

# A Study on the Effects of Different Interaction Combinations and Language Levels on Continuous Writing in Online Environments

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**Abstract:** This study was conducted with non-English sophomore students, aiming to explore the effects of different interaction combinations and language levels on continuous writing in an online environment, and compare the differences in lexical alignments and composition quality of learners with different interaction combinations and language levels in the same continuous writing task through experiments. The results show that the mean values of the word-phrase alignment of the paired group were higher than those of the individual group in different interaction combinations, and the two groups showed significant differences; in terms of composition quality, the individual group was better than the paired group, but there was no significant difference between the two groups in terms of task continuation. Secondly, the word-phrase alignment and composition scores of the different language-level groups were higher than those of the same language-level groups, and there was a significant difference between the two groups in terms of word-phrase alignments, but not in terms of composition scores. The results of this study can be useful and informative for second language teachers in future continuous teaching in online environments.

**Keywords:** Online environment; Continuous writing; Interaction combinations; Language levels

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## 1. Introduction

Modern information technology is crucial to social progress and development, affecting people's lives and communication styles. In the new COVID-19 epidemic, the Internet has become an important tool for students' learning, and the convenience of cell phones and network terminals is widely recognized. The future development of education will move toward online and offline mixed teaching modes. English is an essential subject for international integration and the promotion of students' comprehensive development, and English writing is an important skill to express thoughts and improve critical thinking. Based on the concept of collaborative interaction, Continuous writing can effectively improve English writing, but the single interaction between humans and text and the lack of a real interpersonal interaction environment in traditional teaching

limit the foreign language learning of Chinese college students<sup>[1]</sup>. The application of the Internet makes up for this deficiency and provides an interactive learning platform, therefore, the interactive mode of continuous writing in the online environment is worth exploring in depth.

## **2. Literature review**

### **2.1. Reading and writing**

Reading followed by writing is a method that combines reading comprehension and writing practice<sup>[2]</sup>, aiming to improve foreign language proficiency by imitating the language and improving comprehension<sup>[2,3]</sup>. In recent years, the research on the acquisition of Chinese vocabulary<sup>[4]</sup>, second language vocabulary<sup>[5]</sup>, grammar<sup>[6]</sup>, syntax<sup>[7]</sup>, discourse<sup>[8]</sup>, and text complexity<sup>[9]</sup> by continuous writing has yielded remarkable results, confirming its alignment effect. However, this approach is still affected by the genre<sup>[10]</sup>, interest<sup>[11]</sup>, and language level<sup>[12]</sup> of the material, as well as by the impact of different input modes and language levels on the acquisition of English vocabulary<sup>[13]</sup> and on the accuracy, complexity, and fluency of language acquisition<sup>[1]</sup>. Although research results are available, there are still some issues to be investigated, such as the lack of interpersonal interaction between reading and subsequent writing in line with actual communication.

### **2.2. Network interaction**

There are fewer communication opportunities in the foreign language environment in China<sup>[14]</sup>, and interpersonal interaction can keep learners' language skills in a state of stress, which is conducive to second language acquisition<sup>[14]</sup>. The popularization of computer technology provides an interactive platform for language acquisition, and the use of the Internet to provide learners with more convenient language output opportunities and to make up for the lack of communicative interaction in college English classrooms has become a new direction in interaction research<sup>[15]</sup>. Research on teaching and learning in the online environment began earlier in foreign countries, confirming the positive impact of network-assisted learning<sup>[16,17]</sup>. Domestic research on network learning is relatively late, most of them are aimed at network writing inquiry, and the research shows that network-assisted teaching can improve learning interest and motivation, and has a positive impact on English learning<sup>[18,19]</sup>. In recent years, mobile linguistics has gradually emerged, characterized by ubiquity, timeliness, interactivity, and multimedia features. Xu and Dong<sup>[20]</sup> used the WeChat platform for the design of audio-visual continuation teaching activities, and the study showed that the activities can effectively promote interactive communication and improve oral communication skills and overall English proficiency.

### **2.3. Interaction mode**

Research has shown that interactions between learners are influenced by language level, leading to alignment differences in language output<sup>[21]</sup>. Successful communication enables learners to understand the meaning of the message<sup>[22]</sup>, and cooperative learning promotes peer learning efficiency<sup>[23,24]</sup>. Arnold found two types of peer interaction patterns: focusing on revising one's own part and focusing on revising the whole piece<sup>[25]</sup>. Studies have confirmed that there is a significant difference in lexical activation time and processing intensity for different language-level groups in group work<sup>[26]</sup>. In the online environment, learners with different language levels can interact more flexibly and form more diverse interaction patterns, and online multilateral interaction can indeed improve students' independent learning ability<sup>[27]</sup>. Zheng confirmed that the cooperative mode of pair interaction with different language levels has a positive effect on students' language output<sup>[28]</sup>. The present study combines the writing-after-reading interaction model with the network, aiming to investigate its effects on learners' lexical alignment and composition quality, which is of practical and instructive significance. The

online environment is convenient and suitable for college students' interactive habits, and the application of continuous writing in the online environment deserves attention. The new COVID-19 epidemic makes the research and practice of facilitated interaction in the online environment more important and urgent.

### **3. Research methodology**

#### **3.1. Research questions**

This study is a pedagogical experiment based on a continuous writing task in an online-based environment, and the specific questions explored are:

- (1) What are the effects of different interaction combinations on learners' lexical alignment and composition quality?
- (2) What is the effect of learners' language level on the quality of lexical alignment and composition in quality different interaction combinations?

#### **3.2. Research subjects**

The subjects of this study were 113 non-English majors in a university in Hebei Province, who were in the second semester of their sophomore year at the time of the experiment, with an average of 10 years of learning English, and none of them had lived or studied abroad. They came from two classes of the same major and were between 18–21 years old. The pre-test was administered to the subjects and ranked the 113 students according to the pre-test results, with the top 37 students ranked in the pre-test as high-level subjects and the bottom 37 students ranked in the pre-test as low-level subjects, where the division between high-level and low-level was relative to the overall situation of the subjects in this experiment. The difference between the scores of subjects with the same language level was  $\leq 5$  points and the difference between the scores of high and low-level subjects was  $\geq 20$  points. In the end, 68 students fulfilled the requirements of this teaching experiment, 12 fulfilled the requirements of different language-level groups, forming pairs of high-low combinations of six groups; 24 subjects fulfilled the requirements of the same language-level group, forming high-high combinations of six groups and low-low combinations of six groups; the rest of the students with different levels of proficiency were selected to complete the continuation of the work alone with 16 students each at a high level and a low level. Another 45 people were also divided into the same language-level groups and different language-level groups to participate in this experiment, but their results were not included in the data of this study for analysis.

#### **3.3. Research materials and methods**

One week before the beginning of this study, a language proficiency test was given to the subjects, which was selected from the National University English Grade 4 questions of June 2018, and the selected questions were writing and reading. In the writing section, two teachers who taught the Great English class (the scoring reliability of the two teachers reached 0.96) were invited to mark the test together, and they scored the writing separately according to the scoring criteria, and the final score was taken as the average of the scores of the two teachers who marked the test. Based on the test scores, the subjects were divided into interactive groups according to their language level. The experimental material was a 720-word short story in English with the end deleted. Considering that factors such as genre <sup>[10]</sup>, interest <sup>[11]</sup>, and text complexity <sup>[29]</sup> would have an impact on the subjects' task continuation, the material chosen was simple and easy to understand, and the difficult vocabulary was indicated in Chinese. The pre-reading materials and continuation task instructions were distributed on the Internet, and the subjects read the input materials and then engaged in discussion in English

in the form of speech or text. During the paired group discussion, the two group members were required to give their ideas about the continuation according to their own understanding, complete and then upload the individual continuation to the group within the specified time. The individual group completed the continuation alone and uploaded it directly. Each learner's uploaded continuation on the Internet was downloaded and then analyzed statistically.

#### 4. Data collection and analysis

The source of data for this study was a total of 68 texts read and rewritten by 19 groups, with an average reading time of 15 minutes and a rewriting time of 30 minutes for each group, totaling about 45 minutes, and with most of the rewritten words in the range of 200–300 words.

The rewritten content with the original material was repeatedly compared and the number of words and phrases that the subjects had alignment with the original text were counted by using the alignment rate, i.e., the number of aligned words and phrases divided by the total number of words of the content to which they belonged, and then multiplied by 100%. The quality of the rewrites was still scored by the two teachers who had previously assessed the pre-test compositions of the experiment, and an average of the scores was taken. In this study, alignment rate was used as a research parameter for the effect of language level and interaction mode on learners' alignment in continuous writing tasks, and scores were used as a research parameter for the effect of language level and interaction mode on the quality of learners' compositions in reading and writing tasks, and the data were analyzed using SPSS25.0, with the level of significance set at 0.05. Four groups of eight pairs of subjects were randomly selected from the paired interaction and individual continuation groups respectively at the end of the experiment to conduct one-on-one Chinese semi-structured interviews as a supplement to the quantitative data, after which the interview data were summarized and analyzed.

### 5. Results and discussion

#### 5.1. The effect of different interactive combinations on learners' lexical synergy and the quality of continued writing

As seen from the results of the independent samples *t*-test in **Table 1**, there was a significant difference in the amount of word-phrase alignments between students in different interaction combinations ( $t = 3.948$ ,  $df = 18.938$ ,  $P < 0.05$ ). The amount of word-phrase alignments of students in the paired group was significantly higher than that of students in the individual group (MD = 0.019).

**Table 1.** Differences in the amount of lexical alignment across groups of words in different interaction combinations

	Word-phrase alignment		Mean deviation (MD)	<i>t</i> (18.938)
	Mean	Standard deviation (SD)		
Paired group (n = 36)	0.060	0.015	0.019	3.948*
Individual group (n = 32)	0.042	0.007		

\* $P < 0.05$

As seen from the results of the independent samples *t*-test in **Table 2**, there was no significant difference in the composition scores of students with different interaction combinations ( $t = -0.11$ ,  $df = 6.30$ ,  $P > 0.05$ ), but the composition scores of students in the individual group were all higher than those of students in the paired group (MD = -0.10).

**Table 2.** Differences in essay scores of groups with different interaction combinations

	Essay score		MD	<i>t</i> (6.30)
	Mean	SD		
Paired group (n = 36)	27.06	27.17	-0.10	-0.11
Individual group (n = 32)	1.24	2.14		

\* $P < 0.05$

The results of the study verified that continuous writing has a facilitating effect on second language vocabulary acquisition <sup>[5]</sup>, which is highly correlated with the selection of experimental materials. Narrative text continuation has a positive effect on the amount of language output <sup>[10]</sup>, and the material is close to life, interesting, and rich in plot, which can stimulate the subjects' imagination and willingness to express themselves, prompting strong interaction with the text and leading to alignment.

The reason why the paired group had higher word-phrase alignment mean than the individual group is that the paired group peers communicate with each other to build similar contexts and enrich the contextual experience of interaction so that the learners enjoy and efficiently process the language <sup>[30]</sup>, provide a facilitating environment for students to imitate the original work to use the new language <sup>[31]</sup>, and help the students to internalize the input to deepen their memories to optimize the output, which will in turn generate alignment. In the interview, the paired group also mentioned that in online interactions, they tend to use simple vocabulary and phrases to communicate in order to improve efficiency. During discussions, they would read back and discuss based on the key vocabulary and kept reading back the previous text to ensure accurate vocabulary use when they continued their writing. In order to quickly conceptualize a continuation, the choice to follow the original vocabulary saves both time and effort, as imitative alignment can alleviate the lack of information processing skills <sup>[3]</sup>. This is in line with Zhang and Wang's findings that subjects can reduce load and improve efficiency through imitation and collaborative interaction <sup>[12]</sup>. On the other hand, the subjects in the individual group had a single form of language input due to the lack of interpersonal interaction and peer guidance, which easily led to memory loss, less vocabulary extension of the original text, and weaker alignment.

There was no significant difference in the quality of compositions between the paired and individual groups, but the individual group scored higher mean scores than the paired group because the individual group was more focused on interacting with the text, was more comfortable with word choice, used more complex sentences and formal written expressions, and was more fluent in sentence structure and content. Deep reading helps to scaffold the original text and motivates intermediate to high-level language learners to use language above their level <sup>[31]</sup>. The paired group also indicated in the interviews that online communication limits communication richness, reduces independent thinking time, and does not contribute significantly to writing quality.

## 5.2. Differences in the effect of interaction at different language levels on learners' synergy and the quality of continued writing

The results of the one-way analysis of variance (ANOVA) between groups in **Table 3** show that there was a significant difference between the word-phrase alignment of the groups of students with different language levels [ $F(2,13) = 7.000, P < 0.05$ ]. The word-phrase synergy of the students in the high-low group was significantly higher than that of the high-high and low-low groups, with  $MD = 0.024$  and  $MD = 0.025$  respectively, but there was no significant difference in the word-phrase synergy of the students in the high-high and low-low groups.

**Table 3.** Differences in the amount of word phrase alignment for each group of words at different language levels in pair combinations

	Word-phrase alignment		F (2, 13)	Post-hoc (Tamhane)
	M	SD		
High-high group (n = 12)	0.055	0.017		
High-low group (n = 12)	0.079	0.003	7.000*	High-low group > High-high group High-low group > Low-low group
Low-low group (n = 12)	0.054	0.007		

\* $P < 0.05$

The results of the one-way ANOVA between groups in **Table 4** show that there was no significant difference in the essay scores of the groups of students grouped at different language levels [ $F(2, 13) = 3.39$ ,  $P > 0.05$ ], but the mean essay scores of the students in the high-low groups were higher than the mean essay scores of the students in the high-high groups and the students in the low-low groups.

**Table 4.** Differences in essay writing scores between language levels in pair combinations

	Essay scores		F (2, 13)
	M	SD	
High-high group (n = 12)	27.50	0.84	
High-low group (n = 12)	27.75	1.26	3.39*
Low-low group (n = 12)	26.17	1.17	

\* $P < 0.05$

In text alignment, the mean values of the amount of alignment and the mean values of the composition scores of the different language-level groups in the pair combinations were higher than those of the same language-level groups. There was a significant difference between the two groups in the mean variance of the amount of alignment, but there was no significant difference in the mean variance of the composition scores. The reason for this is that the high-level students in the different language-level groups were able to quickly identify and use words or phrases that were aligned with the text and share them with the low-level students, and the low-level students were also able to identify and apply them more quickly. This interaction promotes language output and creates a leveling effect. At the same time, this exchange has an enhancing effect on the language proficiency of both parties, with high-level students being more confident and motivated and low-level students' language output being improved<sup>[32]</sup>. The reason for the lower number of alignments in the same language-level group is related to their language level. The high-high level groups have a strong sense of competition and believe more in their own cognitive ability and language use ability, so they are more inclined to complete the task independently; while the low-low level students lack confidence and are unwilling to take the initiative to familiarize themselves with the communication. Familiarity will have an impact on peer communication, unfamiliar peers will try to avoid embarrassing scenes to save both sides' faces by raising difficult questions in the process of communicating<sup>[33]</sup>. Since there is no in-depth communication between the peers, it is difficult to establish a deep connection between peers without in-depth communication, and therefore they cannot provide targeted or constructive advice<sup>[34]</sup>, resulting in less interaction and low alignment<sup>[35]</sup>. Some subjects also indicated in the interview that "they have had unpleasant experiences of cooperation before and are less willing to go for interaction"; and unpleasantness does affect emotional regulation thus inhibiting the

efficient processing of information <sup>[30]</sup>.

Although there was no significant difference in composition scores between the different language-level groups and the same language-level group, the quality of compositions was higher in the different language-level groups. This is mainly due to the high rate of vocabulary alignment and high accuracy of language expression in the different language-level groups. The high-level students in the different language-level groups indicated that they paid more attention to the accuracy and comprehensibility of language expression in communication, and the low-level students also indicated that they tried harder and did not want to drag their feet. The subjects in the same language-level groups said in the interviews that they were of similar level and could not recognize some mistakes or did not point them out to save face, which led to no reduction in the number of language errors, so the quality of the compositions of the different language-level group was higher than that of the same language-level group. This is consistent with previous research findings <sup>[36]</sup>, that is, different language-level groups are more likely to establish positive cooperative relationships than same language-level groups, and positive interdependence increases group cohesion, and group cohesion is significantly positively correlated with group performance.

In summary, the different language-level groups performed better than the same language-level groups in text collaboration, which was mainly due to the guidance of high-proficiency students and the active participation of low-proficiency students. At the same time, positive interdependence and group cohesion are also important factors in improving the quality of compositions.

## 6. Conclusion

This study explored the effects of different interaction combinations and language levels on continuous writing in an online environment. The results showed that the low level of psychological anxiety of the subjects in the online environment and the interesting nature of the text material promoted the interaction between the subjects and the text, leading to different levels of alignment at the word-phrase level in the different interaction combinations and language-level groups. Interaction combinations had a significant effect on learners' alignment with the paired group being better than the individual group in terms of the mean number of alignments, whereas the individual group was better than the paired group in terms of the quality of the compositions, but there was no significant effect. Secondly, language level also has a significant effect on alignment, the different language-level group was better than the same language-level group in terms of alignment and showed a significant difference, while the effect of language level on the quality of the subject's continuation of the composition did not show a significant difference, but the mean value of the scores of the compositions of the different language-level group was better than the same language-level group. In order to improve interaction and synergy, it is recommended to use the form of group interaction of learners with different language levels. This study has theoretical and practical significance, but with a small sample size, a short experimental period, and a single genre of task continuation, it is necessary to further expand the sample and increase the number of interactive experiments in different genres in order to provide a more reliable basis for practice.

## Disclosure statement

The author declares no conflict of interest.

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