Task-specific writing anxiety and self-efficacy are separate from general L2 writing anxiety and self-efficacy and they have differential associations with the effects of written corrective feedback in pre-task and within-task planning

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ABSTRACT

This study examines the validity of task-specific anxiety and self-efficacy and the joint effects of task-specific and general second language (L2) writing anxiety and self-efficacy on learning gains resulting from different task conditions formed based on two types of written corrective feedback and two types of task planning. 115 high school EFL learners in South Korea were divided into two groups and received either direct correction or metalinguistic feedback on their wrong use of English articles and past tense in their written narratives. After receiving feedback, each of the two large groups was further divided into three subgroups, each performing a second writing task under three conditions: pre-task planning, within-task planning, and no planning. The learners responded to questionnaires that aimed to measure task-specific and L2 general anxiety and self-efficacy. The results demonstrated that task-specific anxiety and self-efficacy were distinct from general L2 writing anxiety and self-efficacy and that they played different roles in L2 development under the different treatment conditions. Specifically, general L2 writing anxiety was a negative predictor of learning gains regardless of learning condition; task-specific anxiety showed a positive effect in metalinguistic explanation + within-task planning but a negative effect in all other task conditions; neither task-specific nor general L2 self-efficacy was a significant predictor of treatment effects. This study demonstrates the importance of investigating task-specific individual difference variables and shows the differential associations between general and task-specific individual difference variables on one hand and different types of task-based instruction on the other.

1. Introduction

The influence of learners' individual differences (IDs) in second language (L2) learning has been a central topic in task-based language teaching (TBLT) research (Ellis et al., 2020; Kormos, 2012; Li, 2024; Li et al., 2022; Robinson, 2011). Previous research, however, has often treated IDs as trait variables, overlooking the variability of ID dispositions across tasks. This issue has led scholars to advocate for examining IDs at the task-specific level rather than, or in addition to, the general level, to better understand how students'

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ID variation *during* task performance affect learning outcomes (Li & Dewaele, 2024; Li et al., 2024; Wang et al., 2021; Wang & Li, 2019). For instance, Li et al. (2024) found that task-specific enjoyment had a stronger effect on task performance than L2 general enjoyment, highlighting the need to distinguish general and task-specific IDs.

Despite the significance of L2 writing anxiety and self-efficacy in L2 writing (Cheng, 2004; Teng et al., 2018; Zabihi, 2018), no studies have distinguished general and task-specific dimensions of the two ID variables. This study, therefore, aims to fill that gap by validating the constructs of task-specific anxiety and task-specific self-efficacy. Anxiety and self-efficacy have putative links with L2 writing, which requires the simultaneous retrieval, storage, and manipulation of linguistic forms and ideas (Bergsleithner, 2010; Li, 2023; Michel et al., 2019), often resulting in increased anxiety (Atay & Kurt, 2006; Cheng et al., 1999). Especially in South Korea, the lack of systematic L2 writing instruction in public schools (Choi et al., 2019) likely exacerbates learners' writing anxiety (Choi, 2013). One ID variable that has been frequently juxtaposed with anxiety is self-efficacy (Cubukcu, 2008; Han & Hiver, 2018; Salem & Al Dyiar, 2014), which refers to an individual's belief in their ability to succeed in a certain task. Anxiety and self-efficacy have been found to be negatively correlated and therefore may have opposite effects in L2 writing and in L2 learning in general (Pajares & Valiante, 1997; Woodrow, 2011). While anxiety can hinder writing, self-efficacy may enhance it by enabling writers to fully engage in the writing process, mobilizing all cognitive resources, and making the most of available resources, such as corrective feedback and task planning (Tsao, 2021), the two instructional interventions investigated in this study.

Written corrective feedback (WCF) is a well-researched topic given its popularity in writing pedagogy (Hyland & Hyland, 2006; Li & Vuono, 2019). Cognitive-interactionist TBLT researchers emphasize the importance of feedback in creating learning opportunities by helping learners to notice discrepancies between errors and target forms (Ellis et al., 2020). Additionally, in the writing process, planning constitutes a vital phase where writers create and structure their ideas (Kellogg et al., 2013) and retrieve and select linguistic items to represent the ideas (Li, 2023). Both corrective feedback and planning are essential components of task-based writing instruction. Within the task-based lesson cycle, which comprises pre-task, main task, and post-task (Willis, 2009), planning facilitates writers' preparation before or during task performance, while WCF enables them to focus on form and analyze language use after task performance. This study combines these two important interventions in L2 writing as treatment variables and explores how they interact with learners' anxiety and self-efficacy. The investigation of ID effects under different instructional conditions is called ITI (Li, 2024)—ID-treatment-interaction—an approach that has been advocated in recent L2 research and that overcomes the limitations of correlational approaches where IDs have an absolute impact on learning outcomes regardless of instructional conditions. This study contributes to this line of research and aims to provide a deeper understanding of the mechanism in which learner-internal factors interface with task-related factors in influencing L2 attainment.

2. Literature review

2.1. Theoretical background

Skehan's Limited Attentional Capacity Theory (1996) and Robinson's Cognition Hypothesis (2001) are two major theoretical underpinnings of TBLT research. Skehan argued that due to human's limited attentional resources, complex tasks with increased cognitive demands would cause learners to struggle between different aspects of task performance, and consequently, they might focus on either linguistic complexity or accuracy, leading to a trade-off between the two. Robinson, however, posited that the impact of task complexity depends on how it is manipulated. According to the Cognition Hypothesis proposed by Robinson, task complexity can be adjusted along resource-directing and resource-dispersing dimensions of tasks. Resource-directing factors pertain to the conceptual aspects of tasks (e.g., whether a task requires reasoning), while resource-dispersing factors relate to the procedural aspects (e.g., whether learners are allowed to plan before task performance). Robinson hypothesized that enhancing task complexity via resource-directing factors could improve both accuracy and complexity of task performance, as learners are compelled to engage in more deliberate language processing and they draw on different pools of resources for accuracy and complexity. Conversely, increasing task complexity through resource-dispersing factors may result in less complex, accurate, and fluent L2 usage, because learners' cognitive resources are spread across various aspects of the task.

Robinson further proposed a tripartite framework that illustrates how task performance and learning gains are influenced by three categories of factors: task complexity, task condition (interactional factors, such as one-way vs. two-way communication), and task difficulty (learner factors influencing task difficulty level, such as aptitude, anxiety, self-efficacy). For a comprehensive discussion of the Triadic Componential Framework, see Robinson (2007). In independent writing tasks, interactional factors are less relevant, leaving task complexity and task difficulty the primary influences on task performance. Robinson posited that the same task can vary in difficulty depending on individual learner traits and dispositions. Robinson (2011) also suggested that, in general, IDs may play a greater role in complex tasks than in simple tasks, as the former are more demanding and require more affective and cognitive resources. Empirical studies have supported these dynamics of IDs in relation to task complexity (Rahimi & Zhang, 2019; Zabihi et al., 2020). Research on anxiety and TBLT suggests that anxiety plays a positive role in simple tasks and a negative role in complex tasks (An & Li, 2024).

In this study, we investigate the associations between IDs in L2 writing anxiety and self-efficacy and learning gains resulting from two types of corrective feedback under pre-task and within-task planning conditions. Cast in Robinson's framework, L2 writing anxiety and self-efficacy related to task difficulty, while task planning functions a resource-dispersing factor associated with task complexity. Based on the theoretical considerations, it is hypothesized that both general L2 and task-specific IDs will be associated with learning gains of the instructional interventions and that they will have differential effects under varying conditions, with these effects being more pronounced in task conditions where learners face increased cognitive demands during task performance. Specifically, based on

research on oral tasks (Ahmadian, 2012; Li & Fu, 2018), within-task planning where learners have unlimited time for task performance and are encouraged to plan the content and language in the ongoing task, is more likely to implicate ID factors. Other things being equal, direct correction where learners' errors are corrected without rule explanations and learners likely engage in item-based learning, may impose a heavier processing burden on the learner than metalinguistic feedback that provides rules learners may apply to all errors (Shintani & Ellis, 2013). However, there may exist nuanced associations between IDs and treatment effects in the three-way interaction between IDs, planning type, and feedback type that this study aims to investigate.

2.2. L2 writing anxiety

Although it is commonly believed that L2 learners feel most anxious when speaking the language (Zabihi, 2018), L2 writing can induce as much anxiety as speaking because it is one of the most complex skills to acquire (Michel et al., 2019). Considering that learners' increased anxiety can negatively impact L2 learning processes and outcomes (Bailey et al., 2000), further research is needed to understand how L2 anxiety interacts with learner-internal and learner-external factors to help learners achieve maximal learning. Horwitz et al. (1986) defined L2 anxiety as "a distinct complex of self-perceptions, beliefs, feelings, and behaviors related to classroom language learning arising from the uniqueness of the language learning process" (p. 128). Narrowing the focus to L2 writing, Cheng (2004) developed the Second Language Writing Anxiety Inventory (SLWAI), describing L2 writing anxiety as "a relatively stable anxiety disposition associated with L2 writing, which involves a variety of dysfunctional thoughts, increased physiological arousal, and maladaptive behaviors" (p. 319).

Researchers have used the SLWAI to examine how L2 writing anxiety affects task performance under various writing conditions. Zabihi et al. (2020), for instance, discovered that the role of L2 writing anxiety varies depending on task complexity, manipulated through genre—narrative versus argumentative writing. Argumentative writing, which was believed to impose higher reasoning demands than narrative writing (Beauvais et al., 2011), showed a more significant negative influence of L2 writing anxiety on writing performance compared to narrative writing. Similarly, Rahimi and Zhang (2019) explored how L2 writing anxiety interacted with task complexity. 60 EFL learners performed two argumentative writing tasks with different levels of complexity (±few elements, ±reasoning demands). Their writing performance was evaluated based on syntactic complexity and accuracy, and anxiety was measured by using the SLWAI. The findings indicated that L2 writing anxiety had a minimal overall effect, but a significant impact was found on syntactic complexity under the complex task condition, supporting Robinson's (2011) prediction on the interaction between IDs and task complexity.

Although the studies yielded significant findings, a notable limitation is that they focused on learners' anxiety related to general L2 writing without accounting for the specific anxiety experienced by learners during task performance. It is plausible that a learner who typically feels anxious about L2 writing might not experience the same level of anxiety when engaged in a particular writing task. Recently, in their validation study, Wang et al. (2021) suggested that learners' task-specific anxiety should be examined as a distinct construct that is separate from general L2 anxiety. However, most studies have overlooked this distinction. To address this gap, we examine the separability of general L2 writing anxiety from their task-specific anxiety and explore how these two constructs interact with task-based interventions. Specifically, we investigate written corrective feedback and planning as task variables, which are presumed to impose varying levels of cognitive demands and interact with learners' anxiety to predict L2 outcomes.

2.3. L2 writing self-efficacy

A consistently identified ID factor that negatively correlates with anxiety is learners' self-efficacy (Pajares & Valiante, 1997; Woodrow, 2011). According to Pajares and Valiante (1997), low self-efficacy can lead learners to perceive tasks as more challenging, increasing anxiety and hindering performance. Self-efficacy refers to "the belief in one's capabilities to organize and execute the courses of action required to manage prospective situations" (Bandura, 1995, p. 2). Since it is "the belief of how well one can accomplish a task with the judgment of his/her own competence and the demand of the task" (Sun et al., 2021, p. 2), self-efficacy is considered domain- and task-specific (Bandura, 1986). In other words, learners' self-efficacy in writing can be different from their self-efficacy in other language domains such as speaking or listening, and one's self-efficacy in a specific task can differ from that in another type of tasks.

Numerous studies have examined how L2 learners' self-efficacy in L2 writing (referred to as 'L2 writing self-efficacy' hereafter) predicts their writing skill improvement (e.g., Chen & Zhang, 2019; Zabihi, 2018; Zhang & Guo, 2012). These studies generally show that self-efficacy is a positive predictor of L2 writing performance and development. Some research also investigated the relationship between L2 writing self-efficacy and other task-related factors, such as written corrective feedback and task complexity. For instance, Tsao (2021) found that 227 EFL high school students' L2 writing self-efficacy was a significant positive predictor of learners' engagement with feedback. Regarding L2 writing self-efficacy and task complexity, Rahimi and Zhang (2019) examined how L2 writing self-efficacy interfaces with task complexity manipulated by the level of reasoning demands. They found that learners' L2 writing self-efficacy had a moderate positive correlation with the learners' syntactic complexity in the complex task ($r = 0.35$) and a significant positive relationship with the number of errors ($r = 0.33$). This suggests that students with high L2 writing self-efficacy produced more complex sentences but with lower accuracy, indicating a dynamic association between L2 writing self-efficacy and L2 writing performance.

Despite extensive research on written corrective feedback and task complexity (Johnson, 2017; Kang & Han, 2015), there remains a lack of evidence on how L2 writing self-efficacy relates to different feedback types and interacts with task planning, a crucial variable in task complexity (Robinson, 2011). Moreover, although the construct of self-efficacy is inherently task-specific (Bandura, 1986),

most prior studies have investigated the role of general L2 writing self-efficacy, neglecting task-specific self-efficacy, which is against the conceptualization of self-efficacy as a task-specific learner variable. Since self-efficacy is closely related to the specific context of a given task, it is essential to differentiate self-efficacy in general L2 writing and self-efficacy in a particular writing task. Therefore, this study aims to provide empirical evidence on how the effects of feedback and planning depend on both general and task-specific L2 writing self-efficacy.

2.4. Written corrective feedback

Written corrective feedback (WCF) is a significant component of L2 writing pedagogy (Bitchener & Ferris, 2012; Li & Vuono, 2019; Mao et al., 2024). Three main types of WCF are identified based on error correction strategy (Ellis, 2009): direct correction, indirect correction, and metalinguistic feedback. In direct correction, an error is replaced with the correct form without further explanation. In indirect correction, errors are identified (such as by underlining or using bold type), but corrections are not provided. Metalinguistic feedback provides grammatical clues using error code (e.g., 'T' for tense, 'A' for article) or brief comments (e.g., "Use past tense").

Kang and Han (2015) conducted a meta-analysis on empirical research examining the effects of WCF and showed that WCF had an overall moderate effect on L2 grammar accuracy ($g = 0.68$, $p < .001$). The meta-analysis further showed that direct feedback is more effective than indirect feedback and that focused feedback targeting particular linguistic structures is more effective than unfocused feedback targeting extensive errors instead of specific structures. Aside from the moderating factors examined by Kang and Han (2015), such as type and focus of feedback, feedback effects are likely also subject to other factors such as the nature of the target structure (Shintani et al., 2014), learners' proficiency level (Park et al., 2016), and individual difference factors such as language aptitude (Benson & DeKeyser, 2019) and working memory (Li & Roshan, 2019). Notably missing from the research is the role of learners' anxiety and self-efficacy in the effectiveness of WCF. This study fills this gap by examining the associations between the two ID factors and the effectiveness of two types of WCF when learners engage in different types of task planning.

2.5. Planning in L2 writing

In task-based research, planning is a procedural option during a task cycle that allows learners time to prepare the content and language of task performance (Ellis, 2006). Planning in L2 research is conceptualized differently from L1 research where planning refers to the retrieval and organization of the *message* or *content* of speech or written production, and the linguistic aspects are addressed after the initial stage of message or content planning. The stage where learners encode or find linguistic representations for the planned content is called formulation in speech models (Levelt, 1989) and translation in writing models (Hayes & Flower, 1980). Thus, while in L2 research, planning is a procedure that involves both content and language preparation, in L1 research, it is a sub-process of language production that involves content or message composition only. In L2 research, Ellis (2005) identified two primary forms of planning in L2 task performance: pre-task planning and within-task planning. Pre-task planning engages learners with planning *before* task performance, while within-task planning encourages learners to conduct careful online planning *during* task performance. In the empirical research on the two types of planning, typically in the pre-task planning condition, learners are allowed time to plan before starting the task but are given a time limit for task performance to minimize planning during the task; in the within-task planning condition, learners are not allowed to plan before the task commences but have unlimited time for task performance and are encouraged to plan while performing the task.

Regarding the effects of planning on task performance, Johnson and Tabari's (2022) meta-analysis on task planning in oral tasks reported that pre-task planning has the largest effect on syntactic complexity ($d = 0.58$), followed by fluency ($d = 0.46$) and accuracy ($d = 0.39$). Within-task planning has a larger effect on syntactic complexity ($d = 1.09$) and accuracy ($d = 1.74$) than pre-task planning, but it has a negative effect on fluency. In the domain of writing, Johnson and Tabari's (2023) meta-analysis showed that pre-task planning significantly enhances syntactic complexity, accuracy, and fluency. However, within-task planning only facilitates accuracy, with the caveat that the sample sizes for within-task planning were relatively small, ranging from seven to nine. The results suggest that, due to the absence of online processing pressure, the effects of within-task planning on writing performance are less pronounced than those on speech performance. It is important to note that most planning studies examined planning's impact on task performance represented by linguistic complexity, accuracy, and fluency. There is little research on its effects on the learning of new L2 knowledge, which often requires instructional interventions such as corrective feedback.

This study addresses several gaps in the research on TBLT and individual differences. Specifically, our study aims to answer the following two research questions.

1. To what extent are learners' task-specific anxiety and self-efficacy distinctive from their general L2 writing anxiety and self-efficacy?
2. What are the roles of anxiety and self-efficacy along the general and task-specific dimensions in L2 writing accuracy development under task conditions formed on the basis of different configurations of written corrective feedback and task planning?

3. Methods

3.1. Participants

115 high school students (53 females and 62 males) in South Korea participated in the study.[1] They were from six 11th-grade classes at the same school, taught by one teacher. To ensure the comparability of English proficiency across the six classes, four sets of scores were collected,[2] and the scores were not statistically different across the groups: $F(5, 104^3) = 1.210$, $p = .310$ for the National English Assessment; $F(5, 109) = 1.150$, $p = .339$ for the in-school English exam; $F(5, 109) = 0.888$, $p = .492$ for the in-school English writing test; and $F(5, 109) = 1.069$, $p = .382$ for the in-school English portfolio. The National English Assessment grades students from 1 (highest) to 9 (lowest) based on percentile scores, and the average grade of the participants was 4.5 ($SD = 2.131$), indicating intermediate proficiency. On average, students began learning English at age 7.4 and their length of study was 9.63 years ($SD = 2.3$ years).

3.2. Treatments

Picture-based narrative writing tasks were employed as treatment tasks, each consisting of a sequence of six pictures depicting an event (Heaton, 1966, 1975; See Appendix A). A narrative writing task was used because it elicits various linguistic features (e.g., temporal connections, tense markers, articles) (Biber & Conrad, 2009) and has been commonly used in previous WCF studies (e.g., Ellis et al., 2008; Sheen, 2007, 2010). To ensure task feasibility, the study was piloted with nine 11th-grade EFL learners in South Korea, who reported no issues with task comprehension or completion. The six classes were randomly assigned to six task conditions (see Table 1) based on the manipulation of two variables: written corrective feedback and planning. Half of the participants (three groups) received direct correction whereas the others received metalinguistic explanation focusing on errors related to English articles and past tense in the previous session's essay.

For the direct correction groups, errors were marked with either a circle (O), a checkmark (∨), or a strikethrough (−), with the correct form provided directly above. In contrast, the metalinguistic explanation groups received a brief metalinguistic clue above the error. Fig. 1 shows examples of each feedback type.

The two target structures—English articles and past tense—were selected because Korean EFL learners often struggle with them. Despite its seemingly simple rule, correct use of the past tense is difficult for Korean learners (Yoo, 2014). Moreover, past tense forms were frequently targeted in previous WCF studies (e.g., Ellis et al., 2006; Frear, 2012). English articles also present challenges because there is no article system in Korean, count and definiteness are not strict in Korean, and the use of English articles is determined not only at word/sentence levels but also at the discourse level (Gang, 2001).

Learners were allotted 5 min to review the feedback. The duration for feedback review was determined based on previous WCF studies (Ellis et al., 2008; Sheen, 2007; Shintani et al., 2014; Stefanou & Revesz, 2015). Following the brief study session, they completed a similar writing task under one of the three planning conditions: pre-task planning (PTP), within-task planning (WTP), and no planning (NP). The PTP group was given 10 min to plan before starting to write, following the planning studies in the literature (Ellis & Yuan, 2004; Ong & Zhang, 2010; Rostamian et al., 2018; Tabari, 2017, 2022). Mehnert (1998) suggested that at least 10 min of planning is necessary to observe measurable effects on L2 performance. Students used a planning sheet to jot down ideas or linguistic information without writing full sentences in L2. Planning notes were removed before writing to prevent participants from directly copying them. After the pre-task planning, they were instructed to complete the writing task within 20 min, a timeframe determined from pilot study observations.

The WTP group, on the other hand, began writing immediately without any planning beforehand but was told to take as long as they needed to complete the essay. To ensure learners' careful online planning, the teacher emphasized that they should think as carefully as possible about the content and language while writing. The NP group was neither allowed time for pre-task planning nor extended time for careful online planning. They had to start writing immediately and complete the essay within 20 min. Table 2 summarizes the differences between the three task planning conditions, while Appendix B provides the task prompts used for each treatment group.

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[1] The study took place in six intact classes of a public high school in South Korea. The total number of the students were 137, and 22 of them did not participate in the study (14 students did not participate from the onset of the study, 8 students withdrew their participation in Session 3). The students who decide not to participate in the study remained in the classroom reviewing the textbook on their own. Both assents from the students and consents from their parents were collected before the start of the study.

[2] In South Korea, the National Assessment is administered four times a year (March, June, September, and October) in all public schools. In the subject of English, the test consists of 45 multiple-choice items assessing learners' listening, reading, grammar, vocabulary skills. The in-school English Exam scores were the combined scores from mid-term and final exams in the preceding semester. For the in-school English writing test, students had been given 20 sentences from their textbook during the past semester, and in a few weeks, they took a test that was designed to check how well they could make use of the sentences to answer short-response questions. For the Portfolio portion, students were asked to take notes on a worksheet in every class (e.g., the meaning of key vocabulary, translation of key sentences) and the collection of their worksheets was examined and scored by the teacher.

[3] The scores of five students were not available because they were absent on the test day due to COVID-19-related issues.

Table 1
Group assignments.

		IV 1: Written Corrective Feedback	
		Direct Correction	Metalinguistic Explanation
IV 2: Task Planning	Pre-task Planning	Group 1 ($n = 18$)	Group 4 ($n = 19$)
	Within-task Planning	Group 2 ($n = 21$)	Group 5 ($n = 18$)
	No Planning	Group 3 ($n = 19$)	Group 6 ($n = 20$)

Note. IV = independent variable.

Fig. 1. Examples of feedback.

Table 2
Conditions for each planning type.

	Planning before writing	Unpressured planning during writing
Pre-task planning	Yes	No
Within-task planning	No	Yes
No planning	No	No

3.3. Materials

3.3.1. Writing tests

The study employed a picture-based narrative writing task as the pretest, immediate posttest, and delayed posttest. Learners were asked to describe what was happening in the given picture within 30 min and write at least 15 lines on the composition sheet. The same picture strip was used in all testing sessions because different pictures might elicit the use of different vocabulary and different numbers of obligatory cases for the target structures—English articles and past tense. Also, students might feel different levels of difficulty in understanding the different picture strips, which may confound the validity of the findings.

3.3.2. L2 writing anxiety questionnaire

To measure L2 writing anxiety, the Second Language Writing Anxiety Inventory (SLWAI) adapted from Cheng (2004, 2017) was employed (see Appendix C). The SLWAI consists of three subcomponents—Somatic Anxiety (related to physical responses, e.g., "*When writing in English, I often feel my heart pounding*"), Cognitive Anxiety (mental processes or feelings, e.g., "*My mind often goes blank when I start to work on an English composition*"), and Avoidance Behavior (avoiding writing, e.g., *I usually do my best to avoid writing English compositions*). The questionnaire included 24 items, all of which were translated into Korean by the first author. The translation's accuracy was verified by two native Korean speakers with over 10 years of English teaching experience. The original versions were scored on a Likert scale of five points ranging from 1 (strongly disagree) to 5 (strongly agree); however, in the present study, a rating scale of 1 (not at all) to 10 (very much) was used to increase the score range and finely capture the nuanced variation of their L2 writing anxiety.

3.3.3. L2 writing self-efficacy questionnaire

L2 writing self-efficacy was measured using an adapted version of the Self-Efficacy for Writing Scale (SEWS) validated by Bruning et al. (2013) (see Appendix D). The SEWS consists of 16 items tapping into three components: Ideation (e.g., *I can think of many ideas for my writing*), Conventions (e.g., *I can spell my words correctly*), and Self-Regulation (e.g., *I can control my frustration when I write*). In this study, all items in the SEWS were retained, but some items were adapted for clarity. For example, Item 10 was revised from "*I can begin my paragraphs in the right spots*" to "*I know exactly where I should end a paragraph and start a new paragraph*". The items were translated into Korean, and a 1–10 rating scale was used to align with the L2 writing anxiety questionnaire.

3.3.4. Task-perception questionnaire

To measure learners' task-specific anxiety and self-efficacy, a task-perception questionnaire with two sections—task-specific anxiety and task-specific self-efficacy—was developed and administered right after the immediate and delayed posttests (see Appendix E). In the task-specific anxiety section, students were asked about their anxiety levels during task performance. Two items from each of the three subcomponents of the SLWAI were included: somatic anxiety, cognitive anxiety, and avoidance behavior. The selection of the

items was based on their factor loadings in the original validation studies (Cheng, 2004, 2017). For example, the two items "*When writing in English, I often feel my heart pounding*" and "*When writing in English, I often get so nervous that I tremble*" in Cheng (2017) clearly loaded on the component of Somatic Anxiety with the highest loading coefficients of 0.990 and 0.903, respectively. Therefore, these were chosen to be included and adapted as the items measuring task-specific somatic anxiety. To measure learners' anxiety experienced while performing the task, the items were reworded using past tense and prefaced with '*While performing this task*' (e.g., '*I feel my heart pounding when I write English compositions*'→'*While performing this task, I felt my heart pounding*').

The task-specific L2 writing self-efficacy items were also adapted from the general L2 writing self-efficacy scale (Bruning et al., 2013). Two items from each of the three subcomponents (ideation, convention, and self-regulation) were included in the task perception questionnaire based on their factor loadings in Bruning et al. (2013). For instance, the items '*I can think of many ideas for my writing*' and '*I can think of many words to describe my ideas*' consistently loaded on 'Ideation' with high factor loadings (larger than 1.000). Since the purpose of this questionnaire was to measure task-specific perceptions *during* task performance, the items were reworded in a retrospective way asking about their beliefs and confidence about their L2 writing capability *while performing* the specific task (e.g., '*I can think of many ideas for my writing*'→'*While performing this task, I believed I was able to think of many ideas for my writing*'). To ensure consistency with the instruments for L2 writing anxiety and L2 self-efficacy, a 1–10 scale was used for the task-perception questionnaire.

3.4. Procedure

This study spanned six weeks during the participants' regular class periods with their regular teacher. Each session lasted approximately 45 min. The procedure of the study is displayed in Table 3. In Week 1, students were introduced to the study's purpose and asked for voluntary participation. They completed the background questionnaire and general L2 writing anxiety and self-efficacy questionnaire, followed by the pretest. In Weeks 2 and 3, each session started with a 5-min review of feedback on their previous essays. After 5 min, the teacher collected their essays to prevent access to the feedback during the subsequent writing task, which was conducted under the pre-task planning, within-task planning, or no planning condition. Weeks 4 and 6 were testing sessions, after which learners completed the task perception questionnaire. Between Weeks 4 and 6, the teacher did not address the target structures during class to control for exposure to the target structures outside of the experiment.

3.5. Data analysis

To determine whether learners' general and task-specific anxiety and self-efficacy are separable constructs (RQ1), an exploratory factor analysis (EFA) was conducted on the questionnaire data. The internal consistency reliability was high across all measures ($a = 0.963$ for L2 writing anxiety, $a = 0.962$ for L2 writing self-efficacy, $a = 0.902$ for task-specific anxiety, and $a = 0.910$ for the task-specific self-efficacy). EFA was selected instead of confirmatory factor analysis (CFA) because this study was the first to explore the factor structures of task-specific self-efficacy and anxiety in L2 writing, and because there has been no research or theoretical models on the relationships between task-specific IDs and general IDs in the domain of L2 writing. CFA is appropriate when the factor structure of a construct has been established and new data are collected and analyzed to confirm an existing model (Brown, 2015).

The EFA served two purposes: (1) to determine whether general and task-specific ID variables are distinct constructs before examining their roles in L2 writing development, and (2) to refine the measurement validity by eliminating items that did not adequately explain the variance of the targeted construct. Prior to EFA, participant responses were checked for missing data and the whole dataset's suitability for analysis. Missing values were less than 5% (Kline, 2011) and deleted pairwise. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was above 0.05, and the Bartlett's Test of Sphericity was significant across all analyses, indicating the dataset's appropriateness for EFA (Shrestha, 2021). Principal components analysis was used for factor extraction, with Direct Oblimin for factor rotation.

To explore how general L2 writing anxiety, general L2 writing self-efficacy, task-specific anxiety, task-specific self-efficacy influence L2 writers' immediate and delayed target structure accuracy under various treatment conditions (RQ2), three-way ANCOVAs were conducted for each outcome measure. The outcome measures included article accuracy, past tense accuracy, and combined target structure accuracy (articles + past tense). Target-like use analysis (Ellis & Barkhuizen, 2005) was used to calculate accuracy scores. For each target structure, the number of obligatory cases was counted, and 1 point was given for each correct use. Overuse case (e.g., using an article/past tense form when it should not be used) added 1 point to the number of obligatory cases in the denominator. For past tense accuracy, a half point was added as a partially correct case in the numerator if the past tense form itself was used correctly but there was an issue regarding voice or conditional structure (e.g., *The boy surprised* (it should be '*was surprised*'). Fig. 2 shows the formula used to calculate target structure accuracy.

$$\frac{\text{cases} + \overset{\text{number of correctly used}}{\text{partial points for past tense accuracy}}}{\text{cases} + \underset{\text{cases}}{\overset{\text{number of obligatory}}{\text{overused}}}}$$

30 percent of the essays were randomly selected and rated by two trained raters: a doctoral candidate in foreign and second language education and a teacher with 12 years of English teaching experience in South Korea. A training session was held before rating began, and any disparities and controversies were discussed and resolved immediately. The inter-rater reliability (Cohen's kappa) was 0.96 for article accuracy and 0.98 for past tense accuracy.

Table 3
Study procedure.

Week 1
- Background Questionnaire
- General L2 Writing Anxiety, Self-Efficacy Questionnaire
- Pretest

Week 2
- Feedback Study
- Treatment Task 1

Week 3
- Feedback Study
- Treatment Task 2

Week 4
- Feedback Study
- Immediate Posttest
- Task-Perception Questionnaire

Week 6
- Delayed Posttest
- Task-Perception Questionnaire

$$\frac{\text{number of correctly used cases } + \text{ partial points for past tense accuracy}}{\text{number of obligatory cases} + \text{overused cases}}$$

Fig. 2. Formula for target-like use.

In the three-way ANCOVAs, feedback and planning served as fixed factors, with ID factors as covariates. Pretest scores were included as a covariate to control for prior knowledge. Interaction terms were built with the treatment variables and each ID variable to investigate whether specific ID factors played different roles under particular task conditions. The data were normally distributed as checked by Q-Q plots and the Shapiro-Wilk test, and homogeneity of variances was confirmed through the Levene's test. Outliers detected in box and whisker plots (i.e., any value beyond three times the interquartile range from the 1st and 3rd quartiles) were excluded from the analyses.

4. Results

4.1. The separability of general and task-specific individual differences

Two rounds of EFA were conducted for each ID construct because the task ID was measured at two time points—after the immediate posttest and delayed posttest. Round 1 involved the general ID items and task ID items used in the immediate posttest, while Round 2 involved the two groups of items used in the delayed posttest. EFA was conducted to determine whether the general ID construct was consistently separable from the task ID construct over time.

4.1.1. Anxiety

The preliminary EFA results for anxiety items are reported in Appendix F. The analyses identified five factors, with task anxiety items consistently loading on the third factor, suggesting that task anxiety was separate from general anxiety. To eliminate less robust items, cross-loaded items whose loadings on more than two factors with a difference in factor loadings less than 0.10 were removed (Acar-Guvendir & Ozer-Ozkan, 2022). Table 4 provides the final EFA results excluding these problematic items.[4] Each round of analysis resulted in a three-factor solution: 'General Somatic Anxiety', 'General Cognitive Anxiety and Avoidance Behavior', and 'Task-Specific Anxiety', explaining 73.7% and 72.72% of the total variance for Rounds 1 and 2, respectively. The analyses consistently demonstrated a separation between general and task-specific anxiety items, underscoring their distinguishability.

4.1.2. Self-efficacy

The preliminary results of EFA on self-efficacy items are in Appendix G. It was revealed that task self-efficacy items consistently loaded on Factor 2, while general L2 writing self-efficacy items loaded on Factors 1 or 3 for both the immediate posttest (Round 1) and the delayed posttest (Round 2). This suggests that learners' general L2 writing self-efficacy and task-specific self-efficacy were separable from each other across time. After confirming this separability, we checked less robust items (i.e., cross-loaded items or

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[4] For both rounds, GA (general anxiety) items 2, 3, 10, 13, 18, 20, and 22 were cross-loaded, indicating they did not effectively explain the targeted construct. Also, GA item 11 loaded on the last factor in all analyses, accounting for a marginal percentage of total variance (3% and 2.97%, for the first and second rounds, respectively). After removing these items, EFA showed that GA item 24 loaded on the last factor as a single item, leading to its removal.

Table 4

EFA on general L2 writing anxiety and task anxiety items after item elimination.

Round 1				Round 2			
Items	Factor Loading			Items	Factor Loading		
	1	2	3		1	2	3
Factor 1: General Cognitive Anxiety and Avoidance Behavior				Factor 1: General Somatic Anxiety			
GA_Item9	0.915			GA_Item7	0.904		
GA_Item4	0.905			GA_Item21	0.896		
GA_Item15	0.875			GA_Item23	0.863		
GA_Item14	0.851			GA_Item17	0.857		
GA_Item16	0.813			GA_Item12	0.823		
GA_Item8	0.789			GA_Item1	0.809		
GA_Item6	0.757			GA_Item19	0.776		
GA_Item5	0.702			Factor 2: Task-Specific Anxiety During Delayed Posttest			
Factor 2: General Somatic Anxiety				TA_Item3		0.845	
GA_Item7		0.909		TA_Item5		0.818	
GA_Item21		0.894		TA_Item6		0.814	
GA_Item23		0.855		TA_Item2		0.787	
GA_Item17		0.846		TA_Item4		0.771	
GA_Item12		0.828		TA_Item1		0.723	
GA_Item1		0.806		Factor 3: General Cognitive Anxiety and Avoidance Behavior			
GA_Item19		0.78		GA_Item9			0.914
Factor 3: Task-Specific Anxiety During Immediate Posttest				GA_Item4			0.901
TA_Item3			0.882	GA_Item15			0.883
TA_Item5			0.864	GA_Item14			0.853
TA_Item6			0.837	GA_Item16			0.819
TA_Item2			0.788	GA_Item8			0.771
TA_Item1			0.763	GA_Item6			0.748
TA_Item4			0.724	GA_Item5			0.719

Note. GA: General L2 Writing Anxiety, TA: Task-Specific Anxiety.

Table 5

EFA on general L2 writing self-efficacy and task self-efficacy items after item elimination.

Round 1			Round 2		
	Factor Loading			Factor Loading	
Items	1	2	Items	1	2
Factor 1: General L2 Writing Self-Efficacy			Factor 1: General L2 Writing Self-Efficacy		
GS_Item16	0.847		GS_Item16	0.853	
GS_Item13	0.843		GS_Item10	0.847	
GS_Item7	0.841		GS_Item13	0.838	
GS_Item10	0.836		GS_Item7	0.834	
GS_Item12	0.818		GS_Item15	0.826	
GS_Item15	0.815		GS_Item12	0.819	
GS_Item9	0.814		GS_Item9	0.805	
GS_Item11	0.786		GS_Item14	0.788	
GS_Item14	0.783		GS_Item11	0.775	
GS_Item8	0.743		GS_Item8	0.747	
GS_Item4	0.701		GS_Item4	0.719	
GS_Item6	0.627		GS_Item6	0.612	
Factor 2: Task-Specific Self-Efficacy in Immediate Posttest			Factor 2: Task-Specific Self-Efficacy in Delayed Posttest		
TS_Item8		0.92	TS_Item9		0.891
TS_Item10		0.914	TS_Item8		0.878
TS_Item9		0.906	TS_Item10		0.874
TS_Item7		0.848	TS_Item7		0.834
TS_Item11		0.837	TS_Item11		0.805
TS_Item12		0.79	TS_Item12		0.709

Note. GS: General L2 Writing Self-Efficacy. TS: Task-Specific Self-Efficacy.

single items loading on factors explaining minimal variance). Table 5 below shows the final EFA results after eliminating these items.[5] The two-factor solution for both rounds explained 73.06% (Round 1) and 72.36% (Round 2) of the total variance, indicating that general L2 writing self-efficacy and task self-efficacy were consistently distinguishable.

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[5] Four GS items (1, 2, 3, 5) were less robust in explaining the construct of general L2 writing self-efficacy and were therefore removed.

4.2. General and task IDs' associations with treatment effects

The second research question concerns the associations between learners' L2 writing anxiety and self-efficacy (both general and task-specific) and their target structure accuracy development. Descriptive statistics for the six classes' ID factors, as well as their pretest, immediate posttest, and delayed posttest scores, are provided in Appendices H and I. When analyzing English articles and past tense separately as outcome variables, neither anxiety nor self-efficacy showed main or interaction effects in both posttests (see Appendix J). This suggests that these ID factors, whether general or task-specific, did not significantly influence the accurate use of English articles and past tense when considered separately. When the accuracy of the two target structures was combined, however, general L2 writing anxiety emerged as a significant predictor of immediate posttest scores, $F(1, 76) = 5.789$, $p = .019$. Additionally, task-specific anxiety significantly interacted with treatment type, $F(5, 76) = 3.091$, $p = .014$ (see Table 6). The main effect of general L2 writing anxiety without interaction indicates it was significantly associated with immediate target structure accuracy, with no significant differences across task conditions. As shown in Fig. 3, the slopes representing the predictability of immediate target structure accuracy by general L2 writing anxiety were largely negative, with R^2 values ranging from 0.025 to 0.127. According to Cohen's (1988) benchmarks for R^2 values, 0.02 is considered a small effect, 0.13 medium, and 0.26 large. Thus, general L2 writing anxiety had a weak to moderate negative effect on immediate target structure accuracy. Only the slope of the 'direct correction + pre-task planning' group was slightly positive, with an R^2 of 0.014, indicating a negligible effect size. The slope differences between groups were not statistically significant, as confirmed by the non-significant interaction effect.

The significant interaction between feedback, planning, and task-specific anxiety for immediate target structure accuracy suggests that the role of learners' task-specific anxiety varies depending on the feedback type and planning condition. As shown in Fig. 4, the intersecting slopes illustrate these significant interaction effects. Specifically, four groups—direct correction + within-task planning, direct correction + no planning, metalinguistic explanation + pre-task planning, and metalinguistic explanation + no planning—exhibited steep negative slopes, with R^2 values ranging from 0.167 to 0.424, indicating moderate to large effect sizes. The slope for direct correction + pre-task planning was slightly negative with a near-zero effect size ($R^2 = 0.001$). Meanwhile, the slope for the 'metalinguistic explanation + within-task planning' group was positive, with a small effect size, $R^2 = 0.025$. These results suggest that while task-specific anxiety was generally a negative predictor of immediate target structure accuracy, it positively influenced the effects of metalinguistic explanation under the within-task planning condition.

The findings of RQ 2 can be summarized as follows. Learners' general L2 writing anxiety was a significant negative predictor of immediate target structure accuracy, regardless of treatment type. Conversely, the effects of task-specific anxiety depended on the task conditions. While task-specific anxiety was mostly negatively related to immediate target structure accuracy, it positively predicted the learning gains of learners who received metalinguistic explanation under the within-task planning condition. These patterns were not observed in the delayed posttest. Regarding self-efficacy, neither general L2 writing self-efficacy nor task-specific self-efficacy showed significant main or interaction effects on the development of L2 writing accuracy. The findings suggest that anxiety had a more pronounced effect on L2 writing accuracy than self-efficacy, and highlight the dynamic influence of anxiety at general and task-specific levels on learners' L2 writing performance.

5. Discussion

5.1. The separability of general and task-specific individual differences

General and task-specific anxiety and self-efficacy were found to be distinct constructs, and this differentiation held true in both the immediate and delayed posttests. The findings underscore the importance of distinguishing between general L2 and task-specific learner traits and dispositions. As noted by Wang et al. (2021), it is common practice to use questionnaires designed to measure

Table 6
Main and interaction effects of ID factors on combined target structure accuracy.

|	Immediate Posttest					Delayed Posttest				
	SS	*df*	*MS*	*F*	*p*	*SS*	*df*	*MS*	*F*	*p*
(Intercept)	0.081	1	0.081	0.933	0.337	0.311	1	0.311	3.871	0.053
Feedback	0.023	1	0.023	0.262	0.611	0.003	1	0.003	0.033	0.857
Planning	0.121	2	0.060	0.697	0.501	0.211	2	0.106	1.316	0.274
Pretest	5.482	1	5.482	63.357	<0.001	4.915	1	4.915	61.23	<0.001
General L2 Writing Anxiety (GA)	**0.501**	**1**	**0.501**	**5.789**	**0.019***	0	1	0	0.004	0.950
General L2 Writing Self-Efficacy (GS)	0.163	1	0.163	1.888	0.173	0.001	1	0.001	0	0.996
Task Anxiety (TA)	0.089	1	0.089	1.024	0.315	0	1	0	0.002	0.967
Task Self-Efficacy (TS)	0.008	1	0.008	0.091	0.764	0.142	1	0.142	1.771	0.187
Feedback*Planning*GA	0.440	5	0.088	1.017	0.414	0.093	5	0.019	0.231	0.948
Feedback*Planning*GS	0.413	5	0.083	0.955	0.451	0.181	5	0.036	0.452	0.811
Feedback*Planning*TA	**1.337**	**5**	**0.267**	**3.091**	**0.014***	0.268	5	0.054	0.667	0.649
Feedback*Planning*TS	0.237	5	0.047	0.547	0.740	0.503	5	0.101	1.253	0.293
Error	6.576	76	0.087			6.502	81	0.080		

Note. *p < .05.
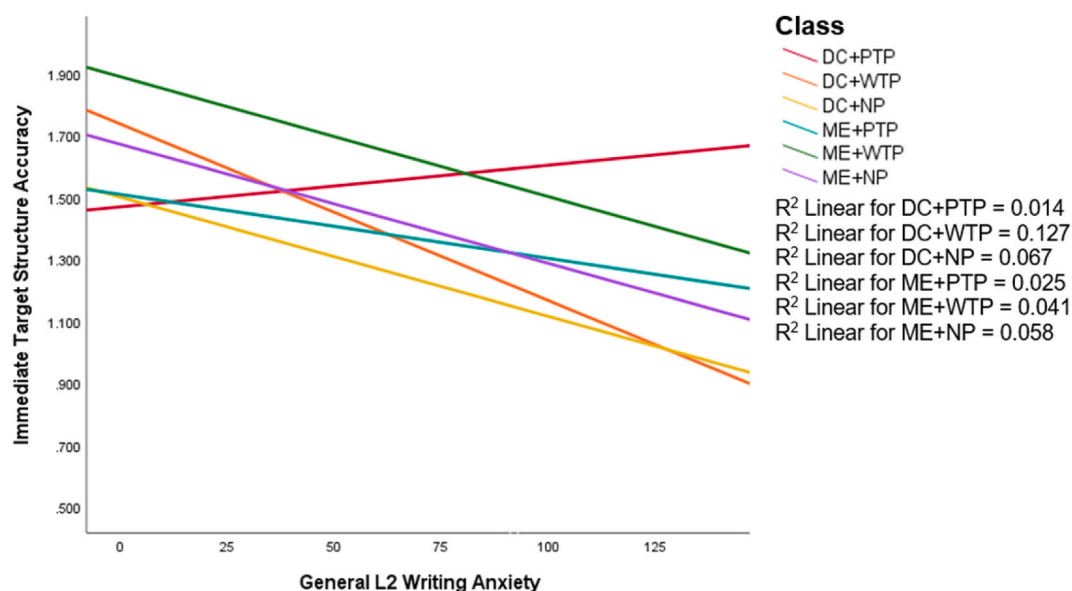
Fig. 3. Effects of general L2 writing anxiety on immediate target structure accuracy across task conditions.
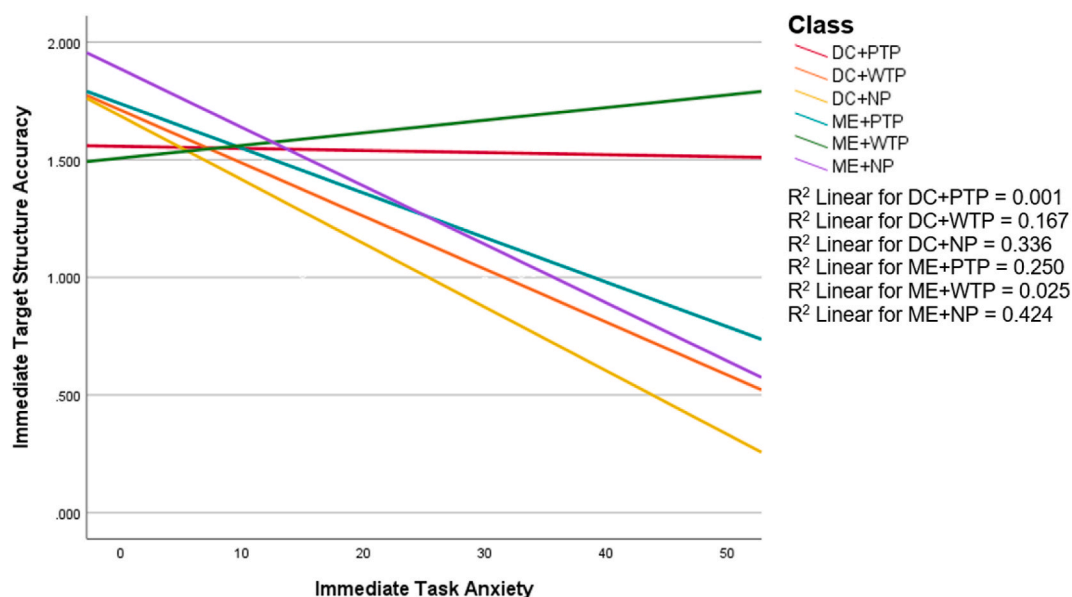

Fig. 4. Effects of task anxiety on immediate target structure accuracy across task conditions.

general anxiety (e.g., questionnaires by Horwitz et al. (1986), Kormos and Dornyei (2004), MacIntyre & Gardner (1994)) when examining individual differences in task-based language learning; in other words, general L2 ID traits are often treated as surrogates for task-specific L2 traits and dispositions. However, the findings from this study, alongside prior research (Wang et al., 2021; Wang & Li, 2019), highlight the separability of general and task-specific anxiety and self-efficacy.

Building on Li and colleagues' (2024) study, which showed the distinct effects of task enjoyment and general (trait-like) enjoyment on L2 writing task performance, the present study contributes additional empirical evidence by demonstrating that L2 writing anxiety and self-efficacy are also distinguishable between general and task-specific dimensions, similar to other IDs. Thus, future researchers are urged to use measures that specifically capture task-related perceptions to avoid conflating general and task-specific constructs. To better understand how learners' IDs interact with other task-relevant factors, such as task complexity (Robinson, 2001), it is crucial to recognize that IDs are not monolithic but rather dynamic and distinguishable across various dimensions. However, emphasizing the importance of task-specific IDs should not be interpreted as leaving out general L2 IDs, as both may be important for task performance and learning outcomes, playing different roles in different task conditions or in different aspects of L2 learning. This argument has been

borne out by the findings for the second research question, discussed below.

5.2. The role of general and task IDs under different task conditions

The second research question explored whether general and task-specific anxiety and self-efficacy have differential associations with the treatment effects of various instructional interventions. When examining English articles and past tense forms separately, no significant findings concerning IDs emerged, showing that the impact of IDs may be minimal when considering a single L2 structure. However, when accuracy scores for both target structures were combined, the influence of IDs became evident, suggesting the need to consider multiple forms rather than a single discrete structure when examining the association between treatment effects and learners' IDs.

With the accuracy scores of the two target structures combined, the study found that general L2 writing anxiety had a main effect, and task-specific anxiety interacted with treatment conditions to influence immediate target structure accuracy. However, general and task-specific self-efficacy did not demonstrate a significant effect, suggesting that neither type of self-efficacy played a pivotal role in predicting learners' target structure accuracy. A possible explanation is that by the time of the immediate posttest, participants had written four similar essays and received feedback on the two target structures, which might have leveled out the impact of self-efficacy. The pronounced influence of anxiety over self-efficacy in the Korean EFL context may be attributed to the highly competitive academic environment. In South Korea, English is a core subject, and high school students face immense pressure to achieve high scores on in-school exams and the college entrance exam to secure admission to prestigious universities. This academic atmosphere likely generates significant stress and anxiety toward English (Choi et al., 2019). Consequently, the heightened anxiety among participants may have made the effects of general L2 writing anxiety and task-specific anxiety more noticeable than those of self-efficacy.

General L2 writing anxiety was negatively associated with learners' immediate target structure accuracy, with similar effects across different treatment conditions. Learners with higher L2 writing anxiety exhibited poorer accuracy in the immediate posttest, a finding consistent with previous studies. Therefore, our study confirmed or reinforced anxiety's detrimental effects on L2 writing (Atay & Kurt, 2006; Cheng et al., 1999). Furthermore, the manipulation of planning time did not mitigate the negative impact of L2 writing anxiety. Whether learners were given 10 min of planning time before writing (pre-task planning) or had unlimited composition time to engage in online planning (within-task planning), those with high L2 writing anxiety committed more errors in the target structures than those with lower anxiety. It is possible that English article and past tense forms were indeed challenging for the learners, as observed in other studies on Korean EFL learners (e.g., Gang, 2001; Yoo, 2014); thus, various forms of support did not help them overcome their anxiety about L2 writing and correctly use these structures. The finding extends previous research by demonstrating that the accurate use of target structures in L2 writing can be significantly influenced by learners' anxiety toward L2 writing.

Regarding the role of task-specific anxiety, the study showed a significant interaction between task anxiety and treatment conditions, suggesting that the impact of task-specific anxiety varied depending on the treatment received. The finding corroborates previous research on the dynamic roles of anxiety under different task conditions (e.g., Rahimi & Zhang, 2019; Zabihi et al., 2020). It also suggests that task-specific anxiety is more sensitive to task environments than general anxiety, which showed a consistent impact across different conditions. This underscores the importance of using task-specific ID measures to better capture the nuanced dynamics of anxiety in task performance, rather than relying solely on general ID questionnaires.

A closer examination on the interaction effect revealed that while task-specific anxiety was generally negatively associated with immediate target structure accuracy, it positively predicted the effects of metalinguistic explanation + within-task planning. Although the positive impact had a small effect size ($R^2 = 0.025$), this finding is noteworthy because it was the only learning condition where task-specific anxiety was *not* a negative predictor. This suggests that the 'metalinguistic explanation + within-task planning' condition helped anxious learners manage their anxiety, enabling them to perform better or as well as less anxious learners. Unlike direct correction, which simply provides the correct form without explaining the grammatical rule, metalinguistic explanation likely engaged learners in deeper cognitive processing about the use of target structures, helping them understand grammatical features and facilitating self-correction of their errors (as in Shintani & Ellis, 2013). During the 5-min feedback study, when learners were informed they would write a similar task afterward, those who felt more anxious about the task may have put more effort into processing grammatical clues in depth for future writing. When metalinguistic explanation was provided in the within-task planning condition, learners with high task-specific anxiety likely took advantage of the careful online planning opportunity to apply the processed knowledge in their writing and monitor their correct use of the target structures. On the other hand, learners with lower task-specific anxiety may not have actively engaged in processing the available feedback, especially under a condition that imposed minimal processing demands due to the lack of time limit for task completion. In all other task conditions, learners faced greater challenges either due to the lack of within-task planning (i.e., the pre-task planning condition) or the absence of explicit metalinguistic explanation (i.e., direct correction). The finding regarding the positive role of task-specific anxiety in L2 writing is notable because it challenges the common assumption that anxiety always negatively influences L2 learning. The study illuminates the possibility that learners' negative feelings toward the L2 learning experience can be transformed into helpful resources, depending on the task environments (MacIntyre & Gregersen, 2012; Trebits, 2016).

6. Conclusion

This classroom-based study explored the distinction between general and task-specific dimensions of anxiety and self-efficacy and their predictive roles in L2 learning outcomes across various treatment conditions in a Korean EFL context. The findings offer valuable insights for researchers and practitioners. The distinction between the general and task-specific dimensions of L2 writing anxiety and

self-efficacy, confirmed through exploratory factor analysis, highlights the importance for TBLT researchers to differentiate these dimensions. This differentiation would allow for more accurate measurement of IDs and a better understanding of how the IDs influence task performance, possibly in conjunction with other task variables. Regarding the roles of IDs, general L2 writing anxiety was found to negatively impact target structure accuracy across various task conditions, whereas task-specific anxiety had varying effects depending on the treatment type. Notably, the condition of metalinguistic explanation + within-task planning appeared to be beneficial for learners with high task-specific anxiety, albeit with a small effect size, enabling them to produce more accurate writing. This finding challenges the prevailing assumption regarding the negative influence of anxiety on L2 acquisition. It also implies that task-specific anxiety can be more sensitive to the task environment compared to general L2 writing anxiety, which did not interact with treatment conditions. It is also advisable to integrate planning with feedback provision, because planning may boost learners' self-efficacy and mitigate the negative effects of low self-efficacy, as observed in this study.

Despite these implications, several limitations should be noted. The sample consisted of 115 EFL learners from the same public school in a suburban area of South Korea, all taught by the same teacher, which may limit the findings' generalizability to other contexts. Future research is encouraged to replicate this study in varied contexts to uncover diverse outcomes, thus broadening our understanding of how feedback and planning jointly influence L2 writing in relation to the learners' IDs. Additionally, participants' anxiety and self-efficacy were explored through questionnaires, which are often subject to biases (Dörnyei & Taguchi, 2010). Future studies should incorporate more direct research methods, such as think-aloud or interviews, to gain a clearer understanding of learners' experiences during task performance. Furthermore, since the present study focused on narrative writing, future research could replicate the study using different genres (e.g., argumentative writing), as prior research has shown the impact of learners' IDs may vary depending on the genre of writing (Zabihi et al., 2020).

CRediT authorship contribution statement

Hyejin An: Writing – original draft, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Shaofeng Li:** Writing – review & editing, Supervision, Methodology, Investigation, Formal analysis, Conceptualization.

Declaration of competing interest

This article does not have any conflict of interest or ethical concerns.

APPENDIX A

Pictures used for treatment tasks and tests (Heaton, 1966, 1975)

Picture for Treatment Task 1: A Picnic.
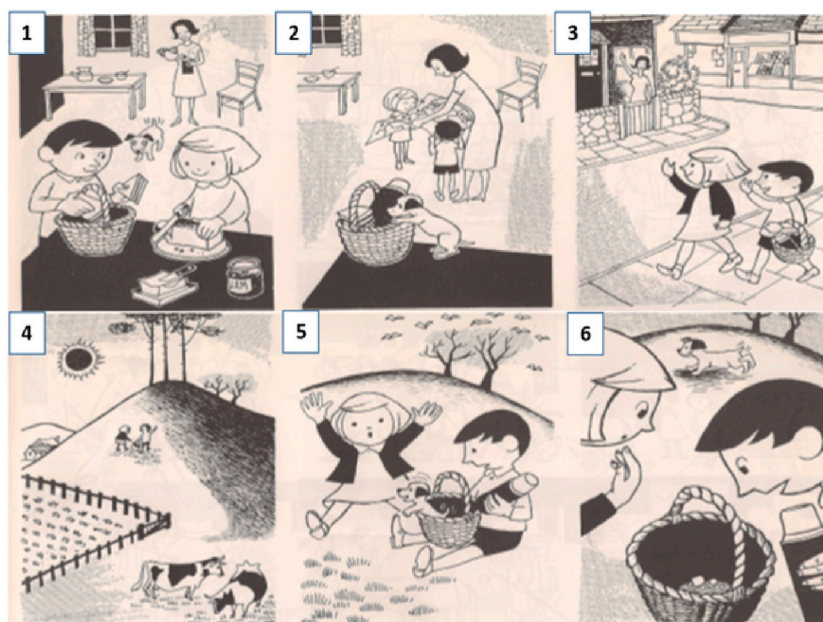
Picture for Treatment Task 2: A Surprise.
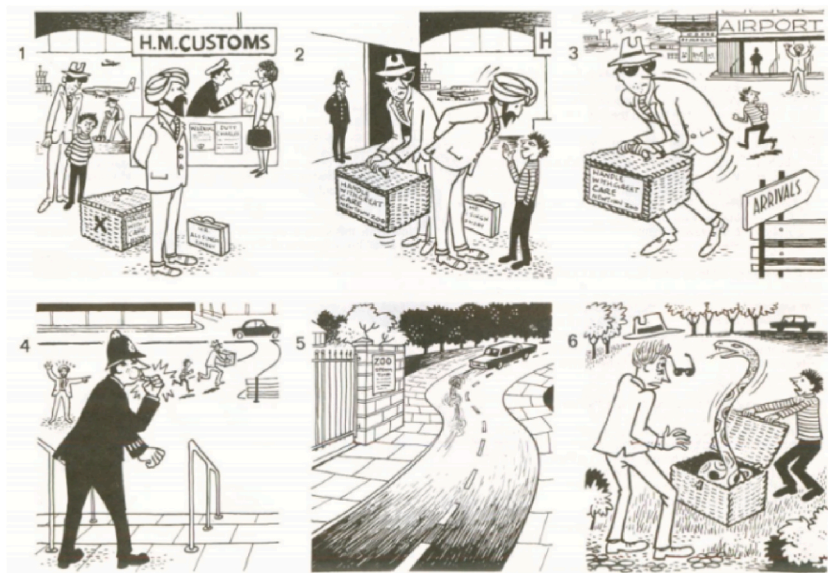
Picture for Writing Tests: A Chase.
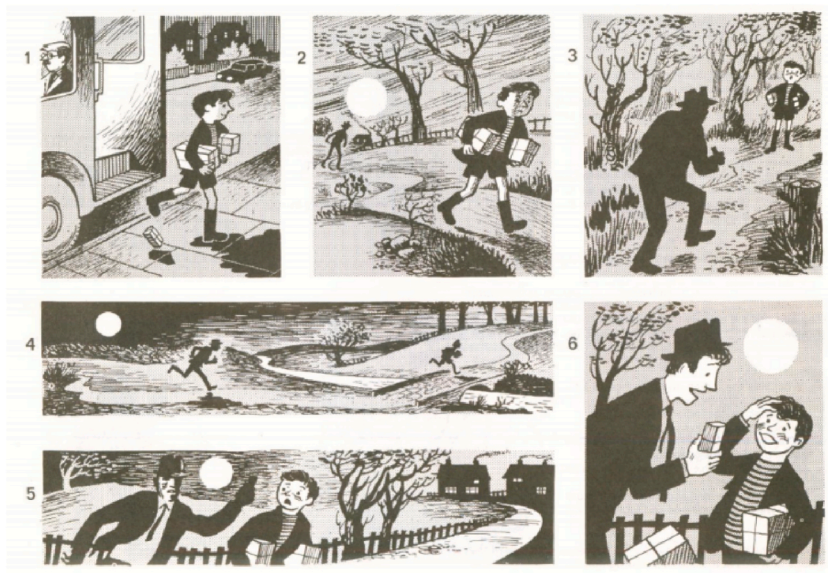
APPENDIX B

Task directions for each treatment group

<Pre-task Planning Group>
Looking at the cartoon strip below, describe what happened in English.
Directions.

1. Before writing, you have **10 min to plan** your writing. Do NOT write full English sentences while planning.
2. After planning, you have **20 min to complete** your essay.
3. Be sure to fully develop your story by including specific details focusing on who, where, when, and what happened, etc. (Write at least 15 lines).

4. Record the starting and ending time of your writing.
5. Start your essay with *"Last Sunday, …"*

<Within-task Planning Group>
Looking at the cartoon strip below, describe what happened in English.
Directions.

1. **Immediately** start writing your essay.
2. You can take **as long as you want** to complete your essay.
3. Be sure to fully develop your story by including specific details focusing on who, where, when, and what happened, etc. (Write at least 15 lines).
4. Record the starting and ending time of your writing.
5. Start your essay with *"Last Sunday, …"*

<No Planning Group>
Looking at the cartoon strip below, describe what happened in English.
Directions.

1. **Immediately** start writing your essay.
2. You have **20 min** to complete your essay.
3. Be sure to fully develop your story by including specific details focusing on who, where, when, and what happened, etc. (Write at least 15 lines).
4. Record the starting and ending time of your writing.
5. Start your essay with "*Last Sunday*, …"

APPENDIX C

Second language writing anxiety questionnaire items (adapted from cheng, 2004; Cheng, 2017)

1. I feel my heart pounding when I write English compositions under time constraint.
2. While writing English compositions, I feel worried and uneasy if I know they will be evaluated.
3. When writing in English, I often worry that I will make language mistakes.
4. I usually do my best to avoid writing English compositions.
5. My mind often goes blank when I start to work on an English composition.
6. As soon as I start writing in English, I begin to worry about not being able to express myself.
7. I tremble or perspire when I write English compositions under time pressure.
8. If my English composition is to be evaluated, I would worry about getting a very poor grade.
9. I do my best to avoid situations in which I have to write in English.
10. My thoughts become jumbled when I write English compositions under time constraint.
11. Unless I have no choice, I would not use English to write compositions.
12. I often feel panic when I write English compositions under time constraint.
13. I'm afraid that the other students would deride my English composition if they read it.
14. My thoughts freeze up when unexpectedly asked to write English compositions.
15. I would do my best to excuse myself if asked to write English compositions.
16. When writing in English, I often worry that my writing performance is worse than others'.
17. When writing in English, I often feel my heart pounding.
18. When practice writing English compositions, I often give it up easily.
19. I usually feel my whole body rigid and tense when I write English compositions.
20. I'm afraid of my English composition being chosen as a sample for discussion in class.
21. When writing in English, I often get so nervous that I tremble.
22. I often skimp over English composition exercises.
23. When writing in English I often sweat and perspire.
24. If there are different kinds of English homework, English writing exercises are the last thing I would do.

APPENDIX D

Self-efficacy writing scale (sews) items (adapted from bruning et al., 2013)

1. I can think of many ideas for my writing.

2. I can put my ideas into writing.
3. I can think of many words to describe my ideas.
4. I can think of a lot of original ideas.
5. I know exactly how to organize my ideas in my writing.
6. I can spell my words correctly.
7. I can write complete sentences including required components such as subjects, verbs, and objects.
8. I can punctuate my sentences correctly.
9. I can write grammatically correct sentences.
10. I know exactly where I should end a paragraph and start another paragraph.
11. I can focus on my writing for at least 1 h.
12. I can avoid distractions while I write.
13. I can get started writing without difficulty.
14. I can control my frustration when I write.
15. I can think of my writing goals before I write.
16. I can keep writing even when it's difficult.

APPENDIX E

Task perception questionnaire items

While working on the task.

1. I felt my heart pounding.
2. I was so nervous that I trembled.
3. I was worried about not being able to express myself.
4. If I could, I would have avoided the situation in which I had to write in English.
5. I was worried that my performance would be worse than others.
6. I wanted to give up during the task performance because I was anxious.

While working on the task, I believe …

1. I was able to think of many ideas for my writing.
2. I was able to think of many words to describe my ideas.
3. I was able to write complete sentences including required components such as subjects, verbs, and objects.
4. I was able to write grammatically correct sentences.
5. I was able to keep writing even when it was difficult.
6. I was able to avoid distractions.

APPENDIX F

Exploratory factor analysis on anxiety items before item elimination

	Round 1						Round 2				
Items	Factor Loading					Items	Factor Loading				
	1	2	3	4	5		1	2	3	4	5
GA 4	0.854					GA 4	0.868				
GA 9	0.844					GA 9	0.863				
GA 6	0.828					GA 6	0.812				
GA 16	0.818					GA 16	0.803				
GA 8	0.795					GA 15	0.792				
GA 14	0.787					GA 14	0.782				
GA 15	0.772					GA 8	0.772				
GA 13	0.733			0.710		**GA 13**	0.723			0.677	
GA 5	0.676					GA 5	0.701				
GA 20	0.675			0.666		**GA 20**	0.643			0.618	
GA 3	0.643	0.591				**GA 3**	0.606	0.592			
GA 7		0.888				GA 7		0.884			

(*continued*)

Round 1						Round 2					
Items	Factor Loading					Items	Factor Loading				
	1	2	3	4	5		1	2	3	4	5
GA 21		0.874				GA 21		0.878			
GA 17		0.838				GA 23		0.842			
GA 23		0.834				GA 17		0.838			
GA 1		0.831				GA 1		0.823			
GA 12		0.793				GA 12		0.784			
GA 19		0.717				GA 19		0.722			
GA 2	0.688	0.711			0.623	**GA 2**	0.676	0.706			0.674
GA 10	0.654	0.664				**GA 10**	0.66	0.662			
Immediate TA 3			0.857			Delayed TA 3			0.844		
Immediate TA 5			0.85			Delayed TA 6			0.812		
Immediate TA 6			0.849			Delayed TA 5			0.811		
Immediate TA 2			0.777			Delayed TA 2			0.781		
Immediate TA 1			0.749			Delayed TA 4			0.775		
Immediate TA 4			0.748			Delayed TA 1			0.712		
GA 24				0.808		GA 24				0.804	
GA 18	0.694			0.737		**GA 18**	0.712			0.733	
GA 22	0.538			0.605		**GA 22**	0.577			0.643	
GA 11					0.828	**GA 11**					0.906

Note. Round 1: Factor analysis with general L2 writing anxiety items and immediate task anxiety items; Round 2: Factor analysis with general L2 writing anxiety items and delayed task anxiety items; GA: General L2 Writing Anxiety, TA: Task Anxiety items; Boldfaced indicates either the cross-loading items or the item solely loaded on the last factor.

APPENDIX G

Exploratory factor analysis on self-efficacy items before item elimination

Round 1				Round 2			
	Factor Loading				Factor Loading		
Items	1	2	3	Items	1	2	3
GS 16	0.846			GS 16	0.855		
GS 7	0.832			GS 7	0.843		
GS 12	0.82			GS 10	0.838		
GS 15	0.803			GS 13	0.829		
GS 13	0.802			GS 15	0.814		
GS 10	0.793			GS 12	0.812		
GS 9	0.792			GS 9	0.804		
GS 14	0.785			GS 5	0.804		
GS 11	0.779			GS 2	0.787		
GS 8	0.764			GS 3	0.786		
GS 6	0.675			GS 14	0.783		
Immediate TS 8		0.92		GS 11	0.777		
Immediate TS 10		0.911		GS 8	0.731		
Immediate TS 9		0.903		GS 4	0.722		
Immediate TS 7		0.851		GS 6	0.621		
Immediate TS 11		0.837		Delayed TS 9		0.904	
Immediate TS 12		0.79		Delayed TS 8		0.899	
GS 1			0.843	Delayed TS 10		0.882	
GS 2			0.842	Delayed TS 7		0.848	
GS 5			0.836	Delayed TS 11		0.768	
GS 4			0.813	Delayed TS 12		0.655	
GS 3	0.732		0.77	**GS Item1**			0.686

Note. Round 1: Factor analysis with general L2 writing self-efficacy items and immediate task self-efficacy items; Round 2: Factor analysis with general L2 writing self-efficacy items and delayed task self-efficacy items; GS: General L2 Writing Self-Efficacy, TS: Task Self-Efficacy items.

APPENDIX H

Descriptives of the id variables

ID Variables	Task Conditions		n	M	SD
General L2 Writing Anxiety	Direct Correction	Pre-task Planning	18	55.89	28.42
		Within-task Planning	21	70.76	31.61
		No Planning	19	69.63	31.44
	Metalinguistic Explanation	Pre-task Planning	19	83	30.68
		Within-task Planning	18	72.61	17.11
		No Planning	20	83.85	29.77
		Total	115	72.83	29.63
General L2 Writing Self-Efficacy	Direct Correction	Pre-task Planning	18	76.78	20.92
		Within-task Planning	21	67.43	20.21
		No Planning	19	68.05	25.50
	Metalinguistic Explanation	Pre-task Planning	19	69.63	16.92
		Within-task Planning	18	70.11	13.01
		No Planning	20	64.1	22.60
		Total	115	69.2	20.24
Task Anxiety Immediate	Direct Correction	Pre-task Planning	17	14.53	9.08
		Within-task Planning	21	16.52	9.20
		No Planning	19	16.74	10.01
	Metalinguistic Explanation	Pre-task Planning	17	20.94	10.60
		Within-task Planning	18	18.89	9.60
		No Planning	17	20.76	12.17
		Total	109	17.99	10.15
Task Self-Efficacy Immediate	Direct Correction	Pre-task Planning	17	46.18	11.77
		Within-task Planning	21	36.71	12.48
		No Planning	19	37.42	10.73
	Metalinguistic Explanation	Pre-task Planning	17	39.59	12.04
		Within-task Planning	18	34.22	9.37
		No Planning	17	35.24	12.48
		Total	109	38.12	11.91
Task Anxiety Delayed	Direct Correction	Pre-task Planning	18	18.44	10.01
		Within-task Planning	21	17.10	8.77
		No Planning	19	17.68	9.59
	Metalinguistic Explanation	Pre-task Planning	19	22.63	11.76
		Within-task Planning	18	17.56	9.93
		No Planning	20	22.80	11.02
		Total	115	19.38	10.28
Task Self-Efficacy Delayed	Direct Correction	Pre-task Planning	18	42.56	10.61
		Within-task Planning	21	37.62	11.58
		No Planning	19	41.63	11.35
	Metalinguistic Explanation	Pre-task Planning	19	39.37	8.92
		Within-task Planning	18	37.61	8.80
		No Planning	19	35.89	10.08
		Total	114	39.07	10.35

APPENDIX I

Descriptives of pretest, immediate posttest, and delayed posttest

Outcomes	Feedback	Planning	Pretest			Immediate Posttest			Delayed Posttest		
			n^a	M	SD	n	M	SD	n	M	SD
Article Accuracy	DC	PTP	18	0.570	0.210	17	0.695	0.259	18	0.614	0.256
		WTP	21	0.448	0.299	20	0.617	0.282	19	0.598	0.236
		NP	18	0.424	0.277	19	0.528	0.283	19	0.512	0.322
	ME	PTP	19	0.536	0.252	17	0.589	0.270	19	0.543	0.296
		WTP	18	0.562	0.219	18	0.769	0.185	18	0.693	0.263
		NP	19	0.457	0.317	16	0.624	0.337	20	0.650	0.197
		Total	113	0.498	0.267	107	0.636	0.277	113	0.601	0.265
Past Tense Accuracy	DC	PTP	18	0.741	0.193	17	0.849	0.139	18	0.833	0.124
		WTP	21	0.604	0.327	20	0.718	0.295	19	0.761	0.230
		NP	18	0.554	0.321	19	0.704	0.223	19	0.651	0.276

(continued)

Outcomes	Feedback	Planning	Pretest			Immediate Posttest			Delayed Posttest		
			n^a	M	SD	n	M	SD	n	M	SD
Combined Target Structure Accuracy	ME	PTP	19	0.661	0.239	17	0.751	0.236	19	0.767	0.185
		WTP	18	0.672	0.284	17	0.889	0.112	18	0.846	0.167
		NP	19	0.591	0.324	16	0.722	0.280	20	0.738	0.257
		Total	113	0.636	0.287	106	0.770	0.232	113	0.765	0.219
	DC	PTP	18	1.311	0.344	17	1.544	0.333	18	1.447	0.303
		WTP	21	1.051	0.568	20	1.335	0.518	19	1.359	0.407
		NP	18	0.978	0.547	19	1.232	0.468	19	1.163	0.505
	ME	PTP	19	1.198	0.383	17	1.341	0.402	19	1.310	0.409
		WTP	18	1.234	0.428	18	1.608	0.326	18	1.539	0.371
		NP	19	1.048	0.577	16	1.347	0.456	20	1.388	0.346
		Total	113	1.134	0.490	107	1.398	0.436	113	1.366	0.404

Note. *n*: The number of participants vary across the tests due to the missing data and outliers. DC: Direct Correction, ME: Metalinguistic Explanation, PTP: Pre-task Planning, WTP: Within-task Planning, NP: No Planning.

APPENDIX J

Main and interaction effects of id factors on english article and past tense accuracy

1. English Article Accuracy

	Immediate Posttest					Delayed Posttest				
	SS	df	MS	F	p	SS	df	MS	F	p
(Intercept)	0.014	1	0.014	0.265	0.608	0.158	1	0.158	3.076	0.083
Feedback Type	0.002	1	0.002	0.040	0.841	0	1	0	0.005	0.942
Planning Type	0.043	2	0.021	0.395	0.675	0.267	2	0.134	2.603	0.080
Pretest	1.419	1	1.419	26.116	<0.001	1.441	1	1.441	28.071	<0.001
General L2 Writing Anxiety (GA)	0.167	1	0.167	3.077	0.083	0.009	1	0.009	0.180	0.673
General L2 Writing Self-Efficacy (GS)	0.056	1	0.056	1.032	0.313	0.006	1	0.006	0.118	0.732
Task Anxiety	0.024	1	0.024	0.448	0.505	0.026	1	0.026	0.516	0.475
Task Self-Efficacy	0	1	0	0.003	0.957	0.012	1	0.012	0.231	0.632
Feedback*Planning*GA	0.125	5	0.025	0.460	0.805	0.037	5	0.007	0.143	0.981
Feedback*Planning*GS	0.225	5	0.045	0.827	0.534	0.18	5	0.036	0.700	0.625
Feedback*Planning*Task Anxiety	0.253	5	0.051	0.932	0.465	0.295	5	0.059	1.150	0.341
Feedback*Planning*Task Self-Efficacy	0.085	5	0.017	0.313	0.904	0.425	5	0.085	1.655	0.155
Error	4.13	76	0.054			4.157	81	0.051		

2. Past Tense Accuracy

	Immediate Posttest					Delayed Posttest				
	SS	df	MS	F	p	SS	df	MS	F	p
(Intercept)	0.060	1	0.06	2.186	0.143	0.048	1	0.048	2.176	0.144
Feedback Type	0.017	1	0.017	0.614	0.436	0.011	1	0.011	0.499	0.482
Planning Type	0.028	2	0.014	0.511	0.602	0.045	2	0.023	1.017	0.366
Pretest	1.417	1	1.417	51.317	<0.001	1.151	1	1.151	51.631	<0.001
General L2 Writing Anxiety (GA)	0.097	1	0.097	3.521	0.064	0.005	1	0.005	0.230	0.633
General L2 Writing Self-Efficacy (GS)	0.052	1	0.052	1.898	0.172	0.031	1	0.031	1.404	0.240
Task Anxiety	0.053	1	0.053	1.929	0.169	0.021	1	0.021	0.929	0.338
Task Self-Efficacy	0.007	1	0.007	0.268	0.606	0.058	1	0.058	2.595	0.111
Feedback*Planning*GA	0.101	5	0.020	0.734	0.600	0.064	5	0.013	0.570	0.723
Feedback*Planning*GS	0.051	5	0.010	0.367	0.870	0.071	5	0.014	0.641	0.669
Feedback*Planning*Task Anxiety	0.315	5	0.063	2.281	0.055	0.058	5	0.012	0.522	0.759
Feedback*Planning*Task Self-Efficacy	0.038	5	0.008	0.275	0.925	0.122	5	0.024	1.098	0.368
Error	2.071	75	0.028			1.805	81	0.022		

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