Exploring Chinese university English writing teachers' emotions in providing feedback on student writing

Abstract

Despite the growing interest in emotions in L2 writing education, empirical research on teachers' emotions as feedback providers is limited. With 288 English writing teachers from 120 universities in 23 provinces of China, this study developed a 17-item scale to measure Chinese university English writing teachers' feedback-giving emotions. Exploratory factor analysis revealed five kinds of emotions: cheerfulness, contentment, frustration, anxiety, and anger. Latent profile analysis identified four groups of teachers according to their diverse patterns of emotions: slight-positive-emotional teachers (N = 118, 40.97% of the total sample), negative-emotional teachers (N = 35, 12.15%), positive-emotional teachers (N = 50, 17.36%), and mixed-emotional teachers (N = 85, 29.51%). Most demographic variables, including teaching experience, student background, and institution prestige, had no correlation with teachers' feedback-giving emotions. Only professional training experience had minimal influence on teachers' group memberships concerning feedback-giving emotions. This study contributes to the literature on teachers' emotions during the provision of feedback by developing an instrument for large-scale quantitative studies. It also confirms the complexity of feedback-giving emotions, particularly the identification of mixed-emotional teachers.

Keywords: L2 writing; feedback-giving; teacher emotions; emotion profiles

Introduction

Emotions are "enmeshed with identity, agency, and power, all central in the learning and teaching of languages in today's multilingual world" (Douglas Fir Group, 2016, p. 36). Unlike the extensive research on emotions in general L2 education (see Dewaele & Li, 2020 for a review), researchers began to analyze the role of emotions in L2 writing education in recent years, unveiling the effect of various emotions on learning (Tahmouresi & Papi, 2021; Zhu et al., 2022a, 2022b) and teaching (Brown et al., 2018; Yu, 2021; Yu et al., 2021) of L2 writing. As an important part in L2 writing education, feedback is likely to arouse emotional reactions among both students and teachers (Hyland & Hyland, 2019). Existing research has documented L2 writers' different emotions in receiving and giving feedback (e.g., Li & Reynolds, 2023; Mahfoodh, 2017; Zhu et al., 2023). Meanwhile, L2 writing teachers may also experience positive (e.g., happiness and satisfaction) and negative (e.g., frustration and anger) emotions in giving feedback on student writing (Brown et al., 2018; Yu et al., 2021). These studies shed light on the emotional dimension of feedback, and establish a new venue for future research on teacher feedback in L2 writing education.

It is imperative to understand L2 writing teachers' emotional response while providing feedback on student writing for two compelling reasons. First, teachers' emotions can influence their feedback practices. Positive emotions have been found to inspire teachers' teaching ideas and strategies, contributing to their usage of student-centered teaching approaches (Sutton & Wheatley, 2003; Trigwell, 2012). Nevertheless, negative emotions may lead to the adoption of teacher-centered teaching practices (Chen, 2019) and lower level of willingness to assess student writing (Yu et al., 2021). Second, teachers' emotions can indirectly shape students' learning experiences (Yu et al., 2021). Conceivably, positive teacher emotions, accompanied by innovating feedback approaches, will bring about joyful, motivating learning experiences for students. In contrast, negative teacher emotions will result

in students' discouraging experiences. Recognizing the potent role of teachers' emotions in shaping their feedback approaches and students' learning experiences, a comprehensive evaluation of these emotions becomes an imperative. Such assessments can inform and guide the design of suitable teacher training programs, thus serving as critical empirical grounding for educators and policy makers. However, existing research predominantly adopts qualitative, narrative-oriented approaches to examine L2 writing teachers' emotions in giving feedback (Brown et al., 2018; Loh & Liew, 2016; Yu et al., 2021). "Systematic large-scale research using well-structured tools … would seem to be a logical next step to understanding the range and impact of teachers' … emotions in relation to assessment" (Brown et al., 2018, p. 218).

Therefore, in this study, we developed a scale to measure Chinese university English writing teachers' emotions in giving feedback on student writing. We then employed latent profile analysis (LPA) to categorize teachers into different groups according to their complex patterns of emotions. Finally, we examined the relationships between teachers' group memberships of feedback-giving emotions and demographic variables. Practical suggestions for L2 writing teacher education and policy-making were provided based on the findings.

Literature review

An interactional perspective of teacher emotions in providing feedback

In her seminal work about emotions in organizations, Hochschild (1990) introduces an interactional perspective that considers the internal psychological characters and the external sociocultural influence on individuals' emotions. This perspective informs research not only in managerial settings, but also in the field of teacher education (e.g., Benesch, 2018; Gkonou & Miller, 2021). Zembylas (2003) defined that "(t)he emotions that teachers experience and express … are not just matters of personal dispositions but are constructed in social relationships and systems of values in their families, cultures, and school situations" (p. 216).

It has been widely documented that different external factors, such as institutional regulations, colleagues, and students, may contribute to teachers' positive (e.g., joy, compassion, excitement, etc.) and negative (e.g., anxiety, anger, disappointment, etc.) emotions in different contexts around the globe (Buri´ c & Frenzel, 2019; Chen, 2016, 2020; Day & Lee, 2011; Frenzel et al., 2016; Samier & Schmidt, 2009).

Notably, the interaction between students and teachers, the two main bodies in education, plays a critical role in shaping teachers' emotions, as Farouk (2012) indicated that teacher emotions "are integral to the ways in which they (teachers) relate to and interact with their students" (p. 69). Teachers may experience positive emotions, such as joy, when students make progress in their learning and display a high level of study motivation (Bahia et al., 2013; Hagenauer & Volet, 2014). Meanwhile, teachers may also experience negative emotions, such as concerns over students' academic achievement (Chen, 2016) and frustration about students' slow progress (Khong & Saito, 2014). As an important form of teacher-student interaction, "feedback is a fundamental aspect of everyday teaching" (Voerman et al., 2014, p. 91), wherein teachers provide various forms of oral and written comments on students' performance in and outside of classrooms. Meanwhile, students should respond to and engage with teacher feedback to improve their academic achievement. This interactive process is extremely likely to arouse emotional reactions and has received substantial research attention (e.g., Ryan & Henderson, 2018; Värlander, 2008). However, most of existing studies focus on students' emotions in receiving and giving feedback, with only a few on teachers' emotions as feedback providers.

The sparse literature reports that providing feedback on students' academic performance can indeed influence teachers' emotions (Hartney, 2007; Nicol, 2010; Stough & Emmer, 1998). For example, teachers commonly are unsatisfied with students' indifferent attitudes toward teacher feedback (Nicol, 2010). In extreme cases, students may overtly resist

or challenge teacher feedback with the support of their classmates, which can aggravate teachers' negative emotions, such as anger and stress (Stough & Emmer, 1998). In view of the negative emotions caused by students' resistance to feedback, Hartney (2007) designed an intervention to reduce the tension between students and teachers. Several strategies, such as increasing general praise and effort-related feedback, were found to bring enjoyable experiences for teachers. Interestingly, the three studies focus primarily on teachers' negative emotions but neglect the positive emotions (e.g., joy) that have been identified in teacher-student interaction (Bahia et al., 2013; Hagenauer & Volet, 2014). It seems that providing feedback on students' academic performance is an emotionally challenging task for teachers. While the three early studies are in the contexts of general higher education (Nicol, 2010) and educational psychology (Hartney, 2007; Stough & Emmer, 1998), they have raised researchers' awareness of teachers' emotional reactions as feedback providers and informed the research in the field of L2 writing education.

L2 writing teachers' emotions in giving feedback on student writing

Some early studies have analyzed L2 writing teachers' responses to student writing in the secondary education in Hong Kong (e.g., Lee, 2003, 2008) and the tertiary education in the U.S. (e.g., Ferris, 2014; Ferris et al., 2011; Junqueira & Payant, 2015). Several identical expressions were used to describe teachers' feelings as feedback providers in the two contexts. For example, teachers complained about the heavy workload and felt that providing detailed feedback on student writing is "time-consuming" (Lee, 2003; Junqueira & Payant, 2015). Frustration was another shared feeling among L2 writing teachers. Hong Kong secondary school teachers' sense of frustration was caused by "a socio-political climate that did not allow them the autonomy to practice what they believed" in the feedback-giving process (Lee, 2008, p. 81). University teachers in the U.S., on the other hand, felt frustrated about the ineffectiveness of the feedback on students' writing performance (Ferris, 2014; Ferris et al.,

2011). Notably, in these initial investigations, researchers employed the terms “problems” or “concerns” rather than “emotions” to encapsulate the adverse sentiments experienced by teachers while delivering feedback.

To the best of our knowledge, Loh and Liew (2016) pioneered the application of the concept “emotion” in exploring teachers’ feelings during the evaluation of student compositions, wherein the 10 secondary school English teachers in Singapore noted that this work was stressful due to various rigorous standards, such as inter-rater reliability, and the large class sizes. Moreover, feedback-giving involves emotional labor, “as teachers learn to control and even suppress their emotional judgements when rewarding or penalizing students for their efforts based on such factors as attitude and ability” (Loh & Liew, 2016, p. 274). This statement underscores the interactional nature of providing feedback, and highlights that students’ learning attitude and performance can arouse emotional responses on teachers. However, this study only investigated teachers’ negative emotions and primarily centered on general L2 English education. Empirical research that specifically examined L2 writing teachers’ positive and negative emotions in giving feedback was not available until Brown et al. (2018). With seven L2 English teachers from an Egyptian university, the authors observed that teachers felt frustrated and exhausted when providing feedback on student writing, which is akin to the previous findings (Ferris, 2014; Lee, 2003; Loh & Liew, 2016). Meanwhile, teachers also expressed a sense of satisfaction when their feedback helped students improve writing performance. These findings informed a more comprehensive investigation of L2 writing teachers’ emotions.

Yu et al. (2021) systematically analyzed 27 Chinese university English writing teachers’ positive (e.g., cheerfulness, contentment, and relief) and negative (e.g., anger, disappointment, and anxiety) emotions in providing feedback on student writing. For example, the good teacher-student communication can contribute to teachers’ cheerfulness, whereas

students' poor writing performance can lead to the feelings of anger and disappointment among teachers. This study is the most comprehensive empirical research on L2 writing teachers' feedback-giving emotions to date. There are two notable issues. First, teachers tend to have "a mixture of feelings" when evaluating student writing (Yu et al., 2021, p. 7). For instance, the ineffectiveness of feedback on students' writing performance can lead to teachers' anxiety, disappointment, and anger. This necessitates the analysis of the nuances in teachers' various positive and negative emotions (further discussed in the following section). Second, there exists a reciprocal relationship between the provision of feedback and the emotional responses elicited in teachers during this process. The act of providing feedback can trigger a spectrum of emotions in teachers. Concurrently, the positive and negative emotions of teachers can significantly influence their feedback practices, which subsequently affect the emotional states of students (Yu et al., 2021). Considering the pivotal role of teacher emotions in L2 writing education, further research is needed to examine the emotional experiences of teachers during the feedback provision process on student writing.

The impact of demographic variables on teachers' emotions

The interactional perspective posits that a multitude of internal and external factors shape teachers' emotional states (Zembylas, 2003). Empirical studies have substantiated the influence of various demographic variables on teachers' emotional responses. For instance, a significant correlation between teaching experience and teachers' emotional states was identified by Chen (2020). Teachers with extensive teaching experience exhibited a higher prevalence of negative emotions and a lower incidence of positive emotions compared to their less experienced counterparts.

Within the context of L2 writing, several contextual factors may also exert influence on teachers' emotions. These include the academic background of the students they teach (i.e., English majors vs. non-English majors), the reputation of the educational institution (i.e., key

university vs. regular university), and teachers' professional training experiences (having received training vs. not having received training) (Lee, 2008; Yu, 2021; Yu et al., 2021). For instance, English writing instruction for English-major students is typically structured in independent modules, affording teachers more time for review and commentary on student writing. Conversely, for non-English-major students, feedback practices are often constrained by limited teaching hours and large class sizes. This often results in teachers feeling overwhelmed by the task of providing comprehensive and detailed feedback on student writing (Yu, 2021). Moreover, Lee (2008) observed that teachers with insufficient training on feedback giving tend to adhere to traditional feedback methodologies, characterized by the provision of detailed written corrective feedback. Regrettably, this approach has been observed to be associated with negative emotional responses among teachers (Yu et al., 2021).

The present research

Thus far, we have drawn four major findings. First, providing feedback on student writing, as an important form of teacher-student interaction, can initiate teachers' emotional reactions. However, empirical research in this area is extremely limited. Second, existing studies in this regard largely rely on qualitative research methods and involve a relatively small sample of participants. Quantitative research with reliable, valid instrument is still missing. While several scales are available for the measurement of teachers' emotions (e.g., Chen, 2020; Frenzel et al., 2016), they are not designed for the specific context of feedback-giving in L2 writing education. Development of a scale to measure L2 writing teachers' emotions in providing feedback is warranted. Third, the emotional states of teachers could be shaped by their individual characteristics. Finally, special attention should be paid to the complexity of teachers' emotions. It is possible that teachers may have multiple emotions simultaneously in providing feedback on student writing. Appropriate statistical analyses should be employed to address this issue.

As a person-centered approach, LPA can categorize participants into different groups according to their diverse patterns of psychological and behavioral characters (Yu et al., 2019; Yao et al., 2021a). Because teachers tend to have mixed feelings during the provision of feedback, it is possible that some teachers may have high level of positive emotions but low level of negative emotions, while others may have low level of positive emotions but high level of negative emotions. There may still exist a group of teachers with moderate level of both positive and negative emotions. As such, LPA is suitable to capture the nuances in teachers' emotions in providing feedback. Currently, LPA has been widely employed to unveil the complex patterns of mentalities in L2 learning and instruction (e.g., Guo et al., 2023; Yao et al., 2021b; Zhu et al., 2022b). For example, Zhu et al. (2022b) investigated 679 Chinese L2 English writers' diverse levels of positive and negative emotions in the learning process. Specifically, students were categorized into different groups according to their various patterns of enjoyment and anxiety. Therefore, we employed LPA in the present study to explore teachers' complex emotions.

Based on the findings, we developed a scale to measure Chinese university English writing teachers' feedback-giving emotions. Three research questions guided the whole study:

(1) What are the constructs of teachers' emotions in giving feedback on student writing?

(2) What are teachers' group memberships in terms of their emotions during the provision of feedback?

(3) What are the relationships between demographic variables and teachers' group memberships?

Research methodology

Context and participants

English writing holds a pivotal role in English pedagogy within Chinese tertiary institutions. English writing tasks constitute a significant component of the Test for English Majors (TEM) and the College English Test (CET) for non-English major students. Driven by the prevalent examination culture, Chinese university English teachers dedicate a substantial portion of their teaching time to instructing students in various writing genres. For non-English major students, writing instruction is typically integrated into the weekly two-hour general college English course, with class sizes ranging from 50 to 100 students. For English major students, English writing instruction forms a distinct course, with teachers typically engaging with their students for two hours per week in classes of approximately 30 students. In both cases, the provision of feedback on student writing presents a formidable challenge for teachers.

A web-based survey was constructed and disseminated via various social media platforms. We received voluntary responses from 295 English teachers that came from 120 universities in 23 provinces of China, which is a feasible and representative sampling. All participants taught English writing courses or included English writing as an important part in their curricula. Seven responses were excluded from analysis, because they were in the same pattern across all items (e.g., 5 or 6 for all items). This resulted in a sample of 288 participants (84.4% female), and their tertiary level English teaching experiences ranged from 1 to 40 years (Mean = 16.8, *SD* = 7.8). Of these, 86 teachers (29.9% of the total sample) came from key institutions (i.e., the 985/211/Double-First class universities), and 202 teachers (70.1%) came from regular institutions (i.e., universities other than the key institutions). Moreover, 167 teachers (58.0% of the total sample) taught English major students and 121 teachers (42.0%) taught students from different disciplines, such as engineering and economics. Concerning teachers' professional training experiences, 123 teachers (42.7% of the total sample) did not receive any trainings on English writing instruction, and 165 teachers (57.3%)

received relevant trainings over the past three years or beyond. Participation in this study was voluntary and was not compensated. The application for human subjects' ethics review for the study were approved by the Departmental Research Committee (on behalf of the Institutional Review Board).

Instrument

The questionnaire used in this study consisted of two sections. The first section collected teachers' demographic information, such as gender, teaching experience, and the name of the universities etc. The second section, as shown in Table 1, was a 17-item scale developed based on the findings of empirical studies (Brown et al., 2018; Loh & Liew, 2016; Yu et al., 2021). Specifically, we used the excerpts of teachers' responses to interviews and the authors' summaries to create the items. For example, one teacher commented that "I feel sorry and guilty for students if my feedback is not detailed enough" (Yu et al., 2021, p. 7), which was adopted in the development of item 9 (I feel sorry and guilty for students if my feedback is not detailed enough). Brown et al. (2018) concluded that teachers felt satisfied with students' improvement on writing performance, based on which we developed items 4 (After providing feedback, I feel content to see students' improvement in language skills) and 5 (After providing feedback, I feel content to see students' improvement in critical thinking skills). Several rounds of meeting were organized during the development of the scale. The phrasings of all items were subjected to meticulous scrutiny by two co-authors of the present study who possess vast expertise in L2 writing assessment. Subsequently, necessary revisions were implemented in accordance with their recommendations.

Table 1

L2 writing teacher feedback-giving emotions scale

Item #	Content
1	I like providing feedback on my students' writings.
2	I enjoy the communication with students through feedback.
3	I am happy that I have learned some new ideas from students when reviewing their writings.
4	After providing feedback, I feel content to see students' improvement in language

	skills.
5	After providing feedback, I feel content to see students' improvement in critical thinking skills.
6	When students make revisions based on my feedback, I feel a sense of achievement.
7	I feel satisfied as long as I see a little, if any, progress in students' writing performance.
8	I feel anxious due to the heavy workload of providing feedback on students' writings.
9	I feel sorry and guilty for students if my feedback is not detailed enough.
10	When I am about to finish assessing students' writings, I will feel relieved.
11	I am disappointed that students' writing abilities do not meet with my expectation.
12	I feel dismayed because I have difficulty understanding students' writings that are full of mechanical problems.
13	I am frustrated to see students' writing performances unchanged after my repeated explanation and instruction.
14	I feel annoyed when I see a lot of mistakes in my students' writings.
15	I am angry that my students do not accept my suggestions and insist on their own ideas in writing.
16	I will easily get angry when my students showed bad attitudes in writing learning (e.g., late submission of homework, careless handwriting, plagiarism, etc.).
17	I tend to lose my temper in case of heavy workload and anxiety.

As our participants were all native Chinese speakers, we invited an expert to translate the original English questionnaire into Chinese, and then used Google Translator to translate it back into English. No information was lost during translation. All participants responded to the Chinese version questionnaire in this study. Teachers rated the extent to which they agreed or disagreed with the 17 items on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

Data analysis

For research question 1, we first used SPSS version 22.0 to perform exploratory factor analysis (EFA) to investigate the structures of the feedback-giving emotions scale. Prior to the analysis, we examined two statistics, Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test of sphericity, to check whether the 17 items have adequate level correlation for EFA. Afterward, we also used SPSS version 22.0 to calculate the descriptive statistics, Cronbach's alpha, and bivariate correlations for the primary variables.

For research question 2, we conducted LPA with Mplus version 8.3 (Muthén & Muthén, 2017) to categorize teachers into different groups according to their diverse patterns of positive and negative feedback-giving emotions. Several fit indices were checked to determine the optimal number of groups, including log-likelihood (LL), Akaike information criterion (AIC), Bayesian information criterion (BIC), sample size adjusted BIC (ABIC), Lo-Mendell-Rubin likelihood ratio test (LMRT), bootstrap likelihood ratio test (BLRT), and entropy. Lower absolute values for LL, AIC, BIC, and ABIC indicate a better model data fit. A non-significant *p* value of LMRT or BLRT ($p > 0.05$) indicates that the model with one less group is better, and an entropy value larger than 0.80 indicates a classification with more than 90% precision (Lubke & Muthén, 2007).

Finally, for research question 3, we investigated the relationships between teachers' group memberships and demographic information. We performed Wald chi-square test, using the BCH command in Mplus, to investigate the differences in teachers' teaching experiences (years) as a function of their group memberships. Further, we performed multinominal logistic regression, using the R3STEP command in Mplus, to examine how these three demographic variables can predict teachers' group memberships.

Results

EFA results

To address research question 1, we performed EFA to explore the constructs of the feedback-giving emotions. The KMO measure of sampling was 0.848, and Bartlett's test of sphericity was statistically significant: $\chi^2(136) = 2202.867$, $p < 0.001$. These results indicated acceptable level of correlation among the 17 items for the subsequent EFA (Meyers et al., 2016). Principal component analysis was used for factor extraction. In terms of factor rotation method, we followed Meyers et al. (2016) to first perform a promax rotation. As the

correlations of some factors exceeded 0.3, we decided to use promax with Kaiser Normalization as the rotation method and obtained four factors with eigen values larger than 1 which, all together, explained 63.93% of the total variance. Notably, the eigenvalues of the fifth factors was 0.848. Jolliffe (1972) suggested that factors with eigenvalues larger than 0.7 may be retained. In addition, the fifth factor explained 4.99% of the total variance. Therefore, we proceeded to examine a five-factor structure of the feedback-giving emotions.

After stipulating the number of factors to be five, we extracted five factors which explained 68.93% of the total variance (Table 2). Item 16 was removed as it cross-loaded on several factors at an absolute value of 0.32 or higher (Tabachnick & Fidell, 2001). The first factor (eigenvalue = 4.81) explained 28.27% of the variance and included five items (# 3, 4, 5, 6, and 7). We turned to the original scale and found that items 4 through 7 all concerned teachers' contentment in evaluating student writing. While item 3, "I am happy that I have learned some new ideas from students when reviewing their writings", was not directly related to contentment, it is reasonable to assume that this particular sense of happiness (learning new things) can lead to teachers' contentment. Therefore, the first factor was termed as "contentment". The second factor (disappointment, eigenvalue = 3.90) explained 22.91% of the variance and included items 11, 12, and 13 which all concerned teachers' feeling of disappointment. The third factor (anxiety, eigenvalue = 1.17) explained 6.88% of the variance and included the three items (# 8, 9, and 10) about teachers' anxiety. The fourth factor (anger, eigenvalue = 1.00) explained 5.88% of the variance and included the three items (# 14, 15, and 17) that were all about the sense of anger. The fifth factor (cheerfulness, eigenvalue = 0.85) explained 4.99% of the variance and included items 1 and 2 that concerned the sense of cheerfulness.

Descriptive statistics, Cronbach's alpha, and bivariate correlations between the five emotions

Table 3 presents the descriptive statistics, Cronbach's alpha, and bivariate correlations between the five kinds of emotions. We were delighted that teachers had extremely high ratings on the two positive emotions. However, their ratings on the three negative emotions were all above three, the mid-point of a 5-point Likert scale, particularly for anxiety (Mean = 3.93, *SD* = 0.72). The skewness and kurtosis of the five emotions were all within -1 to +1, and thus the data could be treated as normally distributed (Kline, 2015). The Cronbach's alpha coefficients for the five emotions were all above or close to 0.70, the threshold level of internal reliability in L2 research (Dörnyei, 2007). In terms of the bivariate correlations, the two positive emotions positively related to each other, so did the three negative emotions. Notably, anxiety also positively and weakly related to contentment and cheerfulness, respectively.

Table 2

Factor loadings of the feedback-giving emotions scale from exploratory factor analysis

Item #	Contentment	Disappointment	Anxiety	Anger	Cheerfulness
Item 1					**0.854**
Item 2					**0.734**
Item 3	**0.810**				
Item 4	**0.876**				
Item 5	**0.881**				
Item 6	**0.697**				
Item 7	**0.752**				
Item 8			**0.818**		
Item 9			**0.577**		
Item 10			**0.897**		
Item 11		**0.650**			
Item 12		**0.897**			
Item 13		**0.971**			
Item 14				**0.560**	
Item 15				**1.000**	
Item 17				**0.525**	

Note. Factor loadings larger than .32 are displayed.

Table 3
Descriptive statistics, Cronbach's alpha, and bivariate correlations between the five emotions

	1	2	3	4	5
1. Contentment	–				
2. Cheerfulness	0.60*	–			
3. Disappointment	0.05	0.06	–		
4. Anxiety	0.25**	0.17**	0.42**	–	
5. Anger	-0.03	-0.01	0.59**	0.44**	–
Mean (*SD*)	4.27 (0.53)	4.06 (0.76)	3.53 (0.81)	3.93 (0.72)	3.09 (0.84)
Skewness (*SE*)	-0.77 (0.14)	-0.60 (0.14)	-0.34 (0.14)	-0.27 (0.14)	-0.15 (0.14)
Kurtosis (*SE*)	0.56 (0.29)	0.19 (0.29)	0.17 (0.29)	-0.58 (0.29)	-0.02 (0.29)
α	0.89	0.84	0.76	0.65	0.72

Note. * $p < .05$, ** $p < .01$.

LPA results

To address research question 2, we performed LPA to categorize teachers into different groups. Prior to the analysis, we first converted the raw scores of the five emotions into standardized Z scores, which were then used to identify the diverse patterns of teachers' emotions in providing feedback. The model-fit indices for 1- to 5-group models are displayed in Table 4. As expected, the absolute values of the LL, AIC, BIC, and ABIC decreased as the number of groups increased. We finally chose the 4-group model due to the following reasons. First, the LMRT and BLRT were both significant for the 4-group model, and thus this solution is better than the 3-group model. Second, while the LMRT and BLRT were also significant for the 5-group solution, there was only one participant for the fifth group. Third, the 4-group model had the highest entropy value (0.89), indicating the highest classification precision. The classification probabilities for the four groups were 0.95, 0.97, 0.89, and 0.93, respectively.

Table 4

Comparisons of models for latent groups

Group #	LL	AIC	BIC	ABIC	Entropy	LMRT	BLRT	Class size per group
1	-2040.767	4101.534	4138.164	4106.453				288
2	-1956.685	3945.369	4003.977	3953.239	0.698	0.0003	0.0000	132/156
3	-1896.297	3836.594	3917.179	3847.414	0.722	0.6466	0.0000	93/98/77
4	**-1850.558**	**3757.116**	**3859.679**	**3770.887**	**0.890**	**0.0228**	**0.0000**	**118/35/50/85**
5	-1811.519	3691.038	3815.578	3707.760	0.822	0.0000	0.0000	119/34/49/85/1

Note. LL = log-likelihood; AIC = Akaike information criterion; BIC = Bayesian information criterion; ABIC = sample size adjusted BIC; LMRT = Lo-Mendell-Rubin likelihood ratio test; BLRT = bootstrap likelihood ratio test.

The patterns of teachers' feedback-giving emotions are shown in Figure 1. Group 1 (N = 118, 40.97% of the total sample) was labeled as slight-positive-emotional teachers, as these teachers' standardized Z scores on the two positive emotions were slightly higher than zero (the mean of the whole sample) and the Z scores on the three negative emotions were slightly below zero. Group 2 (N = 35, 12.15%) was labeled as negative-emotional teachers whose Z scores on the negative emotions were slightly higher than zero. However, these teachers scored obviously low on the two positive emotions. Group 3 (N = 50, 17.36%) was labeled as positive-emotional teachers who scored high on positive emotions but low on negative emotions. Interestingly, group 4 (N = 85, 29.51%), constituting the second largest group in this study, had approximately the same levels of all five emotions and thus was labeled as mixed-emotional teachers. The means and standard deviations of the raw scores on the five emotions, as well as the Wald chi-square tests of group differences are displayed in Table 5. Notably, all four groups scored high on anxiety. It appeared that teachers' feeling of anxiety was ubiquitous in Chinese tertiary-level L2 writing education.

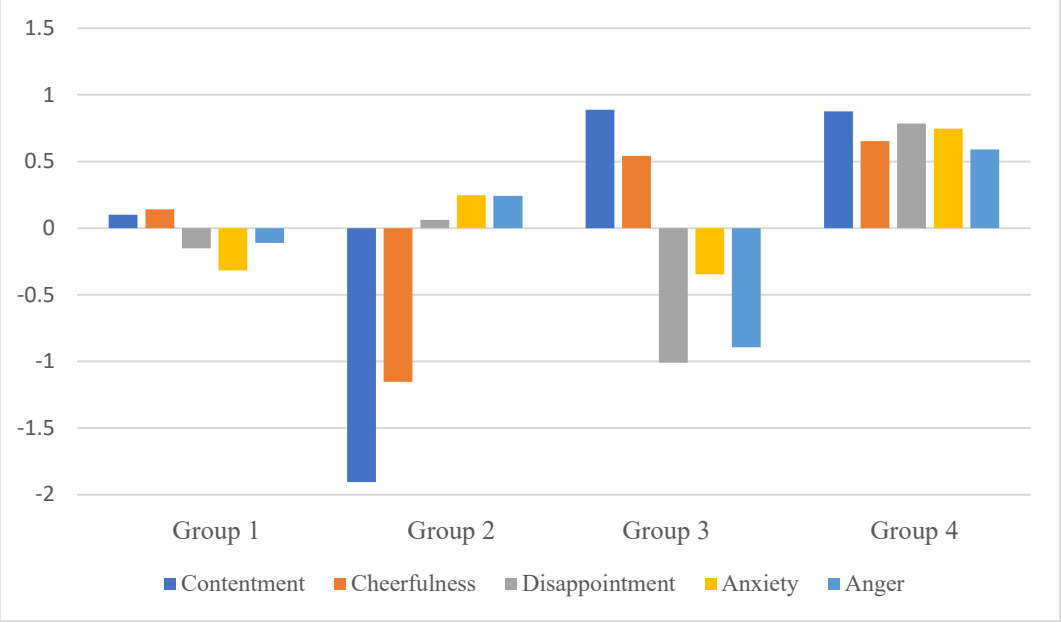

Figure 1. Patterns of feedback-giving emotions

Note. Standardized Z scores were used to classify teachers into different groups. Group 1= slight-positive-emotional teachers; Group 2 = negative-emotional teachers; Group 3 = positive-emotional teachers; Group 4 = mixed-emotional teachers.

Table 5

Comparisons of means between groups

Indicators	Group 1 Means (*SE*)	Group 2 Means (*SE*)	Group 3 Means (*SE*)	Group 4 Means (*SE*)	Wald chi-square tests results					
					Group 1 vs. 2	Group 1 vs. 3	Group 1 vs. 4	Group 2 vs. 3	Group 2 vs. 4	Group 3 vs. 4
Contentment	3.97 (0.03)	3.05 (0.10)	4.84 (0.03)	4.84 (0.02)	G1 > G2**	G1 < G3**	G1 < G4**	G2 < G3**	G2 < G4**	Not sig.
Cheerfulness	3.77 (0.05)	3.18 (0.13)	4.47 (0.10)	4.55 (0.07)	G1 > G2**	G1 < G3**	G1 < G4**	G2 < G3**	G2 < G4**	Not sig.
Disappointment	3.41 (0.07)	3.58 (0.13)	2.72 (0.14)	4.17 (0.08)	Not sig.	G1 > G3**	G1 < G4**	G2 > G3**	G2 < G4**	G3 < G4**
Anxiety	3.70 (0.06)	3.76 (0.13)	3.68 (0.13)	4.47 (0.07)	Not sig.	Not sig.	G1 < G4**	Not sig.	G2 < G4**	G3 < G4**
Anger	3.00 (0.08)	3.29 (0.18)	2.34 (0.12)	3.59 (0.09)	Not sig.	G1 > G3**	G1 < G4**	G2 > G3**	G2 < G4*	G3 < G4**

Note. Group 1= slight-positive-emotional teachers; Group 2 = negative-emotional teachers; Group 3 = positive-emotional teachers; Group 4 = mixed-emotional teachers.

*$p < .05$, **$p < .01$.

Finally, to address research question 3, we investigated the relationships between teachers' group memberships and the relevant demographic variables. We first examined the group differences in teaching experiences which were 17.65 (*SE* = 0.74), 15.92 (*SE* = 1.45), 16.18 (*SE* = 1.14), and 16.40 (*SE* = 0.93) years for the four groups, respectively. Wald chi-square tests reported no significant difference among the four groups: $\chi^2(3) = 2.09$, $p = 0.55$. In other words, all four groups of teachers, despite their diverse levels of emotions, had similar length of teaching experience. Using group 4 (mixed-emotional teachers) as the reference group, we then performed multinominal logistic regression to examine the predictive power of student background, institution prestige, and professional training experience on teachers' group memberships. As shown in Table 6, student background and institution prestige were not significant predictors. Professional training experience was only associated with the emotions of group 3 (positive-emotional teachers): $b = 0.665$ (*SE* = 0.308), $p < 0.05$, Odds ratio = 1.945. In other words, teachers with professional training experiences on L2 writing instruction were 1.945 times more likely than those without such experiences to be positive-emotional teachers (group 3) rather than mixed-emotional teachers (group 4). In summary, of the four demographic variables, only professional training experience had weak influence on teachers' group memberships in terms emotions in providing feedback on student writing.

Table 6
Group memberships predicted by student types, institution prestige, and professional training experience

Predictors	Group #	*b*	*SE*	*t*	*p*	Odds ratio
non-English major vs. English major	1	-0.374	0.317	-1.179	0.238	/
	2	-0.485	0.450	-1.077	0.281	/
	3	-0.624	0.434	-1.440	0.150	/
regular university vs. key university	1	0.426	0.341	1.250	0.211	/
	2	-0.398	0.566	-0.702	0.483	/
	3	0.459	0.461	0.994	0.320	/
non-training vs. training	1	0.49	0.307	1.594	0.11	/
	2	0.79	0.462	1.713	0.09	/
	3	0.665	0.308	2.159	0.031*	1.945

Note. Group 4 (mixed-emotional teachers) was treated as the reference group.

Discussion

Our preliminary analyses, encompassing descriptive statistics, Cronbach's alpha coefficients, and bivariate correlations, have substantiated the scale's reliability in assessing the emotions of teachers while offering feedback on student writing.The EFA and LPA results further provided answers to the three research questions. The results are discussed here in relation to existing literature.

The discrete categories of L2 writing teachers' emotions in giving feedback

The first research question asks about the constructs of teachers' emotions in giving feedback. We identified a five-factor structure in terms of teachers' emotions. Specifically, teachers can have five kinds of emotions (cheerfulness, contentment, anxiety, disappointment, and anger) in providing feedback on student writing. This discrete categorization is in line with the findings in the field of general education (e.g., Bahia et al., 2013; Chen, 2016; Frenzel et al., 2016; Trigwell, 2012), as well as in L2 writing education (Yu et al., 2021). Moreover, the richness in emotions also corroborates the argument that providing feedback is an activity that involves intensive emotional labor for L2 writing teachers (Loh & Liew, 2016). Different factors, such as students' academic performance, learning attitude, and work load, can stimulate teachers' diverse emotional reactions. Therefore, adopting the discrete approach "could enable us to further expand the definitions of various emotional status by situating them in the context of writing feedback" (Yu et al., 2021, pp. 2–3).

While the EFA results exhibit a stable structure of the scale, there are two items that are worth mentioning. Item 3, "I am happy that I have learned some new ideas from students when reviewing their writings", belongs to the subdimension of contentment according to the EFA results. However, the wording of this item suggests that it can also be part of the cheerfulness subdimension. Future research is needed to examine the affiliation of this item. Item 16, "I will easily get angry when my students showed bad attitudes in writing learning

(e.g., late submission of homework, careless handwriting, plagiarism, etc.)", concerns teachers' feeling of anger toward students' bad learning attitudes which has been widely documented in the literature (e.g., Hartney, 2007; Yu et al., 2021). Nevertheless, this item was excluded from subsequent analysis in this study because it cross-loaded on several factors at an absolute value of 0.32 or higher. Considering that the feeling of anger is ubiquitous in L2 writing education, we suggest future research still include item 16 and further explore its appropriateness in measuring teachers' emotions.

In terms of the overall levels of teacher' emotions, the mean scores of contentment and cheerfulness were obviously higher than those for the three kinds of negative emotions (Table 3). This indicates that Chinese university English writing teachers generally have higher levels of positive emotions in providing feedback on student writing. However, it should be noted that teachers tend to regulate their emotions (e.g., supress negative emotions) due to different reasons, such maintaining professional in teaching (Taxer & Gross, 2018). For instance, Geng et al. (2023) observed that Chinese L2 English writing teachers would disguise and restrain their negative emotions to avoid conflicts during instruction and interaction with students. This may be the reason why our participants scored relatively lower on the three negative emotions. Notably, the mean score of anxiety was the highest (3.93) among the three negative emotions. It appears that Chinese university English writing teachers feel pretty anxious about providing feedback on student writing (further discussed in the following section). While the descriptive statistics offer an overview of the issue, the LPA results further demonstrate the nuances of feedback-giving emotions among teachers from different groups.

The nuances of feedback-giving emotions

The second and third research questions concern the nuances in teachers' emotions and their relations to demographic variables. In this study, slight-positive-emotional (group 1)

teachers accounted for the largest group of the total sample (40.97%). Special attention should be given to this special group of teachers, as they had slight positive and negative emotions simultaneously (Figure 1). Conceivably, certain teachers will transfer between positive and negative emotions, as teacher emotions "continually arise and fluctuate as a result of everyday classroom transactions and interactions" (Agudo, 2018, p. 12). Positive-emotional teachers (group 3, 17.36%) constituted only a small group of the sample. This indicates that only a few Chinese university English writing teachers have obviously more pleasant emotions in evaluating student writing. Besides, negative-emotional teachers (group 2, 12.15%) had slightly high above the mean level of the three negative emotions, however, they scored obviously low on the two positive emotions. Providing feedback on student writing can be a time-consuming and labor-intensive task (Lee, 2003, 2008). Additionally, teachers may also have difficulties in providing effective feedback and in staying up-to-date with best practices for providing feedback (Yu, 2021), which can make it difficult for them to enjoy the process. Interestingly, approximately one-third of the participants were mixed-emotional teachers (group 4, 29.51%) who had approximately identical levels of all five kinds of emotions. The question arises as to whether these teachers truly enjoy the process of evaluating student writing, or if their positive emotions are outweighed by their negative emotions. More research is needed to provide in-depth understanding of this unique group of teachers.

A noteworthy finding is that, according to the raw scores in Table 5, all four groups reported high levels of anxiety. This can explain the positive correlations between cheerfulness and contentment and anxiety in descriptive statistics. A number of factors may contribute to the high-level anxiety experienced by all teachers when providing feedback on student writing. Teachers may feel overwhelmed by the amount of time they dedicate to providing feedback, as well as the amount of effort required to ensure that the feedback is meaningful and helpful (Brown et al., 2018; Lee, 2003; Loh & Liew, 2016; Yu et al., 2021).

Furthermore, teachers may be concerned about the accuracy of their feedback, as well as the potential for misinterpretation or misunderstanding. Given the high-level anxiety of all teachers, effective measures should be implemented to alleviate teachers anxious feelings (further discussed in the following section).

Finally, we observed that the majority of demographic variables, including student background, institution prestige, and teaching experience, bore no correlation to the group memberships of teachers in regards to the feedback-giving emotions. This may be attributed to the interactional nature of providing and receiving feedback. Teachers' emotions associated with providing feedback are influenced by their own individual dispositions and interactions with students (Farouk, 2012; Zembylas, 2003). For example, a teacher who is naturally more empathetic may be more likely to feel positive emotions when giving feedback, while a teacher who is more critical and has higher expectations on students' writing performance may be more likely to feel negative emotions (Yu et al., 2021). Besides, students' indifferent attitude to feedback may also elicit teachers' negative emotions (Hartney, 2007; Stough & Emmer, 1998). Over the years of teaching practices, these factors, all together, seem to play a more influential role in shaping teachers' emotions in providing feedback than the external demographic variables, such as student background and institution prestige. Only professional training experience had some minimal influence on teachers' group memberships. Teachers who possess professional training in writing instruction exhibit a higher probability of belonging to the category of positive-emotional teachers (group 3), as opposed to mixed-emotional teachers (group 4). This highlights the necessity of training on the professional development of writing teachers (Lee, 2008). Nevertheless, the associations between professional training and other groups were not evident in this study. This is probably because the regulation of emotions concerning feedback-giving has not been included in existing writing teacher training programs. Therefore, we propose the following practical

suggestions for writing teacher educators and policy makers based on the findings of this study.

Practical suggestions

Writing teacher educators and educational policy makers are suggested to provide teachers with the necessary resources and support to help them feel more confident and comfortable when providing feedback on student writing. First, given the small number of positive-emotional teachers, regulation of feedback-giving emotions should be included in writing teacher education curriculum. Teachers can be instructed about the nature and origins of different emotions associated with providing feedback on student writing. Additionally, strategies for regulating emotions can be introduced. For example, teachers are encouraged to lower their expectations on students' writing competence and uphold empathetic feelings to students. These measures have been found to decrease teachers' negative emotions, such as disappointment and anger (Yu et al., 2021). Besides, teachers can increase the portion of general praise and effort-related feedback, which can improve students' learning attitudes and bring about more joyful experiences for teachers (Hartney, 2007).

Second, in light of the shared, high-level anxiety, teachers should be encouraged to use complementary feedback sources, such as automatic writing evaluation (AWE) and peer feedback, to help them manage their workload more efficiently. AWE can provide timely feedback on student writing, thus providing a useful tool to reduce the burden of teachers' workload. While traditional AWE programs may occasionally provide problematic comments, Yao et al. (2021) argued that the integration of AWE and peer feedback can not only stimulate students' interest and engagement in writing learning, but also help them maintain a high-level study motivation. Therefore, school administrators can encourage the implementation of such novel, up-to-date technologies to lighten teacher' workload and anxiety. Moreover, teachers' sense of frustration may also be alleviated with the autonomy to choose various

feedback practices according to their discretions (Lee, 2008). This is likely to increase the effectiveness of teacher feedback and bring about positive influence on teachers' mentalities in the teaching profession.

Conclusion

Contextualized in tertiary education in China, we explored English writing teachers' emotions in providing feedback on student writing. This study contributes to the literature in two ways. First, we advance the research on L2 writing teacher emotions by developing an instrument for large-scale quantitative study. Future research may use this scale to investigate the relationships between teachers' feedback-giving emotions with other important variables, such as self-efficacy and language mindsets. Second, we confirm the complexity of teachers' emotions, especially the identification of a unique group of teachers (mixed-emotional teachers). Future quantitative research in this area should take into account this particular group of teachers.

Finally, in addition to the possible future research directions indicated in the Discussion section, there are at least three limitations that merit further investigation. First, we rely on teachers' self-report to collect data on their emotions, which may lead to the single-measure bias. Future research may adopt a mixed-method design and triangulate the quantitative measures with qualitative research findings. This can provide more in-depth findings concerning teachers' feelings in providing feedback, as well as the strategies to regulate the emotions. Second, this study is situated in the tertiary level education of mainland China in a collectivist culture and with its own institutional regulations. Teachers' interaction with the culture and school institutions can also shape their emotions (Zembylas, 2003). It is possible that L2 writing teachers from individualist societies, such as the U.S. and European countries, may have different emotional constructs or profiles. Future research may involve

participants with diverse cultural, educational, and institutional backgrounds to examine the similarities and differences in teachers' feedback-giving emotions across different contexts. Finally, to provide more robust construct validity evidence for the feedback-giving emotions scale, we should have divided the participants into two sub-groups and performed EFA and confirmatory factor analysis (CFA) with the two groups sequentially. However, as we only recruited 288 teachers for the present study, dividing the participants into two halves (i.e., 144 for each sub-group) may lead to unstable results for factor analyses of a 17-item scale. Future research in this regard should involve a large sample size to address this issue.

References

Agudo, J. D. D. M. (2018). Introduction and overview. In J. D. D. M. Agudo (Ed.), *Emotions in second language teaching. Theory, research and teacher education* (pp. 1–16). Springer.

Bahia, S., Freire, I., Amaral, A., & Teresa Estrela, M. (2013). The emotional dimension of teaching in a group of Portuguese teachers. *Teachers and Teaching*, *19*(3), 275–292. https://doi.org/10.1080/13540602.2012.754160

Benesch, S. (2018). Emotions as agency: Feeling rules, emotion labor, and English language teachers' decision-making. *System*, *79*, 60–69. https://doi.org/10.1016/j.system.2018.03.015

Brown, G. T., Gebril, A., Michaelides, M. P., & Remesal, A. (2018). Assessment as an emotional practice: Emotional challenges faced by L2 teachers within assessment. In J. D. D. M. Agudo (Ed.), *Emotions in second language teaching. Theory, research and teacher education* (pp. 205–222). Springer.

Buri´ c, I., & Frenzel, A. C. (2019). Teacher anger: New empirical insights using a multi-method approach. *Teaching and Teacher Education, 86*, Article 102895. https://doi.org/10.1016/j.tate.2019.102895

Chen, J. (2016). Understanding teacher emotions: The development of a teacher emotion inventory. *Teaching and Teacher Education, 55*, 68–77. https://doi.org/10.1016/j.tate.2016.01.001

Chen, J. (2019). Exploring the impact of teacher emotions on their approaches to teaching: A structural equation modelling approach. *The British Journal of Educational Psychology, 89*, 57–74. https://doi.org/10.1111/bjep.12220

Chen, J. (2020). Teacher emotions in their professional lives: implications for teacher development. *Asia-Pacific Journal of Teacher Education*, *48*(5), 491–507. https://doi.org/10.1080/1359866X.2019.1669139

Day, C., & Lee, J. (2011). *New Understandings of Teacher's Work: Emotions and Educational*. Springer.

Dewaele, J. M., & Li, C. (2020). Emotions in second language acquisition: A critical review and research agenda. *Foreign Language World*, *196*(1), 34–49. https://eprints.bbk.ac.uk/id/eprint/32797

Dörnyei, Z. (2007). *Research methods in applied linguistics: Qualitative, quantitative and mixed methodologies*. Oxford University Press.

Douglas Fir Group. (2016). A transdisciplinary framework for SLA in a multilingual world. *The Modern Language Journal*, *100*(S1), 19–47. https://doi.org/10.1111/modl.12301

Farouk, S. (2012). What can the self-conscious emotion of guilt tell us about primary school teachers' moral purpose and the relationships they have with their pupils? *Teachers and Teaching*, *18*(4), 491–507. https://doi.org/10.1080/13540602.2012.696049

Ferris, D. R. (2014). Responding to student writing: Teachers' philosophies and practices. *Assessing Writing*, *19*, 6-23. https://doi.org/10.1016/j.asw.2013.09.004

Ferris, D., Liu, H., & Rabie, B. (2011). The job of teaching writing: Teacher views of responding to student writing. *Writing and Pedagogy*, *3*(1), 39–77. https://doi.org/10.1558/wap.v3i1.39

Frenzel, A. C., Pekrun, R., Goetz, T., Daniels, L. M., Durksen, T. L., Becker-Kurz, B., & Klassen, R. M. (2016). Measuring teachers' enjoyment, anger, and anxiety: The Teacher Emotions Scales (TES). *Contemporary Educational Psychology*, *46*, 148–163. http://dx.doi.org/10.1016/j.cedpsych.2016.05.003

Gkonou, C., & Miller, E. R. (2021). An exploration of language teacher reflection, emotion labor, and emotional capital. *TESOL Quarterly*, *55*(1), 134–155. https://doi.org/10.1002/tesq.580

Guo, Y., Wang, W., Yao, Y., Yu, J., & Chen, Y. (2023). Measuring and profiling Chinese secondary school English teachers' language mindsets: An exploratory study of non-native teachers' perceived L2 proficiency loss. *IRAL–International Review of Applied Linguistics in Language Teaching*, 61(4), 1697–1723. https://doi.org/10.1515/iral-2022-0050

Geng, F., Yu, S., & Yuan, R. (Eric). (2023). Exploring L2 writing teachers' feeling rules, emotional labor and regulation strategies. *System, 119*, 103160. https://doi.org/10.1016/j.system.2023.103160

Hartney, E. (2007). Strategies for the management of lecturer stress in feedback tutorials. *Active Learning in Higher Education*, *8*(1), 79–96. https://doi.org/10.1177/1469787407074119

Hagenauer, G., & Volet, S. E. (2014). "I don't hide my feelings, even though I try to": Insight into teacher educator emotion display. *The Australian Educational Researcher*, *41*(3), 261–281. DOI 10.1007/s13384-013-0129-5

Hochschild, A. R. (1990). Ideology and emotion management: A perspective and path for future research. In T. Kemper (Ed.), *Research agendas in the sociology of emotions* (pp. 117–134). State University of New York Press.

Hyland, K., & Hyland, F. (2019). *Feedback in second language writing: Contexts and issues*. Cambridge university press.

Jolliffe, I. T. (1972). Discarding variables in a principal component analysis. I: Artificial data. *Journal of the Royal Statistical Society Series C: Applied Statistics, 21*(2), 160-173. https://doi.org/10.2307/2346488

Junqueira, L., & Payant, C. (2015). “I just want to do it right, but it's so hard”: A novice teacher's written feedback beliefs and practices. *Journal of Second Language Writing*, *27*, 19–36. https://doi.org/10.1016/j.jslw.2014.11.001

Kline, R. B. (2015). *Principles and practice of structural equation modeling*. Guilford publications.

Khong, T. D. H., & Saito, E. (2014). Challenges confronting teachers of English language learners. *Educational Review*, *66*(2), 210–225. https://doi.org/10.1080/00131911.2013.769425

Lee, I. (2003). L2 writing teachers’ perspectives, practices and problems regarding error feedback. *Assessing Writing*, *8*(3), 216–237. https://doi.org/10.1016/j.asw.2003.08.002

Lee, I. (2008). Understanding teachers’ written feedback practices in Hong Kong secondary classrooms. *Journal of Second Language Writing*, *17*(2), 69–85. https://doi.org/10.1016/j.jslw.2007.10.001

Li, M., & Reynolds, B. L. (2023). Academic emotions in giving genre-based peer feedback: an emotional intelligence perspective. *Applied Linguistics Review*, *14*(4), 993-1026. https://doi.org/10.1515/applirev-2020-0134

Loh, C. E., & Liew, W. M. (2016). Voices from the ground: The emotional labour of English teachers' work. *Teaching and Teacher Education*, *55*, 267–278. http://dx.doi.org/10.1016/j.tate.2016.01.016

Lubke, G., & Muthén, B. O. (2007). Performance of factor mixture models as a function of model size, covariate effects, and class-specific parameters. *Structural Equation Modeling: A Multidisciplinary Journal*, *14*(1), 26–47. https://doi.org/10.1080/10705510709336735

Mahfoodh, O. H. A. (2017). I feel disappointed": EFL university students' emotional responses towards teacher written feedback. *Assessing Writing, 31*, 53–72. https://doi.org/10.1016/j.asw.2016.07.001

Meyers, L. S., Gamst, G., & Guarino, A. J. (2016). *Applied multivariate research: Design and interpretation*. Sage publications.

Muthén, L. K., & Muthén, B. (2017). *Mplus user's guide: Statistical analysis with latent variables, user's guide*. Muthén & Muthén.

Nicol, D. (2010). From monologue to dialogue: improving written feedback processes in mass higher education. *Assessment & Evaluation in Higher Education*, *35*(5), 501–517. https://doi.org/10.1080/02602931003786559

Ryan, T., & Henderson, M. (2018). Feeling feedback: students' emotional responses to educator feedback. *Assessment & Evaluation in Higher Education*, *43*(6), 880–892. https://doi.org/10.1080/02602938.2017.1416456

Samier, E. A., & Schmidt, M. (2009). Editors' introduction. In E. A. Samier & M. Schmidt (Eds.), *Emotional dimensions of educational administration and Leadership* (pp. 1–17). Routledge.

Stough, L. M., & Emmer, E. T. (1998). Teachers' emotions and test feedback. *International Journal of Qualitative Studies in Education*, *11*(2), 341–361. https://doi.org/10.1080/095183998236809

Sutton, R. E., & Wheatley, K. F. (2003). Teachers' emotions and teaching: A review of the literature and directions for future research. *Educational Psychology Review, 15*(4), 327–358.

Tabachnick, B.G., & Fidell, L.S. (2001). *Using multivariate statistics* (4th ed.). Allyn and Bacon.

Tahmouresi, S., & Papi, M. (2021). Future selves, enjoyment and anxiety as predictors of L2 writing achievement. *Journal of Second Language Writing*, *53*, 100837. https://doi.org/10.1016/j.jslw.2021.100837

Taxer, J. L., & Gross, J. J. (2018). Emotion regulation in teachers: The "why" and "how". *Teaching and Teacher Education*, *74*, 180-189. https://doi.org/10.1016/j.tate.2018.05.008

Trigwell, K. (2012). Relations between teachers' emotions in teaching and their approaches to teaching in higher education. *Instructional Science, 40*(3), 607–621.

Värlander, S. (2008). The role of students' emotions in formal feedback situations. *Teaching in higher education*, *13*(2), 145–156. https://doi.org/10.1080/13562510801923195

Voerman, L., Korthagen, F. A., Meijer, P. C., & Simons, R. J. (2014). Feedback revisited: Adding perspectives based on positive psychology. Implications for theory and classroom practice. *Teaching and Teacher Education*, *43*, 91–98. http://dx.doi.org/10.1016/j.tate.2014.06.005

Yao, Y., Guo, N. S., Wang, W., & Yu, J. (2021a). Measuring Chinese Junior high school students' language mindsets: What can we learn from young EFL learners' beliefs in their language ability? *System. 101,* 102577. https://doi.org/10.1016/j.system.2021.102577

Yao, Y., Wang, W., & Yang, X. (2021b). Perceptions of the inclusion of Automatic Writing Evaluation in peer assessment on EFL writers' language mindsets and motivation: A short-term longitudinal study. *Assessing Writing, 50*, 100568. https://doi.org/10.1016/j.asw.2021.100568

Yu, S., Zhou, N., Zheng, Y., Zhang, L., Cao, H., & Li, X. (2019). Evaluating student motivation and engagement in the Chinese EFL writing context. *Studies in Educational Evaluation*, *62*, 129-141. https://doi.org/10.1016/j.stueduc.2019.06.002

Yu, S., Zheng, Y., Jiang, L., Liu, C., & Xu, Y. (2021). “I even feel annoyed and angry”: Teacher emotional experiences in giving feedback on student writing. *Assessing Writing*, *48*, 100528. https://doi.org/10.1016/j.asw.2021.100528

Yu, S. (2021). Feedback-giving practice for L2 writing teachers: Friend or foe? *Journal of Second Language Writing*, *52*, 100798. https://doi.org/10.1016/j.jslw.2021.100798

Zembylas, M. (2003). Emotions and teacher identity: A poststructural perspective. *Teachers and Teaching*, *9*(3), 213–238. https://doi.org/10.1080/13540600309378

Zhu, X., Guan, Y., & Yao, Y. (2022a). Transfer of ideal L1 and L2 writing selves and their impacts on L2 writing enjoyment and integrated writing performance. *Assessing Writing, 54*, 100674. https://doi.org/10.1016/j.asw.2022.100674

Zhu, W., Yu, S., & Zheng, Y. (2023). Exploring Chinese EFL undergraduates’ academic emotions in giving and receiving peer feedback on writing. *Assessment & Evaluation in Higher Education*, 1-17. https://doi.org/10.1080/02602938.2023.2235635

Zhu, X., Zhan, J., & Yao, Y. (2022b). A latent profile analysis of Chinese EFL learners’ enjoyment and anxiety in reading and writing: associations with imaginative capacity and story continuation writing performance. *International Review of Applied Linguistics in Language Teaching*. https://doi.org/10.1515/iral-2022-0105