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Mitigating Japanese L2 Writing Anxiety through Online Peer Feedback

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ABSTRACT
Writing in a second language is one of the most challenging abilities to be acquired in a second language, and it frequently causes learners to experience severe anxiety, seriously impairing a learner's capacity to communicate ideas clearly and successfully complete writing assignments. In response, this study investigated the impact of online peer feedback on L2 writing anxiety among Iranian learners of Japanese as a Foreign Language (JFL). The study focused on the effects of peer feedback on cognitive, somatic, and avoidance-inducing anxiety across different stages of the writing process and various environments, including exams, home settings, face-to-face classes, and online classes. Forty-six Iranian university students (21 intermediate; 25 advanced) wrote weekly compositions and received peer feedback over six weeks. Pre- and post-intervention data were collected using the Second Language Writing Anxiety Inventory (SLWAI) and an open-ended questionnaire. Quantitative and qualitative analysis indicates a significant reduction in cognitive and avoidance-inducing anxiety following peer feedback, though somatic anxiety persisted. The study also reveals that sources of anxiety vary depending on the writing stage and the environment, highlighting the need for tailored interventions. These findings contribute to our understanding of how peer feedback can mitigate L2 writing anxiety, particularly in online learning contexts.

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1. Introduction

Writing in a non-native language (L2) is one of the most challenging skills learners have to master, often leading to significant anxiety among them. L2 writing anxiety can manifest in various ways, including cognitive stress, somatic symptoms, and avoidance behaviors (Cheng, 2004), all of which can severely hinder a learner's ability to express their thoughts effectively and engage in writing tasks. This anxiety not only affects the quality of the written output but can also lead to a reluctance to participate in writing activities, thereby impeding overall language development. Addressing L2 writing anxiety is therefore essential to creating a more supportive and productive language learning environment.

One pedagogical approach that shows promise in mitigating L2 writing anxiety is peer feedback (Do, 2024; Zhang, 2024). Grounded in the principles of social constructivism, peer feedback involves students reviewing and providing constructive feedback on each other's work, fostering a collaborative learning environment that shifts the focus from teacher-centered evaluation to a more communal and interactive process. This approach has the potential to enhance writing skills and reduce anxiety by creating a sense of shared responsibility among learners. However, while the benefits of peer feedback are well-documented in traditional classroom settings, its effectiveness, particularly in alleviating L2 writing anxiety, in online environments remains under-explored.

While traditional peer feedback has been extensively studied and shown to reduce L2 writing anxiety by fostering a collaborative and supportive learning environment, the transition to online peer feedback introduces novel dynamics that warrant further investigation. Though online settings offer unique advantages, including increased flexibility and accessibility, they also present challenges, including the potential for heightened anxiety due to the lack of face-to-face interaction as well as technological barriers. Studies show that the absence of face-to-face interaction, technological challenges, and the isolation often associated with online learning can exacerbate anxiety levels (Matsumura & Hann, 2004; Saadé et al., 2017). Given these challenges, it is crucial to investigate how online peer feedback—an inherently interactive and communal process—affects L2 writing anxiety. In response, this study explores these dynamics by focusing on Iranian learners of Japanese as a Foreign Language (JFL), whose cultural and linguistic backgrounds may uniquely influence their experiences with online peer feedback. By examining how these learners navigate the online feedback process, the study seeks to provide insights into the specific benefits and challenges of online peer feedback in reducing L2 writing anxiety, thereby contributing to a more nuanced understanding of its effectiveness across diverse learner populations.

Iranian learners of Japanese as a Foreign Language (JFL) constitute a group that has long been underrepresented in existing research. By investigating how online peer feedback influences their writing anxiety, this research seeks to fill a critical gap in the literature. Specifically, it examines the sources and causes of students' anxiety at different stages of the writing process, including grammar, word choice, and essay structuring, as well as across various environments, including exams, home settings, face-to-face classes, and online classes. Understanding how anxiety manifests in these different contexts is crucial to developing

targeted interventions that can alleviate anxiety and support more effective language learning.

2. L2 Writing Anxiety

L2 writing anxiety, a specific form of language learning anxiety, arises when learners experience significant stress during the process of writing in a second language (L2), severely impeding a learner's ability to write clearly and effectively and thus impacting their overall language acquisition. Cheng (2004) identifies three key dimensions of L2 writing anxiety: cognitive, somatic, and avoidance-inducing. Cognitive anxiety involves mental stress, such as concerns about the quality of one's writing and fear of negative evaluation. This form of anxiety is often linked to the learner's internal thoughts and concerns, which can paralyze the writing process. Somatic anxiety, on the other hand, manifests physically through symptoms such as sweating, an increased heart rate, and nervousness. These physiological responses can further exacerbate the difficulties faced during writing. Lastly, avoidance-inducing anxiety is characterized by procrastination and reluctance to engage in writing tasks, leading to a cycle of avoidance that can severely hinder language learning progress (Bailey, 1983).

Studies have consistently shown that L2 writing anxiety negatively affects students' writing performance. For example, Surur and Dengela (2019) found a significant negative correlation between high levels of writing anxiety and writing performance, indicating that as anxiety increases, writing proficiency tends to decrease. Similarly, Hassan (2001) demonstrated that students with high levels of writing anxiety tend to produce shorter essays, display lower confidence, and often achieve lower grades. These findings show that L2 writing anxiety not only hampers immediate writing tasks but also contributes to a long-term decline in language learning motivation and success.

The reasons of L2 writing anxiety are multifaceted. Factors such as time constraints, evaluative pressure, and negative feedback from teachers have been identified as significant contributors to anxiety (Genç & Yayli, 2019; Lee, 2003; Quvanch, & Na, 2022; Yan, 2024). In particular, Genç and Yayli (2019) emphasize that writing anxiety is not merely a cognitive or emotional challenge but also a behavioral barrier, often leading to a cycle of avoidance and underachievement whereby learners, overwhelmed by anxiety, avoid writing tasks altogether, further hindering their language development. Understanding these dimensions and their impact is crucial to developing effective strategies to mitigate L2 writing anxiety and support learners in overcoming these challenges.

In addition, various studies have identified specific sources of L2 writing anxiety that arise during different stages of the writing process and in different environments. Traumatic past experiences related to writing, such as harsh criticism or public failure, can leave lasting psychological scars, contributing to anxiety (Savitsky et al., 2001). Negative feedback from teachers, particularly when it is overly critical or focused on errors rather than on improvement, can exacerbate fears of failure and lead to a deep-seated reluctance to engage in writing tasks (Ferris & Roberts, 2001). Moreover, a lack of writing competence, including limited knowledge of grammar and vocabulary, is a common source of anxiety, particularly when students feel they are unable to express their thoughts clearly in the target language (Kucuk, 2023; Rasool et al., 2023). Moreover, pressure

from time constraints, such as those experienced during exams, can further heighten anxiety as students may fear they will not have enough time to organize their thoughts or revise their work adequately (Genç & Yayli, 2019; Lee, 2003). Finally, fear of negative evaluation, whether from teachers or peers, often looms large, leading to perfectionism and the avoidance of writing tasks altogether (Rafek et al., 2013).

3. Peer Feedback and Second Language Writing

Peer feedback has gained recognition as a valuable pedagogical approach to fostering a collaborative, anxiety-reducing environment in second language (L2) learning contexts. Grounded in social constructivist theory (Vygotsky, 1978), peer feedback invites students to engage in constructive critiques of each other's work, creating a mutual support network that can enhance learning outcomes while helping to alleviate L2 writing anxiety (Hyland & Hyland, 2006). This support is particularly beneficial in managing cognitive, somatic, and avoidance-inducing anxiety, with learners potentially gaining confidence and lessening performance-related fears. However, while peer feedback is generally noted for its benefits, the impact of online versus face-to-face feedback—and especially its application to less commonly taught languages such as Japanese—remains underexplored, leaving critical gaps in our understanding of its effects in diverse learning environments.

Though studies consistently support peer feedback's effectiveness in reducing anxiety, they vary considerably in their examination of traditional versus online classes. For example, in Shekarabi (2023), students who received online peer feedback reported lower writing anxiety than those relying solely on teacher feedback, with online peer interaction perceived as less intimidating than direct teacher assessment. This reflects findings by Tsui and Ng (2000), who argue that peer feedback's informal nature can shift learners' focus from linguistic accuracy to content engagement, a change that substantially reduces anxiety. However, Tsui and Ng conducted their research in face-to-face environments, where visual cues, body language, and immediate clarification play essential roles in creating a supportive atmosphere. In contrast, online settings remove these aspects, posing potential challenges, especially for learners prone to anxiety over technology or unfamiliar with remote collaboration tools (Saadé et al., 2017; Matsumura & Hann, 2004). Thus, while online peer feedback shows promise, its application may have limitations that require further investigation.

Moreover, the majority of studies of peer feedback emphasize its effectiveness in L2 English and other widely taught languages such as Spanish, with comparatively limited research focusing on Japanese and similar languages, especially those with unique linguistic or writing-related challenges (e.g., *kanji* in Japanese). Unlike alphabetic languages, Japanese writing consists predominantly of logographic elements that often intimidate learners, creating an additional layer of anxiety related to character memorization and accuracy. Yet, as Genç & Yayli (2019) note, studies of more commonly taught languages may not capture this complexity, suggesting that considering language-specific factors is critical to understanding the effectiveness of peer feedback in L2 writing. As regards JFL learners, the challenges associated with *kanji*, grammatical intricacies, and unfamiliar syntactic structures

add specific pressures that may interact with peer feedback dynamics, especially in an online format.

An additional justification for the present study is that cultural differences may also contribute to the reception and effectiveness of peer feedback. Given that most studies have been conducted in Western educational contexts, where students may have different attitudes toward peer evaluation compared to learners in non-Western settings, potential cultural differences create a need for research that explores how online peer feedback addresses—or falls short of supporting—learners facing linguistic as well as cultural hurdles in diverse educational and cultural contexts

Comparative studies of peer versus teacher feedback also show different impacts on both anxiety and writing quality. For example, Shekarabi's (2023) findings suggest that while teacher feedback may yield higher quality scores due to expert guidance, peer feedback can be more effective in lowering anxiety. However, this distinction may have implications for how learners perceive authority and expertise in feedback, two elements online environments may dilute. Without face-to-face interaction, peer feedback in online settings may lack the immediate reassurance that in-person feedback provides, potentially affecting learners' confidence. Studies by Akbari (2021) and Dowden et al. (2013) emphasize the importance of the relational aspect of feedback, where trust in the feedback provider significantly influences its effectiveness. In online environments, where relationships may be less personal, this relational dynamic may be weakened, impacting the anxiety-reducing benefits of the approach.

Moreover, the technological medium itself introduces new variables in the feedback process, which are often overlooked in studies focusing solely on traditional classrooms. Online feedback platforms can be intimidating, especially to those unaccustomed to digital learning, which can exacerbate existing anxieties around both writing and technology (Matsumura & Hann, 2004; Saadé et al., 2017). In Shekarabi's (2023) study on Japanese language learners, students who received teacher feedback outperformed their peers in terms of writing scores, indicating that while online peer feedback may reduce anxiety, it does not necessarily result in superior language accuracy or proficiency. This raises important questions about the effectiveness of peer feedback for learners requiring more structured guidance, particularly in languages like Japanese, where linguistic accuracy is a common concern.

4. The Study

To address how peer feedback affects the different dimensions of L2 writing cognitive, somatic, and avoidance-inducing anxiety in L2 writing and to propose targeted interventions that can effectively reduce anxiety in L2 writing contexts, this study explores these sources of and reasons for anxiety among Iranian JFL learners. Moreover, it will investigate how the above variables change among JFL learners with different proficiency levels (intermediate and advanced). To this end, the study formulated the following research questions:

RQ1. What are the types of intermediate and advanced JFL learners' L2 writing anxiety?

RQ2. To what extent does online peer feedback impact the types of intermediate and advanced JFL learners' L2 writing anxiety?

RQ3. What are levels of intermediate and advanced JFL learners' L2 writing anxiety in the different stages of the writing process?

RQ4. What are levels of intermediate and advanced JFL learners' L2 writing anxiety in different writing environments (e.g., home, face to face classes with or without time limits, online classes with or without time limits, exams, etc.)?

5. Method

5.1 Participants

The participants in this study were 46 Iranian learners of Japanese as a Foreign Language (JFL) enrolled at a university in Iran. They volunteered to join the study. The group comprised 10 males and 36 females, with an average age of 22.6 years. Among the participants, 21 were second-year students, representing the intermediate proficiency level, and 25 were fourth-year students, representing the advanced proficiency level. All participants provided informed consent to participate in the study.

5.2 Instruments

Two questionnaires were employed in this study. The first was the Second Language Writing Anxiety Inventory (SLWAI) questionnaire developed by Cheng (2004) to assess L2 writing anxiety. The SLWAI instrument comprises 22 items that measure three types of anxiety: cognitive, somatic, and avoidance-inducing in the context of L2 writing. The SLWAI questionnaire is based on a five-point Likert scale ranging from "strongly agree" (1) to "strongly disagree" (5), with an "uncertain" (3) midpoint option. The reliability of SLWAI was very high (r = .91).

The second instrument was an open-ended questionnaire adapted from Genç and Yayli (2019) to evaluate the sources of the anxiety experienced by JFL learners at different stages of the writing process (e.g., grammar, word choice, *kanji* and punctuation, brainstorming, topic selection, organizing ideas, finding supporting ideas, writing topic sentences, writing supporting sentences, writing concluding sentences, proofreading, rewriting after receiving peer feedback, etc.). The questionnaire also probed levels of anxiety experienced in different writing environments (e.g., during exams, at home, in face-to-face classes with or without time limits and in online classes with or without time limits). The questionnaire was modified to fit the context of this study. Participants were asked to rate their anxiety levels on a scale of 1 to 5 (1 = least anxious, 5 = most anxious) and to provide explanations for their anxiety. This dual approach allowed for both quantitative assessment of anxiety levels and qualitative insights into their underlying causes.

5.3 Procedure

Participants were required to write three Japanese expository compositions each week and received online feedback from their peers on each composition. Following the feedback, they were asked to revise and rewrite each composition, resulting in a total of six writing tasks over the six-week duration of the intervention. The online peer feedback discussions were conducted using Moodle, incorporating online discussion forums, document sharing, and written, audio, and visual communication. Students shared their compositions with their peers, who had one week to review them and provide feedback. In the online sessions, students were grouped into pairs to discuss the feedback received from their peers. They were not trained on how to provide feedback on the compositions as the aim was for them to learn from each other based on their existing knowledge. Students were free to

provide feedback on any part of the compositions and to discuss any issues regarding organization, structure, or any other aspects. The researcher observed these online sessions but avoided interrupting the peer interactions.

To investigate the types of L2 writing anxiety experienced by the learners and to examine changes in anxiety levels before and after the writing tasks, participants completed the SLWAI questionnaire twice: once before the intervention, and once after its completion. Additionally, to elucidate the causes of L2 writing anxiety, participants completed the open-ended questionnaire at the conclusion of the intervention.

6. Results

To address Research Question 1, the level of learners' anxiety was examined using the frequency of L2 writing anxiety at the beginning (pre-test) and conclusion (post-test) of the intervention. As illustrated in Table 1, in the intermediate group, prior to receiving online peer feedback, the distribution of L2 writing anxiety among JFL learners was as follows: high (52%), moderate (44%), and low (4%). However, following the online peer feedback, these levels changed to high (24%), moderate (56%), and low (20%). Similarly, in the advanced group, the pre-test results indicated that L2 writing anxiety was high (48%) and moderate (52%), with no instances of low anxiety, with post-test results revealing a reduction in anxiety levels, with high anxiety decreasing to 33%, moderate anxiety remaining constant at 52%, and low anxiety emerging at 14%. These findings suggest that in both the intermediate and advanced groups, learners experienced reduced anxiety following peer feedback, as evidenced by a decline in high anxiety levels and a corresponding redistribution towards moderate and low anxiety levels.

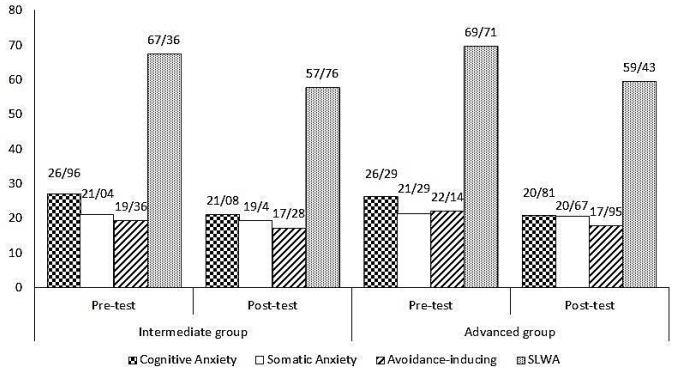
Regarding the types of anxiety, the mean scores for overall L2 writing anxiety as well as the three specific types of anxiety (cognitive, somatic, and avoidance-inducing), were analyzed. According to Zhang (2011), a mean score above 65 is classified as a high level of anxiety, a mean score below 50 as a low level, and a mean score between 50 and 65 as a moderate level. As shown in Figure 1, in the intermediate group, the pre-test results indicated that the predominant types of anxiety were cognitive (M = 26.96), avoidance-inducing (M = 21.04), and somatic (M = 19.36), while post-test results showed a reduction across all anxiety types: cognitive (M = 21.08), avoidance-inducing (M = 17.28), and somatic (M = 19.70). In the advanced group, the pre-test results similarly identified cognitive (M = 26.29), avoidance-inducing (M = 22.14), and somatic anxiety (M = 21.29) as the prevalent types. However, the post-test results also indicated a decrease in these anxiety types, with cognitive (M = 20.81), avoidance-inducing (M = 17.95), and somatic anxiety (M = 20.67) all showing reductions. These outcomes suggest that online peer feedback contributed to a general reduction in anxiety levels among students, with distinct changes observed across all three types of anxiety.

Table 1. Results of SLWAI in the Pre-test and Post-test

Groups	Intermediate group		Advanced group	
	Pre-test	Post-test	Pre-test	Post-test

	%	N	%	N	%	N	%	N
Low anxiety	4	1	20	5	0	0	14.28	3
Moderate anxiety	44	11	56	14	52.38	11	52.38	11
High anxiety	52	13	24	6	47.61	10	33.33	7
Total	100	25	100	25	100	21	100	21

Figure 1. Comparison of means of sub-categories and general L2 writing in the pre-test and post-test



To examine the effects of online peer feedback on JFL students' overall L2 writing anxiety, the L2 Writing Anxiety Questionnaire was administered twice—once at the beginning and once at the end of the intervention. Since the variables in this study are ordinal, a nonparametric test (Wilcoxon signed-rank test) was conducted to analyze the data. Among the 21 advanced students who participated in the study, anxiety levels decreased in 18 students after receiving peer feedback, with one student showing no change and two students reporting increased anxiety. The Wilcoxon signed-rank test indicated a statistically significant reduction in anxiety levels (Median = -7.00), with a median score of 64.00 before receiving peer feedback compared to 56.00 after receiving feedback, z = -3.698, p < .001, r = .81. Similarly, among the 25 intermediate students, anxiety levels decreased in 20 students, with one student showing no change and four students reporting increased anxiety. The test results also demonstrated a statistically significant reduction in anxiety levels (Median = -8.00), with a median score of 66.00 before feedback compared to 58.00 after feedback, z = -3.418, p < .001, r = .68.

To further investigate the impact of online peer feedback on JFL students' cognitive anxiety, a Wilcoxon signed-rank test was performed. Among the 21 advanced students, cognitive anxiety decreased in 17 students after receiving peer feedback, while one student showed no change and three students reported increased anxiety. The analysis revealed a statistically significant decrease in cognitive anxiety levels (Median = -4.00), with a median score of 25.00 before feedback compared to 22.00 after feedback, z = -3.367, p < .001, r = .73. For the 25 intermediate students, cognitive anxiety decreased in 20 students, while five students reported increased anxiety. The test confirmed a statistically significant reduction in cognitive anxiety levels (Median = -5.00), with a median score of 26.00 before feedback compared to 21.00 after feedback, z = -3.461, p < .001, r = .72.

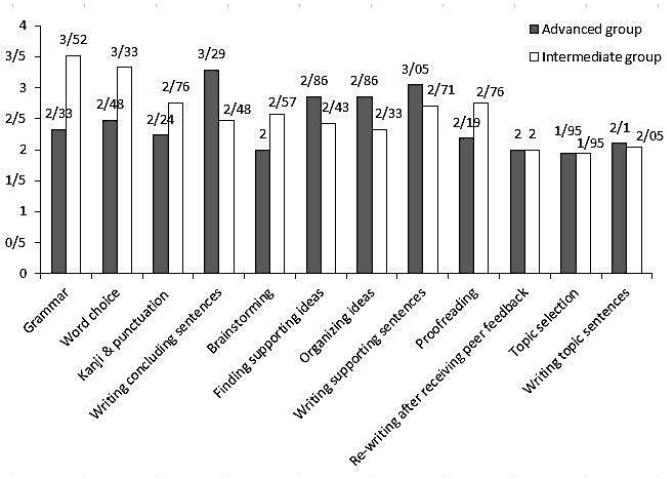
Regarding somatic anxiety, a Wilcoxon signed-rank test revealed that among the 21 advanced students, somatic anxiety decreased in 8 students but increased in 11 students, with 2 students showing no change. The test indicated no statistically significant decrease in somatic anxiety levels (Median = 1.00), with a median score of 21.00 before feedback compared to

18.00 after feedback, $z = .304$, $p > .05$. Similarly, among the 25 intermediate students, somatic anxiety decreased in 14 students, increased in 9 students, and remained unchanged in 2 students. The analysis found no statistically significant decrease in somatic anxiety levels (Median = -1.00), with a median score of 21.00 before feedback compared to 18.00 after feedback, $z = -1.340$, $p > .05$.

Finally, the effects of peer feedback on JFL students' avoidance-inducing anxiety were examined using a Wilcoxon signed-rank test. Among the 21 advanced students, avoidance-inducing anxiety decreased in 17 students, increased in 1 student, and showed no change in 3 students. The test revealed a statistically significant decrease in avoidance-inducing anxiety (Median = -4.00), with a median score of 20.00 before feedback compared to 18.00 after feedback, $z = -3.664$, $p < .001$, r = .80. In contrast, among the 25 intermediate students, avoidance-inducing anxiety decreased in 14 students, increased in 8 students, and remained unchanged in 3 students. The analysis found no statistically significant decrease in avoidance-inducing anxiety (Median = -1.00), with a median score of 18.00 before feedback compared to 17.00 after feedback, $z = -1.856$, $p > .05$.

To examine the levels of L2 writing anxiety among intermediate and advanced JFL learners at different stages in the writing process, mean anxiety scores for each step were calculated. As shown in Figure 2, intermediate students exhibited the highest levels of anxiety in the following areas: grammar (M = 3.52), word choice (M = 3.33), and *kanji*, punctuation, and proofreading (M = 2.76). In contrast, advanced students demonstrated the highest levels of anxiety in writing concluding sentences (M = 3.29), writing supporting sentences (M = 3.05), and generating and organizing supporting ideas (M = 2.86). These findings suggest that the sources of L2 writing anxiety differ between intermediate and advanced JFL learners during the writing process.

Figure 2. Means of intermediate and advanced JFL learners' writing anxiety at different stages in the writing process



To investigate levels of L2 writing anxiety among intermediate and advanced JFL learners in different writing environments, mean anxiety scores for each environment (exams, home, face-to-face classes with and without time limitations, online class with and without time limitations) were calculated. As depicted in Figure 3, the results indicate that learners in both the intermediate and advanced groups experienced the highest anxiety levels when writing essays during exams, while they felt least anxious when writing at home. Furthermore, students reported higher anxiety when writing essays in face-to-face classes compared to online classes. In face-to-face settings, anxiety was greater when time limits were imposed compared to when there were no such restrictions. Similarly, in online classes, students felt more anxious when writing under time constraints than in time-unrestricted environments.

Figure 3. Means of intermediate and advanced JFL learners' L2 writing anxiety in different environments

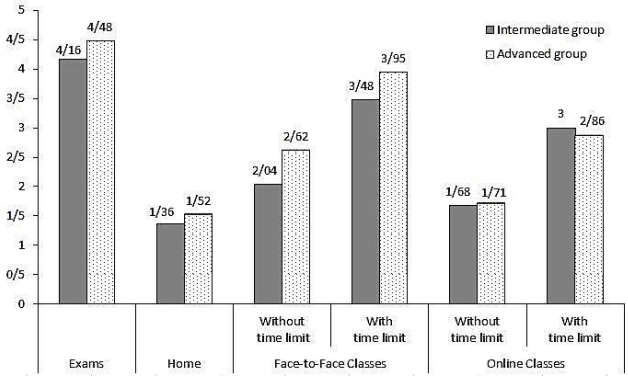


Table 2 provides a detailed analysis of the factors contributing to L2 writing anxiety among intermediate and advanced JFL learners across different writing environments. As regards exams, most learners in both groups cited the exam atmosphere, time constraints, and the pressure of grades as primary sources of anxiety. In contrast, the home environment was associated with lower anxiety levels as students appreciated the calm atmosphere and the autonomy it afforded. For both face-to-face and online classes, time constraints were identified as the most significant factor contributing to increased anxiety levels among students in both groups.

Table 2. Reasons for intermediate and advanced JFL learners' L2 writing anxiety in different writing environments

Writing environment	Reasons	Intermediate group %	Advanced group %
Exams	Exam itself	44	66.66
	Time	32	9.52
	Score and assessment	20	23.8
	Lack of knowledge	12	9.52
	Lack of focus	4	4.76
Home	Calmness/Peace of mind	72	42.85
	Authority	8	14.28
	Enough time	12	14.28
	Focus	8	14.28
Face-to-face classes without time limit	No time limit	60	42.85
	Focus	8	19.04
	Lack of focus	12	14.28
	Presence of others (students, teacher)	8	4.76
Face-to-face classes with time limit	Time	76	66.66
	Lack of focus	12	23.8
	Being face-to-face	8	4.76

	Presence of others (students, teacher)	4	4.76
Online classes without time limit	Time	48	52.38
	Calmness/Peace of mind	24	28.57
	Focus	8	9.52
	Being online is stressful	8	9.52
	Absence of others	4	4.76
Online classes with time limit	Time	44	42.85
	Calmness/Peace of mind	24	28.57
	Lack of focus	8	4.76
	Being online is stressful	12	14.28
	Absence of others	4	4.76

7. Discussion and Conclusion

This study investigated the impact of online peer feedback on L2 writing anxiety among Iranian learners of Japanese as a Foreign Language. The findings indicate that both intermediate and advanced learners experienced high to moderate levels of anxiety in Japanese writing prior to receiving peer feedback. However, their anxiety levels decreased significantly following the intervention. This reduction corroborates previous findings, which show that online peer feedback is effective in alleviating writing anxiety by fostering a sense of community and shared responsibility among learners (Shekarabi, 2023; Hyland & Hyland, 2006).

The results also show that the most notable reductions occurred in the cognitive and avoidance-inducing anxiety types. The marked reduction in cognitive anxiety is particularly significant, suggesting that peer feedback helps learners better organize their thoughts, thereby boosting their confidence in writing (Cheng et al., 1999; Cheng 2004). By providing constructive criticism, peer feedback is easier to accept and act upon compared to feedback from instructors, leading to a more positive attitude towards revisions and improvements (Choi, 2013; Cui et al., 2021). Additionally, the collaborative nature of peer feedback fosters a sense of community and support, alleviating feelings of isolation and making the writing process more enjoyable (Weng et al., 2023). Collectively, these factors contribute to a marked reduction in cognitive anxiety, making learners feel more confident and capable in their writing tasks (Miers, 2021).

. However, contrary to studies that highlight somatic anxiety as the predominant form of writing anxiety (e.g., Genç & Yayli, 2019), this study found cognitive anxiety to be the most prevalent both before and after the intervention. This discrepancy may be attributable to the nature of peer feedback, where the anticipation of peer evaluation may exacerbate cognitive concerns among learners.

Moreover, the absence of a judgmental dimension in peer feedback may make learners feel less judged and more receptive to criticism, thereby reducing anxiety (Chen et al., 2023). In this study, JFL learners perceived the process of receiving feedback from classmates as a collaborative learning activity. Following the receipt of feedback, they engaged in revising and rewriting their essays based on the feedback provided. Thus collaborative learning, which allows learners to pool their knowledge and strengths, fosters a sense of community and shared learning goals, thereby reducing cognitive anxiety. This suggests that any intervention aimed at reducing mental stress can lead to a decrease in writing anxiety. Furthermore, as demonstrated in previous research, online feedback offers accessibility and flexibility, immediate and continuous feedback, and enhanced interaction through features such as comments, highlights, and suggestions, making feedback more engaging and easier to comprehend (Peungcharoenkun & Waluyo, 2024). Additionally, peer rapport and learners' emotional and behavioral engagement play a crucial role in mitigating cognitive anxiety by increasing learners' investment in their learning and reducing anxiety about their performance. This social and collaborative support helps alleviate anxiety by making learners feel more comfortable and less isolated (Chen et al., 2023; Choi, 2013).

Moreover, the study revealed that somatic anxiety did not significantly decrease in either group; in fact, some students even experienced heightened somatic anxiety post-feedback. This suggests that while peer feedback may reduce cognitive and avoidance-inducing anxiety, it may not fully address the physiological stress associated with writing under pressure (Bailey, 1983). This persistence of somatic anxiety, particularly among advanced learners, underscores the necessity for additional support mechanisms such as stress management training or mindfulness exercises to complement peer feedback interventions.

To delve into why somatic anxiety did not decrease as a result of online peer feedback while cognitive anxiety did, it is essential to consider the nature of somatic anxiety. As mentioned above, somatic anxiety refers to the physical symptoms of anxiety, such as increased heart rate, sweating, and muscle tension. These physical symptoms can be more deeply ingrained and less responsive to interventions that primarily target cognitive aspects. While cognitive anxiety can be alleviated through understanding and reassurance, somatic symptoms may require more direct physical interventions, such as relaxation techniques or physical activity (Yasuda & Nabei, 2018).

Another contributing factor may be the lack of immediacy and personal touch in online feedback compared to face-to-face interactions. The presence of peers in a physical setting can provide more immediate reassurance and support, leading to a more effective reduction in physical anxiety symptoms (Andrade & Williams, 2009). Additionally, the asynchronous nature of online feedback may not provide the same level of emotional support as real-time interactions. This delay in communication may leave some physical symptoms of anxiety unaddressed as it does not offer the immediate relief needed to reduce somatic anxiety (Papi & Khajavy, 2023).

Several psychological factors may also help explain this finding. Psychological factors such as self-efficacy and the nature of the feedback

may influence the effectiveness of peer feedback. Higher self-efficacy can reduce cognitive anxiety but may not directly impact somatic symptoms. Learners who feel confident in their abilities may still experience physical symptoms of anxiety due to ingrained stress responses (Peungcharoenkun & Waluyo, 2024). Moreover, the quality and tone of the feedback play a crucial role. Constructive and positive feedback can reduce cognitive anxiety; however, if the feedback is perceived as critical or ambiguous, it might not alleviate somatic symptoms (Bailey & Cassidy, 2019).

In addition to cognitive and somatic anxiety, the study also examined the impact of online peer feedback on avoidance-inducing anxiety. Avoidance behavior, characterized by procrastination, reluctance to engage in writing tasks, even outright refusal to write, represents a critical form of anxiety that can severely impede language learning progress (Bailey, 1983). The findings of the present study demonstrate a significant reduction in avoidance-inducing anxiety among both intermediate and advanced learners after receiving online peer feedback. This outcome aligns with the theory that peer feedback encourages students to engage more proactively with the writing tasks, most likely because the feedback process fosters a sense of responsibility and accountability toward peers (Hyland & Hyland, 2006).

Nevertheless, the persistence of avoidance-inducing anxiety in some learners indicates that certain students may continue to struggle with engaging in writing activities, potentially due to deeply ingrained fears of failure or negative evaluation (Woodrow, 2011). This highlights the need for ongoing support such as personalized feedback and encouragement to help students to overcome avoidance behaviors and fully participate in the writing tasks.

The analysis of anxiety levels across different stages of the writing process revealed distinct factors contributing to anxiety among intermediate and advanced learners. As detailed above, intermediate learners were most anxious about grammar, word choice, *kanji* writing and proofreading, whereas advanced learners were primarily concerned with essay structuring, particularly the composition of supporting and concluding sentences. This finding aligns with the notion that a lack of proficiency in the target language exacerbates writing anxiety (Hyland, 2003). More specifically, this distinction reflects developmental differences in writing proficiency between the two groups, where intermediate learners focus more on language accuracy and advanced learners are more concerned with higher-order writing skills (Flower & Hayes, 1981; Thewissen & Anishchanka, 2022). This suggests that instructional interventions should be tailored to the specific needs of learners at different proficiency levels, with a focus on language accuracy for intermediate learners and discourse-level writing skills for advanced learners.

The study also identified significant differences in anxiety levels across various writing environments. Both intermediate and advanced learners reported the highest levels of anxiety during exams and the lowest levels when writing at home, consistent with previous research indicating that test situations typically evoke high anxiety due to time pressure and evaluative scrutiny (Horwitz, 1986). While earlier studies emphasized time constraints as the primary factor contributing to writing anxiety (Genç & Yayli, 2019; Lee, 2003; Quvanch, & Na,

2022; Yan, 2024), this study highlights the significant role of the writing environment. In particular, the home environment, characterized by calmness and autonomy, was associated with lower anxiety levels, suggesting that creating a supportive and low-pressure environment is crucial to reducing L2 writing anxiety.

Furthermore, the finding that learners felt more anxious in face-to-face classes compared to online settings, particularly under time constraints, underscores the importance of fostering a supportive and flexible learning environment. This suggests that reducing time pressure and providing more opportunities for writing in low-stakes environments such as writing at home or in untimed online settings could help alleviate L2 writing anxiety.

Taken together, the findings of this study carry several pedagogical implications. First, the significant reduction in cognitive and avoidance-inducing anxiety following peer feedback suggests that incorporating structured peer feedback sessions into the L2 writing curriculum could be an effective strategy for reducing overall writing anxiety. Second, the persistence of somatic anxiety even after receiving peer feedback indicates the necessity of additional interventions to address the physiological aspects of anxiety. In response, educators might consider integrating stress-reduction techniques into writing instruction to help learners manage their somatic responses. Finally, given the significant impact of the writing environment on anxiety levels, educators should strive to create a calm, supportive atmosphere that minimizes time pressure and encourages students to write without fear of judgment.

This study has several limitations. The focus on Iranian learners of Japanese and the limited sample size constrain the generalizability of the findings to other cultural or linguistic groups. Additionally, the use of self-reported data could lead to biases in responses. In response, future research should incorporate objective measures to validate the findings more robustly. Furthermore, research could investigate the impact of different types of feedback (e.g., teacher vs. peer feedback) on various dimensions of writing anxiety to identify the most effective strategies for anxiety reduction.

Future studies should also consider expanding the participant pool to include L2 learners from diverse linguistic backgrounds and cultural contexts. For example, examining how online peer feedback affects L2 writing anxiety among learners speaking different languages as their L1 could provide a broader understanding of its effectiveness. Investigating the role of cultural differences in the perception and reception of peer feedback could offer insights into tailoring feedback strategies to specific learner populations. Furthermore, exploring the impact of peer feedback in various educational settings such as traditional classroom environments, online learning settings, and blended learning environments could help identify best practices for reducing writing anxiety across diverse L2 learner groups.

This study shows that online peer feedback can significantly reduce L2 writing anxiety, particularly cognitive and avoidance-inducing anxiety among JFL learners. However, the persistence of somatic anxiety and the varying sources of anxiety across different writing stages and environments highlight the need for a more comprehensive approach to anxiety reduction in L2 writing. By understanding the sources of anxiety across different stages of the writing

process and environments, educators can design more effective interventions tailored to the specific needs of learners at different proficiency levels.

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