Sight Translation of Metaphorical Constructions: An Analysis of Emergent Structure

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Abstract: The translation of metaphors remains a significant challenge in the field of linguistics. The present study endeavors to bring fresh perspectives to this complex problem by examining the cognitive processing dynamics involved in the sight translation of metaphorical constructions from Chinese to English. Our analytical framework is the Conceptual Blending Theory (CBT), with we analyzed emergent structures generated within the metaphor blending space, revealing the intricate cognitive processes that underpin translation. We employed reaction time as a pivotal measure to gauge the efficiency and fluidity of the blending process. This metric serves as a real-time indicator of the cognitive load and complexity associated with metaphor translation. Furthermore, our study offers an exploration of the diverse strategies utilized for the translation of metaphorical constructions. These strategies, mapped from the analysis of reaction time and emergent structures, not only underscore the complexity of metaphor translation but also highlight potential areas for improvement and optimization in the sight translation process. The findings underscore a conspicuous absence of conceptual blending during the sight translation of metaphorical constructs. This is illustrated by the similarity in the mean values derived from the samples of two distinct groups. This commonality suggests that the translation process lacks a nuanced blend of original and target language elements, which is pivotal for an authentic translation. Furthermore, our results indicate an aberration in the formation of emergent structures within the blend space of metaphorical blending. This aberration is manifested in the form of excessive omission translation, free translation, and literal translation. These excessive proportions of various translation types suggest a departure from ideal translation practices, which aim for a balanced synthesis of literal and interpretive elements. This study provides valuable insights into the role of conceptual blending in the sight translation of metaphorical constructions. The identified deficiencies in the process pave the way for future research to develop more effective translation strategies that can deliver higher fidelity translations.

Keywords: metaphorical construction; conceptual blending; emergent structure; sight translation

1. Introduction

Metaphors serve as a pivotal cognitive tool, establishing relationships between source and target domains, thereby structuring cognitive interaction frameworks[1]. This "cross-domain mapping in the conceptual system" materializes through "metaphorical expressions"[2]. Language representations of metaphors have typical characteristics of source domain and target domain. The same theoretical type of representation object is called "construction"[3]. In this sense, metaphorical expressions are constructions. Goldberg underscores the importance of construction in language, positing that constructions encapsulate the competence of a language user[4]. Metaphorical constructions reflect both linguistic and cognitive abilities of speakers. During the predictive comprehension of such constructions, a cognitive connection is established between metaphor and translation[5].

Both metaphor and translation involve blending features of two separate fields into one. Delving further, Fauconnier[6] introduced the "conceptual blending" theory in his seminal work. This theory outlines the prerequisites for conceptual blending activities, encompassing mental spaces, language modifications, and conceptual integration[7]. The conceptual blending network comprises four spaces. Post-integration of similar information from two input spaces, a novel space, the blend, materializes. Three methods lead to the generation of an emergent structure in the blend: composition,

completion, and elaboration. Composition involves mapping elements from two input spaces directly into the blend space, forming new relationships. Completion is a process triggered when the previously mapped structure aligns with human memory, leveraging background knowledge and cognitive experiences to activate long-term memory. This process incrementally morphs into the emergent structure of the blend space [8].

While Conceptual Blending Theory (CBT) plays a pivotal role in translation research, its application in the examination of interpreting processes is rare. Moreover, present-day research predominantly focuses on semantic meaning and form[9] or underlying cognitive models of metaphor translation[10]. For example, Massey[11] suggested that the translation of metaphors demand more cognitive efforts than non-metaphors. However, a more holistic approach that integrates both linguistic and cognitive elements is often overlooked. In our investigation, we utilize the definition of "metaphorical constructions" in tandem with the emergent structure of the conceptual blending network. Our primary objective is to unravel the complexities of the "XX 之 X" metaphorical construction in sight translation—an area yet to be sufficiently explored.

To validate our research, we implemented an interpreting experiment and employed the R programming language for a comprehensive statistical analysis. This empirical approach allowed us to scrutinize the following hypotheses rigorously:

(1) the reaction time of metaphorical construction is longer than that of non-metaphorical construction
(2) the pause time of metaphorical construction is longer than that of non-metaphorical construction
(3) interpreters may employ different strategies to render metaphorical constructions

2. Methods
2.1 Participants
The study involved fourteen participants who were selected based on two criteria: possession of a CATTI Level-3 interpreting certificate (or equivalent English proficiency tests such as IELTS, TOEFL, or the English Test for International Communication) and a minimum of one year's experience in interpretation skills training.

The primary language of all participants is Chinese, and their secondary language is English. All participants are well-versed in interpreting skills and are proficient in the use of interpreting equipment.

To control for potential confounding factors, participants were advised to abstain from the consumption of coffee, tea, alcohol, other functional drinks, and hormone drugs on the day of the experiment.

Participation in the study was entirely voluntary. All participants were thoroughly informed about the experimental process, duration, and application of results prior to their involvement.

2.2 Materials
The translation form is Chinese-English translation. According to the text type classification of Newmark[9], the experimental text is qualified with expressive function text and informational function. In terms of the form, this text is the narrative style. It was selected from *Xi Jinping: The Governance of China (Volume I, II, III)*. After completing the metaphor tagging, the team performs the blind review and mutual evaluation. This session will be conducted twice.

The text needs to contain the metaphorical construction phrase "XX 之 X". To prove the hypothesis mentioned above, the text also needs to contain non-metaphorical constructions. The author uses the corpus software Antconc 3.5.8 (Windows) to retrieve metaphorical constructions and select the paragraphs containing the required information. After selecting paragraphs according to the search conditions, the final paragraphs need to be determined according to the number of words and length of each paragraph. The final version of the experimental text should have about 1300 words and no more than 8 paragraphs.

For readability information statistics, the results are 1124 characters, 5 paragraphs, and 38 sentences; the average number of sentences in each paragraph is 7.6 and the number of characters in each sentence is 29.5. This passage contains 13 metaphorical construction phrases of "XX 之 X" and 6 non-metaphorical construction phrases.

2.3 Research Design

2.3.1 Experimental design
Participants were required to perform a Chinese-English sight translation (STR) of the experimental text. Prior to the experiment, the author collected background information from each participant and clarified the purpose of the experiment. Participants then proceeded to complete the experiment following the author's instructions.

Audio data from the participants' translations were recorded and saved. Each data file was labeled with a unique six-digit data code: the first two digits denoted the number of years the translator had spent in skill training; the middle two digits indicated the form of translation (01 representing interpretation and 02 indicating written translation); and the last two

digits represented the sequence in which the data was collected. For instance, a data code of 010101 would signify a translator with one year of training, performing an interpreting task, and it being the first data collected.

Upon completion of the task, participants were asked to complete a questionnaire based on their actual process. Following the data collection, the software tool ELAN was employed to annotate the text and time of the STR data, with a specific focus on the translation of metaphorical constructions. Upon the completion of text annotation, all results were exported for further analysis.

2.3.2 Experimental procedures
The interpretation experiment site is in the simultaneous interpreting laboratory and the completion time is about 15 minutes. Before the formal experiment, the participants will receive the background materials of the experimental text in advance, including the style of the text, the speech's background, the speech scene, and the professional vocabulary involved in the materials. The participants need to complete STR tasks in the simultaneous interpretation laboratory. The specific steps are as follows:
(1) Participants were supplied with background materials two or three days prior to the commencement of the experiment.
(2) Prior to the experiment, participants were given the option to review the provided materials.
(3) Thirty minutes before the simulation began, participants were required to calibrate and adjust the necessary equipment.
(4) Participants proceeded to complete the STR task.
(5) Upon completion, participants were instructed to exit the display interface.
(6) Audio and video data were saved on the central control computer, and organized according to the seating arrangement of participants.
(7) Data was then reviewed for quality assurance and to check for any possible document damage.
During the whole process of interpreting, the participants can carry their own materials and electronic devices. To avoid information interference, the participants complete the experiment alone in the simultaneous interpreting box instead of the conference table in the laboratory.
The above is the experimental procedure completed in the laboratory. Participants who are unable to complete interpretation on site will have remote visual interpretation. All participants need to fill in the questionnaire sent by the author after completing the experimental process. The use of the questionnaire feedback is limited to this experiment.

2.4 Measurement indicators
Reaction time of sight translation (STR) was used as an important indicator of blending in mental space. Reaction time in this experiment refers to the time taken by the participants to produce the translation. Pause time is an important criterion in interpretation. The pause time in this thesis is the pause time during the interpretation of metaphorical and non-metaphorical constructions. Based on the similarity between STR and SI (sight interpreting), the definition of "pause time" is referred to the SI standard. That is, the criterion for judging pause is silence for more than 250 milliseconds [12].

3. Results
We marked the time and text layers of the recording audio through ELAN 6.2 and obtained a total of 238 translations, including 160 metaphorical construction translations and 78 non-metaphorical construction translations. As shown in Table 1, the average duration time of metaphorical construction is 1.36, while that of non-metaphorical construction is 1.34. The standard deviations of the two groups of results are 0.87 and 1.13 respectively. The results of standard deviations showed that the duration time (DT) of the two groups had a certain degree of dispersion with the dispersion coefficient of 0.26.

Table 1 Statistical data of metaphorical and non-metaphorical groups

Group	Standard Deviation (.00)	Average (.00)
DT of metaphorical construction	0.87	1.36
DT of non-metaphorical construction	1.13	1.34

Table 2 Results of reaction time for metaphorical and non-metaphorical construction

Item	Reaction time (s.)	% (.00)
DT1	0.1-1	38.13
	1-2	44.38
	2-7	17.50
DT2	0.2-1	48.72
	1-2	39.74
	2-6	11.54

We then calculated differences between the two groups of data. Firstly, this work summarizes the DT data of metaphorical construction (DT1) and non-metaphorical construction (DT2) into the same sheet. Then, name this sheet "DT" and import it into R Studio to execute the outlier deletion command. The deletion range of values is DT1 > 0.1 & DT1 < 3.5 and DT2 > 0.1 & DT2 < 3.5, and "Data6" with sample size of 78 is obtained. Then the data is visualized to judge whether the data distribution is normal, that is, the kernel density diagram is used to test the normal distribution. Since there are two tasks of DT, namely metaphorical construction and non-metaphorical construction. The author uses image superposition of kernel density for display (as shown in Figure 1). The red line represents the result of DT1, that is, the duration time of the metaphorical construction group. The green dotted line represents the result of DT2, that is, the duration time result of the non-metaphorical construction group. Both sets of data are close to normal distribution. Next, a single sample t-test is conducted for the two tasks. The results are shown in Table 3 below. The p-value of the two groups of samples is less than 0.05, indicating that the DT of the two samples is significantly different. In conclusion, the samples of this study are statistically significant.
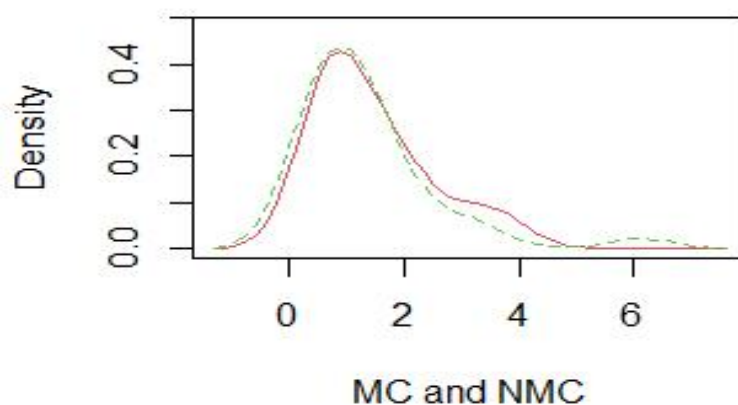

Figure 1 Task normal distribution

Table 3 T-test results

DT1	DT2
t = 10.964, df = 70, p<0.001-value	t = 19.656, df = 70, p<0.001

From the perspective of text results, by sorting out the export results of ELAN text annotation by Antconc 3.5.8, it can be found that the main interpretation methods include literal translation, free translation, and omission when the participants encounter the metaphorical construction of "XX 之 X" in the process of STR. The proportion of three different methods is shown in the table below (Table 4):

Table 4 Translation methods of metaphorical construction

Methods	Proportion (.00)	Examples
Literal translation (67)	41.61%	the tree of literature the lamp of our wisdom
Free translation (82)	50.93%	light their dream a good development
Omission (12)	7.45%	——

From the above numbers, it can be concluded that the translation method commonly used by the participants is free translation（50.93%）Literal translation, and free translation account for the majority. Although its proportion is not very high, omission as a common way of interpretation can provide a reference way when facing the translation of specific metaphorical constructions. Therefore, the experimental results show that the participants use omission in interpreting the metaphorical construction of "XX 之 X", accounting for 7.45%.

Accordingly, for non-metaphorical construction processing, the participants' interpretation methods take many methods, as shown below (Table 5):

Table 5 Translation methods of non-metaphorical construction

Methods	Proportion (.00)	Examples
Adverbialization (7)	8.97%	seriously
Adjectivization (13)	16.67%	serious, important, fascinating
Nominalization (44)	56.41%	communication
		A tree is based on its roots.
Paraphrase (6)	7.70%	How far you can go relies how solid your foundation are.
		hold our hands
Other (8)	10.26%	the tree which is tall and luxuriant, with luxuriant leaves

4. Discussion

Our analysis of the text results reveals substantial differences in translation strategies between metaphorical and non-metaphorical constructions. For metaphorical constructions, participants predominantly employed a hybrid translation strategy, integrating both literal and free translation techniques. In contrast, non-metaphorical constructions were mainly translated using free translation. The associated translation methodologies included adverbialization, adjectivization, nominalization and paraphrasing.

A key finding from our results is the identification of three principal strategies implemented in text translation: omission, free translation, and literal translation. This insight underscores the nuanced approaches translators take based on the nature of the text at hand, whether it is metaphorical or non-metaphorical.

4.1 Omission

Omission, within the context of this study, refers to the exclusion of significant information from the source language. This is often a result of the participants' incomplete comprehension of the original text. The high-pressure environment of interpretation can exacerbate this issue, leading participants to resort to omission as a strategy to reduce the complexity of certain phrases. Two specific scenarios characterize the use of omission: Firstly, the inadvertent exclusion of key information which should ideally be retained, and secondly, the excessive omission of information to the extent that it disrupts the logical coherence of the text.

Consider the following example:

Example 1: 学生要坚持学而信、学而思、学而行，把学习成果转化为不可撼动的理想信念，转化为正确的世界观、人生观、价值观，用理想之光照亮奋斗之路，用信仰之力开创美好未来。理想因其远大而为理想，信念因其执着而为信念。理想之光不灭，信念之光不灭。
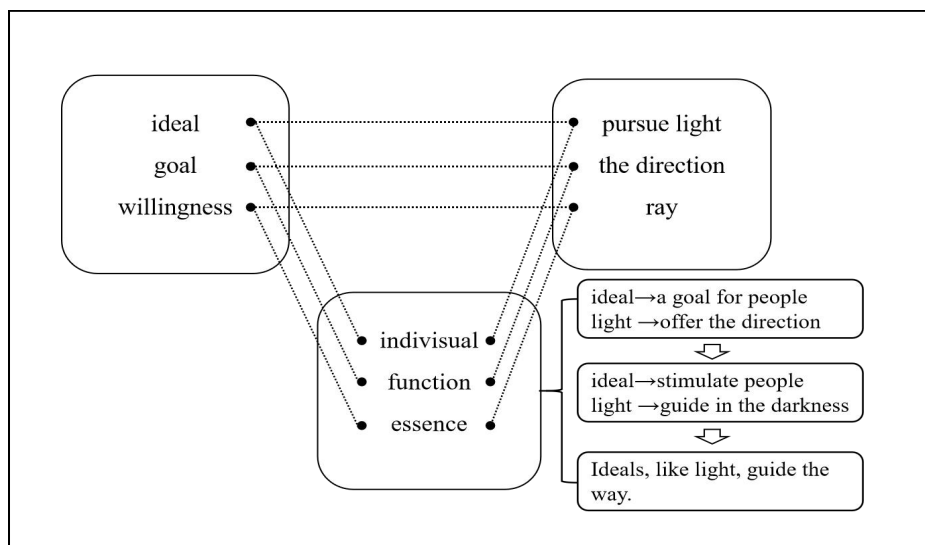

Figure 2 The conceptual blending of "li xiang zhi guang (理想之光)"

The sample text contains three sentences with four instances of the metaphorical construction "XX 之 X". The repetition of the words "ideal" (li xiang) and "belief" (xin nian) complicates the understanding of the original text. It is observed from the annotation results that omission as a translation strategy was applied three times within these example sentences. In the blending conceptual space, the attribute of "ideal" is perceived as pure and clean, while "light" projects the concepts of speed and brightness. After the arrangement and composition within the emergent structure, new categories are generated: "ideal" maps to "goal," and "pursue light" correlates with "purpose." Therefore, we obtain a more abstract, almost nihilistic concept of "ideal," grounded in our personal experiences and cultural models. By fleshing out this concept, we understand that "ideal" serves to inspire individuals, while "light" symbolizes the dispelling of darkness to illuminate the night sky.

Excessive omission, despite its frequent use, can be justified in the target language since there's an established precedent within the language pair[13]. While this approach may not enhance the linguistic elegance, it ensures accurate transmission of the text's content. However, excessive omission risks creating an information deficit. In other words, if the translator can effectively integrate the blending process of the two concepts, the resulting translation would be more succinct and less liable to information loss.

4.2 Literal translation

The phenomenon of literal translation, which involves a verbatim, word-for-word translation approach, can lead to information redundancy when employed inappropriately. This redundancy may impose an additional cognitive load on the audience. However, there can be a silver lining to this approach. The repetitive presentation of similar concepts can solidify construct impressions[14], thereby reinforcing the audience's understanding.

As a result, the translator may not need to invest significant effort in processing and comprehending the information. Instead, they can focus on fidelity to the source material, even if it leads to a degree of redundancy. This approach to translation underscores the balance that must be struck between linguistic faithfulness and cognitive efficiency.

Example 3: 自力更生是中华民族自立于世界民族之林的奋斗基点，自主创新是我们攀登世界科技高峰的必由之路。

The phrase "min zu zhi lin" is not a little-known phrase in Chinese expression. Surprisingly, there are many translation methods for this metaphorical construction phrase in the experimental results. Firstly, for conceptual blending, the concepts of "min zu" and "lin" are projected into the blend, and then independent factors are shaped. In the first stage of entering the emergent structure, the "min zu (ethnic group)" and "lin (forest)" should be rearranged. The sequence of the two concepts is: nation → people and people's community; forest → trees, patches of trees. So, the similarity of composition shows some comparability between "nation" and "forest". This sets a trap for the translators to clarify the core point. But, when understanding the metaphorical phrase "min zu zhi lin", the translators are able to grasp the main points without completing the third stage of emergent structure. Problem that needs to be considered is that the high-frequency use of this metaphorical phrase has gradually occupied the subconscious. From the text results, there is a large deviation in the presentation of the interpretation. There are seven translation methods of this metaphorical construction phrase (Table 6):

Table 6 Translation of "min zu zhi lin (民族之林)"

Metaphorical construction	Translated text
min zu zhi lin (民族之林)	omission
	this world
	earth
	in the forest, (then change it into) in the world
	forest of nations
	nations of the world
	in the world

From the underlined translation, they reflect two completely different blending processes. "forest of nations" only interchanges the source domain and the target domain of the source language, that is, mirroring; while, "nations of the world" adds "world" to avoid information omission after completing the generation of emergent structure. Two different methods bring different understanding experiences. Guided by metaphorical constructions, translators can easily form their own empirical semantic fields[15] and semantic frames[16]. After conceptual blending, the translators should clarify that the phrase's core is "minzu". Therefore, "in the world", "this world" and "earth" could be used as references.

4.3 Free translation

Free translation refers to the explanation of the context, resulting in the increase of the length of the interpretation. The excessive use of free translation will not improve the quality of translation; on the contrary, it will increase the difficulty of understanding. This is an unfriendly behavior to the target language listeners. It is important to be aware that translations that produce domestication of various kinds are not conducive to the transmission of information [17][18].

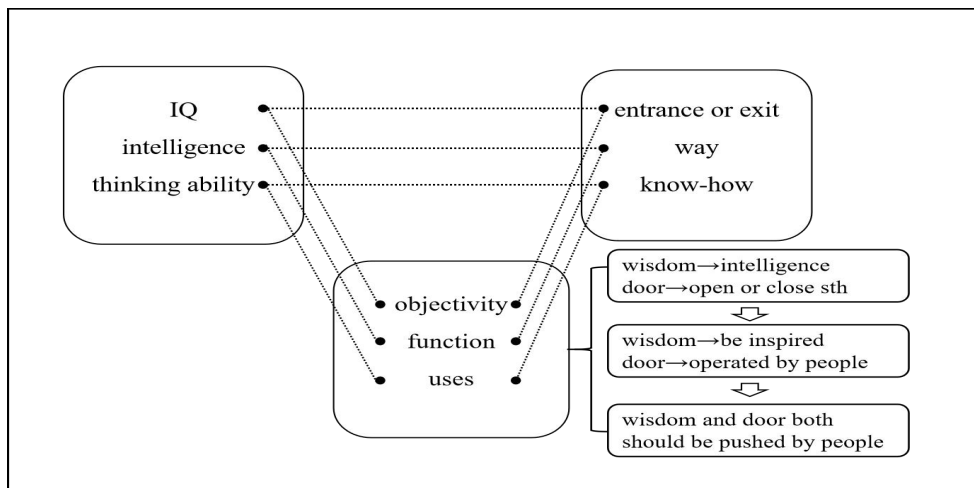Example 2: 教师要时刻铭记教书育人的使命，甘当人梯，甘当铺路石，以人格魅力引导学生心灵，以学术造诣开启学生的智慧之门。

Figure 3 The conceptual blending of "zhi hui zhi men (智慧之门)"

In this examination of a 53-character Chinese sentence, we find four metaphorical expressions. The projection of information from the two input spaces— 'wisdom' and 'door'—automatically generates a blended space. Here, 'wisdom' is associated with IQ, intelligence, and thinking ability, whereas 'door' signifies an entrance or exit, a way, or a method.

During the composition stage, the distinct concepts of 'zhi hui' (wisdom) and 'men' (door) are organized based on their respective characteristics. From an inherent cognitive model, we can infer that 'wisdom' needs to be inspired, akin to a 'door' needing to be opened. Through this blending, the final meaning derived is: 'Enlightening wisdom is like opening a door, necessitating an external impetus.

However, a discrepancy exists between the source language information and the translation expression, leading to a deviation in comprehension. During the STR process, an apt free translation could enhance the translation quality and yield different translation effects. Yet, excessive free translation risks distorting the original information.

In essence, this discrepancy stems from a confusion in the stages of the emergent structure generation within the blending space. This confusion can mistakenly mix the information originally output during the completion stage with other innovative information in the elaboration stage. Therefore, the translation recognition of metaphorical constructions requires an understanding of whether a 'tension' exists between the cluster and the clause[19].

4.4 Limitations and Prospects

This study endeavors to elucidate the cognitive outcomes of metaphorical constructions in interpretation, using reaction time and pause time as indicators. Reaction time refers to the duration within the interpretation output stage, while pause time pertains to the length of pause during the same stage. Utilizing the emergent structure in conceptual blending, this study seeks to analyze cognitive differences between metaphorical and non-metaphorical constructions.

By comparing two different task types, we aim to identify deviation factors in the cognitive blending of metaphorical constructions. However, due to the absence of pause time results, it is currently not feasible to draw definitive conclusions from the comparison of the two tasks. This limitation will be a primary focus for amendment in future experimental iterations.

It is important to note that this study, to the best extent possible, has excluded non-environmental and human factors that could affect the experimental process. Still, the experimental design may contain unidentified flaws. Furthermore, the participants in this study were student translators, meaning the experimental findings may not be fully representative of the broader interpretation industry. To enhance the study's representativeness, it would be beneficial to expand the scope of participant selection in future iterations.

The data sample in this study is relatively small, and could be augmented in subsequent studies. Lastly, the research scope of this study is confined to the information output process in the expression stage of metaphorical and non-metaphorical concepts. The input stage, however, requires further exploration using additional cognitive tools.

5. Conclusion

Upon measurement, it becomes evident that metaphorical constructions do indeed influence translators. The three methods of generating an emergent structure in blending space—composition, completion, and elaboration—provide innovative approaches for translators dealing with the challenging task of metaphorical translation during conceptual integration. Through the use of similar forms of metaphorical constructions, translators can achieve one-pass comprehension of the content. Translators often resort to strategies like omission, free translation and literal translation to handle metaphorical constructions. However, one issue that arises is the extended time translators spend during cognition. Reaction time data suggests a certain level of unfamiliarity in the translator's perception of these constructions. Consequently, the question of how to reduce the difficulty of metaphorical constructions for translators, facilitating a smoother understanding of the information, will be the focus of future research.

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