The impacts of self-efficacy on undergraduate students' perceived task value and task performance of L1 Chinese integrated writing: A mixed-method research

Abstract

While integrated writing (IW) has received extensive research attention, students' self-efficacy beliefs in IW learning remain under explored, particularly in first-language (L1) IW instruction. With a sample of 239 first-year undergraduate students at a Chinese university, this study investigated students' L1 Chinese IW self-efficacy beliefs, as well as their impacts on perceived task value and IW performance. Exploratory factor analyses identified five sub-dimensions of IW self-efficacy: ideation, conventions, source use, negative emotion control, and concentration. Notably, source use was a unique sub-dimension for IW self-efficacy. Negative emotion control and concentration were separated from the self-regulation construct in Bruning et al. (2013). Latent profile analysis categorized students into three groups based on their diverse levels of IW self-efficacy: moderate-, moderate-high-, and high-efficacious students. Students' IW self-efficacy levels had a positive association with their perceived IW task value; however, the relationship between self-efficacy and IW performance was insignificant. Nine representative students, three from each group, were invited for the follow-up semi-structured interviews, and their responses provided complementary information for the quantitative analyses results. Pedagogical suggestions on L1 IW instruction were provided based on the findings.

Keywords: integrated writing; self-efficacy; task value; Chinese-as-a-first-language

1. Introduction

Integrated writing (IW) has been recognized as one of the core competencies in academic discourse communities, where writing skills are usually deployed in concert with other skills, such as reading and listening (Cumming, 2013; Gebril & Plakans, 2016; Yang & Plakans, 2012; Authors2, 2021a; Authors2, 2021b). While the literature has established that different factors, such as source use and cognitive process, contribute to IW performance in English-as-a-second language (L2) (e.g., Gebril & Plakans, 2016; Plakans & Gebril, 2012) and Chinese-as-a-first-language (L1) (e.g., Authors2, 2021a, 2021b), little is known about students' personal beliefs and mentalities during learning or completing IW. Over the past two decades, researchers have realized that writing is "a demanding process" that imposes high cognitive workloads on writers (Bruning et al., 2013, p. 28). From a social-cognitive perspective, substantial attention has been devoted to the impacts of self-efficacy (Bandura, 1986, 1997) on L1 and L2 writers' mentalities and independent writing performance (e.g., Bai et al., 2021; Shen et al., 2020; Sun et al., 2021). It is necessary to extend this line of inquiry to IW, a more challenging writing task that tests students' comprehensive cognitive and linguistic competences (Authors2, 2021a, 2021b).

Currently, most of the IW research has been conducted in L2 English education, probably because IW tasks have been included in large-scale English tests, such as the Test of English as a Foreign Language (TOEFL) and Canadian Academic English Language (CAEL) Assessment. Chinese is an underrepresented language in extant IW literature. Since the beginning of the 21st century, IW tasks have also been adopted by various Chinese language assessment programs, including the Hong Kong Diploma of Secondary Education (HKDSE). Thus, Author2 and colleagues (2016) called for research attention to Chinese IW and argued that "research on integrated writing tasks in Chinese is likely to … complement the previous studies in the field of

English as a foreign/second language assessment" (p. 169). In addition, L1 and L2 contexts are also a noteworthy issue in IW research. On the one hand, L2 writers must possess a certain level of reading or listening competence to fully comprehend the source materials in IW tasks (Cumming, 2013), whereas students commonly do not have this concern in completing L1 IW tasks (Authors2, 2016). Research findings on L2 IW should be generalized into L1 IW context with caution. On the other hand, both L1 and L2 IW writers may use the same source use processes (i.e., organizing, selecting, and connecting information from source texts) during the composition procedures (Yang & Plakans, 2012), and thus L1 IW research may serve as a reference for L2 IW research and education. Therefore, empirical studies on L1 Chinese IW are warranted due to the limited research in this area and the potential contribution to literature.

Drawing on the self-efficacy framework (Bandura, 1986, 1997), this mixed-method study examines the impacts of Chinese university students' L1 Chinese IW self-efficacy on their perceived task value and IW performance. Specifically, a person-centered statistical analytic approach is utilized to uncover students' complex, nuanced belief systems, based on which representative students are sampled for follow-up semi-structured interviews. Pedagogical suggestions are provided based on the findings.

2. Literature Review

2.1 Brief introduction to integrated writing

IW is a kind of writing task that combines writing with other language modalities, such as reading and listening (Cumming, 2013; Gebril & Plakans, 2016). Students should identify, select, and synthesize relevant information from source materials and use it in their own writings, which impose high demands on their linguistic and cognitive abilities. Substantial research attention has been paid to IW due to its authenticity, fairness, and recent popularity in existing

language assessment programs around the globe. Early studies focused on the impacts of linguistic features, students' source use, and cognitive process on IW performance (Gebril & Plakans, 2016; Yang & Plakans, 2012; Authors2, 2021b). Recently, researchers have begun to realize that students' self-efficacy may also play a role in determining their IW performance. For instance, with a sample of 191 university L2 English learners in Iran, Golparvar and Khafi (2021) observed that students' IW self-efficacy significantly predicted their English IW performance and strategy use. This study indicates that students' individual difference variables, such as self-efficacy, may be a new direction for IW research.

2.2 Self-efficacy in writing research

Bandura's (1986, 1997) self-efficacy framework has been widely applied in different research areas including psychology, management, education, etc. In writing education, self-efficacy was once defined as "students' judgments of their confidence that they possessed the various composition, grammar, usage, and mechanical skills appropriate to their academic level" (Pajares & Valiante, 2001, p. 369). This definition reflects an early regard of writing self-efficacy as students' confidence in their specific writing skills from the 1980s to the first decade of the 21st century (e.g., McCarthy et al., 1985; Pajares & Valiante, 2001; Shell et al., 1995). However, as writing is a cognitively demanding activity, a good command of specific language skills cannot ensure ideal writing performance. In fact, Zimmerman and Bandura (1994) have indicated that students' writing self-efficacy may also involve their confidence in planning and revising their writings, as well as managing their writing activities, the so-called self-regulatory efficacy. Based on these findings, Bruning and colleagues (2013) proposed a three-dimensional model to measure students' writing self-efficacy beliefs, including ideation, conventions, and self-regulation. Ideation refers to students' beliefs about their abilities to generate ideas in their

writings; conventions concern students' capabilities to follow conventional writing rules, such as punctuation and spelling; self-regulation consists of self-regulatory strategies to "manage the anxieties and emotions that can accompany writing" (Bruning et al., 2013, p. 29). This three-dimensional writing self-efficacy model has been validated by empirical studies in different contexts. For instance, with a sample of 992 elementary and 518 high school students in the U.S., Zumbrunn and colleagues (2020) observed that ideation, conventions, and self-regulation were three independent sub-dimensions of the writing self-efficacy construct. Meanwhile, self-efficacy for writing conventions was significantly associated with students' L1 English independent writing performance.

Despite the sizable body of research on students' self-efficacy beliefs in independent writing tasks, IW writers' self-efficacy remains unexplored. Notably, researchers have repeatedly indicated the task-specificity of self-efficacy beliefs (Bandura, 1986; Bruning et al., 2013; Pajares, & Valiante, 2006), and "self-efficacy in one writing task may be different from that in another" (Sun et al., 2021, p. 2). Unlike independent writing, IW requires students to write a composition based on the information from source texts. In doing so, students should comprehend the meaning of the writing topic, sort out key information from source texts pertaining to the writing task, and effectively integrate all useful information (Spivey, 1990, 1997). These processes have been operationalized as "citation and synthesis", an important trait in L1 Chinese IW (Authors 2, 2016; Authors 2, 2021a, 2021b). Therefore, it is possible that students' capabilities in information citation and synthesis, or source use, may constitute a unique sub-dimension in their self-efficacy in completing IW tasks. Unfortunately, existing research on IW writers' self-efficacy did not involve the source use sub-dimension in the scale (Golparvar & Khafi, 2021), and thus a self-efficacy questionnaire designed specifically for IW is

needed.

2.3 The relationships between Self-efficacy, task value and writing performance

Students' writing self-efficacy is closely related to their learning motivation, and task value is the commonly used motivational construct in existing research (Bai & Guo, 2021; Bai et al., 2021; Pajares, 2003; Shen et al., 2020). Task value refers to students' interest in and perceived importance of a given task (Bai et al., 2021). Bandura (1986) maintained that people's self-efficacy could impact their perceived task value (cf. Pajares, 2003). In educational settings, this means that high-efficacious students are interested in learning and can perceive the importance of the learning activity, whereas those low-efficacious students are less likely to do so. This positive association has been affirmed in independent English writing education in both L1 (Pajares, et al., 1999; Pajares & Valiante, 1999) and L2 (Bai & Guo, 2021; Bai et al., 2021; Shen et al., 2020) contexts. For example, in investigating 742 middle school students' self-efficacy, motivation, and English writing performance in the U.S., Pajares and Valiante (1999) reported that self-efficacy was moderately correlated with task value for both girls and boys (rs = .40 and .42, respectively, $p < .001$). With a sample of 433 4th to 6th grade primary school students in Hong Kong and using structural equational modeling (SEM), Shen and colleagues (2020) observed that English writing task value significantly predicted students' self-efficacy beliefs in ideation, conventions, and self-regulation (all βs > .45, ps < .001). Notably, Shen et al. (2020) adopted a cross-sectional design, and thus the relationship between task value and self-efficacy may be better interpreted as association, rather than prediction.

Writing performance is another important issue in writing self-efficacy research, and empirical studies in this regard focus primarily on the English language (e.g., Chen & Zhang, 2019; Pajares & Valiante, 2001; Sun & Wang, 2020). Generally, students' writing self-efficacy

beliefs bear a positive relationship with their L1 or L2 English writing performance. In a recent meta-regression analysis, self-efficacy was found to be more influential on L2 (r = .441) than on L1 (r = .233) independent writing performance (Sun et al., 2021). The authors inferred that "self-efficacy plays a more facilitative role in writing achievement among low self-efficacious students", and that L1 writers generally had high levels of self-efficacy beliefs toward their L1 writing abilities (Sun et al., 2021, p. 9).

The abovementioned studies on students' writing self-efficacy, task value, and independent writing performance have laid the foundation for the present study. We expect that L1 Chinese students' IW self-efficacy can also determine their perceived task value and IW performance. In reviewing the literature on writing self-efficacy, we find that quantitative research outnumbers qualitative research and that researchers primarily rely on conventional analytical approaches, such as linear regression and SEM. Here we argue that latent profile analysis (LPA) may be an alternative approach to analyze students' mentalities and can be combined with qualitative approaches, such as semi-structured interviews, in linguistic and educational research.

2.4 LPA in second language education research

Statistical analyses in social science research include two genres: variable-centered and person-centered approaches (Laursen & Hoff, 2006; Authors1, 2021a). Variable-centered approaches, such as linear regression and SEM, are based on the homogeneity assumption that participants have similar characteristics (Laursen & Hoff, 2006). Meanwhile, person-centered approaches, such as LPA, are based on the heterogeneity assumption that participants demonstrate diverse features and can be further categorized into different sub-groups (Laursen & Hoff, 2006). As researchers have realized the complex, nuanced mentalities of language learners,

LPA has received increasing attention in L2 education research in recent years (e.g., Lou et al., 2021; Authors1, 2021a, 2021b). In these empirical studies, students were categorized into several groups according to their diverse patterns of emotional and behavioral responses in L2 learning. For instance, Lou and colleagues (2021) categorized 234 Canadian university L2 learners into three groups according to their various growth and fixed language mindsets. Afterward, the authors reported significant differences in engagement and course grades as a function of students' group memberships. This study exemplifies how students' group memberships can influence other variables. Another important issue is that LPA may provide empirical evidence for selecting representative participants for qualitative research. In Authors2 (2021b), after classifying students into four groups using LPA, the authors selected one participant from each group for follow-up semi-structured interviews, and provided a more comprehensive picture of L2 learners' mentalities with a mixed-method design.

For the present study, we expect that our participants can be categorized into different groups according to their diverse levels of L1 Chinese IW self-efficacy. Besides, students' group memberships may impact their perceived task value and IW performance. Finally, recruiting representative students from different groups for interview may provide more information about the relationships between IW self-efficacy and task value and IW performance.

2.5 Aims of the present study

Thus far, we have three major findings that provide rationale for the present study. First, writing self-efficacy is a multi-dimensional construct, and students' judgement on their capability in appropriate source use may constitute a unique sub-dimension in IW self-efficacy construct. Existing research on writing self-efficacy focuses primarily on independent writing tasks; therefore, it is necessary to extend this line of inquiry to IW education. Second, Chinese is

an under-represented language in extant research on IW, particularly in L1 education. Empirical research in this area can provide additional evidence about IW writers' learning and serve as a reference for L1 and L2 English IW research. Third, students' perceived task value and IW performance may closely relate to self-efficacy. LPA, combined with semi-structured interviews, can effectively examine the complex, nuanced relationships between these variables.

Therefore, the present study adopts a mixed-method design to answer the three research questions:

1) what are the dimensions of Chinese university students' L1 Chinese IW self-efficacy?

2) what are students' group memberships in terms of their diverse levels of IW self-efficacy, as well as their relationships with task value and IW performance?

3) what are the similarities and differences in students' IW self-efficacy beliefs, task value, and IW performance across groups?

3. Research Method

3.1 Participants

As part of a large project investigating Chinese university students' L1 Chinese and L2 English IW performance, we recruited 239 first-year English major students (mean age = 19.15, SD = 0.79; 88.3% female) at a university in the southeast of mainland China. Chinese was included in their curricula as a required course for the whole academic year. In each semester, students had 16 Chinese classes (90 minutes per each class) where they learned advanced Chinese reading and writing skills. In the second semester of the academic year, students received IW instructions and wrote several practice compositions before they participated in the present study.

3.2 Instruments

Two questionnaires (Appendix A) were used to measure students' IW self-efficacy and perceived task value on a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The IW self-efficacy questionnaire included 19 items asking students' self-efficacy beliefs in ideation (six items), conventions (seven items), and self-regulation (six items) that were adapted from Pajares et al. (2001) and Bruning et al. (2013). We made minor changes to the wording to make the items suitable for Chinese writers. For example, we changed the original item "Correctly spell all words in a one-page composition" into "I can correctly write all Chinese characters in a one-page composition (conventions). Example statements included: "I can think of many words to describe my ideas" (ideation); "I can correctly write all Chinese characters in a one-page composition" (conventions); "I can avoid distractions while I write" (self-regulation). We developed six new items to measure students' self-efficacy in source use based on Plakans and Gebril (2012) and Authors2 (2021b). Example statement included: "I can effectively select principal information from reading materials to support my ideas".

The task value questionnaire consisted of two sections: interest and task importance. Students' interest was measured by seven items adapted from Baker and Wigfield (1999). Example statement included: "I am very interested in Chinese writing". The seven task importance items were developed based on Bai et al. (2022). Example statement included: "I think Chinese writing is very important".

The topic of the Chinese IW task was "Choosing Majors in University". Four reading passages with diverse stances were collected from different sources, such as news reports and academic papers, and were provided for students' reference. After reading the four passages, students were required to write a 600 to 800-word Chinese argumentative paper.

During semi-structured interviews, we intended to obtain an in-depth understanding,

especially the sub-dimensions, of students' Chinese IW self-efficacy, as well as their associations with task value and IW performance. The interview protocol is displayed in Appendix B.

3.3 Data collection

Data were collected with the assistance of the classroom teachers at the end of year one of university education. Students first spent 20 minutes reading the four passages and another 40 minutes writing the paper. After a 10-minute interval, students responded to the two questionnaires and they were encouraged to seek clarification from teachers in case of confusion regarding the meanings of the items. Students' and teachers' participation in this study was voluntary and not compensated.

Two experienced Chinese raters with master's degree provided analytical ratings on four traits of students' writings (i.e., contextual awareness, citation and synthesis, opinion and argument, and organization and expression), and the scores for each trait ranged from 1 to 10. The scoring rubrics (Appendix C) have been applied in existing empirical studies, such as Authors2 (2016) and Authors2 (2021a, 2021b). Prior to formal rating, two meetings were organized to familiarize raters with the scoring rubrics. Anchor essays of different levels were provided for discussion and trail marking. Afterward, raters first evaluated 30 papers, and an additional meeting was organized to resolve the uncertainties and disagreements between the raters before they finished evaluating the remaining papers. The inter-rater reliability estimates for the four traits ranged from 0.71 to 0.79. The averaged summed scores assigned by the two raters were used to denote students' IW performance, ranging from 1 to 40.

To provide complementary information to the quantitative findings, we finally conducted several semi-structured interviews for students from each identified group. Three students from each group were randomly selected. We first presented their writings and responses to the

questionnaires and then asked them to reflect and express opinions toward their IW self-efficacy beliefs, task value, and IW competence. Each interview was conducted in Chinese as their mother tongue and lasted about 90 minutes.

3.4 Data analysis

We used SPSS version 22.0 to perform exploratory factor analysis (EFA) for the IW self-efficacy questionnaire and calculated descriptive statistics, Cronbach's alpha, and bivariate correlations for the primary variables. We then used Mplus version 8.3 (Muthén & Muthén, 2017) to perform LPA to categorize students into different groups according to their diverse levels of IW self-efficacy. The optimal number of groups was identified based on a series of fit indices, 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 (Authors1, 2021a). An entropy value larger than 0.80 indicates a classification with more than 90% precision (Lubke & Muthén, 2007). We used Wald chi-square tests to examine group differences in self-efficacy beliefs. Using the BCH command implemented in Mplus, we performed Wald chi-square test to investigate the differences in students' perceived task value and IW performance as a function of their group memberships. All Mplus codes written for the analyses are available from the authors through email.

Interview data were recorded and transcribed by graduate research assistants. The data were first coded on a line-by-line basis and then re-analyzed to explore the interrelations among emerging themes (Creswell, 2014). We first found out the key words and phrases pertinent to

each sub-dimension of students' Chinese IW self-efficacy. For instance, expressions that included the words "summarize" and "copy" were coded as related to the source use sub-dimension, and expressions that included the words "vocabulary" and "sentence" were coded as related to the conventions sub-dimension. The connections between sub-dimensions were also analyzed. We then explored the similarities and differences in students' task value and IW performance across groups. Particularly, we focused on the reasons why students from different groups had a certain level of task value and IW performance. Only data that were used for the present study were translated into English.

4. Results

4.1 EFA results

The sample size of this research was 239 and the number of items for EFA was 25. The ratio of sample size to item number was close to the commonly acceptable level of 10 to 1 (Everitt, 1975). We examined two statistics before conducting EFA. Kaiser-Meyer-Olkin measure of sampling was 0.913, larger than the commonly acceptable value of 0.5, and Bartlett's test of sphericity was statistically significant: $x^2(300) = 3117.450$, $p < 0.001$. This indicated that the IW self-efficacy items had adequate level correlation for EFA (Meyers et al., 2016). Principal component analysis was used for factor extraction and Varimax with Kaiser Normalization was used as the rotation method for EFA. We obtained five factors with eigenvalues larger than 1. Two items (convention 5 and self-regulation 5) were excluded as they cross-loaded on several factors at an absolute value of 0.32 or higher (Tabachnick & Fidell, 2001). Factor loadings for the IW self-efficacy questionnaire are displayed in Table 1.

[Insert Table 1 Here]

The five factors, all together, explained 63.39% of the variance. The first factor

(eigenvalue = 9.632) explained 38.53% of the variance and included the six ideation items and conventions items 6 and 7. We turned to the IW self-efficacy questionnaire and checked the wording of the two conventions items: “I can write a well-organized and sequenced paper with good introduction, body, and conclusion” (conventions 6) and “I can end paragraphs with proper conclusions” (conventions 7). The two items both concerned students’ abilities to generate ideas for their writing structures and contents. Therefore, it is reasonable to combine the two conventions items with the ideation items, and the first factor was termed as “ideation”. The second factor (eigenvalue = 2.011), termed as “source use”, included the six source-use items and explained 8.04% of the variance. The third factor (eigenvalue = 1.763), “conventions”, included the remaining four conventions items and explained 7.05% of the variance. The fourth factor (eigenvalue = 1.353) included self-regulation items 3, 4, and 6, and explained 5.41% of the variance. As shown in Appendix A, the three items mainly measured students’ abilities to manage negative emotions in the process of writing, such as frustration and difficulties. This factor was termed as “negative emotion control”. The Fifth factor (eigenvalue = 1.089) included self-regulation items 1 and 2 and explained 4.36% of the variance. The two items measured students’ abilities to concentrate on writing tasks and the factor was termed as “concentration”.

4.2 Descriptive statistics, Cronbach’s alpha, and bivariate correlations between primary variables

Descriptive statistics, Cronbach’s alpha, and bivariate correlations between the primary variables are shown in Table 2. The Skewness and Kurtosis statistics indicated that our data met acceptable level of central tendencies. Cronbach’s alpha coefficients for all variables were larger than 0.60, showing internal reliability evidence of the instruments for linguistic research (Dörnyei, 2007). Students’ IW self-efficacy beliefs were positively correlated with each other

and their perceived task value; however, the relationships between IW performance and the other variables were insignificant.

[Insert Table 2 Here]

4.3 LPA results

Using the mean scores of the five identified sub-dimensions of IW self-efficacy as indicators, we categorized our participants into several groups. The one- to four-group solutions were examined and the model fit indices are listed in Table 3. As expected, the absolute values of LL, AIC, BIC, and ABIC decreased as the number of groups increased. The three-group solution had the largest entropy value (0.812), which suggested that this solution had the highest classification precision. Moreover, the *p* value for LMRT was insignificant for the four-group solution ($p = .2426$). Therefore, we finally chose the three-group solution, and the classification probabilities for the most likely group membership for the three groups were 0.918, 0.922, and 0.905, respectively.

[Insert Table 3 Here]

The estimated means of the five indicators for the three groups are displayed in Figure 1. Group 1 (N = 77, 32.2% of the total sample) was labeled as "moderate-efficacious students", as their mean scores on the five IW self-efficacy sub-dimensions were hovering around 3, the mid-point on a 1-5 Likert scale. Group 2 (N = 145, 60.7%) was labeled as "moderate-high-efficacious students" whose means scores ranged from 3.517 to 3.787. Group 3 (N = 17, 7.1%) was labeled as "high-efficacious students" who scored highest on all five indicators. Wald chi-square tests (Table 4) reported significant differences in all five indicators among groups 1, 2, and 3 (all *p*s $< .001$).

[Insert Figure 1 Here]

[Insert Table 4 Here]

We then examined the differences in students' perceived task value and IW performance. With regard to task value, Wald chi-square test identified significant mean differences among the three groups: $\chi^2(2) = 45.693$, $p < 0.001$. Further, significant differences were evident in each pair-comparison (all ps < 0.01). Specifically, group 3 (high-efficacious students; $M = 3.681$, SE = 0.124) had the highest level of perceived task value, followed by group 2 (moderate-high-efficacious students; $M = 3.282$, SE = 0.040), and group 1 (moderate-efficacious students; $M = 2.923$, SE = 0.052). Concerning IW performance, the mean scores of groups 1, 2, and 3 were 19.103 (SE = 0.246), 19.029 (SE = 0.220), and 18.899 (SE = 0.569), respectively. It appeared that all three groups had poor performance on the IW task, because the total score is 40. Wald chi-square test showed that performance on the IW task was equivalent between groups: $\chi^2(2) = 0.126$, $p = 0.939$.

4.4 Interview responses

Based on the LPA results, we selected nine students, three from each group, for the follow-up semi-structured interviews. Students' age, gender, group memberships, questionnaire scores, and IW performance are shown in Table 5. We also included the nine students' Chinese test scores on Gaokao, the national university entrance examinations for Chinese high school graduates. The students scored between 104 and 121 out of 150, indicating that they have moderate to moderate-high levels of Chinese language abilities. To provide complementary information for the quantitative findings, we focused primarily on students' responses concerning the contents of their IW self-efficacy beliefs, as well as the relationships between self-efficacy and task value and IW performance.

[Insert Table 5 Here]

While students from the three groups had different levels of IW self-efficacy beliefs, they unanimously highlighted the close association between their abilities in citing and synthesizing reading passages (source use) and in generating ideas for writing (ideation). For instance, when asked "what are the relationships among the five abilities?", student B (group 1, moderate-efficacious student) said, "I didn't know how to summarize the key points in the reading texts. I knew I couldn't just copy the contents. It was plagiarism. So I had no idea what to write in my essay". Student F (group 2, moderate-high-efficacious student) noted, "One of the difficulties in IW was selecting appropriate information and summarizing its meaning … and when I didn't know what to write, I just used the sentences in the reading texts". Student I (group 3, high-efficacious student) said, "When I was writing, I found out the keywords, summarized the main ideas, and developed my own points. In doing so, the logic of my essay became clear to me". Students from the three groups also mentioned that source use was related to their capabilities in processing vocabularies (conventions) in writing, such as "when I didn't know how to summarize the main ideas in the reading texts, I just replaced the original words with their synonyms" (student C from group 1) and "I found many hyponymy words in the reading texts. If I didn't know their superordinate words, I replaced them with their synonyms" (student H from group 3).

As the self-regulation efficacy was further divided into negative emotion control and concentration in the present study, we examined students' responses pertaining to these two sub-dimensions. When asked to elaborate on their ability to control negative emotion, all three groups of students indicated that they sometimes felt dismayed and tired when writing. However, only high-efficacious students reported their control over negative emotions. For instance, student I (group 3) confessed that, "I have low efficiency in writing when I felt tired … but I

must hold on and finish it, because I think a good attitude is important. I must finish the writing task, whether in examinations or practices". Meanwhile, when required to elaborate on their ability to concentrate on the IW task, while all three groups noted that they were sometimes absent-minded during writing, only high-efficacious students mentioned their strategies to stay focused on the IW task: "I will set up a target for my writing. This will make me a little nervous, but it can drive me to finish my writing efficiently" (student G from group 3).

We then asked students to elaborate on the relationship between their task value and Chinese IW self-efficacy. Moderate-efficacious and moderate-high-efficacious students both indicated that teachers' positive feedback contributed to their interest in writing. For instance, student A (group 1) said, "When I was in high school, one day, my Chinese teacher praised my writing in front of my classmates. Since then, I had confidence in writing and would proactively show my writings to my teacher". Meanwhile, high-efficacious students attributed their high perceived task value to their motivation to study writing. Student G said, "I am an English major and I want to improve my English writing. I think a good Chinese writing ability can enable me to write high-quality, logical English essays".

Finally, we asked students to explain why they all had poor performance on the IW task. Moderate-efficacious students admitted that they were incapable of organizing their ideas on the writing topic in a logical way: "each time I saw the Chinese writing topic, I felt like that I could only use a couple of sentences rather than hundreds of words to elaborate on it. I didn't know how to support my argument" (student B). Moderate-high- and high-efficacious students both reported that they were not accustomed to completing a Chinese writing task within 60 minutes, as they normally had plenty of time in Chinese writing practices. For instance, student D (group 2) said, "After entering university, I have little experience taking a Chinese exam and writing a

Chinese essay within limited time … it's hard for me to write a good Chinese essay in 60 minutes". Besides, one high-efficacious student added that he did not take the IW task seriously: "Because my teacher told me that my score on the IW task would not influence my course assessment, I just wanted to finish it as soon as possible" (student I).

5. Discussion

Our statistical analyses and semi-structured interviews provide answers for the three research questions. Results are discussed here in relation to existing literature.

5.1 Students' self-efficacy in L1 Chinese IW

We observe a five-factor structure of students' self-efficacy in L1 Chinese IW, consistent with Bruning et al. (2013) that writing self-efficacy is a multi-dimensional construct. Akin to the situation with independent writing (Shen et al., 2020; Zumbrunn et al., 2020), ideation and conventions are also two independent sub-dimensions in IW self-efficacy. In completing IW tasks, Chinese university students have diverse judgement on their capabilities in generating ideas and following conventional rules. Meanwhile, students' confidence in source use constitutes a unique sub-dimension in IW self-efficacy. This is a reasonable result since appropriate source use plays a critical role in students' IW performance (Authors2, 2016, 2021a, 2021b). Notably, students' self-efficacy in ideation and conventions are intertwined with their source use abilities, as evidenced by the interview responses from all three groups. This corroborates the argument that IW "does not assess isolated language skills" but "evaluate test-takers' comprehensive employment of multiple language skills to complete authentic tasks" (Authors2, 2016, p. 180). Finally, the original self-regulation sub-dimension can be further divided into concentration and negative emotion control. According to students' interview responses, absent-mindedness and negative emotions, such as dismay and fatigue, are common

during completing IW tasks. Certain high-efficacious students reported distinct strategies to deal with these two issues; therefore, concentration and negative emotion control may better be treated as two independent sub-dimensions in IW self-efficacy.

LPA results indicate that all three groups of students have above the medium level IW self-efficacy, suggesting that students are generally confident in their L1 Chinese IW abilities. This is in line with the observation that students have relatively high self-efficacy beliefs in their L1 writing ability (Zumbrunn et al., 2020). Interview responses reveal some individualities and commonalities pertaining to IW self-efficacy beliefs among the three groups. Moderate- and moderate-high-efficacious students had difficulties retrieving from the reading materials useful information and appropriately using it in their writings. They were aware of the risk of plagiarism but would still use the sentences in the reading materials directly. Only high-efficacious students reported effective strategies for using the reading texts to facilitate their writings. While reading in native language may not be challenging for L1 IW writers (Authors2, 2016), students still have difficulties connecting the reading passages to the writing tasks. Moreover, while less competent L2 IW writers tend to copy words and phrases from reading texts (Plakans & Gebril, 2012), all L1 IW writers seem to be capable of processing words and phrases, because even less-efficacious students in the present study reported replacing the original words in the reading texts by their synonyms. However, except for high-efficacious students, most students relied on verbatim use of sentences in the Chinese reading materials.

Another noteworthy finding is that, in completing the IW task, students generally feel absent-minded and experience such negative emotions as dismay and fatigue, probably because IW is extremely time-consuming and cognitively commanding. Students should read several passages and decide their relevance to the writing topic, based on which they can develop ideas

for their own compositions. During the writing process, students must constantly go back to the reading materials to retrieve supportive information, which renders high cognitive workloads. A series of cognitive skills are required to complete IW tasks, including analysis, comparison, synthesis, evaluation, etc. Amongst the three groups, only certain high-efficacious students reported strategies for controlling their negative emotions and concentrating on the IW task. This is consistent with extant literature that self-efficacy beliefs can guide students to "sustain effort, increase perseverance and resiliency when obstacles are encountered, foster optimism, and lower feelings of apprehension as academic tasks are engaged" (Pajares & Valiante, 1999, pp. 390–391).

5.2 The impacts of IW self-efficacy on task value and IW performance

Consistent with the research on independent writing self-efficacy and task value (e.g., Pajares & Valiante, 1999; Shen et al., 2020), students' IW self-efficacy can also shape their perceived task value. In general, higher-efficacious students are more likely to be interested in IW and regard it as an important learning activity, whereas lower efficacious students are less likely to do so. Interview responses shed light on the nuances in students' beliefs and perceptions. Moderate- and moderate-high-efficacious students mentioned that teachers' positive comments contributed to their self-efficacy and the interest in learning Chinese writing. This is in line with Bandura's (1997) argument that evaluative feedback from others, such as teachers or coaches, could shape students' self-efficacy beliefs. It is possible that certain moderate- and moderate-high-efficacious students' self-efficacy and perceived task value will be lowered once they receive negative comments on their writings, a common phenomenon in East Asia where traditional teacher-centered instruction is still prevalent. For high-efficacious students, they seemed to have realized that a good command of L1 Chinese ability can contribute to their

English major studies at university, the potential cross-linguistic transfer from L1 to L2 (Authors2, 2021a). This reflects these students' proactive considerations and deep understandings of language learning, and may explain why they had the highest IW self-efficacy beliefs and perceived task value in L1 Chinese IW. Notably, while significant difference in task value was evident across the three groups, the highest mean score (high-efficacious students) did not reach 4, and the lowest mean score (moderate-efficacious students) was close to 3, the mid-point on a five-point Likert scale. This small, though significant, difference warrants further research on the associations between L1 Chinese IW writers' self-efficacy and task value.

While existing research unanimously reports the significant influence of self-efficacy on L1 and L2 independent English writing performance (Sun et al., 2021), the relationship between IW self-efficacy and L1 Chinese IW performance was not evident in this study. Regardless of IW self-efficacy levels, all three groups of students performed poorly on the IW task. Students' interview responses provide some possible explanations. Moderate-efficacious students admitted their deficiency in IW ability, which can explain their low scores on the IW task. Moderate-high- and high-efficacious students both used time constraint as the excuse for their poor performance, which is a plausible reason because students normally spend longer time on IW tasks than on independent writing tasks. In fact, one participant in Authors2 (2021b) also noted that he was confident to perform better on the L1 Chinese IW task had he been given more time. Another possible explanation is that certain high-efficacious students may not take the IW task seriously. This cautions us that students' responses to self-report scales may not fully translate into their behaviors in academic learning, particularly in an exam-oriented learning context, such as China. Students seem to have justifiable reasons to slack off on tasks that are irrelevant to academic assessment, as they have already been overwhelmed by different kinds of exams in their daily

learning.

5.3 Pedagogical suggestions

We have the following pedagogical suggestions for L1 IW teaching based on the findings of the present study. First, given the importance of the source use sub-dimension in IW self-efficacy, teachers should provide instructions on source use strategies to facilitate students to process the reading materials in IW tasks. L1 students may be able to understand the meaning of each reading text, however, many of them still have difficulties appropriately using the reading materials to support their writings. Students should be equipped with sufficient reading skills, such as comparison, synthesis, and evaluation, for their IW practices. This may help students develop ideas for their own writings and prevent them from copying sentences in reading texts.

Second, as students feel stressful in completing IW tasks within a limited time, teachers should organize IW practices with appropriate time constraints. Initially, students may be given longer than usual time to finish their writings and be encouraged to share their perceptions of challenges with teachers after each practice. This can help teachers understand students' diverse negative emotions in the writing process. As students become increasingly familiarized with IW tasks, teachers can gradually shorten the time for each IW practice. Besides, given that students may sometimes not treat classroom practices seriously, teachers can make IW practices part of the formative assessment for the course, thus motivating students to produce their best performance.

Third, teachers may explicitly instruct students the benefits of L1 IW writing development applied to L2 writing. Researchers have indicated that the IW ability in L2 could capitalize on the reading and IW abilities in L1 (Authors2, 2021a; Cheong et al., 2019). In the present study, only a small group of high-efficacious students seem to have realized the

contribution of L1 to L2 IW ability. By referring to existing empirical findings, teachers can tell students that the improvement of L1 reading and IW abilities can lead to better L2 IW performance. This may help students understand the possible transfer across languages and increase their motivation to study writing in the contemporary multilingual world.

Finally, teachers should be mindful when providing comments on their students' writings. Moderate-efficacious and moderate-high-efficacious students (more than 90% of the total sample) both indicated that teachers' positive feedback contributed to their interest in writing. While researchers have different opinions toward this issue, we still believe that more positive, encouraging feedback can inspire students' confidence, interest, and incentive in writing learning, particularly in an East Asian culture which highlights the teacher authority.

6. Conclusion

In the context of Chinese tertiary education, this study investigated the multi-dimensional structure of L1 Chinese IW self-efficacy, as well as its impacts on students' perceived task value and IW performance. This study contributes to the literature in three ways. First, it includes IW in the existing research on writing self-efficacy and provides quantitative and qualitative evidence for the source use sub-dimension. Second, it demonstrates that the self-regulation sub-dimension may better be divided into negative emotion control and concentration for IW task. Third, it exemplifies that person-centered statistical analysis can be coupled with qualitative research approaches in linguistic and educational research to provide complementary information regarding participants' mentalities and academic performance.

However, there are at least three limitations in this study that warrant further exploration. First, this study was conducted at only one university in the southeast of mainland China and our participants were all first-year English major students. Caution should be taken in generalizing

the findings in this study to other contexts. It would be remunerative to examine whether the results, such as the factor structure of IW self-efficacy and the insignificant difference in IW performance, can be replicated with different research samples (e.g., non-English majors), at different educational levels (e.g., senior level university students or high school students), and in other regions of China or around the globe.

Second, female students disproportionately outnumbered male students in this study, a common phenomenon for English major students at Chinese universities. Researchers have observed gender differences in students' self-efficacy and independent writing performance (e.g., Pajares et al., 1999; Pajares & Valiante, 2001). It is highly possible that such gender differences may also be evident in IW. Thus, future research can involve approximately equal number of male and female students to address this issue.

Third, we did not expect that Chinese university English major students have little experience taking Chinese exams and finishing IWs within a limited time. Further, Chinese students may be less motivated and engaged when IW tasks are unrelated to academic assessment. These factors probably explain why the hypothesized positive association between IW self-efficacy and IW performance is insignificant in this study. In the future, researchers may use students' IW scores on final or large-scale exams to assess their IW performance, and examine their relationships between IW self-efficacy.

References

Bai, B., & Guo, W. (2021). Motivation and self-regulated strategy use: Relationships to primary school students' English writing in Hong Kong. *Language Teaching Research, 25* (3), 378–399. https://doi.org/10.1177/1362168819859921

Bai, B., Nie, Y., & Lee, A. N. (2022). Academic self-efficacy, task importance and interest: Relations with English language learning in an Asian context. *Journal of Multilingual and Multicultural Development, 43*(5), 438–451. https://doi.org/10.1080/01434632.2020.1746317

Bai, B., Wang, J., & Nie, Y. (2021). Self-efficacy, task values and growth mindset: What has the most predictive power for primary school students' self-regulated learning in English writing and writing competence in an Asian Confucian cultural context? *Cambridge Journal of Education, 51* (1), 65–84. https://doi.org/10.1080/0305764X.2020.1778639

Baker, L., & Wigfield, A. (1999). Dimensions of Children's Motivation for Reading and Their Relations to Reading Activity and Reading Achievement. *Reading Research Quarterly*, *34* (4), 452–477. https://doi.org/10.1598/RRQ.34.4.4

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice Hall.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. Freeman.

Bruning, R., Dempsey, M., Kauffman, D. F., McKim, C., & Zumbrunn, S. (2013). Examining dimensions of self-efficacy for writing. *Journal of Educational Psychology, 105* (1), 25–38. https://psycnet.apa.org/doi/10.1037/a0029692

Chen, J., & Zhang, L. J. (2019). Assessing student-writers' self-efficacy beliefs about text revision in EFL writing. *Assessing Writing, 40*, 27–41.

https://doi.org/10.1016/j.asw.2019.03.002

Cheong, C. M., Zhu, X., Li, G. Y., & Wen, H. (2019). Effects of intertextual processing on L2 integrated writing. *Journal of Second Language Writing, 44*, 63-75. https://doi.org/10.1016/j.jslw.2019.03.004

Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed method approaches* (4th edition). SAGE publications.

Cumming, A. (2013). Assessing integrated writing tasks for academic purposes: Promises and perils. *Language Assessment Quarterly, 10* (1), 1–8. https://doi.org/10.1080/15434303.2011.622016

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

Everitt, B. S. (1975). Multivariate analysis: The need for data, and other problems. British *Journal of Psychiatry, 126*, 237-240. https://doi.org/10.1192/bjp.126.3.237

Golparvar, S. E., & Khafi, A. (2021). The role of L2 writing self-efficacy in integrated writing strategy use and performance. *Assessing Writing*, *47*, 100504. https://doi.org/10.1016/j.asw.2020.100504

Gebril, A., & Plakans, L. (2016). Source-based tasks in academic writing assessment: Lexical diversity, textual borrowing and proficiency. *Journal of English for academic purposes*, *24*, 78–88. https://doi.org/10.1016/j.jeap.2016.10.001

Laursen, B. P., & Hoff, E. (2006). Person-centered and variable-centered approaches to longitudinal data. *Merrill-Palmer Quarterly, 52* (3), 377–389. https://www.jstor.org/stable/23096200

Lou, N. M., Chaffee, K. E., & Noels, K. A. (2022). Growth, fixed, and mixed mindsets: Mindset

system profiles in foreign language learners and their role in engagement and achievement. *Studies in Second Language Acquisition*, *44*, 607–632. https://doi.org/10.1017/S0272263121000401

Lubke, G. H., & 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

McCarthy, P., Meier, S., & Rinderer, R. (1985). Self-efficacy and writing: A different view of self-evaluation. *College Composition and Communication, 36*, 465–471. https://doi.org/10.2307/357865

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.

Pajares, F. (2003). Self-efficacy beliefs, motivation, and achievement in writing: A review of the literature. *Reading & Writing Quarterly, 19* (2), 139–158. https://doi.org/10.1080/10573560308222

Pajares, F., Hartley, J., & Valiante, G. (2001). Response Format in Writing Self-Efficacy Assessment: Greater Discrimination Increases Prediction. *Measurement and Evaluation in Counseling and Development, 33* (4), 214–221. https://doi.org/10.1080/07481756.2001.12069012

Pajares, F., Miller, M. D., & Johnson, M. J. (1999). Gender differences in writing self-beliefs of elementary school students. *Journal of Educational Psychology, 91*, 50–61.

https://psycnet.apa.org/doi/10.1037/0022-0663.91.1.50

Pajares, F., & Valiante, G. (1999). Grade level and gender differences in the writing self-beliefs of middle school students. *Contemporary Educational Psychology, 24*, 390–405. https://doi.org/10.1006/ceps.1998.0995

Pajares, F., & Valiante, G. (2001). Gender differences in writing motivation and achievement of middle school students: A function of gender orientation? *Contemporary Educational Psychology, 26*, 366–381. https://doi.org/10.1006/ceps.2000.1069

Pajares, F., & Valiante, G. (2006). Self-efficacy beliefs and motivation in writing development. In C. A. MacArthur, S. Graham, & J. Fitzgerald (Eds.), *Handbook of writing research* (pp. 158–170). Guilford Press.

Plakans, L., & Gebril, A. (2012). A close investigation into source use in integrated second language writing tasks. *Assessing Writing*, *17*(1), 18–34. https://doi.org/10.1016/j.asw.2011.09.002

Shell, D., Colvin, C., & Bruning, R. (1995). Self-efficacy, attribution, and outcome expectancy mechanisms in reading and writing achievement: Grade-level and achievement-level differences. *Journal of Educational Psychology, 87*, 386–398. https://psycnet.apa.org/doi/10.1037/0022-0663.87.3.386

Shen, B., Bai, B., & Park, M. (2020). Exploring Hong Kong primary students' English writing motivation: Relationships between writing self-efficacy and task value. *Journal of Multilingual and Multicultural Development*. Advance online publication. https://doi.org/10.1080/01434632.2020.1823397.

Spivey, N. (1990). Transforming texts: Constructive processes in reading and writing. *Written Communication, 7*(2), 256–287. https://doi.org/10.1177/0741088390007002004

Spivey, N. (1997). *The constructivist metaphor: Reading, writing, and the making of meaning*. Academic Press.

Sun, T., & Wang, C. (2020). College students' writing self-efficacy and writing self-regulated learning strategies in learning English as a foreign language. *System, 90*, 102221. https://doi.org/10.1016/j.system.2020.102221.

Sun, T., Wang, C., Lambert, R. G., & Liu, L. (2021). Relationship between second language English writing self-efficacy and achievement: A meta-regression analysis. *Journal of Second Language Writing, 53*, 100817. https://doi.org/10.1016/j.jslw.2021.100817.

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

Yang, H. C., & Plakans, L. (2012). Second language writers' strategy use and performance on an integrated reading-listening-writing task. *TESOL Quarterly, 46* (1), 80–103. https://doi.org/10.1002/tesq.6

Authors1 (2021a). (Deleted for review purposes)

Authors1 (2021b). (Deleted for review purposes)

Authors2 (2016). (Deleted for review purposes)

Authors2 (2021a). (Deleted for review purposes)

Authors2 (2021b). (Deleted for review purposes)

Zimmerman, B. J., & Bandura, A. (1994). Impact of self-regulatory influences on writing course attainment. *American Educational Research Journal, 31*, 845–862. https://doi.org/10.3102/00028312031004845

Zumbrunn, S., Broda, M., Varier, D., & Conklin, S. (2020). Examining the multidimensional role of self-efficacy for writing on student writing self-regulation and grades in

elementary and high school. *British Journal of Educational Psychology, 90* (3), 580–603. https://doi.org/10.1111/bjep.12315