

## A Preliminary Assessment of Facilitating Anxiety in Second Language Reading

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### Abstract

Facilitating anxiety in second language (L2) learning research has not been thoroughly discussed for both methodological and conceptual reasons. This trend is also evident in the field of L2 reading, where reading anxiety has been viewed as a negative force. This study takes the initial step to explore the nature of facilitating anxiety in L2 reading. The behavior of facilitating anxiety measured by a domain-general measure is examined in relation to various L2-reading-specific variables, and the necessity of a new skill-specific measure for facilitating anxiety is discussed. Based on the results of partial correlation and stepwise regression analyses, this study proposes that incorporating a new skill-specific measure for facilitating anxiety could assist future research in gaining a better understanding of the role of anxiety in L2 reading and reading practice.

*Keywords:* language anxiety, reading anxiety, facilitating anxiety, positive psychology, reading performance

Researchers have been focusing their attention for many decades on the nature and role of anxiety in second language (L2) learning (see Gregersen, 2020; Horwitz, 2010; Macintyre, 2017; Madsen, 1982; Scovel, 1978). Previous studies have established that anxiety in L2 learning is a situation- and skill-specific phenomena, and meta-analyses have shown that anxiety toward L2 reading (reading anxiety) has a negative correlation with L2 achievement (e.g., course grades) (Teimouri et al, 2019; Zhang, 2019) and reading performance (e.g., scores on L2 reading comprehension tests) (Li, 2022). Meanwhile, what has rarely been discussed is that existing measures of reading anxiety are designed to capture the debilitating aspects of anxiety, including trembling, nervousness, interfering thoughts, and avoidance behaviors.

All of these anxiety reactions are theoretically related to lower language performance. To put it another way, the current operationalization of reading anxiety does not allow examination of the positive role of anxiety, which could limit our understanding of anxiety in L2 reading. As will be discussed later, this potential problem appears to stem from inconsistent views on the nature of facilitating anxiety in the field of language learning research. This study therefore aimed to explore the potential value of incorporating the concept of facilitating anxiety into L2 reading research. In what follows, this paper provides an overview of pertinent research on anxiety, before outlining a rationale for investigating the facilitative role of anxiety in language learning. It then presents the results of empirical research demonstrating the relationship between facilitating anxiety and L2 reading.

## Literature Review

### *Anxiety in Language Learning Research*

Situation- and skill-specific anxiety has been conceptualized as a response to the inconsistent results in earlier studies on the role of anxiety in L2 learning (Scovel, 1978). The use of existing psychology scales, which do not directly measure anxiety specific to L2 learning (L2 anxiety), has since been identified as problematic (Macintyre, 2017; Teimouri, 2018). This realization was the starting point for a new movement called the specialized approach, which has led to the conceptualization of situation- and skill-specific anxiety constructs, including foreign language classrooms anxiety (Horwitz, 2010) and skill-specific anxieties (Cheng, 2017; Pae, 2013). The use of language-domain-specific measures has yielded more consistent evidence regarding how L2 anxiety is related to language achievement (Teimouri et al., 2019; Zhang, 2019).

Reading anxiety thus came to be conceptualized within the framework of the specialized approach. The Foreign Language Reading Anxiety Scale (FLRAS) introduced in Saito et al (1999) is the first L2-reading-specific anxiety scale. The FLRAS captures reading anxiety as a multidimensional construct, and considers that these dimensions include (a) worry about unfamiliar linguistic features (i.e., grammar and vocabulary), (b) the cultural and orthographical distance between learners' first language (L1) and L2, and (c) lack of confidence and enjoyment in reading (Hamada & Takaki, 2019; Matsuda & Gobel, 2004).

While the FLRAS has quickly become a popular research tool (Teimouri et al, 2019), some other reading anxiety scales were also developed in later studies. For instance, Yamashita (2007) developed a questionnaire for her research on reading attitudes and identified what she called "Anxiety" as a factor. This Anxiety focuses primarily on apprehension about the general comprehension of texts rather than word-level comprehension. Brantmeier (2005) also developed a questionnaire to examine the effect of testing on anxiety arousal in L2 reading. As such, Brantmeier's scale targets worry about post-reading tasks as well as L2 reading itself. Next, Cheng (2017) categorized anxiety reactions into somatic, cognitive, and behavioral reactions, and created a new scale that concerns the degree of these anxiety reactions in the domain of L2 reading. Such differences in the operationalization of reading anxiety also show its multidimensionality.

While evidence suggests that existing reading anxiety scales measure partially different constructs (Mikami, 2019), all of these scales share the characteristic that they consider reading anxiety as a negative psychological condition. To begin with, most question items used in the existing scales concern the degree of adverse reactions to L2 reading and the level of negative beliefs about L2 reading or L2-speaking cultures. Such questions typically start from expressions like "*I feel anxious when...*", "*I fear having to...*", "*I get upset when...*", "*I am nervous when...*", "*I feel intimidated whenever...*", and "*I feel uncomfortable when...*" (see, e.g., Brantmeier, 2005; Cheng, 2017; Hamada & Takaki, 2021; Saito et al, 1999; Yamashita, 2007; Zoghi & Alivandivafa, 2014). Moreover, even when positive expressions (e.g., "*I don't mind if...*" and "*I feel confident when...*") are used, they are treated as reverse scored items.

This point becomes clearer when we look at the behavior of reading anxiety in previous research. First, Yamashita (2013) observed a decrease in the Anxiety score under conditions where L2 reading was designed to be easy and enjoyable, while Bahmani and Farvardin (2017) found the opposite change in the FLRAS score when their participants constantly dealt with reading materials beyond their proficiency level. It is reasonable to posit that constant struggle or failure in text comprehension promotes negative thoughts and feelings that are measured by the FLRAS (Bahmani & Farvardin, 2017). Conversely, accruing successful and enjoyable reading experience would promote the development of positive beliefs and attitudes (Yamashita, 2013), which in turn could mitigate negative feelings about text comprehension represented by Anxiety.

Second, research findings indicate that the characteristics of reading anxiety contrast markedly with those of positive psychological factors, such as self-efficacy and motivation. Li's (2022) meta-analysis showed that reading efficacy, a perceived ability to successfully complete L2 reading tasks, was negatively correlated with reading anxiety ( $r = -.59$  [95% CI =  $-.83, -.17$ ]). Mikami et al (2016) also confirmed that reading anxiety measured by a modified version of Brantmeier's (2005) scale had a strong positive correlation with a lack of motivation for L2 reading ( $r = .54$  [95% CI =  $.34, .71$ ]). Third, the results of meta-analysis showed a consistent inverse relationship between reading anxiety and reading performance:  $r = -.28$  [95% CI [ $-.34, -.22$ ]] (Li, 2022).

All of the above-mentioned characteristics indicate that reading anxiety in prior studies was operationalized as a negative force which stems from past language experience, has distinct characteristics from positive psychological factors, and impairs reading performance. In other words, while the existing scales are shown to be useful in examining the negative association of anxiety with L2 reading and reading practice, they are not specifically designed as a tool to explore possible positive effects of anxiety (e.g., prompting diligent reading and amplifying learners' efforts to enhance reading skills). As will be seen below, there are both methodological and conceptual reasons why prior studies, not only in reading studies but in L2 studies as a whole, have focused their attention on the debilitating role of anxiety. To understand these reasons, the next section will review historical trends in anxiety research.

### ***Facilitating Anxiety in Academic Contexts and in Language Learning Research***

As discussed earlier, anxiety can refer to a psychological condition that negatively affects learning and skill utilization. However, there is also a viewpoint that argues anxiety can be a positive force that promotes learning efforts and attention/focus during task engagement. The former is known as debilitating anxiety, while the latter is termed facilitating anxiety (Burcaş & Creţu, 2021; Zeidner, 2010). At first, anxiety in academic contexts was thought to exist on a continuum, with facilitating and debilitating anxiety located at opposite ends. This suggested that anxiety could either have a negative or positive effect, depending on the individual. This also means that there is a trade-off between facilitating and debilitating anxiety, and low scores on debilitating indexes indicate high facilitating anxiety (and vice versa).

Alpert and Haber (1960) conducted the first study to evaluate the validity of this assumption and concluded that it would be advantageous to consider facilitating and debilitating anxiety as separate constructs instead of different manifestations of the same latent construct. First, the facilitating and debilitating indexes in Alpert and Haber's study only moderately correlated with each other (overall  $r = -.37$ ), indicating that low scores in the debilitating index do not guarantee high scores in the facilitating index. Also, each of these indexes not only correlated with multiple academic performance measures (i.e., the course grade, final examination grade, and grade point average), but the use of both indexes best explained variance in the grade point average. These empirical findings formed part of the foundation for contemporary research on academic anxiety (Cassady et al, 2019), and the concept of facilitating anxiety remains of importance in psycho-educational assessment (Lowe, 2021).

Meanwhile, facilitating anxiety in L2 learning has not been thoroughly discussed as has been done in academic anxiety research (El Shazly, 2021; Hardacre & Güvendir, 2020). There seem to be two reasons for this. The first is the inconsistent use of the term “facilitating anxiety.” As Macintyre (2017) has pointed out, early anxiety studies in L2 research have sometimes used an inverted-U relationship to explain the positive relationships between debilitating anxiety measures and L2 test performance. An example of such an interpretation can be seen in Chastain (1975, p.160): “Perhaps some concern about a test is a plus while too much anxiety can produce negative results” (for a similar view, see Williams, 1991). This type of facilitating–debilitating distinction is, as we reviewed above, different from that of Alpert and Haber (1960). The confusion surrounding the concept of facilitating anxiety, as Macintyre (2017) continues, led to inconsistent results between the studies that followed Alpert and Haber's (1960) framework (Kleinmann, 1977) and those that did not; and led to an early conclusion that the facilitating–debilitating explanation may not be so practical in L2 research (Scovel, 1978).

The educational view of some researchers appears to be another reason for this limited discussion. In her review article, Horwitz (2017) states that anxiety may facilitate the performance of subjectively easy or non-stressful language tasks as a function of the inverted U-shaped effect. At the same time, Horwitz also argues that a search for facilitating anxiety is pointless from an educational standpoint. She argued that L2 learners are often already coping with multiple types of stress, including lack of perceived learning aptitude and high-stakes consequences; hence, it is unethical to offer even more anxiety to them. This would be a valid argument, provided that facilitating and debilitating anxiety occupied opposite ends of the same continuum. If this were the case, the promotion of facilitating anxiety could indeed be dangerous, because attempts to raise anxiety to the optimal level may make some learners unnecessarily anxious about L2 learning. However, it seems that there are two basic problems with this view.

The first is that we currently have little direct evidence of the inverted-U effect of anxiety in L2 learning and use, meaning the validity of the effect has not been systematically examined. Prior studies instead suggested that even high levels of L2 anxiety were not always related to lower L2 performance (Joo & Damron, 2015; Marcos-Llinás & Garau, 2009), and that the direction of anxiety reactions (facilitative or debilitating) may be more a matter of the interaction between anxiety and learner variables (El Shazly, 2021; Nassif, 2019). For instance, individuals who spontaneously choose to study a language with high levels of expected difficulty might be highly

motivated to improve their L2 skills. Such learner characteristics may, as suggested in Nassif (2019), aid in the management of negative thoughts and feelings, and facilitate a focus on language learning. If learner variables do play important roles in determining how anxiety is related to L2 learning, a search for facilitating anxiety should be reconsidered as one way to understand individual differences in reactivity to language experience and self-regulation. Therefore, while it is still a valid argument that teachers must take care to avoid exacerbating anxiety in their students (Horwitz, 2017), investigating how learner characteristics are related to effective and ineffective anxiety management appears to be a valuable pursuit.

A second possible problem with Horwitz's (2017) view on facilitating anxiety is much simpler. The results of Alpert and Haber (1960) indicated that facilitating anxiety is a different construct from the debilitating type, and the incorporation of both types predicts higher academic achievement. Again, facilitating anxiety in L2 learning research has often been discussed based on the positive relationship between the debilitating anxiety measures and language performance. However, if facilitating–debilitating anxieties are two distinct constructs, a more reasonable way of assessing the nature of anxiety in L2 learning is to use both debilitating and facilitating measures.

### *The Current Study and Study Purpose*

It is now safe to say that the historical trends in language learning research have influenced the current conceptualization of reading anxiety (i.e., a negative construct). The above review also offers good justification for reconsidering the nature of facilitating anxiety in L2 reading. If facilitating anxiety is a different construct from the debilitating kind even in the domain of L2 reading, it is possible that each of them has a unique effect on L2 reading and reading practice. If this is the case, it would change how we model anxiety in future research.

Given this, the current study had two aims. The first was to clarify the behavior of facilitating anxiety measured by the Facilitating Anxiety Scale (FAS; Alpert & Haber, 1960) in relation to L2-reading-specific measures. If facilitating anxiety is a different construct from the debilitating kind even in the domain of L2 reading, the following would be observed. First, there would be a moderate negative correlation between the FAS and existing reading anxiety scales. This is expected based on the distinct roles and functions of facilitating and debilitating anxieties (Alpert & Haber, 1960). Second, if the FAS measures a positive construct, its score would be positively correlated with learner characteristics that facilitate L2 reading and reading practice (e.g., reading efficacy and positive attitudes) (El Shazly, 2021; Gregersen, 2020; Nassif, 2019; Yamashita, 2007).

Third, the FAS score would also be positively associated with the performance of a difficult L2 reading task. A positive correlation here would suggest that facilitating anxiety can occur even in challenging and stressful situations, which stands as counterevidence to the argument that facilitating anxiety can only occur in easy or non-stressful tasks (Horwitz, 2017). Lastly, the scores of existing reading anxiety scales would be expected to have negative relationships with positive learner characteristics (Li, 2022; Mikami et al 2016; Yamashita, 2007) and the performance of a difficult L2 reading task.

The second aim of the study was to consider the necessity of a new skill-specific measure for facilitating anxiety. As reviewed above, the specialized approach in L2 research has contributed to a better understanding of the nature of anxiety in language learning and use. At the same time, this approach opened the door to many possibilities for conceptualizing L2 anxiety, which in turn prompted the introduction of various reading anxiety scales. In fact, on top of the scales already introduced, several more L2-reading-specific measures of anxiety have been introduced in the past: they are, the Reading Anxiety Scale (Sellers, 2000), the English as a FL Reading Anxiety Inventory (Zoghi & Alivandivafa, 2014), and the Cognitive-Metacognitive-Classroom FLRAS (Hamada & Takaki, 2021).

On one hand, the constant development of new scales helps expand our understanding of the dimensions and complexity of reading anxiety. Meanwhile, one significant drawback of this approach is the challenge of comparing and synthesizing the results obtained using conceptually different scales. On this point, empirical evidence revealed that the selection of scales can affect the strength of the association between reading anxiety and reading performance measures (Hamada & Takaki, 2021; Mikami, 2019).

For this reason, the introduction of yet another reading anxiety scale must be done with caution and should be based on empirical necessity. One compelling justification for developing such a scale is that the findings of this study indicate that anxiety measured by the FAS behaves as a positive construct, and yet the performance of a difficult reading task is more strongly related to L2-specific variables than to the FAS. If these results are observed, then there is a possibility that the domain specification of facilitating anxiety enhances our understanding of anxiety's role in L2 learning. Furthermore, if the FAS is confirmed to be a robust predictor of reading test performance, this would encourage the use of the FAS in assessing the relationship between facilitating anxiety and L2 reading performance, at least in test-like situations.

The specific research question underpinning this paper then is:

How is facilitating anxiety (measured by the Facilitating Anxiety Scale--FAS) related to L2-reading-specific variables?

## **Method**

### ***Participants***

One hundred and four English majors at a Japanese university participated in this study (40 female and 64 male participants, 18–24 years of age). All participants spoke Japanese as their L1 and had studied English as a school subject before enrolling in university. At the time of the present investigation, the participants had learned English as their L2 in the target department, for between one and four years ( $M = 2.43$  years,  $SD = 0.88$ ,  $Skew = 0.17$ ). The program was specifically designed to develop participants' overall L2 proficiency. L2 learning activities in the target university involved, for instance, extensive reading, academic writing, oral presentation, and English-medium classes.

### ***Materials/Measurement Instruments***

**Reading comprehension test.** The use of a challenging test was a necessary condition for comparing the behaviors of facilitating and debilitating anxieties. The common view is that the facilitative effect of anxiety can only be seen in easy or non-stressful tasks (Horwitz, 2017). If this view is correct, facilitative anxiety measured by the Facilitating Anxiety Scale (FAS) would have a negligible relationship with the performance of a challenging L2 reading comprehension test. A clear positive association, on the other hand, suggests the need to reconsider the role of anxiety in test-like L2 use situations.

A standardized test called TOEIC® was used for this research project. The reading section of the test consists of 100 multiple-choice questions, and it estimates English reading proficiency (hereafter Proficiency) (score range: 5–495) based on the five subskill scores (Cid et al, 2017) (for the validity and reliability estimates of the test, see Wei & Low, 2017). The subskills of the test purportedly represent the ability to:

- 1) locate and understand specific information in tables and passages.
- 2) connect information across multiple sentences in a single text and across texts.
- 3) make inferences based on information in written texts.
- 4) understand vocabulary in formal texts.
- 5) understand grammar in formal texts.

TOEIC® was expected to serve as a challenging test for the participants of this study. This test classifies English L2 readers into five proficiency levels based on their test scores. The highest level is equivalent to the C1/Advanced level in the Common European Framework of Reference (i.e., the scores greater than 455 out of possible 495) (Educational Testing Service, 2019). The official statistics of the test indicate that the C1 level is achieved by a mere 1% of test-takers in Japan (the ratio was calculated using the official data available (in Japanese) at: [https://www.iibc-global.org/toEIC/official\\_data/lr.html](https://www.iibc-global.org/toEIC/official_data/lr.html)). Consequently, it was anticipated that the TOEIC® would pose a challenge for most English learners in Japan, including the 104 participants.

**Questionnaire.** The questionnaire consisted of two parts: The participants' basic information (gender, age, and year at university) and nine self-reported psychological measures. The latter part consisted of 55 items that measure facilitating anxiety, positive psychological characteristics, and reading anxiety (all questionnaire items are available in the initial studies cited in this section). All 55 items were answered on a 6-point Likert scale, ranging either from “never true of me” to “always true of me” (the FAS) or from “strongly disagree” to “strongly agree” (the remaining measures).

Facilitating anxiety was measured using the FAS ( $k = 11$ ) (Alpert & Haber, 1960). This scale assesses the extent to which high-pressure and test situations enhance one's performance and how well one can perform under pressure.

Regarding positive psychological characteristics, it was felt that five variables were particularly useful for this research project. As will be explained in detail, higher scores on these variables

were expected to be related to lower reading anxiety and better test performance. The behavior of facilitating anxiety, when compared to these five positive variables, can thus provide insight into the characteristics underlying the attribute measured by the FAS.

The first variable identified was Reading Efficacy (Mori, 2002). Reading Efficacy stands for a perceived ability to successfully complete L2 reading tasks. Higher scores on Reading Efficacy were demonstrated to be linked to lower reading anxiety (Li, 2022; Mikami et al 2016) and better performance in reading tasks (Leung et al, 2019; Mills et al, 2006). Four question items ( $k = 4$ ) were adapted from Mori (2002), and two retrospective questions pertaining to efficacy in middle and high schools were modified to investigate the efficacy at university. The changes were made because the participants' current learning environment (English as an L2) is very different from that at the pre-university stage (i.e., English as a foreign language setting). The altered questions of focus were: *"I like reading classes at university."* and *"My grades for English reading classes at university are not very good."*

The remaining four positive characteristics were measured using the question items taken from Yamashita (2007). Of the four variables, three are indicative of one's attitudes toward L2 reading. Individuals may find L2 reading beneficial for intellectual development, career building, and improving their L2 skills. Intellectual Value ( $k = 5$ ), Practical Value ( $k = 4$ ), and Linguistic Value ( $k = 3$ ) are the measures of such personal interest in L2 reading. The final variable, Comfort ( $k = 6$ ), is the degree to which individuals think L2 reading is pleasant and enjoyable.

Yamashita (2007) confirmed that these variables, with the exception of Practical Value, were significant and positive predictors of TOEIC<sup>®</sup> reading score, whereas Anxiety predicted the score in the opposite direction. Additionally, while Yamashita (2007) did not present direct correlation data, it is reasonable to assume that Anxiety has negative associations with positive attitudes and feelings of comfort. This is because a lack of interest and enjoyment are commonly acknowledged as significant contributors to reading anxiety (Hamada & Takaki, 2019; Matsuda & Gobel, 2004). It should also be noted that Practical Value was used in the current survey despite its non-significant relationship with the test score in Yamashita (2007). This decision was made based on the fact that all participants of this study had previously completed various Business English classes before participating in the survey. On this point, Yamashita's (2007) participants seemed to have had limited opportunities for learning English for business purposes (see the description of her participants, p.87). It was postulated that the participants of the current study may place a higher value on studying English for career advancement.

Reading anxiety was measured using three scales: the FLRAS ( $k = 20$ ) (Saito et al, 1999), Anxiety ( $k = 4$ ) (Yamashita, 2007), and the short version of Brantmeier's (2005) scale (hereafter the SBS) ( $k = 4$ ) (Mikami, 2019). The FLRAS was selected as it is the most widely used assessment tool (Teimouri et al, 2019). The results obtained from this scale were deemed to be valuable for highlighting the similarities and distinctions between facilitating anxiety and the commonly acknowledged concept of reading anxiety.



The SBS and Anxiety were employed in this study for two reasons. The first reason is their theoretical and empirical relationships with reading performance and the five positive variables. The SBS was demonstrated to have an inverse correlation with Reading Efficacy (Mikami et al, 2016) and performance on challenging L2 reading tasks (Mikami, 2019). Anxiety also had an inverse correlation with reading performance (Yamashita, 2007), and, as discussed earlier, there were grounds to suspect Anxiety has a negative association with positive learner characteristics. The second reason was the conceptual distinctions between the three reading anxiety scales. Prior research has suggested that choice of scales has an impact on how reading anxiety relates to performance measures (Hamada & Takaki, 2021; Mikami, 2019). Additionally, Mikami (2019) has confirmed that the SBS and Anxiety measure anxiety constructs that fall outside the purview of the FLRAS. These differences in targeted constructs are useful in evaluating the association between the FAS score and reading anxiety.

### ***Procedure***

The 104 participants first completed the questionnaire individually before sitting the TOEIC® Reading and Listening test simultaneously. All participants agreed to take part in this study under the condition of anonymity and received remuneration for their participation. The data collection procedure of this study was granted approval by the ethics committee of the institution.

### ***Data Analysis***

The sample size of this study ( $N = 104$ ) did not allow the use of confirmatory factor analysis (Phakiti, 2018). For this reason, the groups of question items were treated as measures of latent constructs when their reliability coefficients were found to be above the commonly accepted threshold values of .70. Cronbach's alpha ( $\alpha$ ), McDonald's omega ( $\omega_t$ ), and the greatest lower bound (GLB) were used for the assessment of reliability. Each of these reliability indices has the potential to produce unreliable estimates under certain conditions, including small sample size, a small number of items, unequal variances, and high skewness (Malkewitz et al, 2023). For this reason, the measures that yielded a reliability coefficient of greater than .70 on all three estimators were retained for data analysis.

Of the nine psychological measures, only Linguistic Value and Practical Value did not meet the requirement ( $\alpha = .60$ ,  $\omega_t = .61$ , GLB = .67 and  $\alpha = .65$ ,  $\omega_t = .64$ , GLB = .77, respectively). Thus, the mean values became the index scores for Reading Efficacy ( $\alpha = .77$ ,  $\omega_t = .78$ , GLB = .83), Intellectual Value ( $\alpha = .77$ ,  $\omega_t = .77$ , GLB = .82), Comfort ( $\alpha = .82$ ,  $\omega_t = .82$ , GLB = .89), FLRAS ( $\alpha = .84$ ,  $\omega_t = .85$ , GLB = .88), Anxiety ( $\alpha = .80$ ,  $\omega_t = .82$ , GLB = .84), SBS ( $\alpha = .90$ ,  $\omega_t = .90$ , GLB = .90), and FAS ( $\alpha = .84$ ,  $\omega_t = .85$ , GLB = .88). The Proficiency/TOEIC® measure was scored and generated by the testing organization.

To test the behavior of facilitating anxiety measured by the FAS, this study first computed the partial correlation between the FAS and the six L2-specific variables (i.e., Reading Efficacy, Intellectual Value, Comfort, FLRAS, Anxiety, and SBS). The influence of year at university ( $M = 2.43$ ,  $SD = 0.88$ ) and reading proficiency measured by TOEIC® was controlled in the

analysis, because the differences in the length of L2 learning and reading proficiency may have influenced the participants' responses in the survey (Mikami, 2019; Yamashita, 2007).

Subsequently, this study calculated the partial correlation between Proficiency and each of the seven psychological variables (the six variables and the FAS). The influence of year at university was controlled again because individuals with a more extensive L2 learning experience may achieve higher scores on the test, and the difference in test scores could potentially impact their responses in the survey (Yamashita, 2007). The second analysis was conducted for two reasons. The first was to confirm the relationship between facilitating anxiety and Proficiency. The second was to identify the reading anxiety index and positive variable that had the strongest correlation with Proficiency in each category (the L2-reading anxiety category and positive belief/attitude category). This was done as a preliminary step to assess the relative impact of facilitating anxiety on Proficiency in comparison to the most test-relevant positive and negative L2 variables (viz., whether Proficiency is more strongly related to L2-specific variables than to the FAS).

A stepwise regression analysis was then conducted to confirm the most appropriate set of predictors of Proficiency from facilitating anxiety, reading anxiety, positive belief/attitude, and their corresponding interaction terms. First, the FAS was set as a predictor of Proficiency. Then, the identified reading anxiety index and positive variable were added to the regression model. The interactions between the three predictors were also tested. A backwards stepwise removal based on the likelihood-ratio statistic was used to gain an adequate model using the minimum number of variables possible (criterion for entrance:  $p < 0.05$ ; criterion for removal  $p \geq 0.1$ ).

All index scores were standardized before the analyses. Alpha was set at .05 using the false discovery rate control procedure (Benjamini & Hochberg, 2000). The software *SPSS* version 21, *Langtest* (Mizumoto & Plonsky, 2016), and *G\*power 3* (Faul et al, 2007) were employed for statistical computations. Regarding the statistical power,  $1-\beta \geq .80$  was the threshold used. Cohen's (1992) criteria was used for the interpretation of effect sizes.

## Results

### *Descriptive Statistics*

Descriptive statistics are reported in Table 1. First, the mean score of Proficiency was 223 out of a possible 495, with a standard deviation of 82.34 ( $Min = 85.00$ ,  $Max = 475.00$ ,  $Skew = 0.52$ ). This result illustrates that the level of difficulty of the test was, as anticipated, either high or very high for most participants. It was also confirmed that only one student in the present sample achieved the C1 level score (i.e.,  $> 455$ ). The data of this student (who attained the score of 475) was retained for the analysis as the ceiling score of 495 was not attained (i.e., this individual could have still experienced anxiety or lack of confidence when choosing incorrect answers over the correct ones). Next, the one-sample Kolmogorov-Smirnov test found that all index scores in Table 1 were normally distributed ( $D = 0.08-0.10$ ,  $p = .210-.570$ ).

Table 1  
*Descriptive Statistics on the Eight Indexes (Raw Scores)*

Index	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	<i>Skew</i>
Proficiency	223.03	82.34	85.00	475.00	0.52
Reading Efficacy	3.14	1.07	1.00	5.50	0.20
Intellectual Value	4.59	0.83	2.40	6.00	-0.63
Comfort	3.25	0.94	1.00	5.17	-0.25
FLRA	3.72	0.73	2.05	5.30	-0.07
Anxiety	3.88	1.23	1.00	6.00	-0.22
SBS	3.57	1.28	1.25	6.00	-0.02
FAS	3.33	0.87	1.33	5.44	-0.03

*Research Question: How is Facilitating Anxiety (Measured by the FAS) Related to L2-Reading-Specific Variables?*

Table 2 shows the partial correlations between the FAS and the three reading anxiety indexes. All correlations were negative, and a conclusive relationship ( $p \leq .05$  and  $1-\beta \geq .80$ ) was observed between the FAS and FLRAS ( $r = -.32$ , [95% CI:  $-.49, -.14$ ]).

Table 2  
*Partial Correlations between FAS Score and Reading Anxiety Scores*

Index	FAS	<i>p</i>	$1-\beta$
FLRA	-.32 [-.49, -.14]	.001	.92
Anxiety	-.14 [-.32, .06]	.173	.30
SBS	-.22 [-.40, -.03]	.025	.62

*Note.*  $N = 104$ , controlled for the influence of year at university and reading proficiency.

Table 3 summarizes the partial correlations between the anxiety variables and positive variables. Reading anxiety (measured by the FLRAS, Anxiety, and SBS) generally had adverse relationships with the positive variables. Meanwhile, the opposite applied to facilitating anxiety: the FAS had moderate positive relationships with Reading Efficacy, Comfort, and Intellectual Value.

Table 3  
*Partial Correlations between Anxiety Variables and Positive Variables*

Index	Reading Efficacy	Comfort	Intellectual Value
FLRA	-.41** [-.56, -.24]	-.40** [-.55, -.22]	-.32* [-.49, -.13]
Anxiety	-.14 [-.32, .06]	-.12* [-.31, .08]	-.27** [-.44, -.08]
SBS	-.27** [-.44, -.08]	-.31** [-.47, -.13]	-.22* [-.40, -.03]
FAS	.29** [.10, .45]	.34** [.16, .50]	.34** [.15, .50]

Note.  $N = 104$ , controlled for the influence of year at university and reading proficiency, \*\* =  $p \leq .01$ , \* =  $p \leq .05$  (corrected by the BH method),  $1-\beta \geq .80$  when  $r \geq .27$  or  $\leq -.27$ .

Table 4 summarizes the partial correlations between Proficiency and the seven psychological variables. All three reading anxiety indexes, Comfort, and Reading Efficacy had conclusive relationships with Proficiency. The FAS also showed a significant relationship; however, its power ( $1-\beta = .77$ ) was slightly below the commonly accepted threshold of .80. Reading Efficacy and SBS had the strongest correlation with Proficiency in each of the anxiety and positive variable categories ( $r = -.44$  [95% CI:  $-.58, -.27$ ] and  $r = .53$  [95% CI:  $.38, .66$ ], see Table 4). These variables were selected for the evaluation of the relative impact of facilitating anxiety on Proficiency in the subsequent step.

Table 4  
*Partial Correlations between Proficiency and Psychological Variables*

Index	Proficiency	$p$	$1-\beta$
SBS	-.44 [-.58, -.27]	< .001	.99
FLRA	-.38 [-.54, -.20]	< .001	.98
Anxiety	-.34 [-.50, -.15]	.001	.95
Intellectual Value	.24 [.04, .41]	.017	.69
FAS	.26 [.07, .43]	.009	.77
Comfort	.33 [.14, .49]	.001	.93
Reading Efficacy	.53 [.38, .66]	< .001	.99

Note.  $N = 104$ , controlled for the influence of year at university.

Lastly, Reading Efficacy, SBS, FAS, and their interactions were entered into a stepwise regression model. The FAS and none of the interaction terms were found to be statistically significant; therefore, these were removed from the model. Table 5 displays the outcomes of the

regression analysis. The adjusted  $R^2$  for the final model was .31 (Step 2 in Table 5). Here, Reading Efficacy and SBS emerged as significant predictors of Proficiency ( $\beta = .40$  [95%CI: .22, .58] and  $-.27$  [95%CI:  $-.45, -.10$ ], each).

Table 5  
*Summary of Stepwise Regression Model*

Variable	Adjusted $R^2$	$F$	AIC	$\beta$ [95%CI]	$t$	$p$
Step 1	.26	24.62	268.85			< .001
Reading Efficacy				.51 [.35, .68]	6.09	< .001
Step 2	.31	37.03	261.77			< .001
Reading Efficacy				.40 [.22, .58]	4.41	< .001
SBS				-.27 [-.45, -.10]	-3.04	.003

*Note.*  $N = 104$ , dependent variable: Proficiency, VIF (Step 2) = 1.23,  $1-\beta$ : Step 1 = .80 and Step 2 = .81.

## Discussion

The results of this study confirmed that reading anxiety, as measured by the three different scales, had negative associations with positive L2 variables and reading test performance. These results lend support to the notion that the focus of the reading anxiety scales is the debilitating kind of anxiety. In contrast, facilitating anxiety measured by the FAS exhibited greater similarity with the positive L2 variables than with the reading anxiety indexes. First, the FAS correlated positively with Reading Efficacy, Comfort, and Intellectual Value. This suggests that L2 learners who think they perform better in high-pressure and test situations tend to be more motivated about, comfortable with, and confident about L2 reading.

The moderate negative association between the FAS and FLRAS suggest that it becomes relatively harder for anxious L2 readers to perform better under pressure. Here, it must be emphasized that, because the FAS is not a skill-specific scale, the moderate correlation observed between the FAS and FLRAS does not serve as direct evidence of little trade-off between facilitating and debilitating anxiety in the domain of L2 reading. Instead, however, it can be argued that the FAS captures a distinct type of anxiety construct that falls outside the purview of the most widely used reading anxiety scale (the FLRAS), and that its nature appears to be aligned with positive psychological variables.

Regarding the relationship between the FAS and Proficiency, the most that can be said is that facilitating anxiety may be associated with performance on a challenging L2 reading test. With respect to this, the result of a post-hoc power analysis conducted using *G\*power 3* (Faul et al, 2007) suggests that an additional seven participants would have been necessary to arrive at a conclusive relationship between the FAS score and Proficiency ( $p \leq .05$  and  $1-\beta \geq .80$ ).

The results of stepwise regression analysis indicated that the FAS is not a robust predictor of L2 reading test performance. The present results confirmed that the L2-specific variables, Reading Efficacy and SBS, were much better predictors of Proficiency than the FAS. These results first provide further support for the argument that the use of skill-specific measures helps improve

our understanding of the relationship between learners characteristics and L2 performance (Macintyre, 2017; Teimouri, 2018). Also, as none of the interaction terms appeared significant, it can be assumed that anxiety and self-efficacy can co-occur in test situations, especially in standardized tests like that used in this study. So, on one hand, learners in test situations must deal with elements that decrease comprehension (e.g., unknown words, lengthy sentences, and the lack of background knowledge). Such a confrontation may in turn generate a debilitating anxiety reaction in reading (e.g., the occurrence of interfering thoughts) (Sellers, 2000). On the other hand, research evidence also indicates that Reading Efficacy helps learners employ different reading strategies in response to task complexity (Leung et al, 2019). The results of this study suggest that both of these negative and positive reactions can occur in one test, rather than the effects of self-efficacy cancel out that of reading anxiety, and vice versa.

### **Implications for Future Research**

One implication for future research is that the development of an L2-specific measure for facilitating anxiety may further our understanding of the nature of anxiety in L2 reading. The results of this study support the possibility that positive reactions are not the target of existing reading anxiety scales. Furthermore, the results of the regression analysis indicate that positive and negative responses may co-occur in test situations. A real possibility arising from these findings is that the effect of reading anxiety on L2 performance has been over- or underestimated due to the confusion surrounding the facilitating–debilitating distinction. Previous L2 research has primarily focused on the downside of anxiety (Hardacre & Güvendir, 2020), and sometimes regarded low scores in anxiety indexes as an optimal level of anxiety (for review, see Macintyre, 2017). The results of this study, however, indicate that the FAS may measure something outside the scope of existing reading anxiety scales. This suggests that the use of debilitating scales alone may have limited the predictions of the model about how anxiety is related to L2 performance. To test if this is the case, we need to develop a new skill-specific measure of facilitating anxiety, and then determine whether the use of the two types of anxiety scales better explains variance in reading performance than using the debilitating scale alone.

A new facilitating anxiety scale is also useful for the assessment of the inverted-U effect of anxiety in L2 performance (Chastain, 1975; Horwitz, 2017; Williams, 1991). This effect would be observed if, of the two types of anxiety scales, only the facilitating type were strongly related to the performance of easy tasks, and the opposite were true for the relationship between the debilitating scale and difficult tasks. In that sense, the new scale has applications even if it is assumed, based on the inverted-U effect of anxiety, that the exploration of debilitating anxiety has greater educational value.

### **Limitations**

The findings of this study bring us closer to understanding the nature of anxiety in L2 reading. However, because of the following limitations, the results should be taken as tentative rather than definitive. First, although there were clear trends in the behaviors of the target variables (i.e., reading anxiety, facilitating anxiety, and positive characteristics), some target relationships remained inconclusive. For instance, this study was slightly underpowered to detect the relationship between the FAS and Proficiency. The reason for this could either be the sample

size of this study or the use of the domain-general scale in L2 research. Such issues can be overcome in future studies by using a new facilitating anxiety scale and a sample size large enough to detect relatively small effects.

The second limitation concerns the generalizability of the results. This study was conducted in the English department of a Japanese university. It is possible that learners' attitudes and beliefs regarding English reading may vary in different contexts, such as when English is studied exclusively as a school subject. In other words, studies in different sociocultural contexts may produce different results.

The final limitation relates to a theoretical issue. This study tested the behavior of the FAS in relation to L2-reading-specific variables. This is an explorative way to confirm the nature of facilitating anxiety in L2 reading. As this study illustrated the general relationship between facilitating anxiety and L2 variables, future studies may wish to consider a more refined theoretical model linking both anxiety and positive attributes to L2 reading performance.

## Conclusion

This article has argued that facilitating anxiety in language learning research has not been thoroughly discussed for methodological and conceptual reasons. This study thus examined the behavior of domain-general facilitating anxiety in relation to various L2-reading-specific variables, and discussed the necessity of a new L2-reading-specific measure for facilitating anxiety. The test results indicated that, while domain-general facilitating anxiety behaves similarly to positive variables, it is a much weaker predictor of L2 reading performance compared to reading-specific anxiety and self-efficacy. Based on these results, this study proposes that it would be meaningful for future studies to develop a new skill-specific scale for facilitating anxiety and examine its role in L2 reading.

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