Chian-Wen Kao, Barry Lee Reynolds* and (Mark) Feng Teng

What we need to know about student writers’ grammar learning and correction

https://doi.org/10.1515/applirev-2019-0016

Abstract: The question of whether grammar learning and correction is effective for second language writing development depends on students’ needs and tendency to study grammar. While the extent of the influence of grammar learning, grammar correction, and learner beliefs on second language writing for English as a second language settings and learners has been heavily debated, little of the research has considered the backgrounds and beliefs of English as a foreign language (EFL) learners. To explore factors that have influenced EFL students’ writing, the current study investigated beliefs regarding grammar learning and correction of 306 EFL students studying at universities of science and technology. An exploratory factor analysis was performed on questionnaire data gathered from the Taiwanese EFL student writers. The analysis uncovered four significant factors including (1) emphasis on the connection between grammar learning and writing, (2) positive attitude towards analyses of grammar rules, (3) positive attitude towards written correction, and (4) negative attitude towards oral correction. Qualitative data gathered through ten open-ended questions further indicated that EFL student writers welcomed teachers’ written correction of grammar errors especially when grammar correction was received for writing produced during writing tasks tailored to students’ future work-related needs. Pedagogical implications and future materials development for university of science and technology EFL student writers were discussed.

Keywords: EFL learner beliefs, grammar learning, grammar correction, second language writing, exploratory factor analysis

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1 Introduction

Writing has been regarded as the most difficult language skill because complicated mental processes (e.g. analysis, synthesis, and evaluation) are required for production (Kao and Yang 2011; Teng 2016, 2019; Tompkins 2004). Many English as a Foreign Language (EFL) learners enrolled in Taiwanese universities, including those studying for graduate degrees, struggle with writing even at the sentence level (Kao 2009, Kao 2010; Reynolds 2013, Reynolds 2015; Reynolds and Anderson 2015). The main reasons were due to the limited number of English courses offered in tertiary education and learners’ rare opportunities to write in English within those courses (Kao 2007; Reynolds 2013; Reynolds and Anderson 2015). Other difficulties included the lack of time provided for learners to read scholarly texts written in English before producing such texts (Reynolds 2015). Lack of time appeared to be even more prevalent in institutes of science and technology. Vocational education has focused more on instruction of subject-matter knowledge (i.e. English for Specific Purposes) rather than English language teaching. Reaching a balance between conveying professional content knowledge and teaching English, particularly English writing, was acknowledged as a challenging task for English teachers.

A common approach to learn writing is to follow and imitate writing patterns from textbooks without taking advantage of useful guidance, steps, or critical evaluation. A common situation in Taiwan involves students writing whatever they can about various topics assigned by teachers. Teachers, then correct and return the writings to students, and finally students copy and paste teachers’ comments and corrections into their revised essays. Learners may only memorize formulas and sentence patterns to possibly produce in their subsequent writings. Ways to learn or improve English writing were considered within the scope of passive learning and students had few opportunities to practice writing (Song 2001). A common situation observed in writing classrooms involved reminding students of grammar, vocabulary, and phrases, while they sit passively soaking up or ignoring entirely what was presented in class (Kao and Reynolds 2017). However, English writing development was determined to be important in business communication and related fields requiring communication between cultures, which was and remains to be a main learning focus in English for Specific Purposes education at institutes of science and technology in Taiwan (Hsu 2006). Although in some situations teachers might not find the marking of grammatical errors on the typed or written page an effective method for improving students’ grammatical accuracy (Reynolds and Anderson 2015), Wu (2003) investigated college students’ perceptions of English writing and...
instruction and found most students valued grammar learning and felt grammar correction aided their writing development better than other types of teacher feedback.

The role that grammar learning plays in learners’ second language acquisition process has been widely discussed in the literature (e.g. Corder 1967; Ellis 2003; Krashen 1985, inter alia). In early studies it was argued whether grammar learning should be meaning-focused or form-focused (Lightbown and Spada 1990; Swain 1993). In other words, grammar should be learnt in a writing task where students use languages or in a written exercise where students practice how language behaves. Later researchers have suggested that both meaning-focused and form-focused approaches should be adopted and adjusted according to students’ learning needs and tendency for learning grammar (Brown 2001; Celce-Murcia 2001; Larsen-Freeman 2000). The issue of grammar correction in second language writing instruction has been particularly controversial (Ferris 2010; Kao and Wible 2014; Truscott 2007) since Truscott (1996) strongly argued that grammar correction should be abandoned. A series of empirical studies have accordingly been undertaken to investigate the effects of both written and spoken modes of correction on students’ written accuracy and have yielded conflicting results (Bitchener and Knoch 2008; Bitchener et al. 2005; Ellis et al. 2008; Shintani and Ellis 2013; Yu and Cheng 2017). Ferris (1999) debated that regardless of what previous studies have shown, student writers would still like to receive grammar correction and believe correction to be an effective way to improve their written accuracy. Since many researchers believed that through understanding learners’ beliefs, teachers could facilitate learners’ foreign and second language learning (e.g. Dörnyei 2005), exploring how university students, especially those enrolled in science and technology universities, perceive grammar learning and correction of English writing (i.e. in what way they intend to learn grammar for writing and receive correction for writing improvement) was deemed worthwhile. This is because educational and often socio-economic backgrounds of science and technology university students are markedly different from their traditional university student counterparts (Calhoun and Finch 1982). While traditional university students have a secondary education that is tracked towards a future study and career path in either the humanities or sciences, those students destined for entering a university of science and technology have more often than not received a vocational secondary education that emphasized a skill-based curriculum aimed to prepare technician and trade workers for immediate entry into the workforce or as an alternative, continuation of higher education at a university of science and technology where their skills or trade learned at the secondary level will be mastered (Ritz 2009). Since there is more emphasis in vocational secondary schools on the acquisition of
skills and less on the acquisition of knowledge (Kao 2010), emphasis on competitive traditional university entrance exams and English learning is decreased. This dichotomization of secondary education results in university of science and technology students entering university with a lower general English language proficiency and having fostered a concept that English is a tool used sparingly to accomplish work duties.

The instructional setting was suggested as one of the influential variables in understanding learners’ beliefs about grammar learning and correction (Mackey and Goo 2007; Truscott 2004). Because the writing purposes learners intend to fulfill and the pedagogical contexts they are involved in are different, a distinction between second language settings and foreign language settings has been drawn to better understand learners’ beliefs about grammar learning and grammar correction (Hedgcock and Lefkowitz 1994). In foreign language settings, a language is learned in a linguistic community where the target language is not widely used while in second language settings, a language is learned in a linguistic community where the target language is widely used. Although a distinction between second and foreign language settings was established, little research in terms of learners’ beliefs about grammar learning and grammar correction has been conducted.

Since learners’ beliefs were considered an important variable in foreign and second language learning (Dörnyei 2005), several researchers deduced whether grammar learning and grammar correction is more effective in second or foreign language settings by gathering and analyzing data on learners’ attitudes or perspectives towards grammar learning and correction. Hedgcock and Lefkowitz (1994) claimed that grammar learning and grammar correction might be more effective in second language settings because second language learners would pay more attention to grammar correction than foreign language learners. Second language learners, unlike foreign language learners that often simply study English to satisfy classroom requirements, hope to improve their language accuracy and clarity to survive daily life in the target language culture or for enrolling in regular university classes after completion of an English as a Second Language program. Yao (2000), however, argued grammar learning and grammar correction might be more effective in foreign language settings, claiming that due to foreign language learners’ fear of repeating the same errors, they would consider grammar learning and correction as necessary in the classroom and would want to know where they have made errors and what errors they have made. Since previous researchers failed to conduct systematic investigations into learners’ beliefs about grammar learning and grammar correction, a factor analysis was conducted to uncover the attitudes toward grammar learning and correction in second language settings (Loewen et al. 2009). Loewen et al.
(2009) claimed that second language learners tend to hold a high regard for communicative language tasks, focus more on communicative competence than linguistic competence, and have a low preference for grammar feedback. Second language contexts, however, differ from foreign language contexts in respect to learning motivation and communicative purposes, among others. This study builds upon Loewen et al. (2009) by addressing the lack of research investigating the science and technology students’ beliefs regarding grammar learning and correction in an EFL context. The following research questions were posed to address the issue.

1. What factors influencing writing can be uncovered by examining EFL student writers’ beliefs about grammar learning and correction?
2. Which of these factors was found to be most valued?
3. What statements do EFL learners provide about grammar learning and correction?

2 Method

The purpose of the current study was to investigate EFL writers’ beliefs about grammar learning and grammar correction. How the research questions above are addressed is elaborated on in the following sub-sections: research participants, research instruments, research procedure, and data analysis.

2.1 Research participants

The 306 college juniors (228 females, 78 males) from northern Taiwan that participated in the current study were recruited from basic level English grammar or writing classes taught at two universities of science and technology \( n = 240 \) public university; \( n = 66 \) private university). All research participants were from a department of applied foreign language majoring in English. The unequal number of males and females is representative of the ratio enrolled in language studies at such universities.

A total of 12 students were randomly selected to reflect on their learning experiences and attitudes towards grammar learning and correction. Some prompts were prepared for the learners to reflect on (see the research instruments section). They were requested to return their reflection reports, and indicated these reports represented their inner feelings.
2.2 Research instruments

A 24-item questionnaire was developed and revised based on Loewen et al. (2009). Among the 24 questionnaire items, 11 items were designed to investigate students’ beliefs about grammar learning; six items were designed to analyze students’ preferences towards grammar corrections; and seven items were designed to explore the relationship between grammar learning and written communication. The questionnaire used for the current study was developed to evaluate students’ beliefs about grammar learning and grammar correction using a Likert Scale from 1 to 5 (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree). A Chinese translation of the questionnaire was used to ensure participants’ full understanding of included items. In addition, the Chinese version of the questionnaire was checked for local usage by two native Chinese-speaking professors in the field of English teaching. After designing the questionnaire, the researchers conducted a pilot study to obtain revision suggestions from 249 potential participants who had already received several years of English writing instruction. After piloting the questionnaire, five questionnaire items were removed due to respondents’ questioning about their irrelevance to the research issue investigated, and 19 questionnaire items were consequently retained (see the results section). Some redundant statements which might hinder respondents’ perceptions were revised.

The qualitative section contained 10 open-ended questions forming a reflection survey. The 10 open-ended questions were developed according to the statistical outcomes from the questionnaire, to gather detailed data to aid in understanding learners’ beliefs and preferences about how to learn grammar and how to have their grammar corrected. Among the 10 questions, four questions were designed to understand students’ likes and dislikes about grammar learning and instruction; two questions were designed to investigate students’ likes and dislikes about grammar corrections; and four questions were designed to explore the importance and beliefs of grammar learning in writing. The 12 students were requested to answer each of the questions. The qualitative reflection survey contained the following open-ended prompts: “I like studying grammar because ... ”, “I don’t like studying grammar because ... ”, “I think studying grammar is important for writing because ... ”, “I don’t think studying grammar is important for writing because ... ”, “I like to be taught grammar in the following ways because ... ”, “I don’t like to be taught grammar in the following ways because ... ”, “I like my writing to be corrected in the following ways because ... ”, “I don’t like writing to be corrected in the following ways because ... ”, “I have some anecdotes to share during the process of learning...”
grammar and how to write, for example ... “I have some comments on the way that the teachers teach us grammar and writing, for example ... ”.

2.3 Research procedure

The researchers gained professors’ and learners’ permission to administer the questionnaire at two universities of science and technology in northern Taiwan. Data were collected during English grammar or writing courses in the middle of Fall Semester of 2014. Students who were reluctant to participate in the study had the right to not fill out the questionnaire. Students that agreed to participate were requested to select a response (1, 2, 3, 4, or 5) that indicated how strongly they agreed or disagreed with each of the item statements. After collecting students’ responses to the questionnaire items regarding their beliefs about grammar learning and grammar correction, the researchers averaged students’ scores of overall beliefs. Data obtained from the open-ended questions was analyzed independently by the three researchers and then results were collectively refined. The independent data coding occurred in three cycles (see 2.4 Data analysis).

2.4 Data analysis

This study adopted an exploratory factor analysis to examine EFL writers’ beliefs about grammar learning and grammar correction. The exploratory factor analysis was chosen because it is unlikely to presume what, and how many, factors might underlie EFL learners’ beliefs about grammar learning and error correction. The 306 questionnaires were administered to EFL students at two universities of science and technology. DeVellis (2003) asserted that the sample size for factor analysis should be at least 300. Therefore, the sample size in the current study satisfied the criteria. Exploratory factor analysis and Cronbach’s α reliability analysis was performed to ensure the construct of students’ beliefs about grammar learning and grammar correction. Furthermore, a repeated measures one-way ANOVA was used to investigate which beliefs (i.e. factors) EFL writers valued the most.

Content analysis was used to code learners’ written responses. The written responses were read, re-read, and coded by the researchers. A conventional three-step coding process was carried out following Miles et al. (2014). During the first stage, open coding, researchers read and re-read the transcription to compare data and continually ask questions about what was or was not
understood. Next, various categories, properties, and dimensions within as well as among the data were identified in a systematic manner. During the second stage, axial coding took place, through which the data was pieced together in alternative ways after open coding to allow for connections between categories previously established. During the last phase of coding, selective coding, a complete picture of the information obtained during the data collection process was established. Finally, the researchers grouped the responses on a more conceptual level and used general themes from the data. The results from the qualitative data analysis were used to support and explain the findings from the exploratory factor analysis.

3 Results

In this section, statistical analyses and results are reported to address the questions raised by the current study, including the construct of EFL writers’ beliefs (i.e. factors) about grammar learning and grammar correction as well as the comparison among the extracted beliefs (i.e. factors).

3.1 Quantitative results

3.1.1 The construct of EFL writers’ beliefs about grammar learning and grammar correction

Item analysis was first conducted to ensure whether the questionnaire items were effective in indicating differences between strong and weak respondents. Because the questionnaire was designed based on a Likert scale, critical ration was adopted as a criterion of identification for item analysis (Wang 2002). As shown in Table 1, a significant difference between strong and weak respondents in terms of their item means was found. This means the test items were effective in distinguishing between strong and weak respondents.

An exploratory factorial analysis was run to understand EFL writers’ beliefs about grammar learning and grammar correction. Before the factor analysis is run, data should be evaluated to determine whether it is suitable for factor analysis. The results of this analysis showed a KMO of 0.932 and Bartlett’s test of Sphericity reached a significant level. This means the data collected for the current study was suitable for the factor analysis (Kaiser 1974). In the factor analysis, the method of Principal Component was used for factor extraction and
<table>
<thead>
<tr>
<th>Items</th>
<th>$F$</th>
<th>$p$</th>
<th>$T$</th>
<th>$p$ (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>01. Understanding grammar rules facilitates English written communication.</td>
<td>98.528</td>
<td>0.000</td>
<td>12.121</td>
<td>0.000</td>
</tr>
<tr>
<td>02. When I encounter grammar problems in English writing activities, teachers' explanations of grammar rules help me solve the problems.</td>
<td>93.914</td>
<td>0.000</td>
<td>13.633</td>
<td>0.000</td>
</tr>
<tr>
<td>03. Studying English grammar helps improve English writing.</td>
<td>73.964</td>
<td>0.000</td>
<td>15.510</td>
<td>0.000</td>
</tr>
<tr>
<td>04. I would like my English writing teachers to explain grammar rules to me.</td>
<td>5.573</td>
<td>0.019</td>
<td>14.275</td>
<td>0.000</td>
</tr>
<tr>
<td>05. The knowledge of English grammar helps understand other writers' English.</td>
<td>57.524</td>
<td>0.000</td>
<td>13.046</td>
<td>0.000</td>
</tr>
<tr>
<td>06. There should be more lessons about grammar rules in English writing courses.</td>
<td>7.439</td>
<td>0.007</td>
<td>15.527</td>
<td>0.000</td>
</tr>
<tr>
<td>07. One of the methods to improve English writing is to increase grammar knowledge.</td>
<td>38.709</td>
<td>0.000</td>
<td>16.148</td>
<td>0.000</td>
</tr>
<tr>
<td>08. If I write accurately in English, I will receive more respects.</td>
<td>0.045</td>
<td>0.832</td>
<td>9.834</td>
<td>0.000</td>
</tr>
<tr>
<td>09. To master English writing, it is essential to study English grammar rules.</td>
<td>36.665</td>
<td>0.000</td>
<td>18.088</td>
<td>0.000</td>
</tr>
<tr>
<td>10. If I study English grammar rules hard, my English writing will improve a lot.</td>
<td>5.335</td>
<td>0.022</td>
<td>15.809</td>
<td>0.000</td>
</tr>
<tr>
<td>11. I like to study English grammar rules.</td>
<td>0.302</td>
<td>0.584</td>
<td>13.181</td>
<td>0.000</td>
</tr>
<tr>
<td>12. I will keep English grammar rules in mind while writing.</td>
<td>0.103</td>
<td>0.748</td>
<td>14.637</td>
<td>0.000</td>
</tr>
<tr>
<td>13. While I am reading other writers' English sentences, I try to find out the rules.</td>
<td>3.946</td>
<td>0.049</td>
<td>13.061</td>
<td>0.000</td>
</tr>
<tr>
<td>14. Understanding many English grammar rules facilitates my writing.</td>
<td>25.790</td>
<td>0.000</td>
<td>16.542</td>
<td>0.000</td>
</tr>
<tr>
<td>15. When I have grammar errors in English writing, I would like my classmates to correct me.</td>
<td>0.493</td>
<td>0.484</td>
<td>11.453</td>
<td>0.000</td>
</tr>
<tr>
<td>16. When I have grammar errors in English writing, I would like my teacher to correct me.</td>
<td>14.670</td>
<td>0.000</td>
<td>14.831</td>
<td>0.000</td>
</tr>
<tr>
<td>17. When I have English grammar errors during the discussion of writing classes, teachers should not correct me.</td>
<td>1.565</td>
<td>0.213</td>
<td>5.615</td>
<td>0.000</td>
</tr>
<tr>
<td>18. I do not like my classmates to correct me when I have English grammar errors during the discussion of writing classes.</td>
<td>0.003</td>
<td>0.003</td>
<td>5.198</td>
<td>0.000</td>
</tr>
<tr>
<td>19. In group writing, I like my group members to correct my grammar errors.</td>
<td>0.026</td>
<td>0.026</td>
<td>9.461</td>
<td>0.000</td>
</tr>
</tbody>
</table>
the method of Varimax was used for factor rotation. After the first factor analysis, one question item (i.e. question number 8) was deleted and four factors were found. According to Tabachnick and Fidell (2007), the acceptable loading for each factor should be between 0.32 and 0.71 and factors should be able to explain more than 50% of the variance observed in the variable(s). The four factors extracted in this study can explain 67.022% of variance in terms of EFL writers’ beliefs about grammar learning and grammar correction, and the loading of the factors were all within the acceptable range. After discussion of the four extracted factors with two research colleagues, the first factor was named “emphasis on the connection between grammar learning and writing”; the second factor, “positive attitude towards the analysis of grammar rules”; the third factor, “positive attitude towards written correction” and the fourth factor, “negative attitude towards oral correction” (see Table 2). The four extracted factors above can be described as follows.

1) Emphasis on the connection between grammar learning and writing: EFL learners tend to believe that the more grammatical knowledge they acquire, the better writing skills they would develop.

2) Positive attitude towards the analysis of grammar rules: EFL learners tend to believe that analyzing grammar rules facilitates the development of second language literacy.

3) Positive attitude towards written correction: EFL learners are willing to have their grammatical errors corrected by teachers or counterparts while they are writing essays.

4) Negative attitude towards oral correction: EFL learners are unwilling to have their grammatical errors corrected by teachers or counterparts while they are discussing how to write essays.

Table 2: Summary table of factor analysis (n = 306).

<table>
<thead>
<tr>
<th>Items</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
<th>Factor 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>03. Studying English grammar helps improve English writing.</td>
<td>0.764</td>
<td>0.320</td>
<td>0.174</td>
<td>-0.104</td>
</tr>
<tr>
<td>05. The knowledge of English grammar helps understand other writers' English.</td>
<td>0.751</td>
<td>0.223</td>
<td>0.244</td>
<td>-0.080</td>
</tr>
<tr>
<td>01. Understanding grammar rules facilitates English written communication.</td>
<td>0.743</td>
<td>0.179</td>
<td>0.246</td>
<td>-0.120</td>
</tr>
<tr>
<td>02. When I encounter grammar problems in English writing activities, teachers’ explanations of grammar rules help me solve the problems.</td>
<td>0.732</td>
<td>0.230</td>
<td>0.273</td>
<td>-0.135</td>
</tr>
</tbody>
</table>

(continued)
Table 2: (continued)

<table>
<thead>
<tr>
<th>Items</th>
<th>Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>After the factor analysis, reliability analysis was performed to</td>
<td>0.727</td>
</tr>
<tr>
<td>ensure the reliability of the extracted factors. According to Field</td>
<td>0.704</td>
</tr>
<tr>
<td>and Nunnally (1978), the reliability coefficient should be greater</td>
<td>0.674</td>
</tr>
<tr>
<td>than 0.7 for the data to be considered reliable. The Cronbach’s α</td>
<td>0.673</td>
</tr>
<tr>
<td>was calculated to measure the reliability of the four</td>
<td>0.659</td>
</tr>
<tr>
<td>factors.</td>
<td>0.581</td>
</tr>
<tr>
<td></td>
<td>0.388</td>
</tr>
<tr>
<td></td>
<td>0.307</td>
</tr>
<tr>
<td></td>
<td>0.380</td>
</tr>
<tr>
<td></td>
<td>0.290</td>
</tr>
<tr>
<td></td>
<td>0.411</td>
</tr>
<tr>
<td></td>
<td>0.261</td>
</tr>
<tr>
<td></td>
<td>−0.009</td>
</tr>
<tr>
<td></td>
<td>−0.194</td>
</tr>
<tr>
<td>Eigenvalues</td>
<td>9.395</td>
</tr>
<tr>
<td>% of variance</td>
<td>31.606</td>
</tr>
<tr>
<td>Cumulative %</td>
<td>31.606</td>
</tr>
</tbody>
</table>

After the factor analysis, reliability analysis was performed to ensure the reliability of the extracted factors. According to Field (2005) and Nunnally (1978), the reliability coefficient should be greater than 0.7 for the data to be considered reliable. The Cronbach’s α was calculated to measure the reliability of the four
factors extracted in the current study. It was found that the four reliability coefficients for these factors were greater than 0.7 (see Table 3).

Table 3: Summary table of reliability analysis.

<table>
<thead>
<tr>
<th>Beliefs</th>
<th>Cronbach’s α</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emphasis on the connection between grammar learning and writing</td>
<td>0.948</td>
</tr>
<tr>
<td>Positive attitude towards the analysis of grammar rules</td>
<td>0.838</td>
</tr>
<tr>
<td>Positive attitude towards written correction</td>
<td>0.862</td>
</tr>
<tr>
<td>Negative attitude towards oral correction</td>
<td>0.802</td>
</tr>
</tbody>
</table>

By conducting a systematic study into EFL writers’ beliefs of grammar learning and correction, the current study uncovered four factors. They are: (1) emphasis on the connection between grammar learning and writing, (2) positive attitude towards the analysis of grammar rules, (3) positive attitude towards written correction and (4) negative attitude towards oral correction. Different from Loewen et al. (2009), who found English as a second language (ESL) student writers generally had a negative attitude towards error correction, data analyzed in the current study indicated EFL student writers tended to have a positive attitude towards written correction and a negative attitude towards oral correction. Since error correction might hinder language fluency, the gap between Loewen et al.’s and the finding in the present study could be explained by ESL students’ preferences for fluency over accuracy as well as EFL students’ greater priority over accuracy in written communication. The “positive attitude towards written correction” factor might lend support to Ferris’s (1999) claim that students prefer and trust teachers’ correction because they need the correction to self-edit or revise their writing to encourage future writing improvement.

3.1.2 The comparison among the extracted beliefs

In order to determine which beliefs (i.e. factors) the EFL writers valued the most, a repeated measures one-way ANOVA was run to compare mean scores among the four extracted factors (See Table 4). Since the questionnaire items targeting a negative attitude towards oral correction were negatively worded, it was necessary to reverse the scores for these items before running the ANOVA. The results yielded statistically significant differences among the four extracted factors ($F = 60.381$, $p < 0.0001$). Among the four factors, learners valued the connection between grammar learning
and writing \((M = 4.06; \ SD = 0.80)\) the most and the analysis of grammar rules \((M = 3.32; \ SD = 0.91)\) the least. In addition, no significant difference was found between positive attitude towards written correction \((M = 3.81; \ SD = 0.83)\) and negative attitude towards oral correction \((M = 3.74; \ SD = 0.97)\).

The repeated-measures one-way ANOVA showed that the EFL writers tended to value learning contexts that encouraged or emphasized a connection between grammar learning and English writing the most. In addition, results indicated that the EFL writers valued the analyses of grammar rules the least. After all, the participants in the current study are from universities of science and technology whose educational purpose is to develop students’ English proficiency in the workplace. They might be more responsive to writing courses which are practical or useful to their future jobs.

### 3.2 Qualitative results

#### 3.2.1 I believe grammar corrections can improve my writing

The results from the reflection survey demonstrated that students perceived there is a connection between grammar and writing. For example, one student writer responded, “In my English learning process, I found my grammar is quite poor, so I might produce some sentences which are ‘understandable’ to me but look weird to native speakers of English.” Another student reported, “Writing is composed of sentences without grammatical mistakes.” Hence, it is not surprising that the EFL student writers believed in the effectiveness of grammar corrections for writing. They believed that the corrections they received would better their future writing performance related to realistic written communication. Common responses

<table>
<thead>
<tr>
<th>Source of variance</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>(\eta^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>17048.642</td>
<td>1.000</td>
<td>17048.642</td>
<td>10275.541**</td>
<td>0.971</td>
</tr>
<tr>
<td>Within (error)</td>
<td>506.040</td>
<td>305.000</td>
<td>1.659</td>
<td>60.381**</td>
<td></td>
</tr>
<tr>
<td>Within</td>
<td>86.860</td>
<td>2.153</td>
<td>40.345</td>
<td>Post hoc comparison: a &gt; b;</td>
<td></td>
</tr>
<tr>
<td>Residual</td>
<td>438.752</td>
<td>656.642</td>
<td>0.668</td>
<td>a &gt; c; a &gt; d; c &gt; b; d &gt; b</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>18080.294</td>
<td>964.795</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: ** \(p < 0.01\); a = Emphasis on the connection between grammar learning and writing; b = Positive attitude towards the analysis of grammar rules; c = Positive attitude towards written correction; d = Negative attitude towards oral correction.
included: “I believe corrections can help improve my writing ability. If one day I apply for jobs and need to submit a resume, I think my resume will be readable”, “English is not my language. I learned grammar to create a sentence, then I need grammar instruction to help me write a passage.”, and “My teacher always corrects grammatical mistakes in my writing. So, I believe that if I can learn more about grammar, my writing would be better.”

3.2.2 I need teacher and peer corrections

Further analysis revealed a theme indicating that EFL student writers felt they needed teacher and peer corrections. The EFL students conceded their dearth of grammar knowledge and claimed they needed corrections to avoid errors which might be repeated in the future. Exemplary statements included: “I think corrections could allow me to recall the errors I made in writing, force me to notice certain language usages and warn me not to make the same errors again.”, “When I am not confident in my language usage, it is not a bad idea to have a classmate, who is better than me, to correct my errors.”, “Maybe sometimes, you’ll feel uncomfortable when you are corrected by your classmates, but in the different way, it’s a good method to make you better.”, “I believe in the effectiveness of grammar corrections because I firmly believe my teacher’s grammar competence is much better than mine.”, “The teacher only teaches grammar again and again in the class, and after instruction, the teacher would expect you to figure out for the most part on your own. I got bored of this method. We need team work.”, and “Interactive team work, e.g. practicing out loud with the class or in a small group, can help me better notice grammar errors.”

3.2.3 Learning grammar is tedious, tiring, and powerless

When asked to complete the phrase “I don’t like studying grammar because … ”, nine learners expressed negative comments. Negative words included “boring”, “repetitive”, “monotonous”, “tired”, “powerless”, “dry”, “confusing”, “difficult to memorize”, and “complex”. For example, one learner said, “I have learned English for many years. I still find the grammar rules complex.” Another learner also reported, “Studying grammar is time-consuming. I spent a lot of time on it, but I still found it difficult to memorize.” When exploring the reasons behind this phenomenon, one student reported, “I think I don’t have the gift for learning English, including grammar.” Some learners reacted negatively to various aspects of studying grammar. For example, one student said, “I put
my time and energy into memorizing the numerous rules. I still cannot remem-
ber it well, let alone using it. I feel powerless.” Another student added, “I seem
to have known all the grammar rules but when combining them together, they
all become very confused to me.” Other negative comments included: “It is
tedious to learn grammar because we only learn it for tests.”, “I think teachers
should correct my grammar errors in my writings, but they should not grade us
according to the scores.”, and “I recite, I forget, what is the point?”

3.2.4 I want a different method in grammar instruction and correction

When asked to complete the phrase “I like to be taught grammar in the follow-
ing ways because … ”, and “I don’t like to be taught grammar in the following
ways because … ”, one theme that emerged indicated students desired for
grammar to be taught in a different way. For example, some expressed that
grammar should be taught with a connection to real life conversation. Examples
included: “It would be easier for me to memorize English grammar through
practicing with speaking.”, “The teaching of grammar should be taught consid-
ering how we can use it in the Taiwan context.”, and “I hate memorizing the
grammar rules again and again. The teacher just gave us a list of grammar rules
for us to memorize, but we never knew how to use it in speaking.” Participants
also mentioned the importance of reading in grammar learning. For example,
“Reading can help us know more about grammar rules. I think we memorize too
many grammar rules without figuring out what they mean in a text.” Other
methods mentioned included: “game”, “English song”, “watching English mov-
ies”, “interactive teamwork between teacher and students”, and “going abroad
for study”. When asked how they would like their grammar to be corrected, a
common theme among participants was wanting their errors to be corrected in a
written way rather than orally. Responses included “When the teacher corrects
and explains what is wrong in my writing, I won’t forget them because I can
review them.”, “I got used to reading written feedback.”, “I don’t like the teacher
to correct my errors while I am writing.”, and “It is difficult for me to understand
what the teacher has said. If he or she corrects my errors orally, I soon forget
what the teacher has said.”

3.2.5 I have a different voice toward the instruction of writing and grammar

When asked for comments on the teaching and learning of writing and grammar
instruction, comments included: “I think teachers should instruct genres of
relevant writing to us rather than mere instruction of grammar.”, “I think teachers should help us know how to self-edit our writing rather than correct all the errors for us”, “Sometimes I would monitor and evaluate my writing, but I lack sufficient knowledge for doing this, not only in the classroom but also outside the classroom”, and “I think the type of writings should be relevant to my future work.” The learners appeared to believe that the instruction of writing and grammar should not be performed in the traditional way. They desired something new. For example, they pointed out that when the teacher marked the grammatical errors rather than corrected them, this would encourage them to figure out what was incorrect in their writing. They also expressed a need for help with noticing different error types.

4 Discussion

Four major findings were concluded from the quantitative data in the current study. The first finding was that EFL student writers held a positive attitude towards written correction. EFL learners’ positive attitude toward written correction suggests that students need teacher corrections for future writing improvements (Ferris 1999; Reynolds 2016). Another possible reason might be because EFL teachers tend to focus more on linguistic forms than English as a second language teachers (Sheen 2004). In fact, this is the normal teaching practice in secondary schools in Taiwan. The focus on the teaching of grammar and a modified product approach to writing is argued as a necessity by many secondary English teachers due to the amount of pressure that the teachers are under to prepare the students for university entrance exams that contain an English component that relies heavily on gauging students’ grammatical knowledge. Students have thus become accustomed to receiving written corrective feedback on their writing in secondary schools and have found such an approach more comfortable. For instance, Liao and Wang (2009) found 371 high school students wished for teachers to provide both oral and written corrective feedback for their grammar errors. However, the students recruited for their study were from very diverse backgrounds, so it is difficult to judge whether the results of their study are comparable to the student population from which the current study’s participants were recruited. Future research should aim to uncover secondary level EFL students’ perceptions of written and oral correction, especially those coming from a similar background as those targeted in the current study. Still, students might take it for granted and assume that teachers should correct all student errors and consider it as a necessary part of writing instruction (Reynolds 2016).
The second finding was that EFL student writers held a negative attitude towards oral correction. This negative attitude might be due to their fear of losing face in front of their peers (Lyster and Saito 2010). Although previous research indicated that EFL writers could be categorized as either high-anxiety learners or low-anxiety learners, Zhang and Rahimi (2014) found anxiety level to have no significant effect on learners’ acceptance of oral corrective feedback in oral communication courses when students were informed of the reasons why teachers wished to provide oral corrective feedback. Although the current study differed from Zhang and Rahimi’s study as the current study concerned oral feedback regarding written grammatical errors, some parallels could be drawn from the results of both studies. Thus, while deciding whether student errors should be corrected in classrooms, teachers might need to take their affective filters into consideration. Correcting students’ errors in public might increase the affective filter and inhibit language acquisition (Martínez 2013). Results indicated that teachers should provide explanations to learners about why the oral corrective feedback would be given and how it would benefit students’ language learning. One method for getting students used to receiving oral corrective feedback was to provide oral feedback to the entire class (Nation 2009). For example, a teacher would gain permission from two to three low-anxiety language learners to project their writing to the entire class and then the teacher would go through their writings providing written corrective feedback and asking questions to the student writers when necessary. Not only would the writers of the essays benefit from such feedback sessions but also the other learners in the class would benefit from the opportunity to compare their writing errors with those of their classmates as well, especially in EFL settings. This type of approach requires the recruitment of low-anxiety language learners and teachers are reminded to provide lots of positive reinforcement for the good points found in the writing. Another possible explanation for the negative attitudes toward oral corrections could be that EFL writers tend to be visual or print-oriented learners because they are accustomed to paper and pencil language learning tasks. Although research has shown that Taiwanese students valued classroom interaction, the same students were often observed to not take part in such in-class participation (Hsu 2015). When further scrutinized, in-class oral participation was found to correlate to students’ course grades and listening abilities, further indicating that students might feel more comfortable communicating orally about a subject they are familiar with, especially when their English listening abilities are strong. Students from universities of science and technology, on the other hand, tend to possess poorer English abilities and may be less inclined to participate. In fact, these “text-oriented” learners rely on texts for most language input (Wible 2008). In such a situation, they may also feel
more comfortable with text-oriented corrections of their language production. Moreover, research has revealed students professed a positive attitude towards focused grammatical feedback that was given by the teacher and later discussed during one-on-one conferencing during regular classroom time (Reynolds 2016). Thus, for teachers that wish to incorporate oral corrective feedback, they may consider one-on-one individual five-minute “conferencing” sessions with students targeting one or two error types that students has previously received instruction (Reynolds 2016). Reynolds (2016) also found a difference in attitude towards error correction depending on whether it was from the teacher administering the corrective feedback or the students self-editing and correcting their writing. Specifically, students responded very positively to activities in which they were taught specific grammar rules from their textbooks and then asked to apply those grammar rules in academic writing that they knew would later receive focused written corrective feedback. However, students felt strong negative emotions towards application of language features of English that were not taught, explained, or provided with feedback by the teacher. In that study, Reynolds (2016) found students responded positively only to oral corrective feedback that was provided one-on-one about the grammar features targeted in the writing class. Nation (2009) also reminded teachers that good conferencing was often the result of a teacher that had prepared the student by providing a list of questions that would be considered during the conferencing session or what topics could be expected to be covered during the conferencing session. Such conferencing allows the teacher to provide comments on both the strengths and weaknesses of the learners’ writings. Hence, learning styles should be considered as well when teachers provide oral correction. Determining the appropriate method for teachers to administer feedback can be done through a quickly administered and analyzed qualitative/quantitative questionnaire at the beginning of second language writing courses (Callahan-Caudill 2015). Posing questions directly to the second language writers that will receive said feedback was found to be one of the most direct methods for determining the type, quantity, and quality of feedback that was most effective for students (Callahan-Caudill 2015).

The third major finding indicated students possess a positive attitude towards the analysis of grammar rules. The role of grammar rules in second language acquisition development has previously been debated. Truscott (1998) criticized Schmidt’s (1990) noticing hypothesis, arguing that students’ noticing grammar rules does not guarantee their acquisition of language competence. Nevertheless, empirical studies indicated that students who received feedback with grammar explanations improved more in their accuracy of certain grammatical usages in their subsequent writing tasks in terms of both short-term and
long-term learning effects (Bitchener 2008; Bitchener and Knoch 2008; Sheen 2007). These findings disclosed the significance of meta-linguistic knowledge in students’ acquisition of language competence. The Taiwanese students recruited for the current study were majoring in English, Applied English, and Applied Languages at universities of science and technology and thus may not possess a level of English equal to the level found at more traditional universities that focus on literary English or the teaching of English as a foreign language. Students from universities of science and technology might need explanations in addition to the grammatical corrections to reduce the cognitive load required for not only writing in a second language but also with near-native proficiency. The results of the current study also indicated that there is a need for more grammar training for students at similar institutes of science and technology. For example, teachers could design certain focused writing tasks for students to analyze the targeted grammar features according to task demands (e.g., verb tense and prepositions in job application letter writing) and then guide them in applying the grammar features in their writing.

The fourth major finding in the current study indicated that students also professed a need for this grammar training to be contextualized to situations in which they would have a need for English writing related to the types of on-the-job writing they would do in the future. This result confirms Ismail’s (2010) findings about a positive view of grammar learning and instruction in the context of an English for Specific Purposes course taught in EFL contexts. Results suggested that departments of Applied Languages should increase the amount of grammar training offered to their students, which are incorporated in English writing, English for Specific Purposes, and other contextualized writing classes. Thus, EFL learners would appreciate learning contexts that encourage a connection between grammar learning and English writing. Nation (2009) also stresses that writing teachers should ensure that any writing program allows for practice of producing different types of writing. It is therefore suggested that even in situations in which students are required to take a traditional English grammar course, the teacher should at least contextualize the grammar instruction to that of second language writing and if possible, contextualize the grammar instruction to possible future work-related scenarios of the students.

Results from the qualitative data analysis lent support to the quantitative analyses. The university of science and technology EFL students believed that grammar instruction is beneficial for writing. For example, a large number of learners reported that studying grammar was useful for improving their writing ability, and helpful for their future work. For example, students need and expect grammar corrections to improve their writing performance for future written
communication related to their respective fields of expertise. This is in line with arguments by Loewen et al. (2009), which revealed that foreign language learners were more convinced of the need for grammar instruction and error correction. In the present study, learners further expressed they would prefer written correction rather than oral correction. Benefits of written correction included the advantage of reviewing the feedback repeatedly, a scaffold to notice the errors, and conventional reliance on written materials for better memorization. This phenomenon might be attributable to Chinese being their first language, denoting that Taiwanese learners became more accustomed to learning grammar from materials. This also suggests a need to explore the social context in which the learners are studying EFL. Because the English learners were living and studying in a Chinese-speaking context, they had limited opportunities for communicating in the target language, and for this reason, they may have placed a higher priority on such written correction rather than oral correction.

However, possibly due to long-term learning based on the traditional method, students also expected something new in their grammar learning. Many students used negative adjectives to describe the process of grammar instruction. They regarded it as “boring”, “tedious”, “powerless”, and they indicated the need for more innovative methods to learn grammar. In addition, although students regarded it beneficial to have teachers and peers correct their mistakes because they possessed much more grammar knowledge, they also pointed out that grammar error correction should not always be the teachers’ duty. They regarded self-evaluation of their own grammar competence at regular intervals as necessary, which would offer opportunities to increase their grammatical knowledge while becoming more independent writers. While students expected and accepted receiving written corrective grammar feedback from teachers, they also considered it necessary to receive scaffolds to become independent writers. In addition to providing written corrective feedback, teachers should also provide students with scaffolds to self-edit and self-evaluate their second language writing. This finding is supplementary to Loewen et al. (2009), wherein students relied on teacher’s error correction in class, students from universities of science and technology in the present study expressed they needed exposure to different genres of relevant writing to aid in explaining the type of professional writing one performs outside the classroom. Exposure to various genres of writing is one method for introducing students to the idea of developing an independent attitude towards second language writing while also ensuring that the type of writing students complete is relevant to their future careers. In addition, one common way found to motivate students to self-edit their writing is to mark the grammatical errors on their papers but not correct them. According to Reynolds and Kao (2016), for less-advanced students, a
series of codes could be developed that indicate different error types to make it easier for students to comprehend the type of error that should be targeted and self-corrected. In view of the quantitative and qualitative analyses, exploring EFL students’ beliefs about grammar learning and correction requires further in-depth exploration, and is a topic worth research in future studies.

5 Conclusions

The role of grammar learning and correction has been hotly debated in second language acquisition research. Because of the controversy surrounding whether students’ grammar errors should be corrected or not, a growing body of literature has emerged. Since few attempts have been made to investigate EFL learners’ beliefs of grammar learning and grammar correction through systematic studies, the researchers that conducted the current study performed several statistical analyses showing that EFL learners preferred written correction to oral correction and were more inclined to learn grammar in contexts which integrate grammar learning into writing practices that mimic those the students will encounter in the future. The current study provides valuable information to English curriculum designers in that it has tapped into and revealed the needs and preferences towards grammar learning and grammar correction for EFL learners attending universities of science and technology. Yet, there are limitations in the current study that could be addressed with future research. Since participants of the current study were mostly females from universities of science and technology in Northern Taiwan and gender in general has some effects on foreign language learning beliefs or styles (Kayaoglu 2012; Viriya and Sapsirin 2014), the results should be carefully interpreted in terms of overall EFL writers’ beliefs about grammar learning and grammar correction. The results of the study should then be delimited to students with similar backgrounds. Future research should also be conducted to determine whether students have developed these perceptions of grammar learning and grammar correction in the university environment or in secondary school. Therefore, students with more diverse educational backgrounds and a more balanced sample of males and females should be invited to participate in future studies to compendiously delineate EFL writers’ beliefs about grammar learning and grammar correction. In addition, it is suggested that more research should be conducted to investigate the difference between students’ and teachers’ beliefs of grammar learning and correction to bridge the gap between them (Ahmad et al. 2017; Deng and Lin 2016; Kang 2017). Lastly,
because learners’ beliefs are always abstract, more qualitative open-ended research incorporating think-aloud protocol, stimulated recall, and diary studies should be developed to further elicit students’ beliefs.

**Funding:** This work was supported by Universidade de Macau, Funder Id: https://doi.org/10.13039/501100004733, Grant Number: MYRG2018-00008-FED, Ministry of Science and Technology, Taiwan, Funder Id: https://doi.org/10.13039/501100004663, Grant Number: MOST 107-2410-H-263-008-MY2.

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