RESEARCH ARTICLE

# Exploring the roles of ideal L2 writing self, growth L2 writing mindset, and L2 writing grit in L2 writing achievement among EFL learners

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## Abstract

Considering the undeniable importance of examining the role of domain- and skill-specific individual difference factors in second-language (L2) writing research, this study examined the possible roles of English-as-a-foreign-language (EFL) learners' ideal L2 writing self and growth L2 writing mindset in their L2 writing grit, which may in turn contribute to their L2 writing achievement (WA). Data were collected from 532 English-major students selected via convenience sampling by administering a questionnaire to measure their growth L2 writing mindset, ideal L2 writing self, and L2 writing grit. The International English-Language Testing System (IELTS) academic writing tasks 1 and 2 were used as measures of the learners' L2 WA. The psychometric properties of the scales were investigated and verified through confirmatory factor analyses. Structural equation modeling (SEM) results revealed that ideal L2 writing self and L2 writing grit directly predicted L2 WA. Additionally, growth L2 writing mindset and ideal L2 writing self predicted L2 WA through the mediation of L2 writing grit. This study highlighted the importance of domain- and skill-specific individual difference factors in L2 WA and the vital necessity of considering them in L2 writing instruction.

**Keywords:** growth L2 writing mindset; ideal L2 writing self; individual differences; L2 writing achievement; L2 writing grit

## Introduction

Writing proficiently in a second or foreign language (L2) is a crucial skill that significantly influences learners' academic success and future professional endeavors (Hyland, 2007). However, the journey toward mastering L2 writing proves to be intricate, requiring learners to actively generate ideas, consider reader responses, meticulously draft, revise, and edit texts, and rectify errors (Kormos, 2012). Limpo and Alves (2013) underscored that achieving expertise in writing hinges on a

confluence of skills, strategies, knowledge, and, notably, motivation—an aspect that has garnered substantial attention in applied linguistics. Motivation is the primary impetus for initiating L2 learning at large (Dörnyei & Ryan, 2015, p. 72) and assumes pivotal significance in L2 writing (Tahmouresi & Papi, 2021).

Elevated motivation in learners has been extensively linked to notable enhancements across various facets of writing proficiency. Studies have consistently revealed a positive association between heightened motivation and learners' positive attitudes toward writing skills (Tsao, Tseng, Hsiao, Wang, & Gao, 2021). This positive inclination often leads to learners' increased engagement in soliciting feedback within their writing endeavors (Waller & Papi, 2017). Moreover, motivated learners demonstrate a heightened commitment by allocating more dedicated time to writing tasks (Hashemian & Heidari, 2013), subsequently manifesting deeper engagement in the iterative revision and editing processes (Zhang & Hyland, 2018). These findings underscore the instrumental role of motivation as a catalyst for heightened involvement and dedication in the multifaceted domain of L2 writing.

Although prior research has diligently explored the impacts of ideal L2 self and growth language mindset on diverse learning outcomes in L2 education—such as achievement (Bai & Wang, 2023; Wong, 2018) and learner engagement (Sadoughi et al., 2023)—the extension of these frameworks to L2 writing, particularly their potential influences on L2 writing achievement (WA), remains an overlooked domain. The crucial question of how ideal L2 writing self and growth L2 writing mindset might significantly shape WA remains an underexplored avenue warranting comprehensive examination. Recognizing this gap, the present study aimed to extend the current discourse by proposing a novel perspective. We posit that learners' ideal L2 writing self and growth L2 writing mindset may substantially influence their L2 writing grit— characterized by their passion and persistence in writing endeavors. By probing into the intricate relationship between these motivational constructs and L2 writing grit, our investigation aimed to illuminate their potential impact on enhancing writing performance in the L2 context.

Moreover, examining the mediating role of L2 writing grit is crucial for understanding the complex interplay among individual differences, motivational beliefs, and L2 WA. Although previous research has primarily focused on direct relationships between these variables, a mediation analysis allows the exploration of the underlying processes through which these factors operate. This approach aligns with the increasing recognition in applied linguistics of the need to unpack the complex mechanisms that contribute to successful language learning and performance.

Despite the nascent stage of research on L2 grit and the absence of prior studies specifically considering the role of skill-specific grit in L2 writing, recent findings indicating the contributions of learners' ideal L2 self and growth language mindset to sustained effort and enthusiasm in L2 education (e.g., Hu, Sidhu, & Lu, 2022; Lan, Nikitina, & Woo, 2021; Sadoughi & Hejazi, 2023) provide a foundation to extrapolate to skill-specific research in L2 writing, anticipating promising results. Therefore, exploring the interplay between motivational constructs such as ideal L2 writing self and growth L2 writing mindset and their potential influence on L2 writing grit seems imperative in unlocking a deeper understanding of the factors driving L2 WA. This extension promises to provide valuable insights into learners' motivation and engagement within the context of L2 writing, paving the way for targeted interventions to enhance writing performance.

In essence, learners' perception of themselves as adept L2 writers in the future and their belief in the malleable and improvable nature of their L2 writing abilities may

significantly motivate them to persist in their endeavors and sustain their effort, enthusiasm, and interest in the demanding process of mastering L2 writing, thereby potentially enhancing their L2 WA. This study represents the inaugural effort to explore the hypothesized relationships between ideal L2 writing self, growth L2 writing mindset, L2 writing grit, and L2 WA. This exploration holds the promise of offering a cohesive, theoretically informed understanding of the interplay among these factors and may inform the development of effective interventions to enhance learners' proficiency in L2 writing.

## Literature review

### *Theoretical framework*

Understanding the intricate nexus between individual differences and motivational dynamics within the domain of L2 writing (Papi, Vasylets, & Ahmadian, 2022), this study embarked on a comprehensive exploration of learners' motivation. To scrutinize these dynamics, we centered our investigation on three established motivational frameworks—namely, the L2 Motivational Self System (L2MSS) developed by Dörnyei (2009), the Language Mindset Meaning System (LMMS) conceptualized by Lou and Noels (2019a, 2019b), and Bandura's (1991) social cognitive theory (SCT). Our adoption of these frameworks aimed to shed light on the pivotal role that motivation plays in shaping and amplifying learners' L2 WA.

Dörnyei's (2009) L2MSS has emerged as a fundamental framework extensively applied in predicting learners' motivation within L2 education (Al-Hoorie, 2018; Boo, Dörnyei, & Ryan, 2015; Mahmoodi & Yousefi, 2021; Yousefi & Mahmoodi, 2022). The L2MSS postulates that the ideal L2 self, a vision of oneself as a successful future L2 user, is a powerful motivator in language learning. Research consistently demonstrates that a strong ideal L2 self is associated with increased effort, persistence, and positive L2 outcomes (Dörnyei & Chan, 2013). These characteristics closely align with the concept of grit, defined as perseverance and passion for long-term goals (Duckworth, Peterson, Matthews, & Kelly, 2007). We propose that the ideal L2 writing self, a skill-specific application of the ideal L2 self, can function as a catalyst for developing L2 writing grit. Learners with a vivid and compelling vision of themselves as proficient L2 writers in the future are more likely to exhibit the sustained effort and passion characteristic of grit, leading to enhanced WA. Recent investigations have extended the purview of the ideal L2 self into the realm of L2 writing, examining its contribution to writing emotions and achievement (Tahmouresi & Papi, 2021), writing strategy use and quality (Jang & Lee, 2019), writing engagement (Zhu, Yao, Pang, & Zhu, 2022b), and feedback-seeking behavior (Zhan, Yao, & Zhu, 2023). These studies support the notion that a strong ideal L2 writing self can foster the perseverance and passion integral to grit, thereby enhancing L2 writing achievement.

The LMMS, proposed by Lou and Noels (2019a, 2019b), underscores the motivational influence wielded by learners' beliefs about the malleability of their language abilities, termed *language mindsets*. This framework emphasizes that learners with a growth language mindset believe their language abilities can be developed through effort and perseverance. This belief aligns with the perseverance of effort component of grit. Furthermore, the growth mindset's focus on improvement and learning fosters a sustained interest in writing, echoing the consistency of interest aspect of grit. Thus, we argue that a growth L2 writing mindset can nurture L2 writing grit by promoting both perseverance and passion for writing. Building on this framework and responding to

the call for examining skill-specific language mindsets, recent research has probed into learners' L2 writing mindsets, investigating their influence on feedback-seeking behavior (Xu & Wang, 2023), the use of self-regulated writing strategies (Xu, 2022), writing motivation, and feedback-seeking orientation (Papi, Bondarenko, Wawire, Jiang, & Zhou, 2020; Waller & Papi, 2017). These studies collectively underscore the role of the growth L2 writing mindset in fostering the characteristics of grit, thereby enhancing WA (Cheong, Yao, & Zhang, 2023; Yao & Zhu, 2022; Zhan et al., 2023).

Bandura's (1991) SCT provides an additional theoretical lens through which we can understand the mediating role of grit in the relationship between both the ideal L2 writing self, the growth L2 writing mindset and L2 WA. SCT emphasizes the role of self-efficacy beliefs in influencing behavior. We suggest that a strong ideal L2 writing self can enhance learners' self-efficacy beliefs about their writing abilities. This increased self-efficacy can, in turn, promote grit by bolstering learners' confidence in their ability to overcome challenges and achieve their writing goals. Similarly, the belief in the malleability and improvability of one's writing abilities, as emphasized in growth L2 writing mindset, can foster self-efficacy and grit. The interplay of self-efficacy, perseverance, and sustained effort can comprehensively explain how motivational factors may influence L2 WA.

The adoption of the L2MSS, LMMS, and SCT as theoretical frameworks in this study stems from their established significance in understanding and explicating the motivational underpinnings driving learners' engagement and achievement within L2 education. These frameworks provide a robust foundation for probing into the multifaceted motivational factors that influence learners' L2 WA, thereby allowing for a comprehensive and nuanced exploration of motivational dynamics in the context of L2 writing.

### Ideal L2 writing self

The concept of the ideal L2 self, a pivotal component of the L2MSS grounded in self-discrepancy and possible selves theories, revolves around learners envisioning themselves as proficient and adept users of an L2 in the future (Dörnyei and Ushioda, 2009). This envisioned future self, contrasting with a learner's present competency, acts as a potent motivational force, compelling learners to invest heightened efforts in their language learning endeavors. Extensive research underscores the essential role of the ideal L2 self across various positive learning outcomes within the broader landscape of L2 education.

Studies have consistently highlighted the association of the ideal L2 self with increased motivation and persistence (Feng & Papi, 2020), heightened engagement (Sadoughi, Hejazi, & Lou, 2023), greater willingness to communicate (WTC) (Fathi, Pawlak, Mehraein, Hosseini, & Derakhshesh, 2023), enhanced enjoyment (Lee & Lee, 2021), elevated joy (Teimouri, 2017), and improved L2 proficiency (Ghasemi, 2018). Al-Hoorie's (2018) comprehensive meta-analysis further substantiates the ideal L2 self's crucial role in predicting learners' motivated learning behavior, even when immediate achievements may not be directly manifested (cf. Moskovsky, Assulaimani, Racheva, & Harkins, 2016).

The need for domain-specific measures in investigating writing skills (Tahmouresi & Papi, 2021) has steered recent scholarly efforts toward the concept of the L2 writing-specific ideal self. Described as "an individual's envisioned future self-concept in L2 writing" (Cheong, Zhang, Yao, & Zhu, 2022, p. 1), the ideal L2 writing self emerges as a

robust predictor of desirable writing outcomes, including L2 writing joy and achievement (Tahmouresi & Papi, 2021) as well as engagement (Zhu et al., 2022a). Learners harboring a vivid vision of themselves as adept L2 writers exhibit heightened motivation to employ self-regulatory writing strategies (Jang & Lee, 2019; Xu & Wang, 2022), actively seek feedback on their writing (Xu & Wang, 2023), and achieve superior writing outcomes (Jang & Lee, 2019). Additionally, recent research by Zhu, Yao, Pang, and Zhu (2022b) revealed a positive correlation between higher levels of the ideal L2 writing self and increased writing engagement, which could significantly contribute to enhanced writing performance.

Furthermore, the domain of L2 writing presents a unique cognitive and affective landscape, demanding a multifaceted approach to language mastery. Writing proficiency in an L2 intricately involves cognitive skills, genre awareness, cultural nuances, and rhetorical conventions (Rijlaarsdam & Van den Bergh, 2006). The complexity inherent in L2 writing extends beyond linguistic intricacies to encompass the ability to ideate, organize, and effectively convey thoughts, profoundly influenced by learners' self-perceived efficacy and aspirations in writing proficiency (Hyland, 2007; Kormos, 2012).

The vivid idealized self-concept as a competent L2 writer significantly influences learners' persistent engagement in writing activities and serves as a guiding beacon in navigating the intricate terrain of L2 writing (Xu & Wang, 2022). Hence, the integration of the ideal L2 self within the sphere of L2 writing emphasizes its relevance as a potent catalyst shaping learners' motivational orientations, perseverance, and engagement specifically tailored for the intricate demands of writing in an L2.

### Growth L2 writing mindset

The exploration of learners' language mindsets, particularly their beliefs regarding the malleability and improvability of their linguistic abilities, has recently gained substantial attention in L2 research (Lou & Zarrinabadi, 2022; Zhang, Lou, Noels, & Daniels, 2022). Drawing from the language mindset theory, which posits the existence of fixed or growth mindsets among L2 learners regarding their linguistic potential (Lou & Noels, 2019a, 2019b), it becomes evident that these mindsets can significantly influence the approaches that learners adopt in their learning processes.

The framework proposed by Lou and Noels (2019a, 2019b), known as the LMMS, delineates the differences between growth and fixed mindset orientations in language learning. Growth-oriented L2 learners perceive their linguistic abilities as amenable to improvement and emphasize learning processes by investing substantial effort, leveraging failures and mistakes as valuable learning opportunities, employing self-regulated learning strategies, and embracing challenges within their learning journey. Conversely, those with a fixed language mindset attribute their linguistic success to their inherent talent and typically set performance-oriented goals, avoid risks to safeguard their self-esteem, and shy away from challenges that might expose their perceived inadequacies.

Considering the inherent challenges in acquiring new skills, it becomes evident that learners' mindsets play a pivotal role in motivating them to navigate and surmount obstacles (Dweck, 2017). Notably, within the multifaceted and demanding realm of L2 writing, fostering a growth L2 writing mindset is poised to significantly enhance learners' resilience and persistence throughout the learning process. Extending the call made by Lou and Noels (2019a, 2019b) to expand language mindset research into

specific L2 domains such as writing, recent studies have elucidated the instrumental role of a growth-oriented L2 writing mindset. For instance, Waller and Papi (2017) found that learners with a growth L2 writing mindset exhibit heightened writing motivation and actively seek feedback on their writing. Additionally, Xu (2022) highlighted that students embracing a stronger growth L2 writing mindset tend to employ a broader range of cognitive, metacognitive, social, and motivational regulation strategies, which helps them display an increased inclination to capitalize on received feedback to enhance their writing skills. Moreover, the findings a study by Papi et al. (2020) revealed that learners with a growth mindset perceive writing feedback as more valuable and actively engage in monitoring and inquiring about feedback, showcasing their proactive approach to improving their writing.

Building on the foundational significance of mindsets in shaping individuals' educational pursuits (Dweck, 2017) and acknowledging the emergent yet substantial research spotlighting the role of the growth L2 writing mindset (Papi et al., 2020; Xu, 2022), our hypothesis posits that embracing a growth mindset within the realm of L2 writing may serve as a catalyst for learners to elevate their writing capabilities, thereby achieving enhanced outcomes in their writing endeavors.

### The mediating role of L2 writing grit

Considering the intricate, time-consuming nature of mastering an L2, individuals who exhibit higher persistence and passion in their L2 learning journey tend to achieve greater success (Teimouri, Plonsky, & Tabandeh, 2022). These individuals often possess elevated levels of grit, showcasing a strong commitment to learning and a capacity to sustain effort and enthusiasm throughout the demanding process of L2 acquisition. This can in turn enable them to effectively confront potential challenges, setbacks, and obstacles (Shafiee Rad & Jafarpour, 2022; Teimouri et al., 2022).

Grit, conceptualized as a higher-order construct, encompasses two fundamental elements: perseverance of effort (PE) and consistency of interest (CI) (Duckworth et al., 2007). PE delineates the learner's propensity to invest arduous and sustained effort, whereas CI underscores the ability to maintain one's interest in learning despite facing challenges and difficulties. Recent studies in applied linguistics have unequivocally affirmed the pivotal role of this essential noncognitive factor in predicting various desirable L2 outcomes such as engagement (Hu, Sidhu, & Lu, 2022), foreign language achievement (Sudina & Plonsky, 2021), willingness to communicate (Lee, 2022), and learning persistence (Feng & Papi, 2020).

Despite the burgeoning theoretical and empirical literature on grit within general L2 education (Khajavy, MacIntyre, & Hariri, 2021; Teimouri et al., 2022), its specific role in distinct L2 skills, particularly writing, remains relatively underexplored. Writing in an L2 poses significantly higher challenges compared to writing in one's native language, which could be due, inter alia, to the substantial differences in writing systems (Gu, Hu, & Zhang, 2005). Thus, extending the motivational impact of grit to the context of L2 writing is warranted. Learners capable of sustaining effort and enthusiasm in L2 writing are more likely to achieve superior L2 writing outcomes.

The intricate demands of L2 writing, deeply intertwined with mastering linguistic nuances and genre-specific knowledge (Rijlaarsdam & Van den Bergh, 2006), can justify the necessity of integrating grit within this domain. The multifaceted nature of L2 writing, encompassing the mastery of distinct linguistic elements and genre conventions, heightens the significance of persistence and passion. Individuals able to

maintain effort and enthusiasm in L2 writing are poised to attain enhanced L2 writing proficiency. This integration acknowledges the intrinsic complexities of L2 writing and aligns with the growing emphasis on noncognitive determinants in predicting language learning success.

Moreover, although direct empirical evidence pinpointing L2 writing grit as a mediator might be limited, several seminal theoretical frameworks support the rationale for its inclusion. For instance, Bandura's (1991) SCT underscores the importance of self-regulation, persistence, and resilience in achieving mastery of complex tasks. Grit, emphasizing perseverance and sustained interest, closely aligns with Bandura's notion of self-regulation, which suggests that individuals can actively influence their learning outcomes through persistent effort and tenacity. Similarly, Dweck's (2017) mindset theory proposes that individuals with a growth mindset exhibit resilience and a willingness to embrace challenges. This growth-oriented approach parallels the characteristics of grit, advocating for continuous effort and perseverance, traits which are highly essential in confronting the challenges inherent in L2 writing. Therefore, although direct empirical evidence is scant, the conceptual alignment of grit with established theoretical frameworks in educational psychology can adequately support the plausible mediating role of L2 writing grit in L2 WA.

As there is ample evidence demonstrating that the ideal L2 self can boost learner's efforts and motivated behavior (Dörnyei & Chan, 2013), it could be the case that learners with a more vivid ideal self in L2 writing are more motivated to passionately and persistently pursue their L2 writing. Additionally, the findings of recent research attesting to the role of a growth language mindset in boosting learners' grit in general L2 education (Hu et al., 2022) may be extended to the more skill-specific area of L2 writing. Therefore, it is expected that L2 writing grit may mediate the associations "between ideal L2 writing self and L2 WA" and "between growth L2 writing mindset and L2 WA".

### *The hypothesized model*

In addressing the recognized impact of the ideal L2 self and growth L2 writing mindset on language learning motivation and proficiency, our study explores the uncharted domain of L2 writing grit. Although the roles of ideal L2 self and growth L2 writing mindset are well established in L2 education, our research pioneers the examination of their interplay with grit in the context of L2 writing. By investigating the mediating role of L2 writing grit, we aim to uncover the intricate dynamics influencing L2 writing outcomes. This research provides a novel perspective on the motivational factors shaping L2 WA, revealing how a learner's self-perceptions, beliefs, and persistence converge to influence their accomplishments. Thus study aims to contribute valuable insights to the current body of research on L2 writing, enhancing educators' and researchers' understanding of motivation in L2 writing and forming a basis for targeted interventions to improve L2 writing performance.

The conceptual framework of the present study was guided by seven hypotheses, as illustrated in Figure 1.

### *$H_1$: Ideal L2 writing self directly affects L2 writing grit.*

The ideal L2 writing self concept encompasses the aspirational and positive self-perception of one's writing ability in the future (Tahmouresi & Papi, 2021). When students view themselves as capable writers who possess the necessary skills to succeed in L2 writing or imagine themselves as proficient L2 writers in the future, they are more
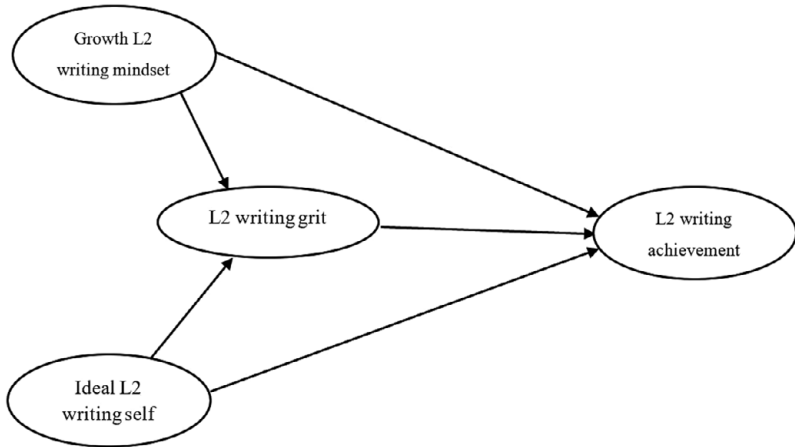
**Figure 1.** The hypothesized model.

likely to engage in proactive behaviors and sustain their motivation over time (Guan, Zhu, Zhu, Yao, & Jiang, 2023). This alignment between their ideal self-image and writing goals may enhance their writing grit, reinforcing their belief in their ability to overcome challenges and achieve their desired writing outcomes (Cheong et al., 2022; Feng & Papi, 2020).

*H₂: Growth L2 writing mindset directly affects L2 writing grit.*
Drawing on Dweck's (2017) mindset theory, a growth mindset is expected to foster the belief that L2 writing skills can be developed with dedicated practice. Students with a growth mindset in L2 writing may approach tasks positively, viewing challenges as inherent in the learning process (Xu & Wang, 2023). This positive attitude and resilience in the face of obstacles may lead to sustained motivation and passion in mastering L2 writing, which is demanding and time-consuming.

*H₃: L2 writing grit has a direct effect on L2 WA.*
Although research on L2 writing grit is almost non-existent, it is possible to draw on the research literature on domain-general grit as well as L2-specific grit and extend their insights. In fact, as gritty learners are highly motivated (Zhao et al., 2018), set mastery or learning goals (Karlen, Suter, Hirt, & Merki, 2019), experience more positive and less negative emotions (Alrabai, 2022; Datu & Fong, 2018), and are considerably engaged in their learning process (Hodge, Wright, & Bennett, 2018; Lam & Zhou, 2019), they are more likely to exhibit higher levels of academic achievement (Wolters & Hussain, 2015; Zhang & Zhang, 2023). In language education, recent studies have particularly highlighted the crucial role of L2 grit in learners' engagement (Khajavy, 2021) and motivation (Feng & Papi, 2020) as well as L2 achievement and performance (Teimouri et al., 2022; Wei, Gao, & Wang, 2019). Hence, it could be hypothesized that learners who are passionate, enthusiastic, and persistent in mastering L2 writing may do better in terms of L2 WA.

*H₄: Ideal L2 writing self directly predicts L2 WA.*

The ideal L2 writing self reflects learners' future aspirations and perceptions of themselves as competent L2 writers, encompassing a positive and aspiring self-image regarding their writing proficiency (Guan et al., 2023; Zhu et al., 2022b). The students who visualize themselves as proficient L2 writers in the future tend to set ambitious goals, devote more time and effort to their writing tasks, and exhibit proactive behaviors in improving their L2 writing skills (Tahmouresi & Papi, 2021). Such alignment between their idealized self-image and writing goals may significantly contribute to enhanced writing achievement, echoing findings in the broader educational context where students' idealized selves predict academic success (Cheong et al., 2023; Jang & Lee, 2019). Therefore, it is hypothesized that learners' ideal L2 writing self will positively affect their L2 WA.

*H₅: Growth L2 writing mindset directly predicts L2 WA.*

L2 learners endorsing a growth mindset perceive challenges as opportunities for learning, display higher resilience, and persist in their efforts to improve their writing skills (Bai, Wang, & Nie, 2021; Lou & Noels, 2019a, 2019b). Recent research indicates that individuals with growth-oriented mindsets tend to approach learning tasks with a positive attitude and view obstacles as stepping-stones for improvement (Bai et al., 2021). This positive attitude to and belief in the malleability of one's writing abilities can potentially drive learners to invest persistent and dedicated effort into mastering L2 writing, leading to improved WA (Bai & Wang, 2023; Cheong et al., 2023). Hence, it is hypothesized that learners embracing a growth L2 writing mindset will exhibit higher levels of L2 WA due to their proactive and persistent engagement with writing tasks.

*H₆: L2 writing grit mediates the link between growth L2 writing mindset and L2 WA.*

Growth-mindset L2 learners, that is, those who believe in the malleability of their L2 abilities, are more likely to engage in persistent and dedicated effort in L2 learning and perceive setbacks as opportunities for learning and improvement (Lou & Noels, 2019a, 2019b), which may promote their passion and perseverance towards achieving their goals, also allowing them to retain their interest in a particular area. Therefore, extending the findings of recent research indicating the role of growth (language) mindset in enhancing students' perseverance in (L2) learning (see Hu et al., 2022) to the L2 writing domain, it could be the case that learners subscribing to a growth L2 writing mindset may be more passionate about and persistent in developing their writing skills and achieve better results (Bai & Wang, 2023).

The mediating role of L2 writing grit in the link between the writing growth mindset and L2 WA can be explained by the motivational and behavioral mechanisms at play. Specifically, students with a growth mindset approach writing tasks with an intrinsic motivation to improve and develop their writing skills (Bai et al., 2021; Liu, 2022). This motivation, combined with their belief in the malleability of their abilities, drives their commitment to devoting the necessary effort and time required to succeed in L2 writing. This sustained effort and perseverance, in turn, lead to higher levels of L2 WA.

*H₇: L2 writing grit mediates the relationship between ideal L2 writing self and L2 WA.*

Ideal L2 writing self refers to learners' vision of themselves as proficient and competent L2 writers in the future (Cheong et al., 2022). When students have a clear and positive

image of themselves as successful writers, they are more likely to set ambitious goals and devote more time, energy, and effort to developing their L2 writing skills. In fact, their ideal L2 writing self can act as a powerful motivator, fueling their desire to achieve and surpass their perceived writing abilities.

The relationship between ideal L2 writing self and L2 WA could be further enhanced by the mediating role of L2 writing grit. Students with a strong belief in their ideal L2 writing self are more likely to exhibit higher levels of L2 writing grit. Moreover, as gritty individuals possess the resilience and determination to persist through difficulties, setbacks, and frustration (Duckworth et al., 2007), L2 learners may be better able to generally maintain their focus, work more diligently, and invest sustained effort in their writing tasks (Zhang & Zhang, 2023). In fact, by channeling their passion and perseverance, gritty students are better equipped to overcome challenges and reach higher levels of L2 WA.

## Method

### Participants

The study involved 532 undergraduate students majoring in English Literature or Translation Studies enrolled across four distinguished universities in Tehran, Iran. This cohort encompassed a blend of male and female students aged 19 to 26, with an average age of 21.34. Among the participants, 233 were male, constituting roughly 43.84% of the total sample, whereas 299 were female, making up approximately 56.16% of the overall population.

The primary language spoken by the majority of participants was Persian (Farsi), reflecting their cultural and linguistic heritage. However, these students had dedicated themselves to the study of EFL for a minimum of 7 years, showcasing a relatively homogenous level of general English proficiency due to their extensive exposure and academic immersion in English-related disciplines. These undergraduate students represented diverse socioeconomic backgrounds and cultural heritages from various regions across Iran. Their amalgamation within the universities of Tehran created a melting pot of cultural diversity, fostering an enriching academic environment that amalgamated different perspectives and experiences.

The participants were specifically selected through convenience sampling, ensuring the practicality and accessibility of recruitment from these universities. Before their involvement in the study, informed consent was scrupulously obtained from each participant, emphasizing the confidentiality and anonymity of their responses. Moreover, participants were unequivocally informed of their freedom to withdraw from the study without facing any adverse consequences.

### Measures

#### L2 writing grit

To evaluate learners' perseverance and sustained interest in developing English writing skills, we adapted and slightly modified the items of the L2 grit scale developed by Teimouri et al. (2022). The Writing Grit Scale comprises two subscales: PE, which includes five items (e.g., *I am a hard-working learner when it comes to English writing.*), and CI, which includes four items (e.g., *My interest in learning English writing has not decreased.*). The scale aimed to evaluate participants' unwavering dedication and

continual interest in developing and refining their English writing skills. Responses were given on a 6-point Likert-type scale, ranging from 1 (*strongly disagree*) to 6 (*strongly agree*)

### Growth L2 writing mindset

The participants' growth L2 writing mindset was measured by Papi et al.'s (2019) questionnaire, which was developed based on Dweck's (2017) original mindset scale. This scale, featuring four slightly modified items, was used to gauge respondents' beliefs in their potential for growth in writing abilities. The scale responses were provided on a 6-point Likert-type scale, ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). An example item from the scale is *I believe that I have the ability to significantly improve my English writing skills, regardless of my background or starting point.*

### Ideal L2 writing self

The scale was employed to measure the participants' envisioned future competence as proficient L2 writers in English, providing insights into their self-concept and aspirations regarding writing proficiency. The Ideal L2 Writing Self Scale, as developed by Han and Hiver (2018) and adapted from Taguchi Magid, and Papi's (2009) original scale, was employed in this study to gauge the participants' envisioned future competence as proficient L2 writers in English. This scale, comprising six items on a 6-point response scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*), aimed to delve into participants' self-concept and aspirations related to their perceived writing proficiency. One example item from the scale is *I can imagine myself writing in English at work.*

### L2 writing achievement

To assess the participants' writing proficiency, the IELTS academic writing tasks 1 and 2 were administered by the researchers. The two types of writing tasks were selected based on McCarter's (2012) "IELTS Introduction" and Williams' (2011) "Collins Writing for IELTS." The participants' academic writing ability was evaluated based on the IELTS writing band descriptors for task 1 and task 2, which included task achievement, coherence and cohesion, lexicon, and grammatical range and accuracy, in accordance with UCLES (2011) guidelines. The scoring process was made less subjective by having the writing tasks evaluated by two experienced IELTS instructors in addition to the researchers. A global writing score was obtained by averaging the scores for each of the four above-mentioned areas. Inter-rater reliability was assessed by comparing the marks assigned by the two raters, which demonstrated high consistency ($r = .89$).

It should be noted that the decision to use IELTS writing tasks 1 and 2 stemmed from their widely recognized validity and reliability as measures of L2 writing proficiency. IELTS tasks are well-established and respected assessments acknowledged for their rigorous standards and ability to effectively gauge writing skills in English-language learners. Leveraging these tasks ensured a standardized and dependable means of evaluating participants' writing abilities, fostering credibility, and ensuring consistency in the assessment process.

## Procedure

Initially, ethical approval was obtained from the university's research ethics committee to ensure the study's adherence to ethical standards. Potential participants were then

identified from English language programs, considering their proficiency levels and willingness to participate. Upon approaching potential participants, the research team provided clear explanations of the study's purpose, procedures, and data protection measures. Written informed consent forms were obtained from all participants, emphasizing their voluntary involvement and the option to withdraw at any time without any consequences.

A self-administered questionnaire was developed and validated to assess the participants' growth L2 writing mindset, ideal L2 writing self, and L2 writing grit. The questionnaire was presented in English to ensure consistency across participants. Each item was rated on a 6-point Likert-type scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). The questionnaire was designed to measure the constructs' underlying dimensions and provide a comprehensive overview of each participant's profile. The participants were given a recommended time frame for completing the questionnaire to ensure thoughtful responses. On average, participants took approximately 20 to 30 minutes to complete the questionnaire.

To accurately measure L2 WA, the internationally recognized IELTS academic writing task 1 and task 2 were employed. These tasks were specifically designed to assess various aspects of L2 writing skills, including grammar, vocabulary, coherence, and cohesion. The tasks were administered in a separate session dedicated solely to assessing writing proficiency. This minimized distractions and allowed for a controlled and focused writing environment. Each participant was given 60 min to complete both tasks, following standardized guidelines to ensure fairness and consistency across participants. The administration process was conducted under the supervision of trained research assistants who provided clear instructions and ensured that participants understood the task requirements.

Upon completion of the questionnaire and writing tasks, all data were securely stored and transferred to a password-protected cloud storage system. Data entry was conducted meticulously to ensure accuracy and consistency. Throughout the data collection and analysis process, strict confidentiality measures were implemented to protect the privacy and anonymity of the participants. The data were stored in a secure location, and only authorized personnel had access to them. The participants were assured that their responses would be kept confidential and they could withdraw from the study at any time without any consequences.

## Data analysis

In the first phase, the researchers used SPSS 26.0 to conduct descriptive and correlation analyses with the aim of examining the connections among the variables. They used the Amos software (version 25.0) for SEM to test the research hypotheses. The measurement model was tested to the data in accordance with Anderson and Gerbing (1988), and then the underlying structural model was tested. Several fit indices were employed to assess the overall fitness of the proposed model. These fit indices included the ratio of $\chi^2$-goodness of fit to the degree of freedom (df), the Goodness of Fit Index (GFI), Tucker-Lewis Index (TLI), the Comparative Fit Index (CFI), the Root-Mean-Square Error of Approximation (RMSEA), and the Standardized Root-Mean-Square Residual (SRMR). A $\chi^2$/df of <3 with $p > .05$ was regarded as satisfactory (Hu & Bentler, 1999). Moreover, GFI, TLI, and CFI of ≥0.90 (Hu & Bentler, 1999) indicate a good fit, whereas RMSEA <0.08 and SRMR <0.10 (Vandenberg & Lance, 2000) indicate a good fit. In the second phase, to analyze the mediation effects, the PROCESS macro (model 4) for SPSS (Hayes, 2009) was employed.

This macro uses a bootstrapping method with 5000 resamples to estimate the indirect effects and their confidence intervals.

## Results

### Data preprocessing and descriptive statistics

In the initial analysis, we comprehensively examined the dataset to address missing data, outliers, and multivariate normality. The missing data rate ranged from 0.26% to 1.16%, indicating relatively low levels of missingness. Using Little's test, we confirmed that the missing data followed a completely random pattern, known as Missing Completely at Random (MCAR; Little, 1988; $\chi^2 = 279.36$, df = 297, $p > .05$). To address the missing data, we used the expectation maximization (EM) algorithm, a robust and commonly used estimation technique in SEM (Enders, 2010). Through iterative estimation, the EM algorithm restored the missing values and completed the data matrix using maximum likelihood estimation. For the identification of the univariate outliers, we visually inspected scatter plots and Z-standardized values. Cases falling beyond the range of –3 to +3 were considered outliers and subsequently excluded from the analysis (Tabachnick & Fidell, 2019).

To assess the assumption of normality, we examined the skewness and kurtosis values, aiming for values between –2 and +2, indicating no substantial departure from normality (Field, 2013). Our findings confirmed that our study did not violate the assumption of univariate normality. To detect potential multivariate outliers, we followed the recommendation of Meyers et al. (2016) and computed Mahalanobis distances for each case. One case exhibited a Mahalanobis distance exceeding the critical $\chi^2$ value at an α level of 0.001 and was therefore excluded from the analysis. As a result, our data analysis was conducted with a final sample size of 526 participants.

Table 1 shows the means, SDs, and correlations among the variables investigated in the study, namely, growth L2 writing mindset, ideal L2 writing self, L2 writing grit, and L2 WA. The results showed that growth L2 writing mindset was positively correlated with ideal L2 writing self ($r = .351$, $p < .01$), L2 writing grit ($r = .532$, $p < .01$), and L2 WA ($r = .423$, $p < .01$). Ideal L2 writing self was positively correlated with L2 writing grit ($r = .501$, $p < .01$) and L2 WA ($r = .551$, $p < .01$). L2 writing grit was positively correlated with WA ($r = .624$, $p < .01$). The means and SDs of the variables were 4.05 (0.83) for growth L2 writing mindset, 3.76 (0.69) for ideal L2 writing self, 3.39 (0.86) for L2 writing grit, and 6.32 (2.16) for WA.

### Measurement model

The measurement model of the three constructs (i.e., growth L2 writing mindset, ideal L2 writing self, and L2 writing grit) was subsequently tested through confirmatory factor analysis (CFA). The analysis showed an acceptable fit between the measurement

**Table 1.** Descriptive statistics and correlations

|  | Mean | SD | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| 1. Growth L2 writing mindset | 4.05 | 0.83 | 1 | | | |
| 2. Ideal L2 writing self | 3.76 | 0.69 | 0.351* | 1 | | |
| 3. L2 writing grit | 3.39 | 0.86 | 0.532* | 0.501* | 1 | |
| 4. L2 Writing achievement | 6.32 | 2.16 | 0.423* | 0.551* | 0.624* | 1 |

*$p < .01$

**Table 2.** Results of the measurement model

| Variable | Indicators | AVE | MSV | ASV | Cronbach's α/CR | Factor loadings | t value |
|---|---|---|---|---|---|---|---|
| Growth L2 writing growth | GM1 | 0.63 | 0.54 | 0.40 | 0.862/0.862 | 0.81 | 11.431* |
| | GM2 | | | | | 0.86 | 11.903* |
| | GM3 | | | | | 0.63 | 9.673* |
| | GM4 | | | | | 0.72 | 10.9762* |
| Ideal L2 writing self | I1 | 0.60 | 0.55 | 0.43 | 0.921/0.921 | 0.85 | 11.671* |
| | I2 | | | | | 0.74 | 10.539* |
| | I3 | | | | | 0.69 | 9.232* |
| | I4 | | | | | 0.79 | 11.024* |
| | I5 | | | | | 0.59 | 8.972* |
| | I6 | | | | | 0.89 | 12.171* |
| L2 writing grit | GR1 | 0.59 | 0.58 | 0.54 | 0.824/0.824 | 0.82 | 11.885* |
| | GR2 | | | | | 0.68 | 9.551* |
| | GR3 | | | | | 0.81 | 11.539* |
| | GR4 | | | | | 0.75 | 10.682* |
| | GR5 | | | | | 0.77 | 10.834* |
| | GR6 | | | | | 0.79 | 11.062* |
| | GR7 | | | | | 0.76 | 11.206* |
| | GR8 | | | | | 0.74 | 11.333* |
| | GR9 | | | | | 0.85 | 11.964* |

AVE = average variance extracted; ASV = average shared variance; CR = construct or composite reliability; GM = growth mindset; GR = grit; MSV = maximum shared variance.
*Significant at the 0.001 significance level.

model and the data, $\chi^2 (491) = 984, p < .001$, GFI = 0.96, CFI = 0.93, RMSEA = 0.04 (90% CI, 0.03-0.05), TLI = 0.92, and SRMR = 0.06, indicating that the measurement model was a good representation of the observed data. As seen in Table 2, the factor loadings for all indicators are statistically significant at the 0.001 level, showing that each indicator is a good measure of its corresponding construct. The average variance extracted (AVE) values for all the three variables (growth L2 writing mindset, ideal L2 writing self, and L2 writing grit) exceeded the recommended threshold of 0.50, indicating that the indicators for each variable converge on the same underlying construct (Anderson & Gerbing, 1988). The maximum shared variance (MSV) values were lower than the AVE values, demonstrating that each construct has more variance unique to it than shared with other constructs. The average shared variance (ASV) values were also relatively low, indicating that the constructs have discriminant validity (Hair, Black, Babin, & Anderson, 2010). All the Cronbach's α and composite reliability coefficients were above the recommended threshold of 0.70 (cf. Dörnyei, 2007), indicating good internal consistency reliability. Overall, the results of the CFA provide evidence for the validity and reliability of the measurement model.

Discriminant validity was also examined. The researchers followed the approach suggested by Fornell and Larcker (1981), which recommends that the AVE value for each construct should be higher than the squared correlation coefficient with other constructs. The findings presented in Table 3 confirm the discriminant validity. The ASV and MSV values were also examined in conjunction with the AVE values. Discriminant validity is established when all the ASV and MSV values are lower than their corresponding AVE values, as proposed by Hair et al. (2010).

**Table 3.** Discriminant validity

|  | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 1. Growth L2 writing mindset | .632 |  |  |  |
| 2. Ideal L2 writing self | .124* | .602 |  |  |
| 3. L2 grit | .284* | .251* | .594 |  |

*Note*: The diagonal line values are AVE. The off-diagonal line values are squared correlation coefficients of one factor with another factor.
*Significance level of 0.01.

## Structural model

Given the acceptable fit of the measurement model, we employed SEM using maximum likelihood estimation (MLE) to test the hypothesized partial mediation model, which posits that L2 writing grit mediates the relationships between ideal L2 writing self and growth L2 writing mindset on L2 WA. The hypothesized partial mediation model demonstrated a good fit to the data: $\chi^2(614) = 860.32$, $p < .001$, CFI = 0.977, TLI = 0.965, RMSEA = 0.036 (90% CI, 0.032–0.040), SRMR = .064. These indices suggest that the partial mediation model provides a parsimonious representation of the data, with the CFI and TLI values exceeding the recommended threshold of 0.95, indicating good fit (Hu & Bentler, 1999). The standardized path coefficients are indicated in Figure 2.

The SEM results showed that ideal L2 writing self had a direct effect on L2 writing grit ($\beta = 0.272$, $p < .001$), and growth L2 writing mindset had a significant positive relationship with L2 writing grit ($\beta = 0.326$, $p < .001$). L2 writing grit was also positively associated with L2 WA ($\beta = 0.487$, $p < .001$). The direct effect of ideal L2 writing self on L2 WA was significant ($\beta = 0.286$, $p < .001$), whereas the direct effect of growth L2 writing mindset on L2 WA was not significant ($\beta = 0.064$, $p = .73$).

To further analyze the mediation effects, we employed the PROCESS macro (model 4) for SPSS (Hayes, 2009). This approach uses bootstrapping, a nonparametric resampling method with 5000 resamples, to estimate the indirect effects and their 95% confidence intervals (CIs). Bootstrapping is particularly advantageous in providing robust estimates, especially when the assumption of normality is not fully met (Preacher & Hayes, 2008). Table 5 presents the bootstrapped indirect effects and their corresponding 95% CIs for the two hypothesized mediation pathways.

As shown in Table 5, the indirect effect of ideal L2 writing self on L2 WA through L2 writing grit was significant ($\beta = 0.132$; 95% CI, 0.084–0.192), indicating a partial mediation effect. The effect size of 0.18 suggests that 18% of the total effect of ideal L2 writing self on L2 WA is explained by the mediation of L2 writing grit.

Similarly, the indirect effect of the growth L2 writing mindset on L2 WA through L2 writing grit was also significant ($\beta = 0.158$; 95% CI, 0.103–0.248), supporting a full

**Table 4.** Path estimates of the structural model

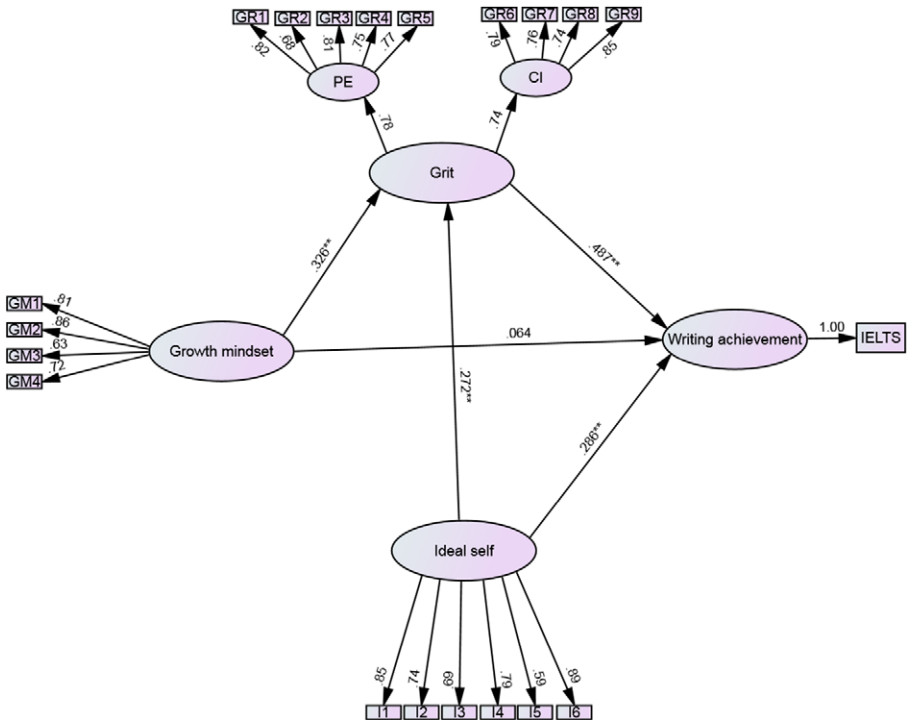| Path | Standardized coefficients (β) | Standard error (SE) | *t* value | *p* value |
|---|---|---|---|---|
| Ideal self → WA | 0.286 | 0.078 | 3.65* | <.001 |
| Growth → WA | 0.064 | 0.088 | 0.73 | .464 |
| Ideal self → Grit | 0.272 | 0.076 | 3.58* | <.001 |
| Growth → Grit | 0.326 | 0.067 | 4.89* | <0.001 |
| Grit → WA | 0.487 | 0.094 | 5.16* | <.001 |

WA = writing achievement.
*$p$ <.001.

**Figure 2.** The final partial model.

**Table 5.** Indirect effects and confidence intervals from bootstrapping

| Path | Standardized Coefficients (β) | Bootstrapped 95% CI | Effect size |
|---|---|---|---|
| Ideal self → Grit → WA | 0.132 | 0.084–0.192 | 0.13 |
| Growth mindset → Grit → WA | 0.158 | 0.103–0.248 | 0.21 |

WA = writing achievement.

mediation effect. The effect size of 0.21 indicates that 21% of the total effect of the growth L2 writing mindset on L2 WA is explained by the mediation of L2 writing grit. Notably, the direct effect of the growth L2 writing mindset on L2 WA was not significant (β = 0.064, $p$ = .464), even after controlling for the indirect effect through L2 writing grit, further confirming the full mediation. Both effect size values fall within the medium to large range according to Cohen's (1988) guidelines, suggesting that these indirect effects are statistically significant and practically meaningful.

### Measurement invariance

Subsequently, the model's measurement invariance was rigorously assessed across gender sub-groups (Table 6). The investigation commenced with the examination of configural invariance, revealing robust fit indices ($\chi^2$ = 825.23, df = 590, GFI = 0.897,

**Table 6.** Measurement invariance analysis across gender subgroups

| Invariance Level | $\chi^2$ | df | GFI | CFI | RMSEA | TLI | SRMR |
|---|---|---|---|---|---|---|---|
| Configural invariance | 825.23 | 590 | 0.897 | 0.978 | 0.034 | 0.962 | 0.066 |
| Metric invariance | 835.68 | 600 | 0.896 | 0.977 | 0.035 | 0.960 | 0.067 |
| Scalar invariance | 850.12 | 605 | 0.894 | 0.975 | 0.035 | 0.958 | 0.069 |
| Residual invariance | 855.80 | 610 | 0.892 | 0.974 | 0.036 | 0.957 | 0.071 |

CFI, Comparative Fit Index; df, degrees of freedom; GFI, Goodness of Fit Index; RMSEA, Root-Mean-Square Error of Approximation; SRMR, Standardized Root-Mean-Square Residual; TLI, Tucker-Lewis Index.

CFI = 0.978, RMSEA = 0.034, TLI = 0.962, SRMR = 0.066). These results suggest that the fundamental structure of the measurement model remains consistent among diverse gender groups.

Following this, the evaluation moved to metric invariance, presenting favorable fit statistics ($\chi^2$ = 835.68, df = 600, GFI = 0.896, CFI = 0.977, RMSEA = 0.035, TLI = 0.960, SRMR = 0.067). The analysis indicates that the latent constructs maintain similar factor loadings across different genders, reinforcing the model's stability in this aspect. Moreover, the scrutiny of scalar invariance displayed reliable fit measures ($\chi^2$ = 850.12, df = 605, GFI = 0.894, CFI = 0.975, RMSEA = 0.035, TLI = 0.958, SRMR = 0.069). This finding substantiates the equivalency of intercepts across diverse gender categories, further solidifying the model's consistency.

Finally, the investigation of residual invariance yielded satisfactory fit metrics ($\chi^2$ = 855.80, df = 610, GFI = 0.892, CFI = 0.974, RMSEA = 0.036, TLI = 0.957, SRMR = 0.071). This analysis confirms that even after considering latent variables, the variance among observed variables remains consistent across gender sub-groups. Overall, these results indicate that the model exhibits substantial invariance across different gender categories. This underscores the model's reliability and validity and signifies its capacity to adequately represent and capture the relationship between variables consistently, regardless of gender distinctions

## Common method bias

Finally, to assess the potential for common method bias, Harman's one-factor test was employed. This test involves analyzing all items from all measures concurrently and determining if a single factor emerges as the dominant factor. A substantial proportion of variance attributable to a single factor indicates the presence of common method bias. In our study, Harman's one-factor test revealed that a single factor accounted for 45.12% of the variance, albeit slightly above the recommended threshold of 50%. However, it is crucial to emphasize that this percentage falls below the threshold of 50%, which is generally considered as a sign of potential concern (Podsakoff & Organ, 1986). Furthermore, the factor loadings for individual items onto this single factor were relatively low, suggesting that the items were measuring distinct constructs (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

To further evaluate potential common method bias, a series of CFAs were conducted, where the same measurement model was specified for all three constructs (growth L2 writing mindset, ideal L2 writing self, and L2 writing grit). Additionally, correlations among error terms were permitted. If common method bias were a significant concern, these error terms would be expected to be correlated (Podsakoff et al., 2003). The CFA results indicated that the error terms were not significantly

correlated, suggesting that common method bias is not a major concern in this study (Podsakoff et al., 2003).

In addition to these statistical tests, several other procedures were employed to assess common method bias. These included evaluating the magnitude of correlations among the three constructs (Podsakoff et al., 2003), examining the residuals from the CFAs, and conducting a series of regression analyses with and without controlling for a common method factor (Lindell & Whitney, 2001). The results of these additional procedures further supported the conclusion that common method bias is not a significant threat to the validity of our findings (Podsakoff et al., 2003).

## Discussion

The present study aimed to investigate the role of selected domain-specific individual difference factors in L2 writing, namely, growth L2 writing mindset, ideal L2 writing self, and L2 writing grit in L2 WA among English-major students. The results showed that both L2 writing grit and ideal L2 writing self directly and positively predicted L2 WA. Additionally, L2 writing grit mediated the associations "between ideal L2 writing self and L2 WA" as well as "between growth L2 writing mindset and L2 WA."

The investigation brought to light a compelling and statistically significant direct relationship between learners' ideal L2 writing self and their L2 writing grit, thereby providing robust support for $H_1$. This aligns with prior research emphasizing the influential role of ideal self-perceptions in driving motivational orientations (Feng & Papi, 2020; Tahmouresi & Papi, 2021). Specifically, our findings corroborate the notion that learners with a strong ideal L2 writing self, characterized by a vivid and aspirational self-image as proficient L2 writers, are more likely to exhibit heightened L2 writing grit, a persistent and enduring commitment to mastering the craft of L2 writing.

The connection between the ideal L2 writing self and L2 writing grit is deeply rooted in the theoretical framework of the L2MSS (Dörnyei and Ushioda, 2009), which posits that individuals' perceptions of their ideal selves serve as a driving force for their learning endeavors. When learners hold a clear and compelling vision of themselves as successful L2 writers, they internalize this ideal image as a standard against which they measure their progress. This alignment between their ideal writing self and their actual writing abilities fosters a sense of purpose, direction, and motivation, propelling them to persist in their writing pursuits and overcome challenges (Guan et al., 2023; Zhu et al., 2022b).

In essence, learners' ideal L2 writing self functions as a motivational catalyst, imbuing them with a belief in their ability to achieve their envisioned level of proficiency. This intrinsic motivation, fueled by the discrepancy between their current writing abilities and their ideal self-image, prompts them to engage in sustained effort, dedicated practice, and continuous improvement (Cheong et al., 2022; Tahmouresi & Papi, 2021; Xu & Wang, 2022). As they progress toward their idealized self-perception, learners become increasingly invested in their writing development, demonstrating a heightened level of L2 grit.

Second, this investigation brought to light a significant and notable direct impact of the growth L2 writing mindset on L2 writing grit, thus providing substantial support for $H_2$. This aligns with prior research highlighting the role of mindset in shaping motivational orientations and learning behaviors (Lou & Noels, 2019a, 2019b; Sadoughi & Hejazi, 2023). Specifically, our findings corroborate the notion that learners who embrace a growth L2 writing mindset, characterized by a belief in the malleability

of their writing abilities and a view of challenges as learning opportunities, are more likely to exhibit heightened L2 writing grit, a persistent and unwavering commitment to improving their L2 writing skills. This link between the two constructs is rooted in the theoretical framework of the mindsets theory, which posits that individuals' beliefs about their abilities play a crucial role in their learning and performance (Dweck, 2017). Learners who endorse a growth mindset in their L2 writing endeavors perceive their writing skills as malleable and improvable rather than fixed and innate. This mindset empowers them to approach writing challenges with resilience, viewing setbacks as opportunities for growth and improvement (Hu et al., 2022; Mrazek et al., 2018).

Fundamentally, individuals adopting the growth L2 writing mindset internalize the conviction that they can enhance their writing proficiency through persistent effort and commitment. This inherent motivation, driven by their belief in the improvability of their skills, inspires them to consistently invest in sustained effort, dedicated practice, and continual refinement (Bai et al., 2021; Liu, 2022; Xu, 2022). In their pursuit of improved writing skills, those with a growth L2 writing mindset exhibit an elevated degree of L2 writing grit, marked by perseverance, resilience, and an unyielding dedication to their writing objectives.

Third, our findings revealed a direct and significant impact of L2 writing grit on L2 WA, thereby supporting $H_3$. This finding is in line with recent studies emphasizing the powerful motivational role of grit in L2 writing performance (e.g., Shafiee Rad & Jafarpour, 2022; Zhang & Zhang, 2023). This direct relationship aligns with the broader literature emphasizing the powerful motivational impact of grit on various learning domains (Hodge et al., 2018; Sadoughi & Hejazi, 2023; Wolters & Hussain, 2015; Yoon, Kim, & Kang, 2020). Specifically, our findings suggest that learners who exhibit higher levels of L2 writing grit are more likely to achieve greater levels of writing proficiency. This positive association is further supported by research indicating the positive contribution of L2 grit to overall foreign language achievement (Alamer, 2021, 2022; Khajavy & Aghaee, 2022; Khajavy et al., 2021; Li & Yang, 2023; Sudina & Plonsky, 2021) as well as L2 vocabulary learning and extensive reading (Kramer, McLean, & Shepherd Martin, 2017).

To understand the underpinnings of this direct relationship, we turn to the socio-cognitive theory of self-regulation, which posits that individuals' self-regulatory abilities play a crucial role in determining their learning outcomes (Bandura, 1991). Gritty learners, characterized by their perseverance, passion, and consistent effort, embody the essence of effective self-regulation (Martin, Craigwell, & Ramjarrie, 2022; Muenks, Wigfield, Yang, & O'Neal, 2017). They take ownership of their learning by setting goals that align with their aspirations and persisting in the face of challenges (Ramos Salazar & Meador, 2023). This self-regulatory capacity is particularly evident in the context of L2 writing. Gritty writers exhibit heightened self-regulation, enabling them to set specific writing goals, meticulously monitor their progress, and deftly employ strategies to overcome obstacles (Teng & Zhang, 2018; Zhou & Hiver, 2022). They effectively adapt their writing process by making informed revisions and consistently refining their writing proficiency over time. Furthermore, the self-regulatory abilities of gritty writers empower them to maintain their focus amidst challenges, fostering persistence and resilience in their writing endeavors (Bai et al., 2021; Zhang, 2023). This perseverance enables them to navigate setbacks and obstacles effectively, demonstrating a sustained commitment to improving their writing skills. In essence, L2 grit catalyzes self-regulation in the writing process, propelling learners toward higher WA levels.

Our study revealed a direct and significant prediction of L2 WA by the ideal L2 writing self, offering support for $H_4$. This aligns with recent research emphasizing the powerful motivational role of the ideal L2 writing self in L2 writing performance (Guan

et al., 2023; Tahmouresi & Papi, 2021; Zhan et al., 2023; Zhu et al., 2022a). As Dörnyei and Ushioda (2009) posits, the ability of learners to envision a desirable future self as a proficient and effective L2 user can serve as a driving force for their motivation and achievement. This aspirational self-image serves as a reference point, enabling learners to perceive the gap between their current language proficiency and their desired level. The awareness of this discrepancy motivates learners to invest more effort in bridging the gap and achieving their L2 aspirations (Moskovsky et al., 2016; Wong, 2018). In L2 writing, when learners possess a vivid and aspirational ideal L2 writing self, they become acutely aware of the discrepancy between their current writing skills and their desired level of proficiency. This realization sparks a desire to reduce this gap and enhance their writing abilities, which can compel learners to engage in persistent effort, dedicated practice, and continuous improvement (Waller & Papi, 2017). L2 writers with a strong ideal L2 writing self often experience positive emotions, such as joy and excitement, which further fuels their motivation and engagement in the writing process (Tahmouresi & Papi, 2021; Zhu et al., 2022a). Additionally, these learners tend to adopt a more self-regulated approach to writing, employing effective strategies such as seeking feedback and revising their work (Xu & Wang, 2022, 2023). This proactive approach to writing further contributes to their improved writing performance.

The findings of this study resonate with a recent study by Jang and Lee (2019), which found that learners with a more vivid ideal L2 writing self produced higher-quality writing in terms of lexical resources, coherence, and cohesion. This suggests that a strong ideal L2 self can directly impact the quality of L2 writing. In essence, a clear and compelling ideal L2 writing self serves as a guiding light, directing learners' actions and attitudes toward achieving proficiency in L2 writing. This long-term vision motivates them to engage in purposeful and structured writing practices, reinforcing their commitment to becoming proficient L2 writers (Guan et al., 2023).

In contrast to our initial hypothesis ($H_5$), the study did not find a direct effect of the growth L2 writing mindset on L2 WA. However, a significant discovery emerged as L2 writing grit mediated the relationship between the growth L2 writing mindset and L2 WA, thereby supporting $H_6$. This finding aligns with the broader literature suggesting that grit serves as a crucial mediator in the relationship between noncognitive variables and L2 achievement (Fathi & Hejazi, 2023; Hu et al., 2022).

According to the mindsets theory (Dweck, 2017), individuals with a growth mindset believe in the malleability and improvability of their abilities through hard work and effort. As such, students endorsing a growth mindset regarding their L2 writing ability are highly likely to expend more effort and show interest by engaging in deliberate practice, seeking feedback to enhance their writing skills, and using cognitive, metacognitive, and self-regulation strategies (Xu, 2022; Xu & Wang, 2022, 2023). Given the demanding and challenging nature of L2 writing as well as growth-mindset learners' views on difficulties and mistakes (Bai et al., 2021), learners perceiving their writing ability as malleable and improvable are more self-confident and are likely to consider challenges and setbacks as learning opportunities that could be capitalized on to develop their writing skills and competence (Yao & Zhu, 2022; Zarrinabadi & Rahimi, 2022). In other words, L2 writers with a growth mindset can exhibit elevated levels of grit, enabling them to consistently engage in their writing practice, diligently revise their work, and actively seek feedback, even when confronted with challenges or setbacks. In the long run, this persistence and resilience may substantially contribute to the development of learners' writing motivation (Bozgün & Akın-Kösterelioğlu, 2021), ultimately leading to improved writing skills and higher L2 WA (Shafiee Rad & Jafarpour, 2022). Moreover, as

growth-mindset learners adopt a learning/mastery, rather than performance, goal orientation (Dweck, 2017), they may be more willing to assume responsibility for the process of developing their writing skills by taking remedial actions such as requesting help and seeking feedback from their teachers or more proficient peers. In essence, the amalgamation of a growth-oriented mindset with the manifestation of L2 writing grit functions synergistically, which could foster adaptive learning strategies and resilient attitudes, thereby positively impacting learners' L2 WA (Cheong et al., 2023; Hu et al., 2022).

Finally, although the ideal L2 writing self significantly impacted L2 WA ($H_4$), our findings revealed a crucial mediating role for L2 writing grit in the association between the ideal L2 writing self and L2 WA, supporting $H_7$. Recognizing the central role of motivation in L2 writing (Graham et al., 2022), individuals with vivid images of themselves as proficient future writers are not only highly motivated (Tahmouresi & Papi, 2021) but also actively engaged in their writing processes (Zhu et al., 2022b). This heightened motivation serves as a potent catalyst, infusing purpose and direction into the writing endeavors of learners. Consequently, these individuals would be highly inclined to dedicate themselves unwaveringly to the pursuit of their writing goals, driven by a commitment to refining their skills and attaining their envisioned level of proficiency. The ideal self in writing emerges as a compelling motivational force, urging individuals to persist in writing practice, seek growth opportunities, and steadfastly work toward achieving their desired level of writing proficiency.

As evidenced in prior studies, learners with clear and vivid visions of themselves as proficient L2 writers in the future experience lower levels of anxiety (Tahmouresi & Papi, 2021) and higher levels of positive emotions such as enjoyment (Zhu et al., 2022a). These emotional states potentially contribute to sustained interest and effort in writing. Moreover, individuals harboring such visions actively seek and welcome feedback (Xu & Wang, 2023) and employ self-regulation strategies in their writing (Xu & Wang, 2022). This emotional disposition, proactive use of self-regulation strategies, and heightened self-efficacy can enhance learners' control over their learning experiences, ultimately elevating their overall L2 writing performance.

Aligning with the broader literature in general education emphasizing the influential role of grit in enabling learners to exert more control over their time and efforts (Wolters & Hussain, 2015) and enhancing self-efficacy (Oriol, Miranda, Oyanedel, & Torres, 2017), gritty learners exhibit higher levels of motivated L2 learning behavior (Pawlak, Zarrinabadi, & Kruk, 2022), L2 achievement (Liu & Wang, 2021), and L2 performance (Wei et al., 2019). These findings from studies on L2 learning and teaching may be extended to skill-specific domains, as recent research indicates that gritty L2 learners could achieve higher proficiency in various skills and subskills such as writing (Shafiee Rad & Jafarpour, 2022), vocabulary learning and extensive reading (Kramer et al., 2017).

## Conclusions and implications

The present study emphasized the pressing need to investigate domain-specific individual difference factors in teaching and learning L2 writing. Drawing on the significant role of a growth L2 writing mindset, ideal L2 writing self, and L2 writing grit in L2 writing achievement, this study uncovered the significance of fostering positive beliefs and attitudes toward L2 writing among students. In doing so, the findings highlighted the direct roles of ideal L2 writing self and L2 writing grit in predicting L2 WA as well as

the mediating role of L2 writing grit in the relationships 'between ideal L2 writing self and L2 WA' and 'between growth L2 writing mindset and L2 WA'.

Overall, the findings of this study emphasize the importance of addressing the role of individual difference factors in L2 writing instruction. Educators can significantly enhance learner motivation and engagement in writing tasks by fostering positive self-images and reinforcing their belief in their writing abilities. Additionally, cultivating students' grit and resilience can equip them to surmount writing challenges and persist in their writing practice, ultimately leading to improved WA.

To instill a robust ideal L2 writing self in learners, teachers can employ practical strategies that guide students in envisioning themselves as successful L2 writers. Activities such as visualization and goal-setting (Al-Murtadha, 2023; Shafiee Rad & Alipour, 2023), along with creative or guided imagery (Dörnyei and Ushioda, 2009) and communicative writing tasks (Dörnyei & Murphey, 2003), could serve as effective tools to encourage students in crafting vivid and compelling images of their future competence in writing. This process exerts a profound motivating influence, encouraging learners to invest more dedication and effort in their writing pursuits.

Recognizing the malleability of L2 grit (Clark & Malecki, 2019), teachers can adopt strategies that nurture students' passion and perseverance. One effective approach is to incorporate writing materials and tasks that resonate with students' preferences and interests. For instance, in the language classroom, teachers can offer a variety of writing prompts or assignments related to different genres or topics, allowing students to choose those that align with their personal interests. This approach captures students' attention and motivates them to engage more actively in their writing processes. Instilling a growth-oriented mindset emphasizes that gaining writing proficiency in an L2 entails a continual learning process rather than an innate talent. Teachers can highlight the importance of persistence and willingness to learn from one's mistakes and failures. For instance, when providing feedback on writing assignments, educators can emphasize areas of improvement while acknowledging students' progress. Encouraging a positive attitude toward challenges and errors helps students understand that setbacks are opportunities for growth and improvement.

Acknowledging the significance of individual differences, educators should tailor their instruction to meet each learner's unique needs, goals, and motivations. This entails providing personalized feedback, targeted support, and opportunities for self-reflection to foster a supportive learning environment that empowers students in their writing development. This personalized approach enhances engagement and facilitates progress in L2 WA. Beyond traditional assessments focused solely on linguistic aspects, incorporating measures assessing mindsets, self-beliefs, and grit could provide valuable insights into learners' writing development and guide instructional decisions. For instance, instead of solely grading a student's essay based on grammar and vocabulary, assessment could involve evaluating students' self-reflection on the writing process, their belief in their ability to improve, and their persistence in revising and editing their work. Teachers might provide prompts or questions related to students' approach to writing, their confidence in their skills, and their willingness to engage in revisions. By analyzing these aspects, instructors can gain valuable insights into students' attitudes, beliefs, and determination toward writing improvement, going beyond linguistic accuracy to understand their holistic writing development. This information can guide teachers in tailoring their instruction to address language deficiencies and motivational and metacognitive factors, thereby supporting students' overall growth in L2 writing.

Creating a positive and supportive classroom environment is pivotal in nurturing effective L2 writing instruction. Encouraging peer collaboration, promoting student

autonomy, and celebrating individual achievements fosters motivation, reduces anxiety, and nurtures a sense of community among writers. For instance, in a language classroom, students can engage in peer-review sessions where they read each other's compositions and offer suggestions for improvement. This collaborative approach not only enhances motivation but also helps reduce anxiety as students feel supported and learn from each other's strengths.

The present study is not free from limitations. For one thing, given the inherent drawbacks of the use of self-report questionnaires for data collection, it is suggested that future research rely on qualitative techniques such as interviews or stimulated recall to gain deeper insights into the variables under investigation. Additionally, as the present study was cross-sectional and conducted in usual, face-to-face classes, future research may replicate it in online L2 writing classes, preferably using longitudinal designs. Moreover, in view of the fact that the participants were English-major students, future studies may recruit non-English-major students, which would allow insights into the generalizability of the findings beyond a specific academic discipline. Additionally, incorporating a diverse range of proficiency levels and language backgrounds would offer a more comprehensive understanding of the role of L2 writing grit in relation to the ideal L2 writing self and L2 WA. Furthermore, it would be interesting to conduct cross-cultural studies to better shed light on the power of motivational beliefs in different foreign or second language contexts.

Although this study investigated the mediating role of L2 writing grit in the relationship between growth L2 writing mindset and L2 WA, it is important to acknowledge the ongoing discussion in the field regarding the timing and justification of mediation analysis. As highlighted by Wang and Wei (2023), establishing a robust understanding of the direct relationships between predictors and outcomes is crucial before delving into more complex mediating mechanisms. Additionally, Tate (2015) cautions against the overuse of mediation analysis without sufficient theoretical grounding. Thus, future research should heed these concerns and prioritize a thorough examination of direct effects, ensuring a strong empirical and theoretical basis before exploring potential mediating factors.

Furthermore, it is important to acknowledge that other factors or mechanisms may also contribute to this relationship. The present empirical investigation did not explore all possible mediators or alternative explanations for the observed associations. For example, echoing Papi, Vasylets, and Ahmadian's (2022) call for considering the role of both cognitive and noncognitive factors in L2 writing to achieve a comprehensive understanding of this important skill, we suggest that future studies consider the roles of cognitive factors (e.g., working memory) along with other noncognitive factors (e.g., emotions). Such studies will have a more balanced and nuanced approach toward examining the contributions of influential factors to the L2 writing skill and may provide valuable findings regarding the interactions of different determining factors. Moreover, as this study looked at learners' motivation in writing by examining their mindsets and ideal self, which are rooted in LMMS and L2MSS, respectively, it would be interesting to measure learners' motivation through other frameworks, inter alia, self-determination theory which emphasizes the substantial role of intrinsic motivation in learning (Ryan & Deci, 2000). Finally, as learners' attitudes to L2 writing may be influenced by their social, cultural, and educational contexts (Kormos, 2012), conducting cross-cultural studies and examining their interaction with learners' individual differences would be necessary.

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