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Research on the Relationship Between L2 Motivational Self System and Engagement with Teacher Feedback and Automated Feedback in L2 Writing

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Abstract

With the development of information technology and corpus research, automated feedback from online writing platforms has become a key supplement to teacher feedback in L2 writing instruction. This study examines the relationship between students' L2 Motivational Self System and the sub-dimensions of L2 writing engagement under different feedback modes, focusing on undergraduate English majors. Results show that within teacher feedback engagement, emotional engagement is the highest, while cognitive engagement is the lowest. In contrast, there are no significant differences among the sub-dimensions of automated feedback engagement.Engagement with teacher feedback is significantly higher than with automated feedback across emotional, behavioral, and cognitive dimensions. Both the Ideal L2 Self and Ought-to L2 Self positively predict engagement with both feedback types, with the Ideal L2 Self having a stronger influence. These findings offer theoretical insights for L2 writing pedagogy and practical guidance for designing effective feedback strategies.

Keywords

L2 Motivational Self System; Second Language Writing; Teacher Feedback Engagement; Automated Feedback Engagement.

1. Introduction

Second language writing feedback is a crucial tool for enhancing learners' writing abilities. High-quality feedback not only helps students identify language errors but also guides them in improving their writing skills, ultimately promoting their writing proficiency (Hyland & Hyland, 2006). Traditionally, second language writing feedback has been provided by teachers. However, with advancements in modern information technology and corpus research, automated feedback from online writing platforms has become an important supplementary tool in second language writing instruction. Despite its potential, one-way feedback alone is insufficient for improving writing proficiency. The key to maximizing its educational impact lies in learners' effective engagement with the feedback (Zhang & Hyland, 2018). Engagement is influenced by both individual differences and environmental factors. Among individual factors, the L2 Motivational Self System, a significant predictor of second language acquisition outcomes (Dörnyei, 2009), has attracted considerable attention in recent years. However, research on the relationship between the L2 Motivational Self System and writing engagement has yielded inconsistent findings. Moreover, the differential impact of the L2 Motivational Self System on various sub-dimensions of writing engagement (such as emotional, behavioral, and cognitive engagement) under different feedback types remains underexplored.

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2. Literature Review

2.1. Second Language Writing Feedback

Second language writing feedback is an integral part of the second language acquisition process. Effective feedback promotes students' monitoring, diagnosis, evaluation, reflection, and regulation of their writing learning process, thereby enhancing metacognitive abilities. Positive feedback can boost students' motivation, self-efficacy, and writing interest, encouraging greater engagement in writing practice (Kormos, 2012).

2.1.1. Teacher Feedback in Second Language Writing

Teacher feedback offers significant advantages in terms of personalization and specificity. Teachers can provide targeted diagnostic feedback based on a deep understanding of students' learning characteristics, which not only helps students identify specific issues in their writing but also provides practical suggestions for improvement, thereby fostering greater engagement with the feedback (Hyland & Hyland, 2006). Research suggests that high-quality teacher feedback can enhance teacher-student interaction, motivate students, and encourage them to adjust learning strategies, ultimately improving learning outcomes (Butler, 1988). However, traditional teacher-written feedback models have notable limitations, such as inefficiency and time consumption, with long feedback cycles. Furthermore, these models lack immediacy and interactivity, making it difficult to meet students' real-time learning needs (Lee, 2015).

2.1.2. Automated Feedback in Second Language Writing

Automated writing evaluation (AWE) platforms, such as "Pigai" and "iWrite," offer instant feedback and diagnosis to learners. These systems, through repeated revisions and submission cycles, foster learners' awareness of the writing process, promote autonomous learning, collaboration, and critical thinking (Zhong, 2015). From the teacher's perspective, AWE platforms create electronic learning portfolios, recording students' progress and supporting personalized teaching. However, technical limitations persist, as current AWE systems struggle to analyze learners' performance in depth, identify individual learning needs, and provide emotional support. These constraints limit the practical effectiveness of AWE systems in writing instruction.

2.2. Engagement in Second Language Writing Feedback

Learning engagement, as a core construct in educational psychology, reflects learners' active participation in learning activities (Tyler, 2013). The three-dimensional theoretical framework proposed by Fredricks et al. (2004) divides learning engagement into behavioral, cognitive, and emotional dimensions, which has been shown to predict academic achievement. Ellis (2010) applied this framework to second language writing feedback research, defining the sub-dimensions as follows: Behavioral engagement involves the duration of writing revisions, feedback adoption rates, and task participation; Emotional engagement refers to learners' interest in feedback, value judgments, and emotional responses; Cognitive engagement focuses on learners' attention to feedback, depth of understanding, and the use of cognitive strategies (e.g., attribution analysis, comparative analysis) and metacognitive strategies (e.g., planning, monitoring, reflection).

2.3. L2 Motivational Self System

Dörnyei (2005, 2009), based on Higgins' (1987) self-discrepancy theory, proposed the L2 Motivational Self System, which includes three core dimensions: the ideal L2 self, the ought-to L2 self, and the L2 learning experience. The ideal L2 self reflects learners' desire to bridge the gap between their actual and desired language proficiency; the ought-to self stems from the need to meet external expectations or avoid negative outcomes; and the learning experience dimension emphasizes motivational factors within specific learning contexts, such as teacher

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influence, course design, peer interaction, and past learning experiences (Dörnyei & Ryan, 2015).

2.4. L2 Motivational Self System and Engagement in Second Language Writing Feedback

Findings on the relationship between the L2 Motivational Self System and writing engagement are divergent. Wu (2019) found that Chinese university students' L2 Motivational Self System was generally at a medium to high level, with the ideal self dimension scoring the highest. In terms of writing engagement, the overall level was medium to low, with behavioral and cognitive engagement being higher than emotional engagement. This positive correlation between the L2 Motivational Self System and writing engagement suggests that learners with a stronger motivational self tend to engage more deeply with writing tasks. However, Yu's (2019) research identified three types of English writing learners in China: "high motivation-high engagement," "ambiguous motivation-engagement relationship," and "contradictory motivation-engagement relationship," suggesting that the relationship between motivational self and engagement may vary across individuals. The inconsistency among the internal dimensions of learning engagement—particularly the phenomenon of "pseudo-engagement" (e.g., high behavioral engagement but low cognitive and emotional engagement)—calls for a more nuanced exploration of writing engagement (Han & Hyland, 2015; Fan & Xu, 2020). Moreover, research focusing on applied undergraduate English majors is limited, especially considering individual differences like proficiency and motivation. Therefore, this study aims to investigate the relationships between the L2 Motivational Self System and writing engagement in applied undergraduate students, using a quantitative approach.

3. Research Design

3.1. Research Questions

This study explores the following questions:

1)Are there significant differences among the emotional, behavioral, and cognitive sub-dimensions of teacher feedback engagement and automated feedback engagement?

2)Are there significant differences between the teacher feedback and automated feedback engagement in terms of the three sub-dimensions?

3)What is the relationship between the L2 Motivational Self System and the sub-dimensions of teacher feedback engagement (emotional, behavioral, cognitive)?

4)What is the relationship between the L2 Motivational Self System and the sub-dimensions of automated feedback engagement (emotional, behavioral, cognitive)?

3.2. Participants

The study selects 100 second-year English majors from an applied university, consisting of 76 females and 24 males. These students participated in two semesters of English writing courses with both online and offline writing exercises. Offline exercises were graded by teachers with written feedback, while online exercises were submitted via an automated platform ("Pigai").

3.3. Measures

L2 Motivational Writing Self Scale: This scale, adapted from Tahmouresi & Papi (2021), measures students' motivational self in the context of second language writing, including the ideal and ought-to L2 writing self.

L2 Writing Feedback Engagement Scale: Designed by Lü (2019), this scale assesses learners' acceptance of feedback, revision behaviors, and changes in writing performance after feedback.

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Scales for both teacher and automated feedback engagement were developed for this study. Reliability and validity tests were conducted before the formal survey.

All questionnaires used six-point Likert scale. Data were analyzed using SPSS 26.0, employing descriptive statistics, paired sample t-tests, one-way ANOVA, and regression tests.

4. Research Results

4.1. Descriptive Statistics

As table 1 indicates, the overall levels of teacher feedback engagement (M=5.20) and automated feedback engagement (M =4.91) were both relatively high, with teacher feedback engagement being slightly higher. The ideal L2 writing self (M = 5.30) and the ought-to L2 writing self (M = 5.14) were also at medium to high levels, with the ideal self slightly outperforming the ought-to self.

Table 1. Descriptive Statistics

Variable	Sample Size	Mean	Standard Deviation	Median
Teacher Feedback Engagement	100	5.20	0.69	5.25
Automated Feedback Engagement	100	4.91	0.92	5.00
Ought-to Self	100	5.14	0.83	5.17
Ideal Self	100	5.30	0.79	5.42

4.2. Differences Among Sub-dimensions of Feedback Engagement

As table 2 shows, teacher feedback engagement showed significant differences across emotional, behavioral, and cognitive engagement (F = 6.850, p = 0.001), with emotional engagement being highest, followed by behavioral and cognitive engagement. Table 3 suggests that automated feedback engagement did not show significant differences between these dimensions (p > 0.05).

Table 2. Differences among sub-dimensions of teacher feedback engagement

Dimension	Sample Size	Mean	Standard Deviation	F	p
Emotional Engagement	100	5.36	0.69	6.850	0.001**
Behavioral Engagement	100	5.20	0.77		
Cognitive Engagement	100	4.96	0.80		

Table 3. Differences among sub-dimensions of automated feedback engagement

Dimension	Sample Size	Mean	Standard Deviation	F	p
Emotional Engagement	100	4.91	0.95	0.911	0.403
Behavioral Engagement	100	4.96	0.92		
Cognitive Engagement	100	4.78	1.07		

4.3. Differences Between Teacher Feedback and Automated Feedback Engagement

From table 4, automated feedback engagement (M = 4.91) was significantly lower than teacher feedback engagement (M = 5.20) (t = -5.28, p = 0.000).

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Table 4. Overall differences between teacher feedback and automated feedback engagement

Engagement Category	Mean	Standard Deviation	Mean Difference	t	p
Automated Feedback Engagement	4.91	0.92	-0.28	-5.276	0.000**
Teacher Feedback Engagement	5.20	0.69			

Table 5 shows a significant difference between automatic feedback emotional engagement and teacher feedback emotional engagement ($p<0.05$), with the former (4.94) noticeably lower than the latter (5.41). A similar difference is found between automatic feedback behavioral engagement and teacher feedback behavioral engagement ($p<0.05$), with the former (4.85) lower than the latter (5.15). The difference between automatic feedback cognitive engagement and teacher feedback cognitive engagement is also significant ($p<0.05$), with the former (4.88) lower than the latter (5.10). Effect size analysis reveals that the largest difference is in emotional engagement, followed by behavioral engagement, and the smallest in cognitive engagement, based on the thresholds for small, medium, and large effects (0.20, 0.50, and 0.80).

Table 5. Differences between teacher feedback and automated feedback engagement in terms of sub-dimensions

Engagement Category	Mean	Standard Deviation	Mean Difference	t	p	Cohen's d
Emotional Engagement (Automated Feedback)	4.94	0.90	-0.47	-6.743	0.000**	0.674
Emotional Engagement (Teacher Feedback)	5.41	0.66				
Behavioral Engagement (Automated Feedback)	4.85	0.99	-0.30	-5.003	0.000**	0.500
Behavioral Engagement (Teacher Feedback)	5.15	0.73				
Cognitive Engagement (Automated Feedback)	4.88	0.97	-0.22	-3.523	0.001**	0.352
Cognitive Engagement (Teacher Feedback)	5.10	0.78				

4.4. Relationship Between the L2 Motivational Self System and Teacher Feedback Engagement and Automated Feedback Engagement

As shown in Table 6, both feedback types are significantly positively correlated with the L2 Motivational Self System. Specifically, the correlation between automated feedback engagement and the ideal self is 0.735 ($p < 0.01$), indicating a strong positive relationship. Similarly, the correlation with the ought-to self is 0.679 ($p < 0.01$), also showing a significant positive correlation. A similar pattern is observed for teacher feedback engagement, with a correlation of 0.749 ($p < 0.01$) between teacher feedback engagement and the ideal self, and 0.727 ($p < 0.01$) with the ought-to self, both indicating significant positive correlations.

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Table 6. Relationship between the L2 Motivational Self System and teacher feedback engagement and automated feedback engagement

	Automated Feedback Engagement	Teacher Feedback Engagement	Ideal Self	Ought-to Self
Automated Feedback Engagement	1			
Teacher Feedback Engagement	0.817**	1		
Ideal Self	0.735**	0.749**	1	
Ought-to Self	0.679**	0.727**	0.793**	1

To further examine the predictive effects of the ideal and ought-to selves in the L2 Motivational Self System on teacher and automated feedback engagement, multiple linear regression analysis was conducted. According to Table 7, the regression model for teacher feedback engagement is:

Teacher feedback engagement = 1.527 + 0.405 * ideal self + 0.296 * ought-to self, with an R-squared value of 0.609. This indicates that the ideal and ought-to selves account for 60.9% of the variance in teacher feedback engagement. The regression coefficient for the ideal self is 0.405 ($t = 4.463$, $p < 0.01$), suggesting a significant positive impact, while the coefficient for the ought-to self is 0.296 ($t = 3.432$, $p < 0.01$), indicating a significant positive impact as well.

Table 7. Effects of L2 Motivational Self System on teacher feedback engagement

	Unstandardized Coefficients (B)		Standardized Coefficients (Beta)	t	p	VIF Tolerance	
	B	Standard Error	Beta				
Constant	1.527	0.303	-	5.047	0.000**	-	-
Ideal Self	0.405	0.091	0.465	4.463	0.000**	2.696	0.371
Ought-to Self	0.296	0.086	0.358	3.432	0.001**	2.696	0.371
R^2	0.609						
Adjusted R^2	0.601						
F	F (2,97)=75.498,p=0.000						
D-W	1.850						
Note： dependent variable= teacher feedback engagement							
* p<0.05 ** p<0.01							

As reflected in table 8, the regression model for automated feedback engagement is: Automated feedback engagement = 0.152 + 0.619 * ideal self + 0.287 * ought-to self, with an R-squared value of 0.564. This shows that the ideal and ought-to selves explain 56.4% of the variance in automated feedback engagement. The regression coefficient for the ideal self is 0.619 ($t = 4.812$, $p < 0.01$), confirming a significant positive effect, while the coefficient for the ought-to self is 0.287 ($t = 2.349$, $p = 0.021$), indicating a significant positive effect as well.

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Table 8. Effects of L2 Motivational Self System on automated feedback engagement

	Unstandardized Coefficients (B)		Standardized Coefficients (Beta)	t	p	VIF Tolerance	
	B	Standard Error	Beta				
Constant	0.152	0.429	-	0.354	0.724	-	-
Ideal Self	0.619	0.129	0.530	4.812	0.000**	2.696	0.371
Ought-to Self	0.287	0.122	0.259	2.349	0.021*	2.696	0.371
R^2	0.564						
Adjusted R^2	0.555						
F	F (2,97)=62.834,p=0.000						
D-W	2.006						
Note： dependent variable= automated feedback engagement							
* p<0.05 ** p<0.01							

5. Discussion

5.1. Differences Among the Internal Sub-dimensions of Teacher Feedback Engagement and Automated Feedback Engagement

The results reveal that cognitive engagement is the lowest across both teacher and automated feedback types. This suggests that emotional and behavioral engagement may reflect a form of "pseudo-engagement," while cognitive engagement, which involves deeper cognitive processing and the use of learning strategies, is essential for learning outcomes. The lower levels of cognitive engagement might be attributed to students' English proficiency, linguistic aptitude, and the quality of the feedback provided. Schmidt's (1990) "Noticing Hypothesis" posits that learners can only use feedback effectively if they notice and understand it. This suggests that further research is needed to explore specific reasons for the observed low cognitive engagement.

5.2. Differences Between the Sub-dimensions of Teacher Feedback and Automated Feedback Engagement

The survey findings show that teacher feedback engagement is generally higher than automated feedback engagement. When broken down by dimension, emotional engagement, behavioral engagement, and cognitive engagement in teacher feedback are all significantly higher than in automated feedback. Notably, the emotional engagement dimension shows the largest difference, followed by behavioral engagement, while cognitive engagement shows the smallest difference. This suggests that for applied undergraduates, teacher feedback has a more significant educational impact than automated feedback. The reasons may be as follows:

The participants in this study are applied undergraduate English majors, whose learning characteristics—such as proficiency, motivation, autonomy, and self-efficacy—differ from those of other learners. These students primarily experienced teacher-led, exam-oriented instruction in high school, where teacher feedback was the primary source of writing guidance, and automated feedback was seldom used. Consequently, they may be skeptical of or unaccustomed to automated feedback.

The subjects participated in a blended learning model that combined online and offline instruction, with teacher feedback playing a central role in the writing course. Teacher feedback

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is often more personalized, addressing individual needs such as language skills, emotional motivation, and anxiety. Teachers' professional competence and emotional investment contribute to the "warmth" of this feedback, which likely enhances student motivation—something automated feedback cannot replicate as effectively.

5.3. Relationship Between the L2 Motivational Self System and Teacher Feedback Engagement and Automated Feedback Engagement

The analysis of the predictive effects of the L2 Motivational Writing Self on feedback engagement shows that both the ideal and ought-to selves positively impact engagement with both teacher and automated feedback. However, the ideal self has a greater influence on feedback engagement than the ought-to self. This is consistent with previous research: learners with a strong identification with their ideal L2 self are more likely to engage in writing activities with enthusiasm and to employ cognitive strategies such as planning and self-evaluation (Dörnyei, 2005). The ought-to self, driven by external pressures (e.g., parental expectations, academic requirements), may lead to strong behavioral engagement but also increase anxiety, potentially reducing long-term motivation and confidence in writing (Ryan & Deci, 2000).

6. Conclusion

This study demonstrates that the relationship between the L2 Motivational Self System and writing engagement under different feedback modes is complex and multifaceted. In second language writing instruction, teachers must consider individual factors such as students' motivation, emotional states, and writing anxieties, as these significantly influence engagement with feedback. Although advancements in artificial intelligence and large language models have improved the quality and efficiency of automated feedback, it is unlikely that automated feedback can fully replace teacher feedback. A blended approach, integrating both automated and teacher feedback, may be the most effective way to enhance second language writing motivation and engagement. Moving forward, research should focus on how teachers can effectively integrate AI-powered feedback to complement human feedback, especially for lower-level learners, and explore how feedback engagement interacts with motivation and other cognitive factors in second language learning.

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