Investigating the Miscue-reflected EFL Oral Reading Process: A Case Study*

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Abstract

This paper investigated the oral reading process of an EFL learner through the use of miscue analysis. It was aimed to explore miscue features, the influence of text type on miscues and the contributory factors to miscue production. Sources of data included questionnaire responses, oral reading of texts, stimulated recalls and written summaries. The results showed that the participant, in the process of meaning construction, utilized grapho-phonetic, syntactic and semantic cues as well as cognitive strategies such as sampling, predicting and correcting. It was found that miscues with syntactic acceptability and high grapho-phonetic similarity were more frequently produced than those with semantic acceptability. In addition, it was revealed that more miscues per hundred words were produced in the expository essay than in the narrative story. The results also indicated that linguistic and cognitive factors were two major contributors to miscue production. This paper concluded that the dynamic miscue-reflected EFL reading process is able to reveal learners’ strengths and weaknesses in text processing. Pedagogical implications for EFL reading instruction were finally discussed.

Key words: miscue; oral reading process; EFL learners

1. Introduction

The question of how people read has been the subject of a considerable number of studies for a long time. Researchers have developed various methods to explore the unobservable mental activities involved in the reading process. Miscue analysis, a research procedure for analyzing miscues (unexpected responses in oral reading), has been regarded by

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many as a practical tool to assess reading ability and a research method of high ecological validity to explore the reading process (Allington, 1984; Goodman, 1996; Leu, 1982). Since its inception in the late 1960s, miscue analysis has been steadily gaining popularity in the field of reading inquiry. So far, extensive miscue research has been conducted involving participants at different levels of language proficiency and with varied language backgrounds (Brown, Goodman & Marek, 1996).

A review of literature shows that miscue studies have investigated various aspects of the reading process and have revealed the linguistic, cognitive and affective factors involved in reading. Previous studies have explored the patterns of oral reading miscues and showed the involvement of language factors in miscue production (Allington, 1984; Beebe, 1980; Goodman & Gollasch, 1980). This line of research has also indicated the role of context in reading (e.g., Campbell, 1987) and found that the use of context increased with the maturity of a reader. Miscue studies further confirmed the utilization of cognitive strategies such as self-monitoring in reading, as reflected in the production of corrected miscues (Kolic-Vehovec, 2002; Thompson, 1984). Miscue analysis involving non-native English speakers identified various factors influencing the second or foreign language (L2 or FL) reading process, such as L2 or FL proficiency, cultural schemata, and cross-language difference (e.g., Ahn, 2005; Miramontes, 1987; Piyakun, 2009; Rigg, 1988; Wallace, 1989). Language-specific features were shown to play a role in English as a Foreign Language (EFL) reading (e.g., Parsons & Lyddy, 2008; Tsou & Tsou, 2006). The role of domain familiarity was investigated in miscue research (e.g., Malik, 1990). Some miscue studies supported the use of miscue analysis as an effective diagnostic tool of reading problems in reading instruction (e.g., Laing, 2002; Martens, 1998; Paulson, 2001; Warde, 2005).

When it comes to reading research in the Chinese context, only a few studies have been focused on the miscues of Chinese EFL learners. Zhang and Gai (2010) investigated the miscue-reflected reading process of normal and dyslexic readers of Chinese and, based on their results, offered intervening measures in reading instruction. Gao (2006) conducted a detailed analysis of oral reading miscues made by Chinese EFL learners. She found that EFL reading was a complex process affected by various factors and suggested that oral reading be introduced as a reading assessment method.

The review of literature reveals the contributions of previous miscue studies but also the research gaps and the need for further improvements. First, most of the miscue studies on the reading process were conducted in L1 English settings. Given the huge number of EFL learners, investigations into miscues as reflected in the EFL reading process are of great significance. Second, children and adolescents are the subjects of most miscue studies of the reading process. Taking into consideration the fact that reading is a critical skill for both beginning and adult learners in literacy instruction, it is advisable to include adult learners at different levels of L2 or FL proficiency in miscue studies, not only for the understanding of the nature of L2 reading process but also for more efficient reading instruction. Third, most previous studies of miscues are on narrative text processing rather than on expository text processing. In view of the fact that expository texts are more frequently encountered in the content fields, there is a need to study the miscue patterns of expository text processing.
Taking into consideration the limitations of previous studies, the present study aims to investigate the reading process of an adult Chinese EFL learner by means of miscue analysis together with an open-ended questionnaire and the stimulated recall. It attempts to answer the following research questions: (1) What are the features of miscues produced by the Chinese EFL learner in the process of orally reading authentic English texts? (2) What is the role of text type in the production of miscues by the Chinese EFL learner? (3) What factors lead to the production of miscues in the Chinese EFL learner’s reading of English texts?

2. Method

2.1 Participant
The participant was a second-year university student majoring in English. She was chosen to participate in the study because she was an average sophomore student based on her academic achievement scores and the assessment of her teachers. She shared the following features with most college EFL learners in China. First, she started learning English at the beginning of middle school, and knew the English language system well. Second, she had studied English through formal classroom instruction without much exposure to English for its communicative use. Third, she was a sophisticated speaker and a proficient reader in her first language (L1) Chinese, so she was able to bring into her English reading additional L1-related resources.

2.2 Reading materials
The reading materials chosen for the case study were two complete texts unfamiliar to the participant. According to the criteria stated in Goodman, Watson and Burke (2005: 46), the material selected should be “difficult enough to challenge readers but not so difficult that they cannot continue independently”. Based on this criterion, one short story, “The Two Thanksgiving Day Gentlemen”, by O Henry, and one short essay, “Could Living in Mentally Enriching Environment Change Your Genes”, by Jennifer L. Barredo and Katherine E. Deeg, were chosen to be the reading materials for the present study. The former was a narrative text of 1,998 words and the latter, an expository text of 1,337 words. A five-point rating scale was provided for two teachers and six college sophomore students to rate the difficulty of the two texts with 1) representing very easy, 2) easy, 3) normal, 4) difficult and 5) very difficult. The difficulty level of the two texts was found to be between 4 and 4.2 indicating that they were a little difficult for second year college English majors.

2.3 Sources of data
Data for the present study came from multiple sources. Oral reading of the selected texts was the major source of data complemented with questionnaire responses, written summaries and stimulated recalls. Oral reading generated the miscues to uncover the factors involved in the reading process. In addition, a questionnaire of 15 open-ended questions was used to explore the student’s beliefs about reading and her self-perceptions.
as a reader. To get an idea of the participant’s comprehension, a written summary of each text was required after the collection of the oral reading data. Finally, a stimulated recall session was conducted after completion of summary collection to explore the factors that affect the production of miscues.

2.4 Data collection
The open-ended questionnaire was first administered to the participant in a quiet office. Following that, the participant was asked to read aloud the two selected texts, one by one, and then to write a summary that demonstrates her comprehension after the oral reading of each text. Finally, she was presented with the typescripts on which miscues were marked by the researchers and asked to explain the causes of miscue production. The whole sessions of reading aloud and stimulated recall were digitally recorded for later analysis.

2.5 Data analysis
For the analysis of oral reading miscue data, this study followed three steps: marking the miscues, coding the marked miscues and analyzing the coded miscues. More specifically, the researchers first replayed each of the recordings to identify and mark miscues on the typescripts using the pre-set symbols. Then, these marked miscues were transferred onto the miscue analysis coding form for coding. Each question was analyzed on the basis of six questions (See Appendix) to assess its semantic acceptability, syntactic acceptability, meaning change, correction, graphic similarity and phonemic similarity. Syntactic or semantic acceptability examined whether a miscue was syntactically or semantically acceptable within the sentence or the entire text or in the reader’s dialect. Similar with the dialect miscues made by nonstandard English speakers that were coded as syntactically or semantically acceptable in miscue studies, the miscues involving inflectional morphemes in this study were coded as syntactically or semantically acceptable despite the fact that the sentences concerned might not conform to the English grammatical rules. The syntactic acceptability of miscues was judged before semantic acceptability, and miscues with no syntactic acceptability were not coded for semantic acceptability.

Graphic or sound similarity examined the extent to which a miscue looked like or sounded like the text word. By degree of similarity, all the miscues were classified into three types: miscues with high graphic or sound similarity, miscues with some graphic or sound similarity, and miscues with no graphic or sound similarity. The following criteria were followed in this study to decide on the extent to which the miscue resembled the text word graphically or phonemically. Specifically, a miscue and the corresponding text word were divided into three parts: beginning, middle and end. A miscue had high graphic or sound similarity if its two or more parts looked or sounded like two or more parts of the text word and appeared in the same location. Similarly, a miscue had some graphic or sound similarity if one part of the miscue looked or sounded like one part of the text word and appeared in the same location. A miscue had no graphic or sound similarity if no similarity existed between the miscue and the text word.

Meaning change was concerned with the extent to which a miscue changed the intended meaning of the original sentence or text. Three degrees of meaning change were
distinguished including no change, partial change and total change. For syntactically and semantically unacceptable miscues, it was difficult to decide on the degree of meaning change caused by a miscue. Therefore, the evaluation of meaning change was confined to the miscues with both syntactic and semantic acceptability.

Correction was concerned with whether a miscue was self-corrected in the oral reading process. All the miscues produced by the participant were classified into three types: corrected miscues, uncorrected miscues, and abandoned miscues. Unsuccessful correction occurred with mispronunciations but not with miscues in this study, and therefore was not included in miscue analysis.

Meaning construction revealed the interrelations among semantic acceptability, meaning change and correction and its patterns indicated the extent to which the miscues influenced the reader’s concern for making sense of print. The meaning construction of each miscue was decided following the patterns provided in Goodman et al. (2005: 153). By meaning construction, all the miscues fell into three types: miscues involving no loss of meaning, miscues involving partial loss of meaning and miscues involving loss of meaning. Grammatical relations were examined by relating syntactic acceptability, semantic acceptability and correction of miscues. By grammatical relations, four types of miscues were differentiated: miscues that had grammatical strength, miscues that had partial grammatical strength, miscues that were over-corrected, and miscues that were grammatically weak. The patterns of grammatical relations indicated a reader’s ability to produce text that sounds like language and were evaluated following the criteria set in Goodman, Watson and Burke (2005: 155).

Right after the coding procedure, these miscues were analyzed mainly based on the in-depth analysis procedure suggested in Goodman et al. (2005). First, based on productive behaviors, these miscues were classified into four types: substitutions, omissions and insertions. Substitutions were concerned with the substitution of one word for the text word. Omissions involved the omission of a text word, a phrase or even a sentence in oral reading. Insertions were concerned with the addition of one word or phrase into the original text. The respective percentage for each type of miscues in each selected text was then calculated. Second, in accordance with linguistic levels, the miscues in both texts were classified into three types: miscues at the sub-word level, miscues at the word level, and miscues at the supra-word level. Third, statistical calculation was administered to the miscues coded under productive behaviors, linguistic levels, syntactic and semantic acceptability, graphic and sound similarity, correction, meaning construction and grammatical relations was calculated and the respective percentages were computed. Then, the frequency and percentage of syntactically or semantically unacceptable miscues that were corrected or uncorrected was calculated to investigate the interaction between correction and linguistic acceptability. Similarly, the frequency and percentage of graphically or phonemically similar or non-similar miscues that were corrected or uncorrected was calculated to reveal the influence of linguistic similarity on correction. Finally, the miscues per hundred words (MPHW) were calculated by dividing the total number of miscues by the total words of the text and multiplying 100.

In addition to the analysis of oral reading miscue data, the researchers conducted
YAN Qiuyan & WANG Junju

an in-depth analysis of the interview schedule data and obtained a general idea about the participant’s reading beliefs and her self-perceptions as a reader. To analyze the stimulated recalls, the researchers listened to the recordings and closely examined the participant’s responses to find patterns and regularities in the factors that might contribute to the production of miscues. Recordings were transcribed to provide support in discussion of the findings. In the analysis of written summaries, a score was assigned to each summary to get a general idea of the participant’s comprehension of the selected texts. Each of the two texts was first segmented into several sections based on units of meaning. Idea units for each section in the reader’s written summary were counted and each idea unit assigned a score of one point, which was believed to provide a picture of the reader’s comprehension.

3 Results and discussion

3.1 Features of miscues
Features of miscues produced by the participant were described in terms of the frequency of miscues and miscues per hundred words, productive behaviors, linguistic levels, syntactic and semantic acceptability, graphic and sound similarity, correction, meaning construction and grammatical relations.

3.1.1 Frequency and MPHW of miscues
One of the quantitative measures of miscues is miscues per hundred words (MPHW). As shown in Table 1, the MPHW for Text One (Narrative) and Text Two (Expository) were 3.6 and 5.3 respectively. It was obvious that the MPHW for the expository text was higher than for the narrative text. The result suggest more reading difficulties confronting the participant in reading. This corresponds with the participant’s interview report that scientific articles pose greater difficulties for her than literary novels. The reading difficulty brought about by the expository text may be attributed to specialized vocabulary, complex sentence structure and a lack of familiarity with the topic. If traced further, the difficulty may have been caused by the lack of interest and the lack of reading practice in scientific writings on the part of the participant. Evidence for this can be found in her interview report that she prefers to read narrative novels and magazines in daily reading.

<table>
<thead>
<tr>
<th></th>
<th>Text One (Narrative)</th>
<th>Text Two (Expository)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>72</td>
<td>71</td>
</tr>
<tr>
<td>Miscues per hundred words</td>
<td>3.6</td>
<td>5.3</td>
</tr>
</tbody>
</table>

3.1.2 Miscues related to productive behaviors
Based on productive behaviors, the miscues were classified into three types: substitutions, omissions, and insertions. Table 2 shows the number and percentage of each type of miscues classified by productive behaviors.
Of the three types listed, substitution miscues were the most frequently produced, accounting for 93.0% and 94.4% in Text One and Text Two, respectively. This result is in line with other miscue studies involving participants from different language backgrounds and varying language levels (Ahn, 2005; Beebe, 1980; Tatlonghari, 1984; Weber, 1970; Wu & Anderson, 2007). The predominance of substitutions seems universal in miscue studies although the exact percentage varies in different studies. After substitution, omission and insertion were the second most frequent miscues. It was interesting to note that most of the omissions and insertions involved the articles the or a and no self-correction attempts were made for either of them. This is in line with the results of other studies. For example, Goodman and Gollasch (1980) noted an increase of non-deliberate omission of words with the improvement of language proficiency. Similar results were reported in Goodman and Burke (1973) showing that the percentage of miscues involving basic sight words such as pronouns and function words tended to increase as one became a more proficient reader. One possible explanation for an increase in the omission and insertion of function words is that the reader tends to sample the most useful information to create meaning and non-deliberately ignores the function words that have a low meaning load.

Table 2. Results of Miscues Related to Productive Behaviors

<table>
<thead>
<tr>
<th>Types of Miscues</th>
<th>Text One (Narrative)</th>
<th>Text Two (Expository)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percentage</td>
</tr>
<tr>
<td>Substitution</td>
<td>67</td>
<td>93.0</td>
</tr>
<tr>
<td>Omission</td>
<td>3</td>
<td>4.2</td>
</tr>
<tr>
<td>Insertion</td>
<td>2</td>
<td>2.8</td>
</tr>
</tbody>
</table>

3.1.3 Miscues related to linguistic levels

Based on linguistic levels, the miscues were divided into three types: miscues at the sub-word level, miscues at the word level, and miscues at the supra-word level. Miscues at the sub-word level involved the insertion, omission or substitution of morphemes, either inflectional or derivational in text words. Miscues at the word level involved the insertion, omission or substitution of text words. Miscues at the sentence level were concerned with those made at the phrase, clause or sentence levels. Table 3 presents the frequency and percentage of miscues related to linguistic levels.

As shown in Table 3, among the three types of miscues classified by linguistic levels, miscues at the sub-word level were most frequently produced, accounting for 41.7% and 57.7% of all the miscues in Text One and Text Two respectively. Miscues at the word level comprised 40.3% in Text One and 26.8% in Text Two. Miscues at the supra-word level were the least produced by the participant, accounting for 18.0% and 15.5% in Text One and Text Two respectively. The results show that the participant made more miscues at the morpheme level than at other linguistic levels. This suggests that the participant focused more attention on meaning construction than on accuracy of form in the oral reading process.
3.1.4 Syntactic and semantic acceptability of miscues
Syntactic and semantic acceptability examines whether a miscue is syntactically or semantically acceptable in standard English or only in the reader’s dialect. In miscue studies involving native speakers, “dialect” refers to the so-called non-standard English varieties spoken by African American people and other minority groups. The miscues produced by ESL or EFL readers out of cross language differences are labeled ESL/EFL-miscues (Rigg, 1988; Wallace, 1989). Miscue researchers generally code these ESL/EFL miscues semantically and syntactically acceptable although the relevant sentences involving these miscues were superficially ungrammatical. The present study followed the customary practice that all inflectional morpheme-involved miscues were coded syntactically or semantically acceptable miscues.

Table 4 summarizes the number and percentage of miscues coded under syntactic and semantic acceptability. In Text One, syntactically acceptable miscues accounted for 84.7% of all and were much higher than non-acceptable miscues which were only 9.7%. Similar patterns were found for miscues in Text Two in which syntactically acceptable miscues accounted for 85.9% and non-acceptable miscues accounted for only 4.2%. In contrast, semantically acceptable miscues in Text One comprised 57% of all and they were only slightly higher than non-acceptable miscues whose percentage was 36.1%. In Text Two, semantically acceptable miscues were 57.7% and non-acceptable miscues were 33.8%. The results show that a large majority of miscues were syntactically acceptable whereas only a little over 50% were semantically acceptable. This reflects the participant’s syntactic competence in that she was able to produce grammatically correct sentences. This also demonstrates her inadequate use of semantic cues in the meaning-making process. No significant differences were found across text types with regard to syntactic and semantic acceptability of miscues.
3.1.5 Graphic and phonemic similarity of miscues
Graphic similarity and phonemic similarity concerned the extent to which a miscue looks like or sounds like the corresponding text word. Table 5 shows that of all the miscues coded under graphic similarity, 84.1% and 78% were highly similar with the expected responses in Texts One and Two, respectively. Miscues that had some degree of similarity with the text words accounted for 11.1% and 14% in Texts One and Two, respectively. Only 4.8% of the miscues in Text One and 8% in Text Two had no similarity with the text words. In terms of phonemic similarity, 69.8% miscues in Text One and 77% in Text Two had a high degree of similarity with the expected responses. 22.2% in Text One and 14% in Text Two of the miscues had some degree of similarity with the text words, and only 8% of the miscues in Text One and 9% in Text Two shared no similarity with the expected responses. A comparison of the percentages in Table 5 revealed that the percentages of high-graphic and high-phonemic similarity categories were much higher than those categories with no similarity. Similar results were found in other ESL miscue studies (Ahn, 2005; Tatlonghari, 1984). Unlike native speakers who tend to substitute a graphically unfamiliar but semantically related word for the text word, the ESL or EFL learners are more inclined to use a graphically similar word to replace the text word. This might be attributed to the comparatively low language proficiency and the inadequate background knowledge of ESL or EFL learners who rely more on the print to decode words. For one thing, contextual cues skillfully employed by native speakers may not be accessible to ESL or EFL learners and they may use the strategy of sounding out words based on their grapho-phonic knowledge.

Table 5. Results of Miscues Related to Graphic and Phonemic Similarity

<table>
<thead>
<tr>
<th></th>
<th>Text One (Narrative)</th>
<th></th>
<th>Text Two (Expository)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Graphic similarity</td>
<td>Sound similarity</td>
<td>Graphic similarity</td>
</tr>
<tr>
<td></td>
<td>H        S       N</td>
<td>H        S       N</td>
<td>H        S       N</td>
</tr>
<tr>
<td>Frequency</td>
<td>53       7       3</td>
<td>44       14       5</td>
<td>51       9       5</td>
</tr>
<tr>
<td>Percentage</td>
<td>84.1     11.1    4.8</td>
<td>69.8     22.2    8</td>
<td>78       14       8</td>
</tr>
</tbody>
</table>

H: high similarity; S: some similarity; N: no similarity

3.1.6 Meaning construction and grammatical relations
Meaning construction and grammatical relations reveal patterns of the interrelations among the categories of syntactic acceptability, semantic acceptability, meaning change and correction. The patterns for meaning construction indicate the extent to which the miscues can influence the reader’s concern for making sense of the print. In the Goodman Taxonomy, three patterns are assigned to meaning construction: no loss, partial loss and loss. The no loss pattern includes miscues that are semantically acceptable or miscues that are semantically non-acceptable but corrected, and they are believed to show the reader’s concern for making sense of print. The patterns for grammatical relations are identified to show a reader’s ability to produce text that sounds like language (Goodman, Watson & Burke, 2005: 154). These patterns are found by examining syntactic acceptability, semantic
acceptability and correction and four patterns are assigned to grammatical relations: strength, partial strength, overcorrection and weakness.

Table 6 summarizes the pattern percentages for meaning construction and grammatical relations. A total of 57 miscues involved “No Loss” accounting for 79.2% of all the miscues while the miscues involved “Loss” accounted for a low percentage of 19.4% in Text One. In Text Two, a similar pattern was found with miscues involving “No Loss” accounting for a high percentage of 81.7% and “Loss” miscues 12.6%. In terms of grammatical relations, Table 6 showed that the participant produced 79.2% of the miscues which were syntactically acceptable in Text One and 78.7% in Text Two. Only a percentage of 6.9% in Text One and 4.2% in Text Two was syntactically unacceptable. The results show the participant’s grammatical competence, which corresponded to the high percentage of syntactic acceptability of miscues. Overcorrection made by the participant was 13.9% and 21.1% for Text One and Text Two respectively. It is argued that overcorrection indicates the reader’s “excessive concern for exactness and focus on surface features of the text” (Goodman, Watson & Burke, 2005: 154).

Table 6. Results of Miscues Related to Meaning Construction and Grammatical Relations

<table>
<thead>
<tr>
<th>Meaning Construction</th>
<th>Grammatical Relations</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Loss</td>
<td>Partial Loss</td>
</tr>
<tr>
<td>Strength</td>
<td>Over-correction</td>
</tr>
<tr>
<td>Partial strength</td>
<td>Weakness</td>
</tr>
<tr>
<td>Loss</td>
<td>Strength</td>
</tr>
<tr>
<td>Partial strength</td>
<td>Over-correction</td>
</tr>
<tr>
<td>Over-correction</td>
<td>Weakness</td>
</tr>
<tr>
<td>Weakness</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Text One (Narrative)</th>
<th>Text Two (Expository)</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td></td>
</tr>
<tr>
<td>%</td>
<td></td>
</tr>
<tr>
<td>57</td>
<td>45</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>14</td>
<td>10</td>
</tr>
<tr>
<td>46</td>
<td>5</td>
</tr>
<tr>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>81.7</td>
</tr>
<tr>
<td>58</td>
<td>62</td>
</tr>
<tr>
<td>15.3</td>
<td>12.7</td>
</tr>
<tr>
<td>13.9</td>
<td>12.1</td>
</tr>
<tr>
<td>6.9</td>
<td>4.2</td>
</tr>
<tr>
<td>62</td>
<td>21.1</td>
</tr>
<tr>
<td>53.5</td>
<td>0.0</td>
</tr>
</tbody>
</table>

F: Frequency

3.1.7 Correction of miscues

One of the questions asked about each miscue is whether this miscue is corrected by the reader. All corrections fell into four types: successful correction, no correction, and abandoned correction, i.e., a text word or phrase that was read in a correct way and then abandoned. As seen in Table 7, the participant corrected 25 miscues in Text One and 33 miscues in Text Two accounting for 34.7% and 46.7% of all miscues respectively. The result suggests the use of self-monitoring strategy in the reading process.

Table 7. Correction of Miscues

<table>
<thead>
<tr>
<th></th>
<th>Text One (Narrative)</th>
<th>Text Two (Expository)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Successful correction</td>
<td>No correction</td>
</tr>
<tr>
<td></td>
<td>Abandoned correction</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>25</td>
<td>33</td>
</tr>
<tr>
<td>Percentage</td>
<td>34.7</td>
<td>46.5</td>
</tr>
</tbody>
</table>
The relative high percentage of self-correction miscues shows the reader’s active monitoring of her reading process. However, Table 7 does not show what language cues played a role in the production of self-corrections. To find out what cues the participant relied on in her self-correction attempts, the present study examined the interaction of correction with syntactic acceptability and semantic acceptability. Table 8 presents the relationship of correction with syntactic acceptability. A close look at the table showed that of all the miscues that were syntactically acceptable, 65.5% and 57.4% for Text One and Text Two respectively, were not corrected, whereas 42.8% and 66.7% of the syntactically unacceptable miscues were corrected for Text One and Text Two respectively. The results suggest that syntactic cues served as a very important factor for generating self-corrected miscues.

Table 8. Correction and Syntactic Acceptability of Miscues

<table>
<thead>
<tr>
<th>Syntactic acceptability</th>
<th>Text One (Narrative)</th>
<th>Text Two (Expository)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Y</td>
<td>P</td>
</tr>
<tr>
<td>Successful correction</td>
<td>19 (31.2%)</td>
<td>3 (75%)</td>
</tr>
<tr>
<td>No correction</td>
<td>40 (65.5%)</td>
<td>1 (25%)</td>
</tr>
<tr>
<td>Abandoned correction</td>
<td>2 (3.3%)</td>
<td>0</td>
</tr>
</tbody>
</table>

Y: acceptable; P: partially acceptable; N: unacceptable

Table 9 shows the semantic acceptability of corrected and uncorrected miscues in both texts. As shown in the table, 73.2% in Text One and 63.4% in Text Two were not corrected for the miscues, which were semantically acceptable within the text. In contrast, of all the semantically unacceptable miscues, 46.2% and 62.5% for Text One and Text Two were corrected. The results indicate that semantic acceptability played an important role in prompting self-correction attempts. No significant differences were found across text types.

Table 9. Correction and Semantic Acceptability of Miscues

<table>
<thead>
<tr>
<th>Semantic acceptability</th>
<th>Text One (Narrative)</th>
<th>Text Two (Expository)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Y</td>
<td>P</td>
</tr>
<tr>
<td>Successful correction</td>
<td>9 (22%)</td>
<td>4 (80%)</td>
</tr>
<tr>
<td>No correction</td>
<td>30 (73.2%)</td>
<td>1 (20%)</td>
</tr>
<tr>
<td>Abandoned correction</td>
<td>2 (4.8%)</td>
<td>0</td>
</tr>
</tbody>
</table>

Y: acceptable; P: partially acceptable; N: unacceptable

3.2 Perceptions of Reading
Analysis of the questionnaire responses revealed the participant’s reading beliefs about reading, self-perceptions as a reader, perceptions of miscue phenomenon, and suggestions
for reading instruction. To start with, the participant held the view that wide reading was characteristic of a good reader in general and considered reading interest and a large vocabulary essential in English reading. As to self-perceptions as a reader, the participant considered herself a slow reader of English and had the bad habit of reading word by word. She reported the use of mental translation to aid comprehension in English text processing and a decline in her Chinese reading proficiency during her University study. With regard to miscue phenomenon in reading, the participant confirmed the production of miscues and attributed it to varying factors such as inattentiveness, slip of the tongue, or wrong prediction of text development. Finally, she suggested that current reading instruction should go beyond textbooks and teachers should focus more attention on meaning rather than on language points.

3.3 Discussion

3.3.1 The use of language cueing systems
Written text provides the basic information for the act of reading. The transactional socio-psycholinguistic theory of reading (Goodman, 1996) posits that there are three language levels and cue systems available for readers in written text: the grapho-phonics, the lexico-grammar, and the meaning and pragmatics. This study found that the participant failed to employ the three language cueing systems in a balanced way. Miscue data showed that she relied more on grapho-phonics and syntactic cues in reading rather than on semantic cues. This is consistent with some other miscue studies that involved ESL or EFL learners (Ahn, 2005; Tatlonghari, 1984). However, Ellinger (1985) investigated the reading strategies used by a high and low proficiency group of ESL learners and found that the higher proficiency group utilized syntactic and semantic systems whereas the lower group relied more on graphophonemic information. Miscue studies involving native speakers seem to suggest that syntax and meaning played a more significant role in reading than graphics and sound (Kucer & Tuten, 2003).

This cue utilization difference demonstrated in miscues studies may be attributed to the influence of language proficiency and background knowledge on the reading process. Reading researchers distinguish between two kinds of processing in reading: the bottom-up processes and the top-down processes. It is now agreed that bottom-up and top-down processes work together to ensure the accurate and rapid processing of text information (Hudson, 2007: 33). However, if the reader’s language proficiency is low, he or she is more likely to be involved in bottom-up process starting from decoding of letters and words. In the present study, the participant, without enough background knowledge to support her English reading, chose to sound out unfamiliar words resulting in a high proportion of grapho-phonemically similar miscues.

3.3.2 The use of cognitive strategies in reading
This study found that the participant made use of a variety of cognitive strategies such as selection, prediction, inference, correction, and repetition in her efforts to reach comprehension. Her reading behavior showed that reading is not an accurate decoding
of each word, but rather a process of sampling the most useful information within and beyond a word. It was found that the participant inserted and omitted some of the text words in reading. A further examination of these miscues revealed that what was mainly involved was the low meaning load function words. Besides insertions and omissions, some of the substitution miscues also displayed the selection strategy used in reading. For example, the miscues exposure and inheritance were produced to replace the text words exposure and inheritance. Though the participant used two non-words to replace two real words, it showed her knowledge of English word formation, that is, -sion and -tion are noun-markers. From another perspective, it showed that instead of decoding the words letter by letter, she sampled the first initial letters of the words and produced the whole based on what she had already known about the language system.

The utilization of prediction and inference strategies can be shown by the substitution miscues in the study. For example, in the sentence He was dressed all in black, and wore the old-fashioned kind of glasses that won’t stay on your nose. The participant read the word “your” as “his” first and then corrected it. In this example, the miscue and the text word share the same syntactic functions, but they are not graphically and phonemically similar at all. Given her English language proficiency, it is safe to say that she will not confuse these two words if her attention is called to the words. The reason she made the miscue lies in the influence of the co-text. The author introduces the old Gentleman in third person without referring to the reader in previous paragraphs. The participant never expected the use of an abrupt “your” in the sentence under discussion and made wrong prediction concerning the following text content.

In addition to prediction and inference strategies, the miscue data also revealed the use of correction strategies on the part of the participant in reading. Miscue researchers consider correcting “one of the most important bits of evidence the readers are intent on comprehending” (Goodman, 1996: 114). In the study, 25 miscues in Text One and 33 miscues in Text Two were corrected accounting for 34.7% and 46.7% of all the miscues. In most cases, correction occurred when what she expected conflicted with what she encountered.

A close examination of the repetitions in this study showed that they tended to occur where there was difficulty in lexical and syntactic understanding in the preceding or following sentence. An example from Text Two may be helpful here to illustrate the point. In the sentence “A recent study, however, published by neuroscientists Junko A. Arai, Shaomin Li and colleagues at Tufts University, shows that not only does the environment an animal is reared in have marked effects on its ability to learn and remember, but also…” the participant first segmented the italicized part as “the environment an animal is reared in have”. When she found that in was not followed by the expected “having”, she repeated “in” and then “is reared in” to get the sentence grammatically acceptable.

3.3.3 The role of self-monitoring in reading

If a reader is aware that what he or she is reading makes sense or does not, he or she is monitoring his or her comprehension. The ability to monitor meaning enables readers to select and use strategies to enhance comprehension. Self-correction is an observable
behavior from which researchers can infer that the reader has engaged in monitoring strategies (Kolic-Vehovec, 2002). It was found that good readers generally left those errors that conformed to the entire context uncorrected, whereas they corrected almost all the miscues that were not grammatically acceptable. In contrast, weak readers corrected both acceptable and unacceptable miscues to the same degree (Thompson, 1984).

A close look at correction miscues revealed the operation of self-monitoring in reading process. In the study, 25 miscues in Text One and 33 miscues in Text Two respectively were corrected accounting for 34.7% and 46.7% of all the miscues. Syntactically, of all the miscues that were syntactically acceptable, 65.5% and 57.4% in Text One and Text Two respectively were not corrected, whereas 42.8% and 66.7% of the syntactically unacceptable miscues were corrected for Text One and Text Two respectively. The results showed the importance of syntactic cues in reading. Semantically, 73.2% in Text One and 63.4% in Text Two were not corrected of the miscues which were semantically acceptable within the text. In contrast, of all the miscues which were semantically unacceptable within the text, 46.2% for Text One and 62.5% for Text Two were corrected suggesting the importance of semantic cues in reading. The results suggested that the participant was monitoring her reading by checking the text information against her knowledge. When the problem of ungrammaticality arose or when what she was reading did not make sense, she regressed to check her previous understanding and make corrections.

3.3.4 Affective factors in reading
Affective states in reading refer to the emotional factors which may have a negative or positive effect on reading (Ellis, 1994: 472). A reader’s attitude to English instruction, to the reading teachers, and to himself or herself as a reader are all affective factors and have great impact on how well he or she reads.

Analysis of the responses to the interview data revealed some of the participant’s affective factors that may impede the improvement of her reading proficiency such as lack of interest in English reading, her anxiety about language learning and her dissatisfaction with reading instruction. Based on her report, she cannot enjoy reading and mainly read in English to learn language points. Consequently, she failed to read extensively in English although she was aware that extensive reading is an effective way to improve reading proficiency. Her complaint about the out-dated reading textbook and the rigid reading instruction method showed that help from the teacher was not available for her in classroom instruction.

3.3.5 The predominance of inflectional morpheme-involved miscues
A further classification of miscues into different types singled out the inflectional morpheme-involved miscues, which accounted for 29.4% of all miscues. The prevalence of inflectional morpheme-involved miscues was also found in other ESL or EFL miscue studies (Rigg, 1988; Wallace, 1989). Rigg (1988) noted that most of the grammatical dialect miscues made by the participants were related to inflectional suffixes such as past tense -ed, plural -s, possessive -’s which were absent in their native languages. Wallace (1989:
Investigating the Miscue-reflected EFL Oral Reading Process: A Case Study

277) found one of the prominent miscue features identified was the omission or the overgeneralization of -ed morpheme which she called interlanguage miscues and argued that these miscues were not just a window on the reading process but also on the language acquisition process, and that they revealed the learner’s language and reading competence. Unlike the participants in Rigg (1988) and Wallace (1989), however, the participant in the present study was an advanced learner of English rather than a beginning learner with no grammatical competence. Analysis of stimulated recalls revealed that the participant could immediately make a correct response when her attention was called to the inflectional morpheme-involved miscues indicating her command of the grammatical rules. This was supported by her report that she made such inflectional morpheme involved miscues very frequently even in English speaking and writing. Problems with inflectional morphemes might find their roots in the cross language differences between Chinese and English. English is an inflectional language relying on inflectional markers for grammatical information such as gender, person, and number whereas Chinese is not inflected. Therefore, Chinese EFL learners have no facilitative support from their mother tongue when learning inflectional morphemes in English.

Explanations can be found for the prevalence of inflectional morpheme-involved miscues in EFL learners’ reading of English from linguistic and cognitive perspectives. One explanation lies in the distinction between two pairs of concept in language learning theories: acquisition versus learning, and implicit knowledge versus explicit knowledge. Acquisition is “a subconscious process which arises when learners are using language for communication” whereas learning is “a process of paying conscious attention to language in an effort to understand and memorize rules” (Ellis, 1994: 356). The EFL learner, over the years, has been learning English through formal instruction. Considering the way English instruction has been conducted in China, it is safe to say that the participant has learned rather than acquired most, if not all, of the English grammatical rules. The learned knowledge, in S. Krashen’s view, is used to monitor the output. Therefore, despite her command of grammatical knowledge, the participant might not be able to flexibly apply the learned knowledge in language use. However, when her attention was called to form, her learned knowledge came into play fulfilling its function of monitoring. Bialystok’s theory of L2 learning makes a distinction between intuitive implicit knowledge and formal explicit knowledge, which generally corresponds to S. Krashen’s acquisition and learning respectively (Ellis, 1994: 355-357). The difference lies in the fact that Bialystok assumed an interface between implicit knowledge and explicit knowledge whereas Krashen claimed a non-interface between acquisition and learning.

Another explanation for the frequent occurrence of inflectional morpheme-involved miscues can be made from the perspective of cognitive constraints on comprehension (Just & Carpenter, 1992; Leeser, 2007). Working memory capacity plays a central role in language comprehension. It is a storage and processing system for carrying out various mental tasks. L2 reading involves more complex processing tasks than L1 reading. More tasks, for example, word recognition, syntactic parsing, information integration, and mental translation compete for the limited processing resources in the working memory. Since the participant had been instructed to write a summary after finishing the reading,
she might have been focusing her attention on meaning construction rather than on form, thus causing her to ignore the low meaning load inflectional morphemes the omission of which did not affect the global meaning of words.

3.3.6 Text type and miscue production
The influence of text types on miscue production concerns the role of text type in the miscue-reflected reading process. Narrative and expository texts differ in their structures. While the typical structure of a narrative text is temporal and causal, the connections in expository texts are dependent on logical relations such as comparison and problem/solution (Hudson, 2007: 182).

As previously shown in Table 1, the MPHW for the expository text was higher than the narrative text. This is consistent with the participant’s questionnaire report that expository texts tend to create problems for her in reading. There were no significant differences in other miscue patterns across text types suggesting that the participant seemed to process the two texts in a similar way. An analysis of her summary writings revealed that the participant produced idea units for each section of Text One and Text Two indicating her awareness of the structures for narrative and expository texts. Later discussion with the participant showed that difficulties in the expository text arose from its complex sentence structure, specialized vocabulary and topic unfamiliarity rather than from her ignorance of text structure.

3.3.7 Factors contributing to miscue production
A further look at the 143 miscues in the study reveals a variety of factors that are likely to contribute to the production of these miscues. The influencing factors are, among others, the implicit/explicit knowledge, inter-language features, lexical chunks and formulaic expressions, contextual influence, and lexical retrieval and storage in the mental lexicon.

Second language acquisition theories support the distinction between explicit knowledge and implicit knowledge (Ellis, 1994: 355). The state of knowledge in mind has a bearing on the learners’ use of language. Having learning English largely through formal instruction, they have learned, rather than acquired, most of the grammatical knowledge that exists in mind explicitly. Consequently, the learners are unable to apply their knowledge flexibly in language usage because they have failed to internalize it and make it implicit. The explicit/implicit distinction offers a proper explanation for the frequent occurrence of inflectional morpheme-related and determiner-related miscues.

In addition to the influence of explicit knowledge, inter-language features may also play a role in the production of miscues. Language acquisition is a complex and dynamic process. EFL learning is even more complex for Chinese learners. Inter-language theory argues for the existence of an emerging linguistic system that has been developed by a L2 learner. As is previously mentioned, Chinese is a logographic tonal language whereas English is an alphabetic intonation language. These cross-language differences tend to create problems for Chinese EFL learners in reading. Their inter-language may reflect the influence of their first language Chinese, the influence of cross-language differences, the over-generalization of English rules, and the creation of new forms.
Lexical chunks and formulaic expressions can also help explain the generation of certain miscues in the study. L2 researchers now realize the significance of lexical chunks and formulaic speech in effective communication. The lexical approach to ESL teaching and learning has already drawn attention from teachers and researchers. In the present study, the participant made certain predictions in reading based on her knowledge about lexical chunks and formulaic expressions. It is not yet clear, however, whether its prevalence in EFL learners’ use of English is caused by instruction effects or frequency input (Ellis, 1994: 272).

It is acknowledged that context helps readers solve reading difficulties that arise in the reading process. It is also true that contextual influence may lead to the occurrence of miscues. After what has been read is processed and stored in memory, it becomes part of background knowledge and influences what is to be processed. In the present study, while being asked why she read “national” as “traditional”, the participant responded that she came across “traditional” in the preceding context several times and the strong signal in her mind resulted in her wrong decoding of the word “national” which shared some graphophonetic similarity with “traditional”.

The way words are stored in mental lexicon may also influence lexical retrieval and leads to the production of miscues. Studies show that the development and organization of mental lexicon in L1 differ greatly from L2 (Li & Sun, 2009; Zhang, 2010; Cui & Liu, 2010). It has been found that L1 mental lexicon is a lexical network based on semantic features whereas L2 mental lexicon is largely based on formal relationships between words. For example, Zhang (2010) found that the L1 mental lexicon was semantically organized keeping a balanced structure of syntagmatic and paradigmatic relations. This study showed that the mental lexicon of Chinese EFL learners, unlike L1 mental lexicon, was a hybrid network of semantic and non-semantic relations and that there was a shift from non-semantic relations to semantic relations with the improvement of language proficiency. The retrieval of words from mental lexicon is closely related to the way words are organized in it. In the present study, the participant produced a high proportion of self-corrected miscues that resembled the text words graphophonically. The participant responded that her original decoding of the miscued word was based on the first few letters she saw and it was the context that made her realize that she retrieved the wrong word. In addition to graphophonically similar miscues, there were also miscues that were semantically similar or dissimilar with the text words. One case in point is that the participant read “the old man” as “the young man” indicating the retrieval of two semantically associated words from the mental lexicon. This is consistent with the findings of previous research that L2 mental lexicon may be a hybrid network of semantic and non-semantic relations.

Based on the discussion above, it is evident that the generation of miscues is caused by a variety of linguistic and cognitive factors. Viewed from another perspective, the production of miscues is a reflection of the complexity of the reading process.
4. Conclusion

It can be concluded that the miscue-reflected oral reading process is dynamic revealing the EFL learner’s strengths and weaknesses in processing English texts. The participant, involved in an active interaction with the text, was able to employ contextual cues available and a variety of cognitive strategies to aid her comprehension. To be specific, she utilized grapho-phonic, syntactic, semantic and pragmatic cues and cognitive strategies such as sampling, correcting and predicting in the process of making sense of print. Among the language cueing systems utilized, syntactic and grapho-phonic cues played a more important role than semantic cues. More miscues per hundred words were found in the narrative text than in the expository text. The influence of text types on reading was found to lie in topic familiarity rather than on text structure awareness. The learner’s weaknesses were also evident in the study. When coping with some unfamiliar words, her reliance on graphic cues rather than on context resulted in loss of meaning. In addition to positive reading strategies, she also employed negative strategies such as the sounding out of unfamiliar words. Finally, despite her awareness of the importance of extensive reading, her questionnaire report showed her lack of extensive reading in daily practice.

The present study provided pedagogical implications for EFL reading instruction in the Chinese context from the following perspectives. First, despite the importance of grammatical knowledge, reading teachers should call learners’ attention to semantic and pragmatic cues in reading. Second, extensive reading should be stressed, and more important, supervised to help EFL learners improve their reading proficiency. The learners’ awareness of the significance of extensive reading does not guarantee their adequate reading. The teachers must offer more encouragement and supervision. In addition, wide reading across different text types should be required rather than confining EFL reading to literary novels. Finally, to discover reading problems, reading assessment should not be limited to standardized tests. It is advisable to conduct a closer examination of the learners’ reading perceptions and behaviors, such as miscue analysis, to complement the reading scores from standardized reading tests, and to obtain a more complete picture of their reading ability.

This study had some limitations. Considering the individual differences among learners, caution should be taken when generalizing the research findings of the case study to other EFL learners. Also, only summary writing was used to test the participant’s comprehension of the reading materials. In future studies, a larger sample of learners with differing language proficiency would be desirable. In addition, it is suggested that a combination of different methods such as question answering, retelling and summary writing should be employed to test comprehension.
References


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Appendix: Questions for In-depth Analysis

**Question 1: Syntactic acceptability**

Does the miscue occur in a structure that is syntactically acceptable in the reader’s dialect?

Y (Yes)-The miscue is completely syntactically acceptable within the sentence and within the entire text.

P (Partial)-The miscue is syntactically acceptable with the first part of the sentence or is syntactically acceptable with the last part of the sentence. Or, the miscue is syntactically acceptable within the sentence, but not within the entire text.
Question 2: Semantic acceptability
Does the miscue occur in a structure that is semantically acceptable in the reader’s dialect? Semantic acceptability cannot be coded higher than syntactic acceptability.
Y (Yes)-The miscue is completely semantically acceptable within the sentence and within the entire text.
P (Partial)-The miscue is semantically acceptable with either the first part of the sentence or is semantically acceptable with the last part of the sentence. Or, the miscue is semantically acceptable within the sentence, but not within the entire text.
N (No)-The miscue is not semantically acceptable.

Question 3: Meaning change
Does the miscue change the meaning of the entire text? This question is asked only if the miscues are both syntactically and semantically acceptable (Q1 = Y and Q2 = Y).
N (No)-There is no change in meaning.
P (Partial)-There is inconsistency, loss, or change of a minor idea, incident, character, fact, sequence, or concept (see note above).
Y (Yes)-There is inconsistency, loss, or change of a major idea, incident, character, fact, sequence, or concept (see note below).

Question 4: Correction
Is the miscue corrected?
Y (Yes)-The miscue is corrected.
P (Partial)-There is either an unsuccessful attempt to correct, or the expected response is read and then abandoned,
N (No)-There is no attempt to correct.

Question 5: Graphic similarity
How much does the miscue (OR) look like the text word (ER)?
H (High)-A high degree of graphic similarity exists between the miscue and the text word.
S (Some)-Some degree of graphic similarity exists between the miscue and the text word.
N (None)-No degree of graphic similarity exists between the miscue and the text word.

Question 6: Sound similarity
How much does the miscue (OR) sound like the expected response (ER)?
H (High)-A high degree of sound similarity exists between the miscue and the expected response.
S (Some)-Some degree of sound similarity exists between the miscue and the expected response.
N (None)-No degree of sound similarity exists between the miscue and the expected response.

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