Processing L2 Metaphorical Expressions by Chinese Learners of English

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1. Introduction

The current study aims to investigate how Chinese learners of English can construct or access conventional metaphorical meanings of lexical items when they read metaphorical expressions in a real-time setting. Acquisition of conventional metaphorical expressions in a second language has been only recently under systematic investigation in second language acquisition, despite the fact that the importance of metaphorical and other figurative expressions in second language pedagogy has been emphasized for decades. Here, “conventional metaphorical expressions” are defined loosely based on Conceptual Metaphor Theory by Lakoff and Johnson (1980), the classical definition in lexical semantics (e.g. Sweetser, 1990) and the Metaphor Identification Paradigm (MIP) further developed by the Pragglejaz Group (2007), the conventional metaphorical meaning of a lexical item being the core of this definition. A conventional metaphorical meaning of a lexical item clearly departs from the literal, core meaning of that word, but nevertheless shows a close link of concepts. A metaphorical expression is therefore defined as a grammatical multi-word phrasal structure (such as a grammatically complete VP, NP or AdjP, etc.), in which one and only one of the lexical items should be interpreted as a conventionalized metaphorical meaning to make the phrase meaningful. For instance, the meaning of “attack” in “attack Mary with a stick”, is “to use violence to try to hurt or kill somebody” (Wehmeier, 2000: 66), and it clearly involves physical contact and conflict, thus concrete and literal. The meaning of “attack” in “attack Mary’s proposal”, on the other hand, is defined as “to criticise somebody or something severely” (Wehmeier, 2000: 66), which does not involve any real physical conflict, therefore abstract and metaphorical. “Attack Mary’s proposal” makes a good representative of metaphorical expressions discussed in this paper.

A metaphorical expression can be seen as a semi-fixed structure. For example, expressions like “attack the proposal”, “attack the argument” and “attack the idea” can be combined together as one semi-fixed metaphorical expression [attack [NP]], while a possible NP should fall into the semantic domain of “ideas and thoughts” in order to trigger the intended metaphorical meaning of “attack.” Since the metaphorical meaning of a lexical item is essentially triggered by the collocation of that lexical item, words that (1) fall into the semantic domain of required collocation and (2) can form valid expressions can all be filled into the blank part of the semi-fixed structure. The metaphorical expressions used in the experiment, as provided in the appendix, are specific realisation of different semi-fixed structures that trigger the conventional metaphorical meanings of lexical items, and learners are asked to read these specific realisations to understand the conventional metaphorical meanings.

Two possible routes are hypothesized for the “meaning-making” process of a figurative expression, both for native speakers and second language learners. In a broader sense, the meaning of a multi-word figurative expression can be either constructed or accessed. “Constructing” refers to a more complicated process of meaning-making, involving searching, selecting and adjusting the meanings of individual constituents of a figurative expression. “Accessing” refers to a more direct process, which means that a figurative meaning is readily available and a reader can ascertain the meaning without complicated selection, activation and possibly inhibition of incorrect meanings. The literal-first hypothesis, following

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the notion of Grice (1989), is a typical hypothesis on the construction of figurative meanings. Grice sees metaphor as the violation of the Maxim of Quality, and metaphorical expressions convey the meanings that are clear departures from the literal meaning of the same expressions. Therefore, the conventional rule for the derivation of metaphorical meanings in a Gricean manner is that language users first arrive at the literal meaning of an expression, while at that time they will realize that the literal meaning is not intended, and they then will calculate the metaphorical meanings as a type of implicature.

However, it is well argued in psycholinguistic studies that native speakers of a language do not show significant differences when processing literal expressions and conventional figurative expressions, which indicates that figurative meanings can be activated directly (i.e. Direct Access view), or in parallel with literal meanings. Studies have been conducted on conventional metaphorical sentences (e.g. “My job is a jail”), idioms (e.g. “spill the beans”) and sometimes idiomatic phrasal verbs (e.g. “look up”), all of which are generally multi-word expressions (see Glucksberg 2001 for a historical review). The results altogether show that native speakers are able to directly access a figurative meaning if it has been conventionalized. In some cases, such as idiom comprehension, native speakers even react faster to the figurative expressions than the literal expressions. Theoretical arguments have been proposed that native speakers tend to store and retrieve these multi-word figurative expressions holistically when they process these expressions, and they no longer deduce the figurative meaning from the compositional meaning of these expressions.

The processing of figurative expressions in a second language, however, shows a clear diversity. Due to different cross-linguistic availability of figurative expressions and particularly the lack of metaphorical competence in L2 (Kecskés 2000; Littlemore & Low 2006), it is possible that L2 learners are not as sensitive as native speakers in terms of access to non-literal meanings. While “literal first” may not be the case with figurative language processing among native speakers of a language, it is still possible that L2 learners will need to spend more time reading and understanding figurative expressions in L2, which include idioms, proverbs, phrasal verbs and metaphorical expressions. In this case, a longer reading time involves the composition of literal meaning and a selection and adjustment in order to derive the figurative meaning. At the same time, the reading time for L2 figurative language might be influenced by factors other than figurativeness itself.

Previous studies on figurative language processing by L2 learners show conflicting patterns in different situations. Investigations on the processing of L2 idioms (e.g. Cieślicka 2006; Siyanova-Chanturia and others 2011) reveal that learners adopt a literal-first strategy when processing L2 idioms, different from native speakers’ direct access. Learners in general favor the literal meaning of idioms at first sight, as if idioms were novel expressions in their L2, and it seems that they will first activate the compositional literal meaning of a multi-word expression before arriving at the intended idiomatic meaning. Studies on the processing of English phrasal verbs and idioms by Heredia and his colleagues (Heredia and others 2007; Matlock and Heredia 2002), on the other hand, show that learners are able to show a native-like reading pattern when they read and comprehend phrasal verbs, and they can access the figurative meaning of an expression at the very beginning of processing. In particular, highly proficient learners are able to identify the figurative use of language immediately, without going through the literal-first direction. The conflicting processing patterns suggest a potentially flexible processing mechanism for figurative language: learners may switch between literal-first construction and direct access, depending on multiple factors, such as frequency and familiarity of expressions, learners’ proficiency of L2 as well as cross-linguistic influence (see Libben and Titone 2008; Titone and others 2015 for relevant discussions and surveys).

Compared with other types of figurative expression, processing of metaphorical expressions has not yet received extensive research. García and colleagues (2015) suggest that comprehension of metaphor may require more contextual information, because it is possible that metaphorical expressions, either conventional or unconventional, are not stored in learners’ mental lexicon in a holistic way, and learners may always need to carry out ad hoc construction in order to establish the meaning of the metaphorical expressions. This paper aims to discover the processing patterns of conventional metaphorical expressions by Chinese learners of English at different proficiency levels, with two distinct focuses: (1) the possible (or lack of) distinction between the processing of literal and metaphorical expressions in a second language; and (2) the possible (or lack of) influence of cross-linguistic availability of metaphorical expressions on the processing patterns. In this study we aim to answer the following research questions:
● How do Chinese learners of English derive or access a conventional metaphorical meaning of a lexical item in their second language in real-time processing? Are they able to establish the link directly from the word to the metaphorical meaning, namely retrieve the metaphorical meanings in the same way as retrieving the literal meanings? Or, do they need any additional process in order to understand the metaphorical meaning?

● How do Chinese learners of English deal with metaphorical expressions with different availability and transferability across languages in offline judgment and online reading tasks? That includes (1) metaphorical expressions that are transferable; (2) metaphorical expressions that are not transferable because there is no corresponding element in the L2; and (3) metaphorical expressions that are not transferable because there is no corresponding element in the L1.

2. Experiment

2.1. Participants

81 Chinese learners of English and 21 native speakers of British English were recruited for a self-paced reading task. The learners were divided into four groups, namely Int (intermediate), Low-Adv (low-advanced), High-Adv (high-advanced) and Overseas (high-advanced overseas) based on their proficiency of English as estimated by their performance in the Oxford Quick Placement Test (UCLES 2001) as well as their linguistic backgrounds. English proficiency level of the High-Adv and Overseas groups were matched, and the only difference between the two groups was that participants in the Overseas group had received long-term exposure to a native English-speaking environment prior to the experiment. The basic information of learner participants is listed below in Table 1. The average age of the native speaker participants was 21;1 years old (SD=2.23), and the average backward digit span was 5.48 digits (SD=1.17), slightly lower than learners.

Table 1
Linguistic backgrounds of the learner participants

<table>
<thead>
<tr>
<th>Group size</th>
<th>Int</th>
<th>Low-Adv</th>
<th>High-Adv</th>
<th>Overseas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average OQPT score (SD)</td>
<td>35.47 (3.59)</td>
<td>44.27 (1.80)</td>
<td>51.45 (3.0)</td>
<td>51.44 (2.36)</td>
</tr>
<tr>
<td>Average age (SD)</td>
<td>22;2 (2.85)</td>
<td>21;3 (2.62)</td>
<td>23;2 (2.28)</td>
<td>23;5 (2.18)</td>
</tr>
<tr>
<td>Gender</td>
<td>Male</td>
<td>6</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>15</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>Number of participants with overseas experience</td>
<td>11</td>
<td>12</td>
<td>43</td>
<td>184</td>
</tr>
<tr>
<td>Average backward digit span (SD)</td>
<td>6.71 (1.89)</td>
<td>6.89 (1.53)</td>
<td>6.7 (1.67)</td>
<td>7.47 (1.58)</td>
</tr>
</tbody>
</table>

2.2. Materials

24 monosyllabic verbs (see Appendix 1) were selected as the critical lexical items, all appearing in the past tense form. All the critical lexical items were selected from the established literature on metaphors in Chinese and English (particularly from Lakoff and Johnson 1980; Link 2013; Liu 2002; Yu 1998), and one metaphorical expression was constructed for each critical lexical item. The 24

1 The participant (27 years old) stated that he went to the UK for 1 month when he was 22.
2 The participant (23 years old) stated that she had been in the UK for 12 months four years before the experiment (when she was 19). Considering that she had been living in China ever since and had not received any exposure to a native English environment since her return, she was categorized in the Low-Adv group according to her performance in the OQPT.
3 All oversea experiences recorded had taken place at least one year before the experiment. Average length of stay was 4.75 months (SD = 5.68). Average age of first overseas experience was 20;9 years old (SD = 3.77).
4 Average length of stay was 37.78 months (SD = 29.30). Average age of first overseas experience was 19;3 years old (SD = 3.04).
metaphorical expressions were divided into three categories: (1) the Metaphorical-Both (MB) category, containing 12 expressions, including metaphorical expressions that were available in both Chinese and English with the same meaning and could be translated in a word-to-word manner without affecting the comprehensibility in the two languages; (2) the Metaphorical-Source (MS) category, containing 6 expressions, that included metaphorical expressions only available in Chinese, where a word-to-word translation to English is supposed to be incomprehensible to English native speakers; and (3) the Metaphorical-Target (MT) category, containing 6 expressions, which included metaphorical expressions that were only available in English, and a word-to-word translation of these expressions to Chinese is supposed to be incomprehensible to Chinese native speakers. To provide a baseline of the results of acquisition and the patterns of processing, three categories of literal expressions were also constructed and examined in the experiments: (1) the Literal-Both (LB) category, which made use of the same critical lexical items as the MB expressions, as the non-metaphorical baseline counterpart of the MB category; (2) the Literal-Source (LS) category, which made use of the same critical lexical items as the MS expressions, as the literal, baseline counterpart of the MS category; and (3) the Literal-Target (LT) category, which made use of the same critical lexical items as the MT expressions, as the literal, baseline counterpart of the MT category. All the literal expressions aimed to activate the literal meaning of a critical lexical item, and they were available in both Chinese and English. The availability of the different types of expressions in Chinese and English are listed in Table 2 below.

Table 2
The availability of different types of expression in the current thesis in Chinese and English

<table>
<thead>
<tr>
<th>Expression Type</th>
<th>Availability in Chinese</th>
<th>Availability in English</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB (Metaphorical-Both)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>MS (Metaphorical-Source)</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>MT (Metaphorical-Target)</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>LB (Literal-Both)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>LS (Literal-Source)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>LT (Literal-Target)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

To ensure that the reading time for literal and metaphorical expressions were comparable, all the metaphorical expressions in the self-paced reading task, regardless of availability, were constructed in the form of Verb-Article-Noun, led by the critical lexical item. A pair of examples are provided below to demonstrate the structure.

a) Literal: built a balcony
   Metaphorical: built an argument

In example (a), the underlined verb was the critical lexical item, which was followed by the noun phrase that included an article. The noun served as the direct object of the verb. When a participant read the noun, she was expected to know whether the verb was used literally or metaphorically.

After the construction of metaphorical and literal expressions, a lexical property survey, as presented in Figure 1, was conducted respectively in English and Chinese for native speakers of the two languages to provide a quantification of the critical expressions’ degree of metaphoricalness (on a concrete-abstract scale), and degree of markedness (on a core-peripheral scale), as well as its relevant frequency in daily language use (see Jordens and Kellerman 1981 for the rationale of this design). Participants were asked to read each sentence in the survey, to understand the meaning of the underlined word, and to drag the sliders to the positions which they believed would most faithfully reflect the degree of concreteness/coreness/frequency of that meaning of the word. The result of lexical property survey, provided in Appendix 1, would be used to analyse the influence of degree of concreteness, markedness and relative frequency on processing of metaphorical expressions.
Henry found some canned food and instant noodles to make a very simple dinner.

Each literal or metaphorical expression was then assigned a test sentence, which provided sufficient contextual information for participants to deduce the meaning of the target expression in case they were not familiar with the expression. In total 144 sentences were constructed for the self-paced reading task. That included (1) 24 sentences each containing metaphorical expressions, among which every metaphorical expression only appeared once; (2) 24 sentences each containing a literal expression constructed from the critical lexical items, and (3) 96 filler sentences. Each sentence consisted of 12 words. In both metaphorical and literal sentences, the first three words formed the subject of the sentence in the form of “The-Adjective-Noun”; the fourth to sixth words included the metaphorical or literal use of the target lexical item; the final six words provided the contextual information and enough space for a spill-over effect\(^5\). The filler sentences were in the same format, but the only difference was that they did not contain any critical lexical items. Except for the different noun phrase and necessary contextual information to support the literal or metaphorical meanings, the rest of the sentences shared a highly similar structure. An example of a pair of test sentences with the illustration of their structure is shown in Table 3. The critical test sentences are listed in Appendix 2.

![An excerpt from the online lexical evaluation survey](image)

**Figure 1.** An excerpt from the online lexical evaluation survey

<table>
<thead>
<tr>
<th>The</th>
<th>famous</th>
<th>doctor</th>
<th>built</th>
<th>a</th>
<th>balcony</th>
<th>for</th>
<th>his</th>
<th>home</th>
<th>near</th>
<th>the</th>
<th>city</th>
</tr>
</thead>
<tbody>
<tr>
<td>W01</td>
<td>W02</td>
<td>W03</td>
<td>W04(^6)</td>
<td>W05</td>
<td>W06(^7)</td>
<td>W07</td>
<td>W08</td>
<td>W09</td>
<td>W10</td>
<td>W11</td>
<td>W12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Segment 01</th>
<th>Segment 02</th>
<th>Segment 03</th>
<th>Segment 04</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject</td>
<td>Literal/metaphorical expression</td>
<td>Spill-over area</td>
<td>Wrapping-up area</td>
</tr>
</tbody>
</table>

### 2.3. Method

A non-cumulative moving window self-paced reading task was designed. All the test sentences in the task were divided evenly into two counterbalanced lists and presented to participants randomly. The sentences were presented in a word-by-word fashion in a moving window paradigm. A simplified

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\(^5\) Spill-over effect refers to the phenomenon that the participant shows hesitation after the display of the target items.

\(^6\) W04 was the position of the main verb in all the sentences. In a metaphorical or literal sentence, W04 was the position where a critical lexical item appeared, either metaphorically or literally.

\(^7\) W06 was the disambiguation position. When reading to that part, a participant would know whether W04 was metaphorical or literal.
illustration of the self-paced reading paradigm is shown in Figure 2 below. At the beginning of each sentence, the participant would see a fixation marker “+” on the left of the laptop screen, which indicated the position of the first word. After pressing the spacebar, the fixation marker would disappear and the first word (“The” in every sentence) would appear at the position of the fixation marker. As the participant pressed the spacebar, the next word would appear spatially following the previous words, and the previous word would disappear. The participant could not go back to read the previous words and could only proceed to the next word. After each sentence, a comprehension question would appear, to which the participant pressed the F key (with the “Y” sticker, for a “yes” answer) or the J key (with the "N" sticker, for a "no" answer) on the laptop keyboard to answer; comprehension questions for the critical test sentences are provided in the appendix. Prior to the main reading task, the participant was given a trial session with 8 sentences to familiarize herself to the operation and the flow of the reading programme. In the middle of the experiment a short break was designed for the participant.

![Figure 2. A simplified illustration of the self-paced reading task in the experiment](image)

2.4. Procedure

Prior to the reading experiment, all the learner participants were required to fill in a language background survey and completed a proficiency test. They were then invited to attend a lab session. At the beginning of lab sessions, participants, both native speakers and learners, were instructed to complete a visual backward digit span task using an iOS app named “Digit Span” (Fu 2012), which allowed them to complete a customized digit span test on the touchscreen. The average backward digit span was calculated by the app automatically after a participant completed all the cycles. Then the experimenter briefly introduced the task to the participants, and they began the self-paced reading task. In the trial session, the experimenter supervised the participants and answered any questions regarding the operation of the programme, after which they were left alone to accomplish the main session and the experimenter only observed silently in the lab. The experiment was completed when the participant finished the self-paced reading task. After completion, all the participants received a small remuneration or a small souvenir from the experimenter.

2.5. Data adjustment and analysis

Reading time data were treated in a two-step trimming method, following the conventional method of reaction time data normalisation. The first trim removed the outliers below 100ms and reduce the outliers above 200ms for native speakers to 2000ms and above 4000ms for learners to 4000ms (see Papadopoulou and others 2013 for a summary of trimming criteria). The second trim regularized the reading time for an individual participant by fitting any data above the upper bound to fit within the upper bound, which was the average of all the reading times plus two standard deviations (mean+2SD).
After the trimming modification, the residual reading time for each word and each three-word segment for each participant was calculated; the three-word segments are shown in Table 4.2. In this way, two large three-word segments were the focuses of the data: the second segment of the whole sentence, which included the fourth to sixth words, and reflected the reading time for the whole metaphorical expression; and the third segment, i.e. the seventh to the ninth words, which showed a potential spill-over effect that may continuously affect more than one word after the critical region (Jegerski 2013).

The reaction time for the comprehension questions was treated in a similar way to the reading time for individual words. However, only the second trim in the two-step trimming method was applied to the reaction time for the questions, because there is no conventional threshold for the trimming of comprehension questions (c.f. Papadopoulou and others 2013). The upper bound of the reaction time to the questions was set to the average reading time plus two standard deviations for each participant (mean+2SD). Then the residual reaction time was also calculated in a similar way to the residual reading time for individual words.

After the data adjustment, all the data were analysed using linear mixed models, with the maximal random factors including individual diversity (e.g. age, average exposure to English, working memory capacity as measured by backward digit span) of learners, individual diversity (e.g. orthographic length, general frequency) of critical words and presentation orders of sentential stimuli. Two fixed factors were focused in the analysis: metaphoricalness (literal or metaphorical) and language specificity (shared, L1-specific or L2-specific). Additionally, three other fixed factors were included as fixed factors respectively in the analysis: degree of metaphoricalness (as degree of concreteness / literalness), degree of markedness (as degree of periphery / coreness) and relative frequency. All analyses were conducted within each proficiency group.

3. Results

3.1. The reading time pattern

The segment-by-segment reading time pattern for the native group, used here as baseline information, is shown below in Figure 3. It can be observed that only the MS sentences caused a major delay: native participants spent significantly more time reading Segment 3 in all the MS sentences compared with the LS sentences ($\chi^2(1)=5.52, p=0.019$); the delay continued into the fourth segment ($\chi^2(1)=4.40, p=0.036$). Other than that, all other types of sentences, all acceptable in English, entailed a similar reading pattern for metaphorical and literal expressions. In general, the native group spent similar amounts of time reading and processing a metaphorical expression that is available in English and its corresponding literal expressions. The degree of metaphoricalness, markedness and relative frequency of the MB and MT expressions (as measured by English native speakers) did not affect the reading time of Segment 3. However, a significant effect of markedness was observed influencing the reading time of Segment 3 of the MB and MS sentences ($\chi^2(1)=7.00, p=0.008$): when a metaphorical expression was perceived more marked by Chinese native speakers, its translation into English cost longer reading time. No other factors, such as metaphoricalness and relative frequency, influenced native speakers’ reading pattern.
The segment-by-segment reading time patterns for the four learner groups are shown altogether in Figure 4. It can be clearly observed that learners displayed a more diverse reading pattern compared with native speakers, and significant differences in reading times can be observed between the literal and metaphorical sentences in the Segment 3 position. Similar to native speakers, all learner groups spent significantly more time reading the segment after the MS expressions than after the corresponding literal expressions ($\chi^2(1)=10.48$, $p=0.001$ for intermediate; $\chi^2(1)=5.02$, $p=0.025$ for low-advanced; $\chi^2(1)=8.02$, $p=0.005$ for high-advanced; $\chi^2(1)=4.44$, $p=0.035$ for overseas), indicating that all learners experienced processing difficulty when reading the MS expressions in their L2, in which those expressions are not available.
Figure 5. Segment-by-segment reading time pattern for the low-advanced group

Figure 6. Segment-by-segment reading time pattern for the high-advanced groups
Differences between learner participants and native speakers were prominent in the analysis of the reading time for metaphorical expressions available in English (i.e. MB and MT expressions). Intermediate learners spent significantly more time reading the Segment 3 position after MB expressions than after the corresponding literal expressions ($\chi^2(1)=5.26$, $p=0.022$), which suggested a processing difficulty when intermediate learners process the MB expressions, even if those expressions are also available in their L1. Such delay disappeared in other groups. A more persistent difference was observed in the comparison between LT and MT expressions: intermediate learners showed significant longer delay after reading the MT expressions than after the LT expressions ($\chi^2(1)=4.11$, $p=0.043$), and such delay became marginal among low-advanced and high-advanced learners ($\chi^2(1)=3.54$, $p=0.060$ for low-advanced; $\chi^2(1)=3.53$, $p=0.060$ for high-advanced). The difference of processing patterns between the LT and MT expressions only ceased to present among the overseas learners with a longer exposure in a native English-speaking environment.

Further comparisons were made to analyse the impact of metaphoricalness, markedness and relative frequency on the reading time of metaphorical expressions. Relative frequency was observed to significantly influence the reading time of Segment 3 of the MB and MT sentences among most learner groups, while the influence became marginal among Overseas learners ($\chi^2(1)=4.00$, $p=0.046$ for Int; $\chi^2(1)=6.55$, $p=0.010$ for Low-Adv; $\chi^2(1)=5.32$, $p=0.021$ for High-Adv; $\chi^2(1)=3.21$, $p=0.073$ for overseas). That means, when a metaphorical expression was perceived more frequent by English native speakers, it cost shorter reading time. Additionally, a significant effect of markedness was observed influencing the reading time of Segment 3 of the MB and MS sentences ($\chi^2(1)=9.01$, $p=0.002$ for High-Adv; $\chi^2(1)=7.97$, $p=0.005$ for Overseas) among high-advanced and overseas learners. Similar to native speakers of English, highly advanced learners spent more time reading the segment after a MB or MS expression if the metaphorical expression was perceived more marked by Chinese native speakers.

### 3.2. Reaction to comprehension questions

The residual reaction time for the comprehension questions, as well as the scores for responses for the native group is presented in Figure 8. The native group did not show any difference when answering the LB and MB questions. However, significantly more time was spent answering questions related to MS sentences than those related to LS sentences ($\chi^2(1)=4.21$, $p=0.040$). There was also a clear difference in mean score for MS and LS questions ($\chi^2(1)=4.05$, $p=0.044$). The native group reacted significantly
faster to questions related to MT expressions than those related to the LT questions ($\chi^2(1)=11.96$, $p<0.001$), but there was no difference in mean score for the two types of questions.

Compared with questions related to metaphorical expressions available in the target language (the MB and MT expressions), the native speakers spent significantly more time answering MS questions ($\chi^2(1)=5.38$, $p=0.020$). However, when the mean scores for MS questions were analysed, it was found that they were significantly lower ($\chi^2(1)=10.75$, $p=0.001$). Although the mean score for MS questions ($M=0.65$, $SD=0.48$) was above chance, meaning the native participants could deduce the meaning of the MS expressions from the word form and the given sentence, it was still difficult for them to answer these questions accurately. Among the three types of metaphorical expression, the questions related to MT expressions were answered fastest: the reaction time for MT questions was significantly lower even than that for MB questions ($\chi^2(1)=4.52$, $p=0.033$). There was no difference in mean score for MB questions and MT questions. It seems that native participants were best at identifying and processing the MT expressions, followed by the MB expressions. Interestingly, it was discovered that native speakers answered the question faster when an MB or MT expression was perceived more marked in English ($\chi^2(1)=7.88$, $p=0.005$); other than that, no other factors were observed to have a significant effect on the reaction time or accuracy of scores for native speakers.

The learner groups’ reaction to the comprehension questions, including reaction time and scores for answers, formed a different pattern from the reaction time for the native group, as displayed in Figure 9. In general, learners did not show a different pattern when answering the questions related to literal and metaphorical expressions. Compared with the native group, a prominent feature is that none of the learner groups showed a significant difference in reaction time or mean score for LS and MS questions; learners spent similar time answering the questions regarding LS and MS sentences with similar degree of accuracy.
Figure 9. Reaction times and mean scores for answers for the intermediate group

Figure 10. Reaction times and mean scores for answers for the low-advanced group
The intermediate group spent significantly more time answering the MS questions than answering the MB and MT questions, and the high-advanced group showed a marginal significance in this comparison ($\chi^2(1)=5.38, p=0.020$ for intermediate; $\chi^2(1)=2.86, p=0.091$ for high-advanced). The intermediate, low-advanced and overseas groups all scored significantly lower when answering the MS questions than answering the MB and MT questions ($\chi^2(1)=10.75, p=0.001$ for intermediate; $\chi^2(1)=3.91, p=0.048$ for low-advanced; $\chi^2(1)=4.11, p=0.043$ for overseas). The high-advanced and overseas groups showed a similar reaction pattern to the native group in terms of the time spent on the MT questions: they spent less time answering the MT questions compared with the MB questions, a marginal effect for
the high-advanced group and a significant one for the overseas group ($\chi^2(1)=3.34$, $p=0.067$ for high-advanced; $\chi^2(1)=7.23$, $p=0.007$ for overseas).

Among metaphoricalness, markedness and relative frequency, the influence of markedness was clearly observed among all the learner groups except the intermediate group. For the MB and MS expressions, if a metaphorical expression was more marked in Chinese, i.e. with a lower coreness score, then learners showed more hesitation after reading it than when reading the less marked metaphorical expressions. This greater hesitation was marginal among low-advanced learners ($\chi^2(1)=2.80$, $p=0.095$), and became significant among high-advanced and overseas learners ($\chi^2(1)=4.49$, $p=0.034$ for high-advanced; $\chi^2(1)=6.93$, $p=0.009$ for overseas). Also, similar to native speakers, high-advanced and overseas participants were also observed to answer the questions faster when an MB or MT expressions was perceived more marked ($\chi^2(1)=2.93$, $p=0.087$ for high-advanced, $\chi^2(1)=4.18$, $p=0.041$ for overseas). The two other factors did not systematically influence learners’ reaction time or accuracy of answers significantly.

4. General discussions

The results of the self-paced reading task, as summarized in Table 4, provide insights for the storage pattern and meaning-making process of literal and metaphorical meanings in a learner’s mental lexicon. As discussed in Introduction, “meaning-making” process for figurative expressions might involve two different processes, namely construction and direct accessing. The results reflect in particular a developmental trend from construction to direct accessing of metaphorical meanings between different proficiency levels, and more prominently, some degree of asymmetry. Dark shading in Table 4 indicates that there is a significant difference between the processing cost for each pair of expressions, while light shading indicates that there is a marginal difference between a pair of expressions. The abbreviation “n.d.” means there is no difference between two types of expression when they are processed by the group.

Table 4

Differences in processing cost between literal and different metaphorical expressions

<table>
<thead>
<tr>
<th>Group</th>
<th>LB vs. MB</th>
<th>LS vs. MS</th>
<th>LT vs. MT</th>
<th>MB vs. MS</th>
<th>MB vs. MT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-advanced</td>
<td>n.d.</td>
<td>MS &gt; LS</td>
<td>MT &gt; LT</td>
<td>MS &gt; MB</td>
<td>n.d.</td>
</tr>
<tr>
<td>High-advanced</td>
<td>n.d.</td>
<td>MS &gt; LS</td>
<td>MT &gt; LT</td>
<td>MS &gt; MB</td>
<td>n.d.</td>
</tr>
<tr>
<td>Overseas</td>
<td>n.d.</td>
<td>MS &gt; LS</td>
<td>n.d.</td>
<td>MS &gt; MB</td>
<td>MT &gt; MB</td>
</tr>
<tr>
<td>Native</td>
<td>n.d.</td>
<td>MS &gt; LS</td>
<td>n.d.</td>
<td>MS &gt; MB</td>
<td>n.d.</td>
</tr>
</tbody>
</table>

Different from native speakers who process literal and metaphorical meanings in the same way, learners, particularly less proficient ones, show a clear asymmetry between literal and metaphorical meaning, even if both types of meaning are available in their L2, and possibly in the L1 (e.g. the LB and MB expressions). In this case, learners would spend more time establishing the metaphorical meaning of an expression than the literal meaning, which exactly indicates that less proficient learners may rely on the literal-first strategy to resolve a metaphorical meaning. Such asymmetry between literal and metaphorical meaning can become less significant gradually, and eventually disappear if learners have been exposed to their L2 in a native environment for a long time. In that case, it is possible for some learners to directly retrieve metaphorical meanings of a lexical item from their mental lexicon in the same way as they retrieve literal meanings.

The asymmetry between the literal and metaphorical meanings can be explained from several different perspectives. From a usage-based perspective, it can be hypothesized that, overall, metaphorical expressions are used less frequently than literal expressions, so that learners have fewer opportunities to encounter, comprehend and memorize the metaphorical expressions. This hypothesis is relatively weak though, as the relative frequency of a metaphorical expression does not clearly influence its processing pattern in this experiment. From a pedagogical perspective, it may also be the case that metaphorical expressions are less taught in the instruction, so that learners can receive little input of these expressions. However, one may argue that learners might be able to “pick up” metaphorical expressions even if they
only receive limited exposure to those expressions. Considering this possibility, the third probable explanation for the asymmetry is that learners, particularly those in a classroom setting (which is the general background of learner participants in this experiment), may have specific weaknesses when attempting to infer the meaning of a lexical item based on the contextual information co-occurring with it (Jiang 2000). As seen in the examples of metaphorical expressions in this paper, the metaphorical meaning of a lexical item needs to be activated by its collocation; if learners fail to utilize the contextual information to deduce the word meaning, they may also fail to acquire the metaphorical meanings in general. Therefore, compared with literal meanings of lexical items, learners are less likely to encounter, to be taught, and/or to infer the metaphorical meanings, which finally leads to the difficulty of autonomous acquisition of metaphorical expressions. As general proficiency rises, learners become more familiar with metaphorical expressions, and the asymmetry between literal and metaphorical meanings decreases.

The second asymmetry is observed between metaphorical expressions with different availability in the L2, namely between those available in English (i.e. the MB and MT expressions) and those unavailable in English (i.e. the MS expressions). Taking native speakers’ performance as a baseline and compared with the processing of other expressions, they do not show hesitation after reading the expressions available in English, either literal or metaphorical, but show clear hesitation after reading the expressions not available in English. Learners, starting from the low-advanced level, are able to achieve a native-like pattern (i.e. with hesitation) when they process the expressions not available in English. It seems that at a particular stage of L2 acquisition, learners begin to establish the idea that some expressions are not possible in their L2, and they will not expect them in an L2 processing task. However, only more proficient learners can achieve a native-like pattern (i.e. no hesitation) when they process the expressions available in English, which indicates that the acquisition of the metaphorical expressions available in the L2 comes later.

The third asymmetry is the one between metaphorical expressions with different cross-linguistic availability, that is, between the expressions shared by both the L1 and L2 (i.e. the MB expressions) and the expressions exclusively available in the L2 (i.e. the MT expressions). Compared with the MB expressions, it takes a learner more time to achieve a native-like reading pattern of the MT expressions, indicating that the MT expressions are more difficult to manage than other types of metaphorical expressions. This difference in learners’ processing, together with the absence of difference among native speakers, suggests that cross-linguistic similarity or difference can affect learners’ processing of figurative expressions. When there is cross-linguistic similarity, learners are more likely to access the figurative meanings directly, resulting in a native-like processing pattern.

It should be noted that, although learners are observed to experience processing difficulty when they process certain metaphorical expressions, they are able to arrive at the metaphorical meanings eventually, at least at the end of a test sentence. In particular, despite the unavailability of MS expressions in English, learners are able to derive the meanings of MS expressions better than native speakers. Compared with the struggle made by native speakers, such as significant delay in the processing and low accuracy when answering the comprehension questions, the learner groups are able to answer the questions related to MS expressions both quickly and accurately. This phenomenon indicates that, the MS meanings, though not available in the learners’ L2, are not completely blocked. Although it is rare for learners to encounter the MS expressions when they are exposed to native speakers’ English and the access of MS meanings does not have any solid implications in reality, it still can be used to show that learners are able to “make the meaning” of L1-specific expressions when the context supports those types of meanings.

The second and third asymmetries altogether show that learners can be influenced by their L1 when they process metaphorical expressions in their L2, and such cross-linguistic influence has different impacts on different aspects of processing patterns. Learners at a relatively low proficiency level, i.e. the intermediate level, transfer part of their knowledge of the MS expressions from their L1 to their L2. They do not clearly distinguish the cross-linguistic availability of different metaphorical expressions in real-time processing; instead, they adopt a literal-first strategy indiscriminately to comprehend all metaphorical expressions. Learners begin to show a discrimination of cross-linguistic availability when they reach the low-advanced level. Although learners at that level still partly rely on the literal-first strategy in their processing, they are aware that some metaphorical expressions in the experiment are not available in their L2, and the hesitation after reading the MS expressions shows that they do not expect
these expressions when reading in their L2. The negative transfer of MS expressions disappears early in the acquisition of metaphorical expressions.

Meanwhile, a persistent negative transfer of the MT expressions is observed among most learners. Even highly proficient learners are not able to achieve a native like processing pattern when they read the MT expressions, and overseas learners still process the MB and MT expressions differently, although both types of expression are available in the L2. To repeat, the MT expressions are exclusively available in the L2, and there are no word-to-word corresponding expressions in the L1. It seems that the unavailability of the MT expressions in the L1 obstructs learners’ acquisition to some extent, and learners are less likely to acquire the MT expressions than other metaphorical expressions.

The three types of asymmetry, as well as the gradual absence of certain types of asymmetry, suggest that learners have a relatively “flexible” processing mechanism for metaphorical expressions. For the same (type of) metaphorical expressions, different learners may select different ways to process; similarly, for the same (group of) learners, they may choose different ways to process different metaphorical expressions. This “flexible” processing mechanism can be interpreted as learners’ optimal solution for meaning making: learners always aim to make least effort when processing an expression in their L2, and they will automatically select an alternative route to construct the meaning if the best route for meaning access is not available. This eventually leads to a practically possible mental lexicon that integrates the word meanings of both the L1 and L2, as shown below in Figure 13.

Figure 13, as an adaptation and extension of Kroll and Stewart’s (1994) Revised Hierarchical Model (henceforth RHM), aims to illustrate the patterns of processing of metaphorical expressions by learners at different levels of proficiency. While the RHM clearly demonstrates the development of learners’ bilingual lexicon, a most important shortcoming of that model is that it only assumes a one-to-one correspondence between a lexical item and a concept, namely the literal concept. If all the meanings of a lexical item are equal in a bilingual mental lexicon, then there should not be any difference when learners process literal and metaphorical meanings, which contradicts the results of the experiment. The extension made in Figure 13 is used to capture the processing of metaphorical meanings of lexical items, under the presumption that literal meanings of the lexical items are already available in the mental lexicon. The black lines represent links between lexical items and concepts, as well as links between lexical items (translation equivalents). The grey lines represent links between concepts, namely conceptual mappings. A solid line means that a link is fully established and intact; a dashed line means
that a link is relatively weak or can only be established when a learner becomes more proficient; and a dotted line means that a link is difficult to be established even for proficient learners.

The intermediate learners show a smaller processing cost for the literal meanings than for all of the metaphorical meanings, which indicates that they take a longer route to arrive at the metaphorical concepts than the literal concepts, regardless of the types of metaphorical concept. If the intermediate learners always access all the concepts of L2 words via the L1 lexicon, then they should experience the same processing cost for metaphorical expressions available in the L1 (i.e. the MB and MS expressions) and the corresponding literal expressions (i.e. the LB and LS expressions), which is not actually the case. Therefore, a feasible proposal is that the intermediate learners utilize a literal-first strategy and always arrive at the literal concept directly when they read L2 words, taking link ①, and then trying to generate all the metaphorical concepts from the literal concept via links ②, ③ and ④ respectively. The existence of links ②, ③ and ④ can ensure a valid explanation is provided for the additional cost for the various metaphorical expressions.

For the low and high-advanced learners, when they attempt to reach the shared metaphorical meaning from an L2 lexical item, they may cease to use link ②, because there is no additional processing cost for access to shared metaphorical meaning (i.e. meaning of an MB expression) when compared with access to literal meaning. Therefore, they are more likely to access the shared metaphorical meaning directly, via link ⑤. The two groups of learners still encounter a marginal additional cost when accessing L2-specific metaphorical meanings, and there exist two possibilities: they may derive L2-specific metaphorical meanings from a literal meaning, hence following links ①+④; or they may access the L2-specific meaning directly but slowly through link ⑥. Since the low-advanced learners show continuous hesitation after reading the MT expressions, they are more likely to retrieve the L2-specific metaphorical meanings via links ①+④. The processing pattern for the high-advanced learners can be either of the possibilities.

The overseas learners and native speakers have qualitatively similar processing patterns, probably due to overseas learners’ extensive exposure in a native English-speaking environment. They directly access the shared metaphorical meanings from the word form via link ⑤, and they directly access the L2-specific metaphorical meanings from the word form via link ⑥. The only quantitative difference between the overseas learners and the native speakers is that they spend a different amount of time on link ⑥. The overseas learners may be less familiar with MT expressions since they have only just moved from links ①+④ to link ⑥; therefore, they are likely to spend more time directly accessing the L2-specific metaphorical meaning.

It can be seen from the explanation above that the strength of links ⑤ and ⑥ is crucial in the acquisition of metaphorical expressions: the acquisition of metaphorical expressions is completed only when these two links are established and, ideally, have the same strength as link ①. As proficiency level rises, link ⑤ can be gradually established and become stronger, while link ⑥ can be eventually established but remains to be weak. As discussed before, there are multiple factors that may lead to problems with link ⑥: (1) cross-linguistic influence from the L1 may suppress the establishment of link ⑥; and (2) learners, especially in a classroom setting, may not be good at making inferences for the meanings of a lexical item, and link ⑥ is therefore difficult to establish.

5. Conclusion

This paper shows that Chinese learners of English process metaphorical expressions in a relatively flexible manner, depending on their knowledge of metaphorical expressions. While less proficient learners tend to adopt a literal-first method and derive the metaphorical meaning from the literal meaning of a lexical item, more advanced learners are able to achieve a native-like processing pattern and access metaphorical meanings directly if these meanings are available in English. Factors that may influence learners’ processing patterns include cross-linguistic availability of the metaphorical expressions, learners’ general proficiency, and possibly learners’ linguistic background. Further investigations could aim at the certain factors that influence cross-linguistic transfer of metaphorical expressions.
Appendices

Appendix 1. Lexical items used in the self-paced reading task and their lexical properties

Lexical property scores rated by Chinese native speakers:

<table>
<thead>
<tr>
<th>Item</th>
<th>Frequency (BNC, per million)</th>
<th>Literal</th>
<th>Metaphorical</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Concreteness</td>
<td>Coreness</td>
</tr>
<tr>
<td>bite</td>
<td>21.33</td>
<td>5.8988</td>
<td>2.087</td>
</tr>
<tr>
<td>break</td>
<td>189.33</td>
<td>-0.16993</td>
<td>-0.6552</td>
</tr>
<tr>
<td>build</td>
<td>230.76</td>
<td>5.3495</td>
<td>3.3191</td>
</tr>
<tr>
<td>change</td>
<td>270.35</td>
<td>5.57523</td>
<td>1.195</td>
</tr>
<tr>
<td>chew</td>
<td>9.57</td>
<td>6.0057</td>
<td>3.2796</td>
</tr>
<tr>
<td>clear</td>
<td>57.59</td>
<td>5.6995</td>
<td>2.0282</td>
</tr>
<tr>
<td>eat</td>
<td>140.25</td>
<td>5.38031</td>
<td>3.2181</td>
</tr>
<tr>
<td>find</td>
<td>972.61</td>
<td>4.05575</td>
<td>0.4868</td>
</tr>
<tr>
<td>fry</td>
<td>5.33</td>
<td>6.02597</td>
<td>2.0764</td>
</tr>
<tr>
<td>give</td>
<td>1283.58</td>
<td>5.40671</td>
<td>3.1062</td>
</tr>
<tr>
<td>grab</td>
<td>27.41</td>
<td>6.41508</td>
<td>1.6994</td>
</tr>
<tr>
<td>play</td>
<td>382.51</td>
<td>5.85573</td>
<td>3.4017</td>
</tr>
<tr>
<td>raise</td>
<td>194.12</td>
<td>6.28033</td>
<td>2.2706</td>
</tr>
<tr>
<td>save</td>
<td>119.6</td>
<td>-0.40462</td>
<td>3.4193</td>
</tr>
<tr>
<td>show</td>
<td>597.35</td>
<td>4.54543</td>
<td>2.2854</td>
</tr>
<tr>
<td>spend</td>
<td>224.56</td>
<td>-1.29724</td>
<td>-0.5261</td>
</tr>
<tr>
<td>win</td>
<td>241.6</td>
<td>1.8292</td>
<td>3.9843</td>
</tr>
</tbody>
</table>
Lexical property scores rated by English native speakers:

<table>
<thead>
<tr>
<th>Item</th>
<th>Frequency (BNC, per million)</th>
<th>Concreteness</th>
<th>Coreness</th>
<th>Perceived frequency</th>
<th>Concreteness</th>
<th>Coreness</th>
<th>Perceived frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>build</td>
<td>230.76</td>
<td>6.91029</td>
<td>5.39747</td>
<td>4.89668</td>
<td>-4.62748</td>
<td>1.32336</td>
<td>-0.09032</td>
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<tr>
<td>buy</td>
<td>260.9</td>
<td>6.33739</td>
<td>4.76017</td>
<td>5.987</td>
<td>-4.48432</td>
<td>-1.80827</td>
<td>2.71</td>
</tr>
<tr>
<td>change</td>
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<td>4.93221</td>
<td>2.88143</td>
<td>5.04158</td>
<td>-4.07764</td>
<td>2.54343</td>
<td>5.98158</td>
</tr>
<tr>
<td>clear</td>
<td>57.59</td>
<td>5.39275</td>
<td>3.27493</td>
<td>2.993</td>
<td>-5.09954</td>
<td>1.33876</td>
<td>1.5079</td>
</tr>
<tr>
<td>drive</td>
<td>150.82</td>
<td>6.70816</td>
<td>4.28102</td>
<td>5.6482</td>
<td>-4.83117</td>
<td>0.41525</td>
<td>-0.4238</td>
</tr>
<tr>
<td>find</td>
<td>972.61</td>
<td>6.62536</td>
<td>3.33527</td>
<td>4.976481</td>
<td>-3.7023</td>
<td>-0.36685</td>
<td>4.877481</td>
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<tr>
<td>give</td>
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<td>4.89809</td>
<td>5.8439</td>
<td>-1.65167</td>
<td>1.4654</td>
<td>4.2022</td>
</tr>
<tr>
<td>grab</td>
<td>27.41</td>
<td>6.81795</td>
<td>4.27247</td>
<td>4.94641</td>
<td>-5.71287</td>
<td>1.36528</td>
<td>0.19141</td>
</tr>
<tr>
<td>light</td>
<td>34.17</td>
<td>5.5639</td>
<td>4.48074</td>
<td>4.4938</td>
<td>-5.13998</td>
<td>-0.49967</td>
<td>-1.8082</td>
</tr>
<tr>
<td>lose</td>
<td>273.07</td>
<td>6.17639</td>
<td>4.71474</td>
<td>5.1463</td>
<td>-4.05251</td>
<td>-0.49139</td>
<td>4.9553</td>
</tr>
<tr>
<td>pay</td>
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<td>6.17507</td>
<td>4.94483</td>
<td>5.5897</td>
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<tr>
<td>play</td>
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<td>5.5181</td>
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<td>0.23236</td>
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<td>5.3984</td>
<td>3.4668</td>
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<td>-3.78974</td>
<td>0.95219</td>
<td>1.522</td>
</tr>
</tbody>
</table>

Appendix 2. Critical sentences and questions in the experiment

The underlined lexical item is the designed critical lexical item in the sentence. The comprehension questions are not included in the appendix. Sentences are arranged in the alphabetical order of the critical lexical items. A comprehension question (CQ) is attached after each critical sentence.

MB (metaphorical-both) sentences:

The famous doctor **built** an argument in his article in the book.

CQ: Did the doctor only describe some facts in his article?

The pretty girl **changed** her mind before she went to the party.

CQ: Did the girl have a different idea when she went to the party?

The honest woman **cleared** her thoughts and told her story to people.

CQ: Did the woman refuse to talk about her story?

The busy musician **found** some time to take a very quick rest.

CQ: Did the musician have no time to rest?

The wise gentleman **gave** an idea to the students in the classroom.

CQ: Did the gentleman ask his student to provide an idea?

The little boy **grabbed** the chance and ran into the house quickly.

CQ: Did the boy use his chance effectively?
The happy lady lit the passion in the mind of her daughter.
   CQ: Did the lady have no influence on her daughter?
The busy musician played a part in the creation of the song.
   CQ: Did the musician contribute to the song?
The famous doctor saved his time by making a very compact schedule.
   CQ: Did the doctor waste a lot of time?
The honest woman showed the solution to the question from the professor.
   CQ: Did the woman explain the solution to a question?
The pretty girl spent some time on computer games with her friends.
   CQ: Did the girl play computer for some time?
The young man won Anne’s heart by writing a very sweet poem.
   CQ: Did the man attract Anne with his own poem?

LB (literal-both) sentences:
The famous doctor built a balcony for his home near the city.
   CQ: Did the doctor construct a balcony?
The pretty girl changed her clothes before she went to the party.
   CQ: Did the girl wear different clothes when she went to the party?
The honest woman cleared her room and put everything into her suitcase.
   CQ: Did the woman leave something in her room?
The busy musician found some food to make a very simple dinner.
   CQ: Did the musician get some food?
The wise gentleman gave some money to poor people on the street.
   CQ: Did the gentleman send food to poor people?
The little boy grabbed the knife and killed the crazy dog quickly.
   CQ: Did the boy kill the dog with a knife?
The happy lady lit the fireplace in the bedroom of her house.
   CQ: Did the lady start a fire in the fireplace?
The busy musician played the drums as a kid for several years.
   CQ: Did the musician learn violin as a kid?
The famous doctor saved his wife by performing a very important procedure.
   CQ: Did the doctor cure his wife effectively?
The honest woman showed a video about the story of her family.
   CQ: Did the woman play a song about her family?
The pretty girl spent some money on new clothes for her dolls.
   CQ: Did the girl use money to buy snacks?
The young man won that prize by writing a very sweet poem.
   CQ: Did the man get that prize by composing a song?
MS (metaphorical-source) sentences:

The poor teacher **bit** her words when she was writing an article.

CQ: Did the teacher choose her words carefully in her writing?

The young man **broke** the crime and received an award from police.

CQ: Did the man fail to solve the crime?

The naughty student **chewed** his tongue while his classmates discussed their homework.

CQ: Did the student keep quiet when his classmates were working?

The rich manager **ate** some loss when he started his own business.

CQ: Did the manager get profit at the beginning of his business?

The old chef **fried** some stocks when he was not at work.

CQ: Did the chef buy and sell some stocks?

The naughty student **raised** his heart when he walked on the ice.

CQ: Did the student feel anxious when he walked on the ice?

LS (literal-source) sentences:

The poor teacher **bit** her nails when she was worried about something.

CQ: Did the teacher paint her nails when she was nervous?

The young man **broke** the door and brought the sleeping baby outside.

CQ: Did the man open the window of that room?

The naughty student **chewed** his gum while his classmates discussed their homework.

CQ: Did the student have some chewing gum?

The rich manager **ate** some fruits because they were healthy for him.

CQ: Did the manager have fruits in his diet?

The old chef **fried** some rice when he was not at work.

CQ: Did the chef cooked some rice?

The naughty student **raised** his hand when the teacher asked a question.

CQ: Did the student stay still when his teacher asked a question?

MT (metaphorical-target) sentences:

The happy lady **bought** an idea because it sounded clever to her.

CQ: Did the lady reject the idea?

The rich manager **drove** his business all the way to the top.

CQ: Did the manager run a successful business?

The poor teacher **lost** her temper and shouted at her students angrily.

CQ: Did the teacher keep calm to her students?

The young man **paid** some attention to the question from his colleagues.

CQ: Did the man ignore the question from his colleagues?

The wise gentleman **saw** the problem and gave a piece of advice.

CQ: Did the gentleman understand the problem correctly?
The naughty student spilled the secret when he entered the meeting room.

CQ: Did the student tell the secret to other people?

LT (literal-target) sentences:

The happy lady bought a wallet because it looked lovely to her.

CQ: Did the lady sell a wallet?

The rich manager drove his motorbike all the way to his house.

CQ: Did the manager take a taxi to home?

The poor teacher lost her wallet and was locked outside her apartment.

CQ: Did the teacher fail to open the door?

The young man paid some money to the owner of the store.

CQ: Did the man give some money to the shopkeeper?

The wise gentleman saw a schoolgirl and gave a book to her.

CQ: Did the gentleman meet a girl?

The naughty student spilled the coffee when he entered the meeting room.

CQ: Did the student drink the coffee in the meeting room?

References


