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Article

The Impact of Resilience and Self-Regulation on L2 Proficiency among ESL Learners

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Abstract
The present study investigates the impact of resilience and self-regulation on English proficiency among second language (L2) learners. Drawing on psychological theories and educational frameworks, it explores the reciprocal relationship between resilience – the ability to adapt to challenges – and self-regulation, the capacity to manage one's cognitive and emotional resources for autonomous learning. A cohort of 197 Japanese university students participated in this study. We employed structural equation modelling (SEM) to analyse the mediating role of self-regulation in the relationship between resilience and English proficiency. Results indicate that self-regulation serves as the primary determinant of L2 proficiency. That means learners who exhibit strong self-regulation skills demonstrate substantially higher English proficiency. Resilience had mediating effects on self-regulation and proficiency. The findings underscore the importance of fostering both resilience and self-regulation in L2 learning, suggesting that targeted interventions to improve these psychological constructs can enhance L2 proficiency development. This study contributes to a growing body of research on resilience and self-regulation that shapes L2 acquisition and offers practical implications for L2 educators.

Keywords
Self-regulation, resilience, English proficiency, structural equation modelling (SEM)

1 Introduction

Resilience and self-regulation are essential to second language (L2) learning. Resilience is defined as 'the process of, capacity for outcome of successful adaptation despite challenging or threatening circumstances' (Howard & Johnson, 2000, as cited in Martin & Marsh, 2006, p. 267). In the academic

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context, resilience often refers to 'the heightened likelihood of success in school and other life accomplishments despite environmental adversities brought about by early traits, conditions and experiences' (Wang et al., 1994, p.46; see Martin & Marsh, 2006, for a more comprehensive review).

Existing L2 studies have shown that a strong sense of resilience is directly and indirectly associated with improvements in motivated behaviours or engagement (Kim & Kim, 2021; Rivera, 2012; Wang, 2021; Zarrinabadi et al., 2022), motivations and emotions (Kim & Kim, 2017; Kim et al., 2019; Proietti Ergün & Dewaele, 2021; Zarrinabadi et al., 2022) and L2 proficiency (Danesh & Shahnazari, 2020; Kim & Kim, 2021). Wang (2021) has also suggested that, while the relationship between resilience and self-regulation was not empirically examined, resilient learners may be more likely to employ self-regulated learning (SRL) strategies, such as goal setting, self-monitoring and self-reflection. The use of SRL strategies has been further highlighted as crucial for enhancing L2 learning behaviours and L2 proficiency (Alqahtani, 2023; Teng & Huang, 2019; Teng et al., 2022; Teng & Zhan, 2023; Wang, 2023; Zahidi & Ong, 2023). For example, learners who employ SRL strategies or related approaches, such as metacognitive strategies like planning, monitoring and evaluating their own learning, tend to achieve higher levels of English proficiency (e.g., Alqahtani, 2023; Zahidi & Ong, 2023). In other research, a series of studies in the context of writing have shown greater associations between the use of SRL strategies and English writing performance (Teng & Huang, 2018; Teng et al., 2022; Teng & Zhan, 2023). Additionally, self-regulation can enhance learners' willingness to communicate in L2, a critical factor for developing speaking proficiency (Alqahtani, 2023). This interplay between self-regulation and L2 proficiency suggests that learners who are better equipped to manage challenges *through* resilience may be more likely to engage in effective learning strategies, leading to improved L2 language skills.

While the previous L2 studies mentioned above have provided valuable insights into the relationship between self-regulation and resilience in the context of L2 learning, very few studies, to our knowledge, have specifically examined the relationship between these two variables within L2 learning contexts (e.g., Yun et al., 2018). Moreover, no research has examined whether these variables are directly or indirectly linked to L2 performance, especially within the Japanese English as a foreign language (EFL) context. Given the recognised importance of self-regulation and resilience in L2 research (Kim & Kim, 2021; Oxford, 2011, 2017; Rose, 2012; Rose et al., 2018; Zarrinabadi et al., 2022) and the potential connection between these variables and L2 performance (e.g., Kim & Kim, 2021; Teng & Huang, 2018; Teng & Zhang, 2022), it is plausible that their effects may vary depending on learning environments (e.g., Bai & Wang, 2021; Ueno & Takeuchi, 2022). Thus, further investigation into how resilience and self-regulation interact and whether they directly and indirectly influence Japanese EFL learners' L2 performance is warranted. Therefore, the present study focuses on Japanese EFL learners, building on prior research findings to explore the psychological mechanisms underlying self-regulation and resilience, as well as their direct and indirect effects on L2 proficiency.

2 Literature Review

2.1 Resilience and self-regulation in psychology and education

Resilience and self-regulation are key elements in both psychology and education, playing crucial roles in an individual's capacity to overcome obstacles and achieve outcomes. The term *resilience*, as used in educational psychology, refers to 'findings that some individuals have relatively good psychological outcomes, despite exposure to acute or chronic stressors that are associated with negative outcomes' (Luthar et al., 2000; Rutter, 2006, as cited in Tudor & Spray, 2017, p. 42). Resilience involves maintaining psychological well-being despite challenges (Mak et al., 2011; Opsomer et al., 2020; Windle, 2011). The American Psychological Association describes resilience as a dynamic process involving positive adaptation to stressors, such as family problems, serious health issues or workplace stress (Opsomer et al., 2020). In educational contexts, resilience enables students to navigate academic

challenges and maintain motivation and engagement in their studies (e.g., Artuch-Garde et al., 2017; Kumi-Yeboah, 2016). Kumi-Yeboah (2016), in particular, argues that resilience can be cultivated through supportive environments and interventions that promote coping strategies and emotional regulation.

Self-regulation, on the other hand, refers to the management of one's thoughts, emotions and behaviours in pursuit of long-term goals (e.g., Schunk & Greene, 2017; Zimmerman, 1986). It involves setting goals, monitoring progress and adjusting strategies as needed to achieve desired outcomes (Arias et al., 2014; Nota et al., 2004; Schunk & Greene, 2017). In educational settings, self-regulation is crucial for effective learning as it allows students to take control of their learning processes, engage in self-assessment and develop metacognitive skills (Arias et al., 2014; Nota et al., 2004; Schunk & Greene, 2017). Self-regulated learners are proactive, participating emotionally, motivationally and cognitively in their learning experiences. The reciprocal relationship between metacognitive strategies, self-efficacy and motivation further highlights the importance of fostering these constructs for perceived progress in language learning (Teng, 2025).

The relationship between resilience and self-regulation is significant, as both traits enhance an individual's ability to cope with adversity and succeed academically. Studies have shown that self-regulation serves as a protective factor that enhances resilience, enabling learners to manage stress and maintain motivation in challenging situations (e.g., Artuch-Garde et al., 2017; Kumi-Yeboah, 2016). Conversely, resilient individuals often exhibit strong self-regulation skills, helping them navigate difficulties and adapt their learning strategies effectively. Thus, resilience and self-regulation play a reciprocal role in learner development.

2.2 The role of resilience in L2 learning

In language education, resilience may be a relatively new area of research, but it is increasingly recognised as a critical variable that enables learners to overcome obstacles and persevere in their efforts to learn a new language despite the inherent difficulties and challenges that accompany the process. For instance, Guo and Li (2022) developed and validated the Foreign Language Learning Resilience Scale, highlighting how resilience fosters adaptability and motivation, which are essential for overcoming challenges in language learning. Similarly, Kim et al. (2017) found that resilience directly affects learners' motivation and indirectly impacts L2 learning outcomes by promoting engagement and persistence in challenging tasks. Zhang (2022) also demonstrated that learners with higher levels of resilience are more willing to engage in language learning activities, which directly contributes to better academic motivation and proficiency. These findings collectively position resilience as a cornerstone in L2 learning, linking it to increased enthusiasm, motivation and proficiency.

Existing studies suggest that individuals with greater resilience are more inclined to approach language learning with enthusiasm, resulting in increased motivation and proficiency (Kim & Kim, 2021; Wang & Liu, 2022; Zhang, 2022). For instance, Wang and Liu (2022) explored how resilience influences learners' willingness to communicate and its subsequent impact on speaking proficiency. Their study revealed that resilient learners are more likely to overcome the fear of speaking, actively engaging in communication tasks that enhance their language skills. This implies that nurturing resilience can enhance learners' satisfaction and dedication to language studies, empowering them to tackle the challenges of language acquisition with greater confidence and long-term commitment.

Resilience also plays a significant role in mitigating anxiety, a prevalent issue among L2 learners. As shown by Nguyen et al. (2015), resilience functions as a protective factor against anxiety by fostering emotional stability, allowing learners to approach L2 learning with greater confidence and less fear of failure. Their research emphasised the importance of storytelling as a pedagogical tool to build resilience and reduce anxiety in language learners. This is particularly important in L2 classrooms, where anxiety can significantly hinder performance and learning outcomes (Shen, 2022). Shen's (2022) study underscored how resilience, along with positive emotions, supports a conducive learning environment,

reducing learners' fear of failure and promoting a more positive attitude toward language acquisition. Such findings highlight that resilience not only enhances emotional well-being but also creates a supportive framework for effective L2 learning.

In developing resilience, however, the emotional aspects of L2 learning are critical. For instance, positive emotions and enjoyment in the classroom significantly contribute to learners' resilience. Students who find joy in L2 classes are more likely to develop a resilient attitude toward learning. This aligns with findings emphasising the importance of supportive and engaging learning environments that promote emotional well-being and resilience among L2 learners. Mindfulness practices can further enhance resilience in L2 learning by fostering a focused and engaged approach. These practices help learners manage stress and anxiety, common barriers to successful L2 acquisition (Shen, 2022).

2.3 The role of self-regulation in L2 learning

Self-regulation involves a learner's ability to manage their learning process by setting goals, monitoring and evaluating progress, and reflecting on outcomes (e.g., Schunk & Greene, 2017; Zimmerman, 1986, 2016). The concept of self-regulation originated from the socio-cognitive perspective in the field of educational psychology (Zimmerman, 1986) and was later introduced into L2 research by Dörnyei and his associates (Dörnyei, 2005; Tseng et al., 2006). While self-regulation in L2 research emerged partly in response to critiques of L2 learning strategy research (see Takeuchi, 2019 for a detailed review), it has since been recognised as a crucial component of successful L2 learning (Rose, 2012; Rose et al., 2018; Teng & Zhang, 2016; Tseng et al., 2006, 2017; Tseng & Schmitt, 2008).

Self-regulation involves various strategies or abilities to control factors such as cognitive, metacognitive, motivational, environmental and behavioural factors related to L2 learning (Kormos & Csizér, 2013; Molnar, 2025; Oxford, 2011, 2017; Teng et al., 2022; Teng & Zhan, 2023; Teng & Zhang, 2016; Tseng et al., 2006; Tseng et al., 2017). It is widely regarded as an initial driving force in L2 learning (Rose, 2012; Takeuchi, 2019), closely linked to increased motivation (e.g., Mizumoto, 2013; Ueno & Takeuchi, 2022; Ziegler, 2015) and learning behaviours (e.g., Tseng & Schmitt, 2008; Ueno & Takeuchi, 2022).

Importantly, while self-regulation enhances motivational factors, recent studies suggest that it is also strengthened by motivational elements such as intrinsic value, self-efficacy and growth mindset (e.g., Bai & Wang, 2021; Guo et al., 2023; Teng et al., 2024). These findings indicate a reciprocal relationship between self-regulation and motivational factors in L2 learning. Moreover, prior studies have shown that self-regulation not only promotes learning behaviours (i.e., strategy use; Teng & Hung, 2019; Teng & Zhang, 2024; Tseng & Schmitt, 2008) and motivational factors (e.g., Teng et al., 2024; Ueno & Takeuchi, 2022; Ziegler, 2015), but also contributes to L2 performance (e.g., Chen et al., 2022; Guo et al., 2023; Teng et al., 2024; Teng & Zhang, 2017). As such, self-regulation is considered a core component in L2 learning (Oxford, 2011, 2017; Rose, 2012; Rose et al., 2018).

2.4 The relationship between resilience and self-regulation

The relationship between resilience and self-regulation is crucial in understanding how individuals manage challenges and achieve goals. Self-regulation can enhance resilience by equipping individuals with strategies to cope with stress and setbacks. Self-regulated learners are more likely to use problem-solving techniques and adaptive coping strategies when faced with challenges, fostering resilience (Swanson et al., 2010). This relationship is particularly evident in education, where students with strong self-regulation skills demonstrate higher academic resilience, enabling them to persist in their studies despite difficulties (Artuch-Garde et al., 2017).

Conversely, resilience can enhance self-regulation. Resilient individuals often have a positive outlook and strong self-efficacy, which boosts their ability to set and achieve goals (Keye & Pidgeon, 2013; Teng,

2024; Zhang, 2022). Resilient learners are more likely to engage in self-reflection and self-assessment, crucial components of self-regulation, as they manage emotions and maintain motivation in the face of challenges (Houten-Schat et al., 2018; Surżykiewicz et al., 2022).

As such, the relationship between resilience and self-regulation is characterised by a reciprocal influence where each trait enhances the other. Self-regulation provides tools for effective challenge management and fosters resilience, while resilience contributes to the development of self-regulatory skills. Understanding this relationship is essential for educators and psychologists to support learners in achieving their goals and overcoming obstacles.

2.5 The impacts of resilience and self-regulation on L2 learning

Resilience and self-regulation are crucial constructs in L2 learning, significantly influencing learners' success and adaptability. As mentioned earlier, while resilience involves the ability to recover from setbacks and maintain a positive outlook despite challenges (e.g., Guo & Li, 2022; Kim & Kim, 2021; Shen, 2022; Zhang, 2022), self-regulation refers to the skills needed to control one's thoughts, emotions and behaviours to achieve specific learning goals (e.g., Ghanizadeh & Jahedizadeh, 2018; Şeker, 2016; Teng & Zhang, 2022; Tseng et al., 2006). These constructs are interrelated and collectively shape learners' experiences and outcomes in the process of L2 acquisition.

Prior studies have demonstrated a significant relationship between resilience and self-regulation in L2 learning. Resilient learners often exhibit robust self-regulation skills, which enable them to manage emotional and cognitive challenges effectively and maintain motivation in the face of difficulties (Nguyen et al., 2015). Ghanizadeh and Jahedizadeh (2018) indicate that the ability to control emotions, attention and behaviour is a hallmark of resilience. That is, self-regulation is an essential component of resilience in language learning contexts. Such interdependence implies that learners who can regulate their emotions and behaviours well are better at coping with language learning challenges, which eventually helps enhance their overall learning outcomes.

Prior studies have emphasised the positive association between resilience, self-regulation and L2 proficiency (Huang, 2022; Kim & Kim, 2016). Kim and Kim (2016) found a strong correlation between resilience and English proficiency among Korean high school students. They noted that resilience contributes to higher motivation and competence in L2 learning. Likewise, Huang (2022) showed that resilience promoted learners' willingness to communicate and engage in speaking activities, which ultimately helped improve L2 learners' speaking proficiency. These findings highlight the importance of resilience in maintaining engagement and motivation for successful L2 learning.

Likewise, self-regulation is a critical factor in successful L2 learning. Learners who can regulate themselves tend to utilise effective learning strategies, resulting in improved proficiency in their L2 (Tomak & Seferoglu, 2021). For example, Tomak and Seferoglu (2021) found that L2 learners with higher levels of self-regulation demonstrated better English verbal skills and written performance, indicating a direct connection between self-regulation and L2 proficiency. Additionally, Chung (2015) showed that self-regulation plays a crucial role in successful English learning as an L2.

The interplay between resilience and self-regulation significantly influences L2 proficiency. Learners who exhibit resilience and self-regulation are more inclined to set goals, monitor their progress and maintain learning motivation. This inherent motivation fosters persistence and a willingness to practice and use the language in diverse contexts, which is vital for achieving proficiency.

In summary, resilience and self-regulation are essential characteristics that significantly impact L2 acquisition. Resilience fosters a positive attitude and persistence in the face of challenges, while self-regulation enables learners to manage their learning processes effectively. While it is yet unclear how they interplay to help improve learners' L2, it may well be the case that these characteristics create a supportive framework that enhances L2 acquisition and proficiency. This aspect underscores the

importance of developing both resilience and self-regulation in L2 learners to achieve successful learning outcomes.

3 Research Gaps and Questions

Despite the growing body of research on resilience and self-regulation in L2 learning, several aspects remain unclear. One is the extent to which resilience and self-regulation interplay to support L2 learning. Prior research has demonstrated that they reciprocally support learning. Yet, the extent to which each construct contributes to *second language* learning and whether self-regulation mediates the relationship between resilience and L2 learning is inconclusive. While resilience may help learners persist in challenging language-learning environments, self-regulation may play a critical role in how resilience translates to L2 proficiency. Another issue concerns the relative contributions of resilience and self-regulation to L2 learning outcomes. Prior studies have examined the question, yet empirical findings are inconclusive as to the extent to which they directly and indirectly impact L2 learning in a single model. To address these gaps, this study aims to explore the following research questions (RQs):

RQ1: What are the relative contributions of resilience and self-regulation to L2 proficiency?

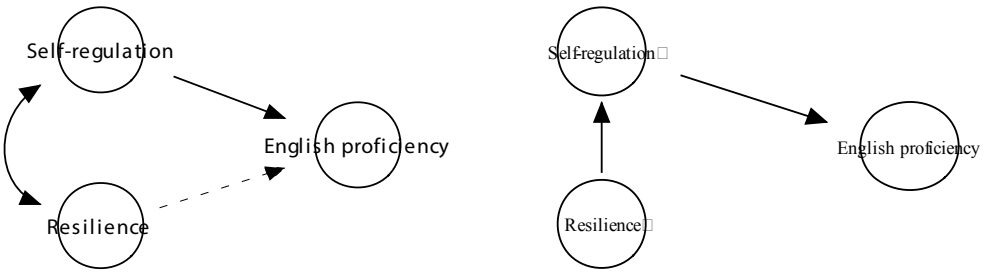
RQ2: How does the reciprocal relationship between resilience and self-regulation influence the development of L2 proficiency?

RQ3: To what extent does self-regulation mediate the impact of resilience on L2 learning outcomes?

Figure 1 presents the models to be tested: the reciprocal model (Model A) and the mediation model (Model B) of structural relationships among self-regulation, resilience, and English proficiency, based on a review of prior studies. These models illustrate hypotheses to be tested in this study. The reciprocal model (Model A) hypothesises a reciprocal relationship between self-regulation and resilience, indicating that each influences the other while concurrently contributing to L2 proficiency, likely to differing degrees. Specifically, the effect of self-regulation on English proficiency is hypothesised to be direct and meaningful, whereas the effect of resilience on English proficiency is indirect, mediated through self-regulation. The mediation model (Model B), on the other hand, assumes that self-regulation acts as a mediator—a variable that transmits the effect of resilience on English proficiency. In this model, it is hypothesised that the influence of resilience on English proficiency is partially or fully mediated by self-regulation.

Figure 1

The Hypothesised Models of Structural Relationships among Self-regulation, Resilience and English Proficiency



Model A: The Reciprocal Model *Model B: The Mediation Model*

4 Methods

4.1 Participants

A total of 197 students from a private university in the eastern part of Japan participated in this study. Of them, 146 (69%) were female students, and the rest were male. They were all first-year students majoring in a foreign language or liberal arts while studying English as an L2 on campus at the time of this research. To maintain the homogeneity of the sample, those students who claimed their L1 was not Japanese were not included in the sample at the TOEFL test administrations.

4.2 Instruments

4.2.1 English Proficiency Test

We used the results from TOEFL ITP tests to assess students' English proficiency. The test was regularly administered to the students, with the first one administered right before their entry into the university. It was mandatory because the test results were used for English class placement. Since the scoring was done by the local ETS office and the raw response data was unavailable, information about the reliability of the three sections (i.e., Listening, Structure and Usage and Reading) was also unavailable. Nonetheless, the test is known to present high reliabilities (ETS, 2023).

4.2.2 Self-regulation scale

Students' use of self-regulation strategies in learning English was measured using a modified self-regulation scale developed by Tseng et al. (2006), which was initially designed to assess self-regulation in vocabulary acquisition. We modified it to measure students' use of self-regulation strategies for our study. We translated it into Japanese and piloted it. Five types of controls for self-regulation – commitment, metacognition, satiation, emotion and environment – were assessed using the questionnaire with Likert response choices ranging from 1 (Strongly disagree) to 6 (Strongly agree). Brief descriptions of each control are as follows:

- Commitment: Strategies to maintain focus and motivation toward long-term goals for L2 learning despite distractions or challenges.
- Metacognition: Strategies to monitor, regulate and guide one's cognitive processes during L2 learning, such as planning and self-evaluating.
- Satiation: Strategies to prevent boredom and maintain interest in L2 learning tasks by keeping activities engaging and varied.
- Emotion: Strategies to manage emotions, reducing anxiety and frustration to maintain a positive and focused L2 learning state.
- Environment: Strategies to modify the physical or social environment to minimise distractions and support effective L2 learning.

Table 1 below shows the descriptive statistics of the questionnaire responses, including the reliability indices.

4.2.3 Resilience scale

The level of students' resilience was measured using the Japanese version of Wagnild and Young's Resilience Scale (RS) (1993). The scale was chosen because it is well known to be general enough for

college students and is widely adopted in various academic contexts. We revised and adapted the scale based on the characteristics of the participants in this study, including three out of the five categories: Equanimity, Flexibility/ControlFlexibility/Control and Perseverance. Equanimity refers to maintaining a balanced perspective and calmness under stress, while flexibility and control mean handling situations with flexibility and self-control. Perseverance means being persistent and determined to overcome challenges in stressful situations. Although the original scale uses a Likert scale of 1 to 7, we chose to use response choices ranging only from 1 (Strongly disagree) to 6 (Strongly agree), eliminating the neutral midpoint for this study. The descriptive statistics of the three measurement outcomes are provided in Table 1.

4.3 Procedures

Students accepted to the university were required to take the TOEFL ITP exam before entry. The TOEFL data utilised for this study come from one such administration.

We collected data on the self-regulation and resilience scales through multiple channels. We contacted students via their teachers and asked them to respond to the scales. On a different occasion, the scales were administered to a group of students attending a pre-departure programme for study abroad approximately 1.5 months after they entered their major programme. We also visited classrooms to administer the scales on site, with the help of teachers and students in their English classes. In all procedures, we followed ethical guidelines for the collection and use of the data, including informed consent, voluntary participation and anonymisation to protect confidentiality.

4.4 Data analysis

All data were analysed using SPSS 29.0 (IBM Corp., 2022) to determine relationships among variables, and EQS 6.4 for Windows (Bentler, 2018) was used to identify structural relationships through SEM. We conducted several preliminary analyses to ensure that our data were suitable for SEM and to identify any potential issues that could affect the results. To identify univariate and multivariate outliers, we examined *z*-scores for univariate outliers and Mahalanobis distance for multivariate outliers. No extreme outliers were found that should be excluded from the analysis. Regarding the normality of the data, we examined the skewness and kurtosis statistics and confirmed that all values fell between -1 and +1. Additionally, Mardia's test of multivariate skewness and kurtosis indicated no concerns with multivariate normality, allowing for the use of the Maximum Likelihood estimation method.

5 Results

5.1 Descriptive statistics and reliability coefficients

Table 1 presents the descriptive statistics and reliability coefficients for each measure within the TOEFL ITP, the self-regulation scale and the resilience scale.

The means and standard deviations (*SD*) are not extreme and are similar within each factor, demonstrating convergent validity. The distribution of the data, as indicated by kurtosis and skewness values, appears adequate since they fall within the acceptable range of +/-1. While we used the TOEFL ITP to measure students' English proficiency, reliability coefficients were not calculated for each measure. Nonetheless, the TOEFL ITP is widely regarded as a reliable English proficiency test, with Cronbach's alpha values between .88 and .93 across its three sections (ETS, 2023). Other measurement variables, except for Environment Control (r = .63) under Self-regulation, demonstrated adequate reliability coefficients, ranging from .76 to .87, for the subsequent analyses. For this reason, we decided not to include the environmental control variable in the subsequent correlational analyses.

Table 1

Descriptive Statistics

Variable	k	Mean	SD	Kurto.	Skew.	Cronbach alpha
TOEFL ITP						
Listening Comprehension	50	48.04	.32	0.96	0.46	
Structure and Written Expression	40	43.63	.42	0.43	0.41	
Reading Comprehension	50	45.04	.40	0.54	-0.14	
Self-regulation Scale						
Commitment Control	3	3.82	.07	-0.25	-0.05	.76
Metacognition Control	3	3.45	.09	-0.59	0.06	.76
Satiation Control	3	3.90	.08	-0.35	-0.06	.81
Emotion Control	3	3.82	.08	-0.61	0.02	.78
Environment Control	3	4.72	.06	-0.31	-0.32	.63
Resilience Scale						
Equanimity	5	3.86	.05	0.18	0.19	.82
Flexibility/Control	5	4.08	.06	-0.44	-0.16	.83
Perseverance	6	4.12	.06	0.10	-0.04	.87

Note. $N = 197$.

5.2 Convergent and divergent validity of the measurement scales

Convergent and divergent validity of the factors and measurement variables were examined to ensure that the measurement variables validly assess the constructs presented as factors and that the represented factors are sufficiently distinct in the models.

To test whether the measurement variables that measure the same construct load onto the same single factor, the standardised factor loadings of the hypothetical model (Figure 1) were examined and presented in Table 2. All loadings for the three factors exceed the recommended level of .60, indicating good convergent validity.

Table 2

Standardised Loadings for Individual Measures

Constructs (Factors) Measurement Variables	Notation in the Models	Standardised Loadings (r)
TOEFL ITP	L2 Proficiency	
Listening Comprehension	Listening	.68
Structure and Written Expression	Grammar	.81
Reading Comprehension	Reading	.74
Self-regulation Scale	Self-regulation	
Commitment Control	Commitment	.80
Metacognition Control	Metacognition	.84
Satiation Control	Satiation	.91
Emotion Control	Emotion	.85
Resilience Scale	Resilience	
Equanimity	Equanimity	.98
Flexibility/Control	Flexibility/Control	.69
Perseverance	Perseverance	.64

We assessed the divergent validity by analysing the square root of average variance extracted (AVE) against the inter-construct correlations in Table 3 using the Fornell-Larcker criteria. The square roots of AVE for TOEFL ITP (L2 Proficiency), Self-regulation and Resilience (.42, .81 and .57, respectively) exceeded the inter-correlations with the other constructs (off-diagonal), suggesting significant divergence. This result supports the hypothesis that the three constructs are conceptually separate and can be treated as distinct in the measurement model.

Table 3

Divergent Validity Assessment Using the Fornell-Larcker Criterion

	L2 Proficiency (√AVE)	**Self-regulation (√AVE)**	**Resilience (√AVE)**
L2 Proficiency (√AVE)	.42	.28	.15
Self-regulation (√AVE)	.28	.81	.40
Resilience (√AVE)	.15	.40	.57

5.3 Identification and comparisons of the SEMs

5.3.1 Model identification

We identified four structural models to address the two RQs: The reciprocal, non-reciprocal, hypothesised and alternative models (Figure 2, Figure 3, Figure 4 and Figure 5, respectively). The reciprocal model in Figure 2 represents the relations of the factors, as also described in Figure 1. Three to four measurement variables are loaded onto each factor. While the reciprocal model assumes a reciprocal relation between the resilience and self-regulation constructs, the non-reciprocal model does not suppose a systematic relationship between the two constructs. On the other hand, the hypothesised and alternative models in Figure 4 and Figure 5 postulate a mediating role of either self-regulation or resilience to L2 proficiency. A better model that fits the data can be identified by comparing the goodness-of-fit across the four models.

We first assessed the model-data fit for the four models by comparing the factorial structure of resilience, self-regulation and English proficiency to the data in the current sample. While the SEM analyses confirmed that all identified models of three factors with ten measures resulted in a reasonable model-data fit, the SRMR values for the non-reciprocal (.15) and alternative (.08) models were beyond the acceptable criteria according to the benchmarks proposed by Kline (2023). Nevertheless, all the other fit indices fell within the acceptable limits, as shown in Table 4.

Table 4

Fit Indices of the Models

	χ2/df	*GFI*	*AGFI*	*CFI*	*SRMR*	*RMSEA*
Kline's benchmarks	≤ 8.00	≥ .90	≥ .90	≥ .90	≤ .05	≤ .08
Reciprocal Model	1.22	.92	.93	.99	.03	.03
Non-reciprocal Model	2.25	.93	.90	.96	.15	.08
Hypothesised model	1.22	.96	.93	.99	.03	.03
Alternative Model	1.56	.95	.92	.98	.08	.05

5.3.2 Model comparison: The hypothesised model vs. other competing models

To compare the fit as in Table 5, we performed the three Chi-square difference tests first between the hypothesised model (χ^2 = 38.958, *df* = 33) and the reciprocal model (χ^2 = 38.945, *df* = 32), and

then between the hypothesised model and the alternative model (χ^2 = 51.562, *df* = 33). Finally, the hypothesised model was compared against the non-reciprocal model (χ^2 = 74.334, *df* = 33).

The difference in Chi-square values ($\Delta\chi^2$ = .013, Δdf = 1) of the hypothesised and reciprocal models was not statistically significant, as the result was below the critical value of 3.84. This result indicates that both hypothesised and reciprocal models fit the data equally well. When the hypothesised model (χ^2 = 38.945, *df* = 33) was compared to the alternative model (χ^2 = 51.562, *df* = 33), the models could not be formally tested using the Chi-square difference test since the degrees of freedom were the same. However, the alternative model had a higher Chi-square value, indicating that the hypothesised model provided a better fit to the data. Likewise, the difference ($\Delta\chi^2$ = 35.376, *df* = 1) between the hypothesised model (χ^2 = 38.945, *df* = 33) and the non-reciprocal model (χ^2 = 51.562, *df* = 33) cannot be estimated as their degrees of freedom were the same. However, since the non-reciprocal model had a higher Chi-square value, the hypothesised model was a better fit to the data.

Therefore, the result of the three pairs of the difference tests can be noted as follows: Hypothesised model = reciprocal model > alternative model > non-reciprocal model.

Table 5

Differential Goodness-of-fit Indices for Model Comparisons

Model	*Goodness of Fit Information*			
	χ^2	*df*	*CFI*	*RMSEA*
Reciprocal Model	38.945	32	.993	.033
Non-reciprocal Model	74.334	33	.958	.080
Hypothesised Model	38.958	33	.994	.030
Alternative Model	51.562	33	.981	.054

Figure 2

The Reciprocal Model of Structural Relationships Among Self-Regulation, Resilience and English Proficiency

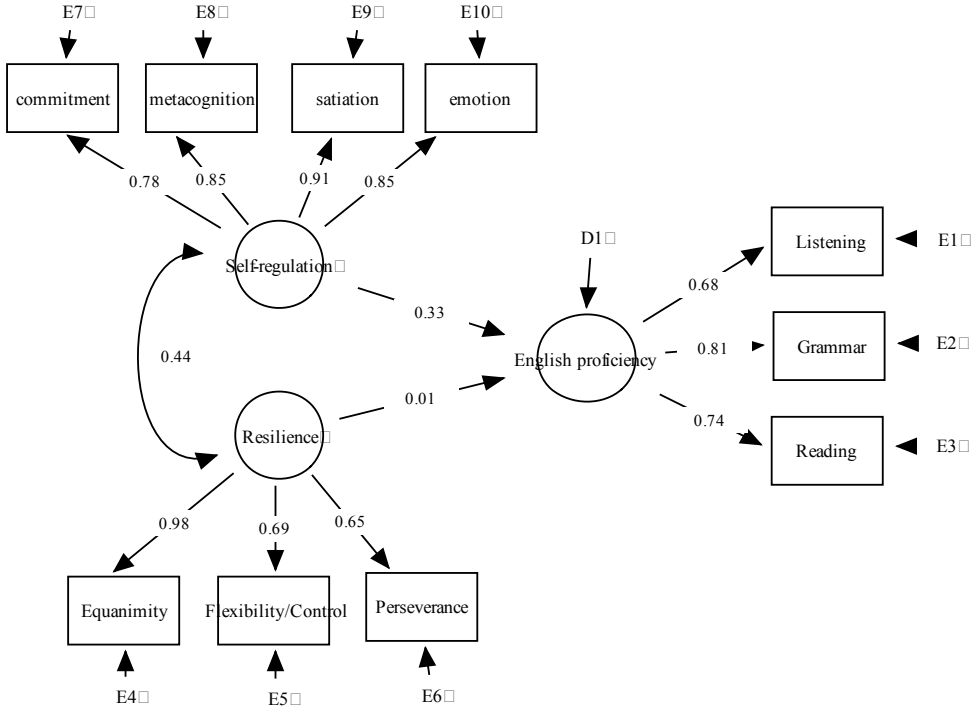


Figure 3

The Non-Reciprocal Model Between Self-regulation and Resilience

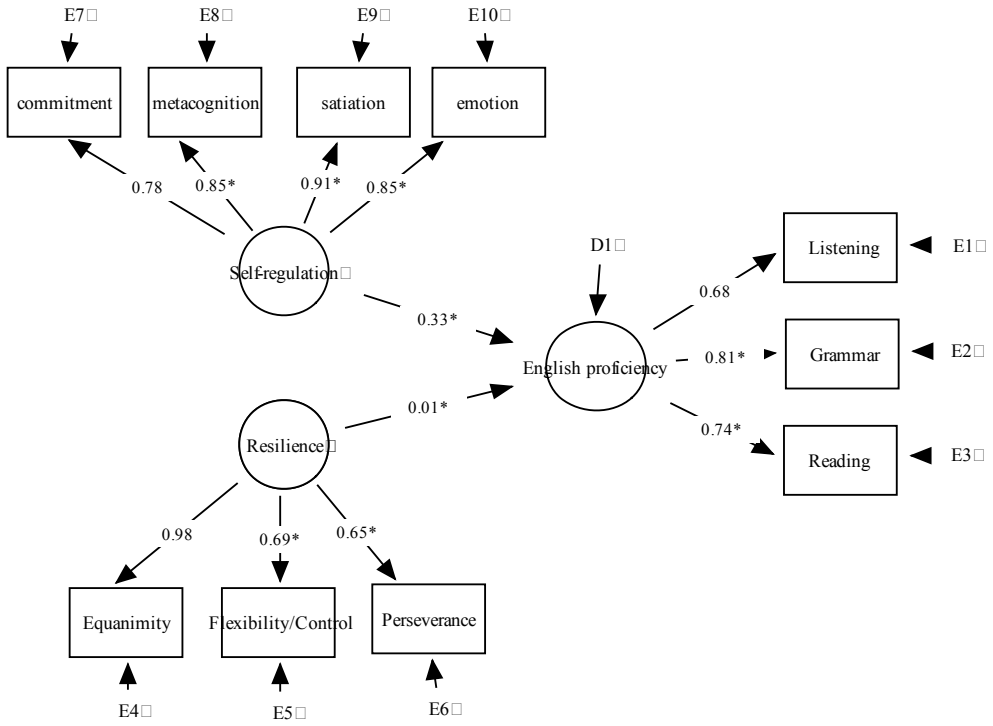


Figure 4

The Hypothesised Model with Self-Regulation Mediating Resilience to English Proficiency

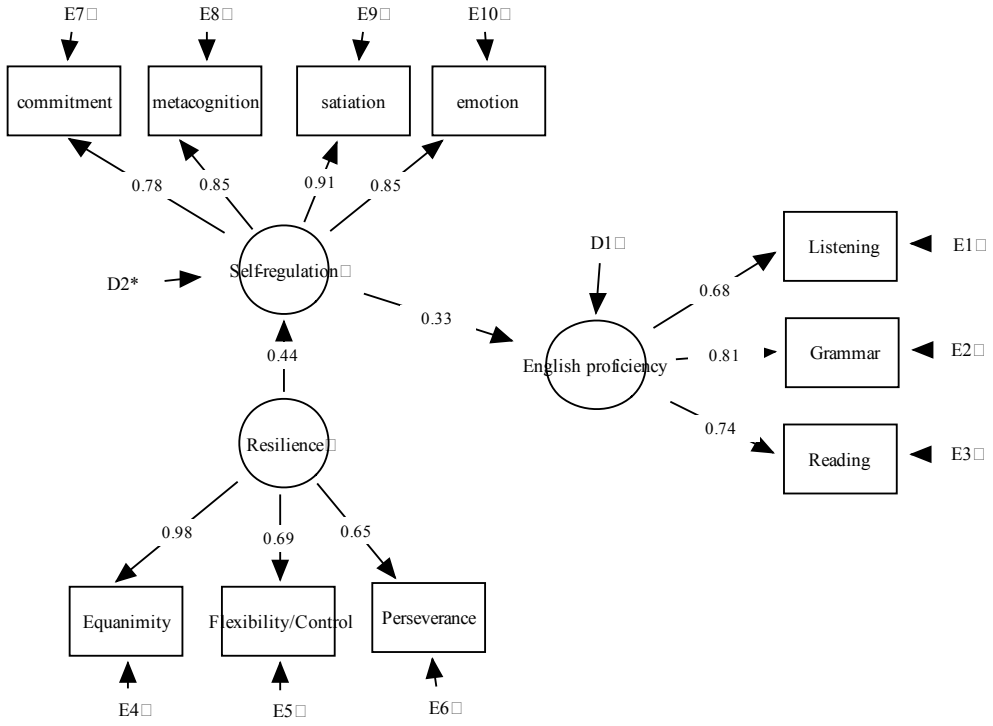
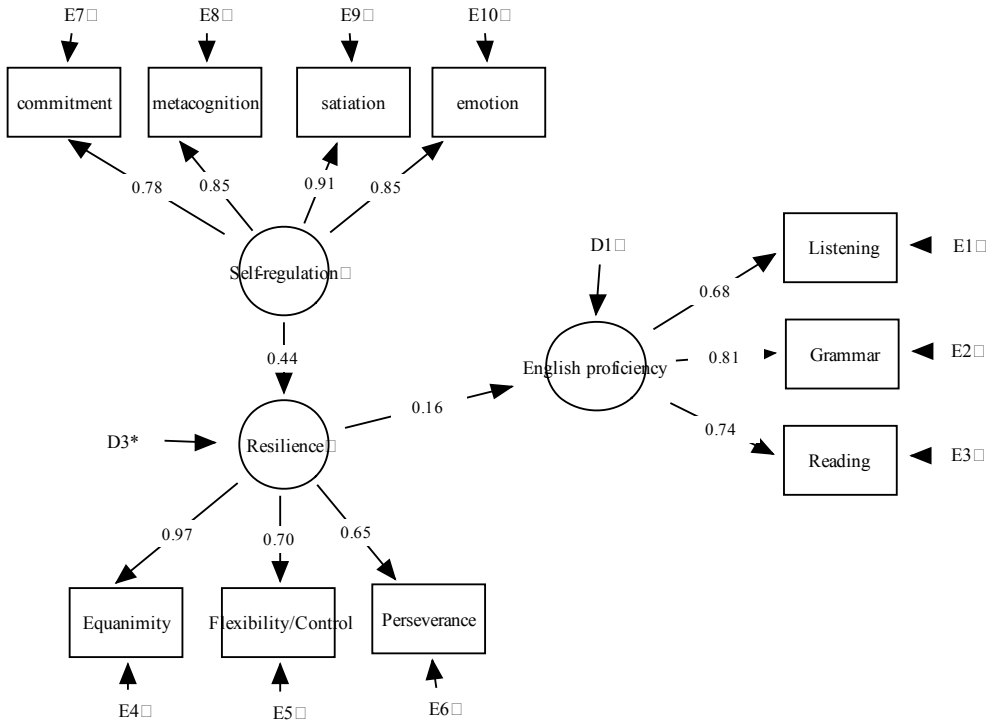


Figure 5

The Alternative Model with Resilience Mediating Self-Regulation to English Proficiency



To address RQ2 concerning the relative contributions of resilience and self-regulation to L2 proficiency, Table 6 summarises the direct path and correlation coefficients between the factors based on the hypothesised model in Figure 4.

Table 6

Direct Path and Correlation Coefficients Between the Factors

Coefficients	Standard Estimation (r)	r^2
Path		
Self-regulation → L2 proficiency	.33	.11
Resilience → L2 proficiency	.01	
Correlation		
Self-regulation ↔ Resilience	.44	.19

6 Discussion

The results of the model comparisons and chi-square difference tests provide significant insights into the roles of resilience, self-regulation and English proficiency in L2 learning. We analyse these findings by synthesising them with prior studies on psychological constructs in L2 acquisition, focusing on the two RQs.

6.1 Relative contributions of resilience and self-regulation (RQ1)

The result of this study indicates that self-regulation is the primary predictor of L2 proficiency, surpassing the contributions of resilience. Previous research has consistently demonstrated that self-regulation

is essential for L2 acquisition, as it enables learners to manage their learning processes, set specific objectives and evaluate their progress (Arias et al., 2014; Dörnyei, 2005; Nota et al., 2004; Oxford, 2017; Schunck & Greene, 2018; Teng & Zhang, 2022; Tseng et al., 2017). The correlation coefficient of 0.44 between resilience and self-regulation in the reciprocal model corresponds with the findings of Sabrillah et al. (2021) and Artuch-Garde et al. (2017), who assert that resilience and self-regulation are intricately connected, as resilient individuals typically have enhanced self-regulatory capacities.

The principal finding from this study is also that self-regulation is the primary channel through which resilience influences L2 proficiency. This finding aligns with Opsomer et al. (2020), who characterise resilience as a quality that enables individuals to navigate adversities, whereas self-regulation offers essential techniques for academic achievement. The findings of this study indicate that resilience alone does not enhance L2 outcomes unless it is facilitated by self-regulation. The robust causal relationship (0.44) between resilience and self-regulation in the reciprocal model reflects Zhang (2022), who emphasised the interdependent nature of these constructs: resilient learners are more inclined to practice self-regulation, while self-regulated learners exhibit greater resilience in challenging situations.

The linguistic implications of these findings can be better comprehended through the perspectives of motivation and engagement in L2 acquisition. Wang (2023) asserts that learners exhibiting greater resilience are more likely to maintain involvement in their studies. Even so, it is the application of self-regulated techniques that converts this engagement into L2 proficiency (Kormos & Csizér 2013). Self-regulation is the conduit between resilience and academic success. Mizumoto (2013) and Tosuncuoğlu (2019) contend that students who establish clear L2 learning goals and track their advancement are more inclined to enhance their competence.

Likewise, the findings align with some previous studies (e.g., Chung, 2015; Guo et al., 2023; Teng et al., 2024; Teng & Zhang, 2017; Tseng & Schmitt, 2008), which have demonstrated the importance of self-regulation for effective English acquisition as an L2. The minimal direct impact of resilience on English proficiency resonates with Zhang's (2022) findings, which indicate that resilience primarily fosters emotional and motivational stability, aiding learners in maintaining persistence without directly enhancing language skills. As such, the findings of the current study substantiate the perspective that self-regulation significantly influences English proficiency, but resilience, despite its correlation with self-regulation, only indirectly facilitates it.

6.2 The interdependent relationship between resilience and self-regulation (RQ2)

The findings offer empirical validation for the reciprocal relationship between resilience and self-regulation, as evidenced by the correlation and causal effect, both measuring 0.44. The result reflects the evidence that self-regulation bolsters resilience by equipping learners with coping mechanisms for stress, while resilience aids in sustaining self-regulatory practices amidst adversities (e.g., Swanson et al., 2010). According to Keye and Pidgeon (2013), resilient individuals typically exhibit elevated self-efficacy, thus enhancing their self-regulation. This reciprocal link is essential for L2 learning since both constructs facilitate learners in managing the intricacies of L2 acquisition (Ghanizadeh & Jahedizadeh, 2018).

In L2 acquisition, self-regulation emerges as the pivotal factor influencing English proficiency, while resilience sustains learner motivation and engagement over time. According to Alrabai and Alamer (2022), resilient learners are more adept at managing the anxieties and challenges associated with language acquisition. However, their performance is contingent upon the self-regulation mechanisms they employ.

6.3 The mediating role of self-regulation (RQ3)

The findings demonstrate that self-regulation serves a crucial mediating function in the association between resilience and L2 proficiency. The chi-square difference tests indicated that the proposed model, in which resilience indirectly affects English proficiency through self-regulation, demonstrates a superior fit to the data compared to alternative models that posit a direct relationship between resilience and

English proficiency. This finding corresponds with earlier research indicating that self-regulation enables learners to navigate the difficulties of L2 learning through goal-setting, self-monitoring and reflection (e.g., Artuch-Garde et al., 2017; Kumi-Yeboah, 2016; Sabrillah et al., 2021; Teng, 2025; Zahidi & Ong, 2023). Kumi-Yeboah (2016) and Artuch-Garde et al. (2017) contend that resilience fosters learners' perseverance amid challenges, while self-regulation equips them with the requisite tools for effective learning strategies, thereby converting perseverance into success in L2 acquisition.

The factor loading of 0.33 from self-regulation to English proficiency highlights the significant influence of self-regulation on the development of L2 proficiency. This finding is consistent with some of the previous studies (e.g., Bai & Wang, 2021; Guo et al., 2023; Kormos & Csizér, 2013; Teng et al., 2024; Tseng & Schmitt, 2008), which have shown that learners' self-regulation skills are closely associated with improved performance in language tasks as well as overall L2 learning success.

On the other hand, the factor loading of 0.01 from resilience to English proficiency signifies that resilience exerts a negligible direct influence on L2 proficiency. This result corroborates the literature that assumes resilience serves primarily as a supportive element that fosters learner engagement and motivation rather than as a direct determinant of academic success (Shen, 2022; Nguyen et al., 2015).

Consequently, the findings of this study align cohesively with the existing literature on resilience, self-regulation and L2 proficiency. Self-regulation is the paramount aspect of L2 proficiency, directly affecting language outcomes for L2 learners. Resilience, although intricately linked to self-regulation, primarily aids learners by cultivating the emotional and motivational prerequisites essential for effective self-regulation. The interdependent relationship between resilience and self-regulation is crucial, as one construct enhances the other. Nevertheless, it is through self-regulation that the influence of resilience on English proficiency is manifested.

These findings underscore the necessity for L2 educational programmes to prioritize enhancing self-regulation skills and the cultivation of resilience to sustain learners' long-term engagement and persistence. Understanding the interaction between these constructs will assist educators in devising more effective interventions to support learners in achieving their L2 learning goals.

7 Conclusion and Implications

This study examined the intricate relationship between resilience, self-regulation and L2 proficiency among Japanese university students, elucidating how these factors influence L2 learning outcomes. The findings highlight the crucial role of self-regulation in moderating the connection between resilience and English proficiency. Self-regulation was identified as the principal component directly affecting L2 proficiency, while resilience, although essential for sustaining motivation and engagement, primarily impacted L2 proficiency indirectly through self-regulation.

The results suggest several implications for L2 learning and teaching. Firstly, they emphasize the importance of cultivating self-regulation skills in L2 learners. Educational programmes must emphasize instructing students to establish learning objectives, monitor their progress and adapt their approaches to overcome obstacles. Improving self-regulation not only improves L2 learning outcomes but also equips learners with vital tools for lifelong learning.

Secondly, although resilience may not immediately enhance L2 proficiency, it provides a foundational basis for effectively applying self-regulatory mechanisms. Therefore, it is essential to establish supportive learning environments that cultivate resilience – enhancing emotional well-being, alleviating anxiety and encouraging perseverance. L2 educators should incorporate resilience-building exercises into the curriculum to help students in cultivating the emotional and motivational stability necessary for prolonged engagement in L2 acquisition.

Finally, the interdependent relationship between resilience and self-regulation indicates that interventions designed to improve one construct can positively influence the other. Future research

should explore the integration of targeted interventions in self-regulation and resilience to enhance L2 learning outcomes, particularly in varied educational contexts where challenges may differ.

This study elucidates the interaction between resilience and self-regulation in relation to L2 proficiency. By focusing on advancing these psychological constructs, educators and researchers can more effectively assist L2 learners in achieving their academic and linguistic objectives.

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