with reading comprehension (see Table 3), only extrinsic reading motivation was a significant predictor of reading comprehension, and intrinsic reading motivation did not contribute to the multiple regression model. These findings suggest that extrinsic reading

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motivation is a better predictor of reading comprehension compared with intrinsic reading motivation. These findings contradict Dhanapala and Hirakawa's (2015) results that Sri Lankan EFL university students' intrinsic motivation had a positive relationship, while extrinsic motivation had a negative relationship with L2 text comprehension. However, the present findings echo Bush's (2014) result that only extrinsic motivation was a significant contributing factor of Turkish EFL ninth grade students' English reading comprehension.

To explain these findings, we have to consider the English learning environment in Taiwan. Since English is perceived as a highly relevant subject to students' academic studies and career development, and language tests such as TOEIC and GEPT (General English Proficiency Test) have been recognized as valid and reliable instruments measuring students' language abilities in Taiwan, EFL instructors have inevitably been trying their utmost to ensure the students can receive these language certificates with high scores. Under this condition, EFL learners in Taiwan might perceive English to have high practical value and at the same time experience a much stronger extrinsic motivation than intrinsic motivation (Wong, 2010). If this is the case, we can infer that EFL learners with higher extrinsic reading motivation are likely to have higher English reading comprehension scores.

### **Results and Discussion of Research Question 2**

The exclusion of intrinsic reading motivation from the regression model predicting reading comprehension could be due to the fact that intrinsic and extrinsic reading motivation were significantly correlated with each other ( $r = .59$ ,  $p < .001$ , see Table 3), indicating that there might be some overlap between them. Thus, intrinsic reading motivation failed to make a unique contribution to explaining the variance of reading comprehension because of the variance it shared with extrinsic reading motivation which had been entered into the equation (Nunnally & Bernstein, 1994, as cited in Nathans, Oswald, & Nimon, 2012). In other words, extrinsic reading motivation might mediate the relationship between intrinsic reading motivation and reading comprehension. Research Question 2 aimed to test this assumption.

To answer Research Question 2, Baron and Kenny's (1986) mediation model was employed. According to Baron and Kenny, mediation effects can be claimed if three conditions are met: (1) the

independent variable significantly predicts the dependent variable; (2) the independent variable significantly predicts the mediator variable; and (3) when the dependent variable is regressed on both the mediator and the independent variable, the mediator significantly predicts the dependent variable, while the effect of the independent variable on the dependent variable is reduced. If the effect of the independent variable on the dependent variable is not significant, the mediator completely mediates the independent- dependent relationship. If the effect of the independent variable on the dependent variable is still significant, then partial mediation is indicated. Table 5 shows that intrinsic reading motivation significantly predicted reading comprehension ( $\beta = .32$ ,  $p < .001$ ; Condition 1 met) and extrinsic reading motivation ( $\beta = .59$ ,  $p < .001$ ; Condition 2 met). Reading comprehension was then regressed on intrinsic reading motivation ( $\beta = .15$ ,  $p = .11$ ) and extrinsic reading motivation ( $\beta = .28$ ,  $p < .01$ ). The beta value of intrinsic reading motivation was reduced from .32 to .15 ( $p = .11$ ); Condition 3 met. Therefore, extrinsic reading motivation completely mediated the relationship between intrinsic reading motivation and reading comprehension. Furthermore, the Sobel test (Baron & Kenny, 1986) indicated that the indirect effect of intrinsic reading motivation on reading comprehension via extrinsic reading motivation was significant ( $z = 4.11$ ,  $p < .001$ ), confirming that extrinsic reading motivation completely mediates the effect of intrinsic reading motivation on reading comprehension. This means that intrinsic reading motivation is related to English reading comprehension but only through extrinsic reading motivation; therefore, EFL learners with higher levels of intrinsic reading motivation are predicted to have better extrinsic reading motivation, and this leads to better reading comprehension. Obviously, extrinsic reading motivation is the underlying cause for the relationship between intrinsic reading motivation and English reading comprehension.

The present study appears to be one of the first studies devoted to exploring the indirect link between intrinsic reading motivation and English reading comprehension by using extrinsic reading motivation as a mediator. The present findings suggest that EFL learners having high levels of intrinsic reading motivation who are willing to invest considerable effort to enhance their English reading comprehension are unlikely to be effective unless they also possess high levels of extrinsic reading motivation.



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Taken together, the multiple regression and mediation analyses suggest that reading anxiety and extrinsic reading motivation have direct effects on English reading comprehension, while intrinsic reading motivation has an indirect effect on English reading comprehension through the mediation of extrinsic reading motivation.

#### **Results and Discussion of Research Question 3**

Research Question 3 afforded a different look at the joint effects of reading motivation (intrinsic and extrinsic motivation together) and reading anxiety on English reading comprehension by examining how different degrees of combinations of these two variables influence English reading. To address this issue, four groups were formulated based on the median splits of reading motivation (intrinsic and extrinsic motivation together) and reading anxiety scales. Individuals who scored above the median in each scale (63 for motivation and 55 for anxiety) were classified as being high in that variable; those scoring below the median were classified as being low. Group 1 ( $n = 37$ ) consisted of the high motivation and high anxiety (HM-HA) learners. Group 2 ( $n = 31$ ) comprised high motivation and low anxiety (HM-LA) learners, whereas the members of Group 3 ( $n = 32$ ) were low in motivation and high in anxiety (LM-HA). Finally, Group 4 ( $n = 40$ ) was composed of learners low in both motivation and anxiety (LM-LA). To learn more about how distinctive these four groups are with reference to motivation and anxiety, a one-way MANOVA was conducted to uncover the differences in motivation and anxiety among the four groups. The MANOVA revealed a significant multivariate main effect for the effect of different combinations of motivation and anxiety,  $F(6, 270) = 76.99$ ,  $p < .001$ , Wilks'  $\lambda = .14$ , partial  $\eta^2 = .63$ . Given the significance of the overall test, the univariate main effects were examined. Regarding motivation, since the test for homogeneity of variance was significant, Levene  $F(3, 136) = 3.22$ ,  $p = .025$ , an adjusted F statistic, the Welch statistic, was used (Field, 2013). Using the Welch statistic, we found that  $F(3, 70.24) = 72.86$ ,  $p < .001$ , indicating that the adjusted F ratio is significant. Because the equal variances assumption had been violated, the Games-Howell post hoc test was used to isolate more specifically where those differences occurred (Field, 2013). Table 6 indicates that both the HM-HA ( $M = 72.48$ ) and the HM-LA ( $M = 73.35$ ) groups significantly outperformed the LM-HA ( $M = 57.15$ ) and the LM-LA ( $M = 57.92$ ) groups. As for

anxiety, the test for homogeneity of variance was not significant, Levene  $F(3, 136) = 2.18, p = .092$ , meaning that the group variances are equal and the assumption underlying the application of ANOVA is met (Field, 2013). The ANOVA showed that the effect of different combinations of motivation and anxiety on anxiety was significant,  $F(3, 136) = 87.74, p < .001$ . The Tukey HSD Post Hoc test results reported in Table 6 reveal that the HM-HA group ( $M = 61.37$ ) significantly outperformed the HM-LA ( $M = 48.25$ ) and the LM-LA ( $M = 50.67$ ) groups; the HM-LA group ( $M = 48.25$ ) significantly fell behind the LM-HA group ( $M = 61.25$ ); and the LM-HA group ( $M = 61.25$ ) significantly outperformed the LM-LA group ( $M = 50.67$ ). Based on the results shown in Table 6, we can reasonably conclude that, in general, the four groups actually differ from each other in terms of motivation and anxiety.

Table 7 shows the descriptive statistics in reading comprehension for the four groups. To probe if these four groups vary in reading comprehension, a one-way ANOVA was run. Prior to performing ANOVA, the homogeneity of variance assumption was tested for reading comprehension across four groups, and the result was not significant, Levene  $F(3, 136) = 0.86, p = .464$ , indicating that this assumption underlying the application of ANOVA is met (Field, 2013). The one-way ANOVA showed that the effect of different degrees of combinations of reading motivation and reading anxiety on reading comprehension was significant,  $F(3, 136) = 10.25, p < .001$  (see Table 8), suggesting that not all four groups of combined reading motivation and reading anxiety result in the same reading comprehension. The value of  $\eta^2$  was .19, implying that approximately 19% of the variation in reading comprehension can be explained by the differences among the four groups (Field, 2013).

Post hoc comparisons using the Tukey HSD procedures were employed to determine which pairs of the four group means differed. As Table 9 shows, the HM-LA group ( $M = 16.23$ ) significantly outperformed the LM-HA ( $M = 10.50$ ) group; the HM-HA group ( $M = 14.46$ ) significantly outperformed the LM-HA ( $M = 10.50$ ) group; and the LM-LA ( $M = 14.17$ ) group significantly outperformed the LM-HA ( $M = 10.50$ ) group. According to Green and Salkind (2011),  $d$  values of 0.2, 0.5, and 0.8 are interpreted as small, medium, and large effect sizes, respectively. The  $d$  values for the differences in reading comprehension among the four groups ranged from 0.88 to 1.42, indicating large effect sizes. However, no significant differences were found among the other

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groups. Taken together, the results revealed that in general, HM-LA learners received the highest reading scores, followed by HM-HA and LM-LA learners, with LM-HA learners receiving the lowest reading scores.

Clearly, these findings provide evidence that reading motivation and reading anxiety might interactively work together to affect EFL learners' reading performance and that different degrees of combinations of these two variables would result in different outcomes in reading comprehension. When reading motivation is at a high level and reading anxiety is at a low level in a learner, the best reading results will be obtained. When reading motivation is at a low level and reading anxiety is at a high level in a learner, the worst reading results will be obtained. This implies that EFL learners need high reading motivation and low reading anxiety in order to reach the highest level of English reading comprehension and that they cannot achieve the highest possible level of English reading comprehension if their reading motivation is low or reading anxiety is high. These findings seem to align with previous studies showing that motivational factors played a key role in the development of foreign language reading skills (Jung, 2009) and that more highly anxious L2 readers tended to recall less passage content than low anxious readers (Sellers, 2000).

#### **Results and Discussion of Research Questions 4 & 5**

Research Questions 4 and 5 were intended to investigate the compensation between reading motivation and reading anxiety towards English reading comprehension. To answer these two questions, the results in Table 9 were further examined. To identify the existence that high reading motivation compensates for high reading anxiety, a further comparison was made to distinguish the difference in reading mean scores between the HM-HA group and the LM-HA group. It can be noted that for the high level of reading anxiety, the difference in reading mean scores between the learners reporting high or low reading motivation (i.e., HM-HA group vs. LM-HA group) was 3.96 (14.46 - 10.50,  $p = .001$ ), implying that the high reading motivation of this group appears to have a tendency to compensate for their high reading anxiety and helps raise the mean score in the reading by 3.96 points. Similarly, to identify that low reading anxiety compensates for low reading motivation, a further comparison was made to distinguish the difference

in reading mean scores between the LM-HA group and the LM-LA group. It can be observed that for the low level of reading motivation, the difference in reading mean scores between the learners reporting high or low reading anxiety (i.e., LM-HA group vs. LM-LA group) was -3.67 (10.50 - 14.17,  $p = .001$ ), suggesting that the low reading anxiety of this group seems to have a tendency to compensate for their low motivation and helps raise the mean score in the reading by 3.67 points. Together, these results suggest that the compensatory facilitation by reading anxiety (3.67) is much smaller than reading motivation (3.96). Clearly, the present findings demonstrate the existence of mutual compensation between reading motivation and reading anxiety towards English reading with high reading motivation trying to make up for the reading ineffectiveness caused by high reading anxiety and with low reading anxiety trying to make up for the reading ineffectiveness caused by low reading motivation. In other words, reading motivation and reading anxiety work together by compensating each other to achieve the highest possible level of English reading comprehension.

## CONCLUSIONS

The present study was an attempt to address the joint effects of reading motivation and reading anxiety on English reading comprehension among Taiwanese EFL university learners. The results revealed that reading anxiety was found to be the best predictor of reading comprehension, followed by extrinsic reading motivation, while intrinsic reading motivation failed to predict reading comprehension directly. Intrinsic reading motivation had an indirect effect on reading comprehension through the mediation of extrinsic reading motivation. Moreover, learners having high reading motivation (intrinsic and extrinsic motivation together) and low reading anxiety were more likely to receive the best reading results, while learners having low reading motivation and high reading anxiety tended to receive the worst reading results. Finally, for successful reading, high reading motivation tended to compensate for the reading ineffectiveness caused by high reading anxiety and low reading anxiety had a tendency to compensate for the reading ineffectiveness caused by low reading motivation.

Since the present findings have highlighted that reading anxiety and extrinsic reading motivation had direct effects on English reading comprehension, while intrinsic reading motivation had an indirect effect

on English reading comprehension through the mediation of extrinsic reading motivation, EFL instructors in Taiwan should adopt an appropriate teaching methodology to alleviate EFL learners' anxiety and to foster their motivation while delivering reading instruction. As for alleviating anxiety, EFL instructors should first understand learners' reading anxiety threshold and be aware of their comfort level so as to avoid harmful feelings of reading anxiety (Zheng, 2008). Next, EFL instructors should make it possible for anxious learners to maximize their reading abilities by building a nonthreatening and supportive environment and by choosing the reading materials which suit students' proficiency levels in terms of vocabulary difficulty, text difficulty, cultural familiarity, and knowledge base.

Regarding fostering motivation, EFL instructors should find some ways to encourage their learners to endorse both extrinsic and intrinsic reading motivation. To do this, the EFL instructors should first help the learners see the relevance in their English reading class to the potential use of the language in their current studies or future career (Wong, 2010). Then the instructors can help individual learners set their reading goals based on their levels of aspiration and reading abilities. If learners can reach their goals and get good grades, then their need for seeking public recognition from peers and important others (extrinsic reading motivation) can be met and their self-confidence can also be strengthened (Chen, 2017). This rewarding reading experience might in turn enhance their interest for reading (intrinsic reading motivation) and help them become more independent and autonomous EFL readers who will pursue new reading skills, tackle challenging ideas presented in text, and cultivate their personal reading competence (Chen, 2017).

Results of the present study also reflect limitations and suggest directions for further research on EFL reading motivation, reading anxiety, and reading comprehension. First, the exclusion of intrinsic reading motivation from the regression model predicting reading comprehension contradicts previous research findings suggesting the positive association between intrinsic motivation and L2 reading comprehension (e.g., Dhanapala & Hirakawa, 2015). Hence, to gain further insights into such an unexpected result, future researchers are encouraged to replicate this study by using a more diverse sample with different levels of English proficiency. Second, the present study fails to explore if the effects of reading motivation and reading anxiety on English reading change over time although it has been increasingly

acknowledged that L2 motivation and L2 anxiety indeed differ over time (Dörnyei, 2010; Ushioda, 2011). Thus, it is meaningful to conduct longitudinal investigations looking into how the effects of these two variables on English reading change across time. Third, the present study revealed that reading motivation and reading anxiety combined to explain 28% of the variance in English reading comprehension, suggesting that motivation and anxiety alone do not make up a complete picture of the English reading process. For this reason, a continued interest in research on other variables such as reading strategies, background knowledge, and affective and social factors in EFL reading should be encouraged (McNeil, 2012). Finally, the original MRQ items were designed for assessing L1 (English) reading motivation, which might not be completely suitable for examining L2 reading motivation although L1 and L2 reading motivation constructs are very similar in terms of intrinsic and extrinsic motivation (Komiya, 2013; Mori, 2002; Wang & Guthrie, 2004). For example, the item “I enjoy a long, involved story or fiction book in English,” might be effective in evaluating L1 (English) intrinsic reading motivation, but it might not be appropriate to examine EFL learners’ intrinsic reading motivation in the present study because their English reading levels, only 63%, on average, on the ERCT (13.86 out of 22), might not have been sufficiently high for the expected enjoyment in reading a long story book in English to happen. In this sense, the findings identified here need to be interpreted with caution, and a valid and reliable reading motivation questionnaire focusing on motivation to read in English L2 (English as a second or foreign language) should be developed in future study.

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*Po-Hsuan Chen*

#### **ACKNOWLEDGMENT**

The author would like to express his gratitude to the editors, anonymous reviewers, and statistical consultant of the *Taiwan Journal of TESOL* for their constructive and insightful comments to help improve earlier versions of this paper. The author is also grateful to the students who participated in this study.

#### **CORRESPONDENCE**

*Po-Hsuan Chen, Foreign Language Center, Feng Chia University, Taichung, Taiwan*  
*Email address: phchen@mail.fcu.edu.tw*

#### **PUBLISHING RECORD**

*Manuscript received: April 27, 2019; Revision received: August 17, 2019; Manuscript accepted: August 19, 2019*

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## **APPENDIX**

Table 1

*Factor Loadings and Reliability for MRQ Two-Factor Solution*

Item	Factor 1	Factor 2
Factor 1: Extrinsic reading motivation, $\alpha = .86$		
8. I like being the best at reading in English.	.85	
7. I look forward to finding out my grades in English reading.	.81	
14. I read in English to improve my grades.	.77	
16. I am willing to work hard to read better than my friends in English.	.76	
2. I like having the teacher say I read well in English.	.69	
3. Grades are a good way to see how you are doing in English reading.	.56	
13. I like being the only one who knows an answer in something we read in English.	.52	
Factor 2: Intrinsic reading motivation, $\alpha = .84$		
15. I read a lot of adventure stories in English.		.78
11. I like to read mysteries in English.		.77
5. I enjoy a long, involved story or fiction book in English.		.74
10. I feel like I make friends with people in good English books.		.73
6. I like to read about new things in English.		.65
9. I enjoy reading English books about people in different countries.		.58

*Note.*  $N = 140$ ; Eigenvalues: Factor 1 = 5.57, Factor 2 = 1.88; Cronbach's  $\alpha = .88$  for entire measure; Total variance explained is 57.41%.

Table 2

*Factor Loadings and Reliability for FLRAS Two-Factor Solution*

Item	Factor 1	Factor 2
Factor 1: Reading anxiety, $\alpha = .80$		
6. When reading English, I get nervous and confused when I don't understand every word.	.88	
4. I am nervous when I am reading a passage in English when I am not familiar with the topic.	.80	
1. I get upset when I'm not sure whether I understand what I am reading in English.	.79	
5. I get upset whenever I encounter unknown grammar when reading English.	.75	
2. When I'm reading English, I get so confused I can't remember what I'm reading.	.74	
7. By the time you get past the funny letters and symbols in English, it's hard to remember what you're reading.	.65	
3. I feel intimidated whenever I see a whole page of English in front of me.	.64	
Factor 2: Reading difficulty, $\alpha = .77$		
8. I enjoy reading English.		.77
9. I feel confident when I am reading in English.		.73
11. The hardest part of learning English is learning to read.		.71

(table continues)

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Table 2 (continued)

Item	Factor 1	Factor 2
10. Once you get used to it, reading English is not so difficult.		.65
13. English culture and ideas seem very foreign to me.		.57
12. I would be happy just to learn to speak English rather than having to learn to read as well.		.50
14. You have to know so much about English history and culture in order to read English.		.48

*Note.*  $N = 140$ ; Eigenvalues: Factor 1 = 5.34, Factor 2 = 2.10; Cronbach's  $\alpha = .85$  for entire measure; Total variance explained is 53.18%.

Table 3

*Correlation Matrix for Predictor and Criterion Variables ( $N = 140$ )*

Variable	1	2	3	4
1. Reading	--	.32***	.37***	-.36***
2. Intrinsic motivation		--	.59***	-.17*
3. Extrinsic motivation			--	.03
4. Reading anxiety				--

*Note.* \*  $p < .05$ , \*\*\*  $p < .001$ .

Table 4

*Regression Analysis Summary for Motivation and Anxiety Predicting Reading (N = 140)*

Variable	Beta	t	p
Intrinsic motivation	.04	0.51	.615
Extrinsic motivation	.36	3.90	.000
Reading anxiety	-.37	-4.91	.000

*Note.*  $R^2 = .28$ ;  $F(3, 136) = 17.72$ ,  $p = .000$ ; Maximum  $VIF = 1.62$ ; Durbin-Watson = 1.55.

Table 5

*Multiple Regression Analysis Summary for Extrinsic Motivation Mediating the Relationship between Intrinsic Motivation and Reading Comprehension (N = 140)*

Step	1	2	3	
Dependent variable	Reading comprehension	Extrinsic motivation	Reading comprehension	
Independent variable	Intrinsic motivation	Intrinsic motivation	Intrinsic motivation	Extrinsic motivation
<i>Beta</i>	.32	.59	.15	.28
<i>t</i>	3.98***	8.58***	1.60	2.86**
$R^2$	.10	.35	.15	
<i>F</i>	15.84***	73.65***	12.43***	

*Note.* \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .



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Table 6

*Games-Howell Post Hoc Results for Motivation and Tukey HSD Post Hoc Results for Anxiety by Motivation/Anxiety Groups*

Motivation (Anxiety)	Mean differences (I – J) (Anxiety is indicated in parentheses)					
	<i>Mean</i>	<i>SD</i>	1	2	3	4
1. HM-HA	72.48 (61.37)	5.60 (4.43)	0.00 (0.00)			
2. HM-LA	73.35 (48.25)	7.91 (5.63)	-0.87 (13.12***)	0.00 (0.00)		
3. LM-HA	57.15 (61.25)	7.29 (3.76)	15.33*** (0.12)	16.20*** (-13.00***)	0.00 (0.00)	
4. LM-LA	57.92 (50.67)	4.71 (3.30)	14.56*** (10.70***)	15.43*** (-2.42)	-0.77 (10.58***)	0.00 (0.00)

*Note.* HM-HA = High motivation/High anxiety; HM-LA = High motivation/Low anxiety; LM-HA = Low motivation/High anxiety; LM-LA = Low motivation/Low anxiety; \*\*\*  $p < .001$ .

Table 7

*Descriptive Statistics for Reading Comprehension in Different Groups*

Group	<i>n</i>	<i>Mean</i>	<i>SD</i>
High motivation/High anxiety (HM-HA)	37	14.46	4.64
High motivation/Low anxiety (HM-LA)	31	16.23	3.83
Low motivation/High anxiety (LM-HA)	32	10.50	4.21
Low motivation/Low anxiety (LM-LA)	40	14.17	4.15

*Note.* Motivation = Intrinsic + Extrinsic reading motivation.

Table 8

*Analysis of Variance for Reading Comprehension*

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Between	552.03	3	184.01	10.25	.000
Within	2440.38	136	17.94		
Total	2992.41	139			

Table 9

*Tukey HSD Post Hoc Results for Reading Comprehension by Motivation/Anxiety Groups*

Variable	HM-HA vs. HM-LA	HM-HA vs. LM-HA	HM-HA vs. LM-LA	HM-LA vs. LM-HA	HM-LA vs. LM-LA	LM-HA vs. LM-LA
Difference	-1.76	3.96	0.28	-5.73	2.05	-3.67
<i>p</i>	.089	.001	.769	.000	.179	.001
<i>d</i>	-0.41	0.89	0.06	-1.42	0.52	-0.88

*Note.* HM-HA = High motivation/High anxiety; HM-LA = High motivation/Low anxiety; LM-HA = Low motivation/High anxiety; LM-LA = Low motivation/Low anxiety.

**Appendix A. Sample English reading comprehension test**

Many people are unhappy at work because their jobs don't suit their personalities. Although people are complex, author Peter Urs Bender classifies people into four personality types. To make it simple, he compares people to birds. The four bird types are the owl, eagle, dove, and peacock.

- (5) Owls are analytical people who like to know how things work. These people work best in jobs with numbers and facts. Eagles like to be in the driver's seat. They are born leaders and like to be the boss. The dove is a bird that represents peace. So, dove personalities excel in jobs where they are helping others. Lastly, the peacock is the show-off. These people like attention and like to be popular. They are most productive in
- (10) jobs where they can be very social. Bender recommends taking a look at your personality before you choose your career. People are happier in jobs where they use their strengths.
17. What is the best title for this article?
- (A) Careers in the Workplace
  - (B) Animals in the Wild
  - (C) Choosing a Career That Suits Your Personality
  - (D) Animals at Work
18. Based on the four animal personalities, what type of job would an owl most enjoy?
- (A) Nurse
  - (B) Accountant
  - (C) Actor
  - (D) Professional athlete
19. Where is the conclusion of the passage?
- (A) Lines 1-2.
  - (B) Lines 4-5.
  - (C) Lines 8-9.
  - (D) Lines 10-11.

### **Appendix B. Motivation for reading questionnaire**

1. If the teacher discusses something interesting I might read more about it in English.
2. I like having the teacher say I read well in English.
3. Grades are a good way to see how you are doing in English reading.
4. I read in English to learn new information about topics that interest me.
5. I enjoy a long, involved story or fiction book in English.
6. I like to read about new things in English.
7. I look forward to finding out my grades in English reading.
8. I like being the best at reading in English.
9. I enjoy reading English books about people in different countries.
10. I feel like I make friends with people in good English books.
11. I like to read mysteries in English.
12. My friends sometimes tell me I am a good English reader.
13. I like being the only one who knows an answer in something we read in English.
14. I read in English to improve my grades.
15. I read a lot of adventure stories in English.
16. I am willing to work hard to read better than my friends in English.

### **Motivation for reading questionnaire (Chinese version)**

1. 如果老師討論的英文主題有趣，我可能會對此主題多加閱讀。
2. 我喜歡讓老師說我英文閱讀能力很好。
3. 我認為從成績可看出一個人英文閱讀能力高低。
4. 我會對感興趣的英文主題加以閱讀以求取新知。
5. 我喜愛長篇複雜的英文故事或小說。
6. 我喜歡閱讀英文的新鮮事物。

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7. 我盼望知道我的英文閱讀成績。
8. 我喜歡當一個英文閱讀能力最強的人。
9. 我喜愛閱讀有關不同國家人物的英文書籍。
10. 我想與好英文書中的人物交朋友。
11. 我喜歡讀英文的神秘事物。
12. 我的朋友有時說我是一個英文閱讀能力不錯的人。
13. 我喜歡當一個唯一知道英文問題答案的人。
14. 我閱讀是希望使英文成績進步。
15. 我讀了許多英文冒險的故事。
16. 我願意用功點以使自己的英文閱讀能力超越朋友。

### **Appendix C. Foreign language reading anxiety scale**

1. I get upset when I'm not sure whether I understand what I am reading in English.
2. When I'm reading English, I get so confused I can't remember what I'm reading.
3. I feel intimidated whenever I see a whole page of English in front of me.
4. I am nervous when I am reading a passage in English when I am not familiar with the topic.
5. I get upset whenever I encounter unknown grammar when reading English.
6. When reading English, I get nervous and confused when I don't understand every word.
7. By the time you get past the funny letters and symbols in English, it's hard to remember what you're reading.
8. I enjoy reading English.
9. I feel confident when I am reading in English.
10. Once you get used to it, reading English is not so difficult.
11. The hardest part of learning English is learning to read.
12. I would be happy just to learn to speak English rather than having to learn to read as well.
13. English culture and ideas seem very foreign to me.
14. You have to know so much about English history and culture in order to read English.

#### **Foreign language reading anxiety scale (Chinese version)**

1. 碰到自己不確定是否讀懂英文時，我會感到苦惱。
2. 當我讀英文時，因為對內容覺得困惑，而無法記得自己在讀什麼。
3. 每當看到整頁英文就覺得害怕。
4. 讀到不熟悉的英文題材，我會緊張。
5. 讀英文時，每當遇到不懂的文法，我會感到苦惱。
6. 讀英文時，若我無法了解每一個單字，我會緊張和困惑。

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7. 在讀完那些奇怪又陌生的英文字母時，我很難記得讀過什麼。
8. 我喜愛閱讀英文。
9. 我覺得我有自信閱讀英文。
10. 我覺得一旦習慣了，閱讀英文就不那麼難了。
11. 我覺得學英文最難的部份是閱讀。
12. 我覺得若要同時學英文口語與閱讀，我將樂於只學口語。
13. 英美文化及思想對我而言似乎很陌生。
14. 我覺得要閱讀英文，必須知道許多英美歷史與文化。