Original Paper

A Corpus-based Study on the Translation of Shallow Needling Related Chapters in *Huangdi Neijing*

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Abstract

Objectives This study aims to analyze chapters related to shallow needling in Li Zhaoguo's and Wu Liansheng & Wu Qi's English versions, identify the reasons for differences and draw a certain reference for its translation in the future. Methods In this study, the two translations and Chinese original version were constructed into a corpus. WordSmith 4.0, AntConc 3.4.4w, and SPSS 26 were employed for qualitative and quantitative analysis at the lexical, syntactic, and discourse levels of translations related to shallow needling. Results 1) Similarities: There is no significant difference in vocabulary density and quantity between the two translations (P>0.05), and both emphasize the use of conjunctions to express semantic relations. 2) Differences: Wu's translation has longer word lengths compared to Li's (P<0.01). Li often uses transliteration with literal translation and annotation, while Wu tends to apply free translation. The differences in sentence length are relatively small in Li's translation (P<0.05), and sentences are more balanced. The two translations have significant differences in using "when" (P<0.05). These differences are closely related to the translators' purposes, strategies, methods, and personal expression habits. Conclusion For the international dissemination of shallow needling, vocabulary translation can draw inspiration from Li's methods and strategies to convey more cultural knowledge related to shallow needling. Sentence translation can benefit from Wu's explicit representation of underlying medical information, facilitating the dissemination of medical knowledge. In terms of discourse, attention should be paid to conveying semantic relationships within passages.

Keywords

Corpus, Huangdi Neijing, Shallow needling, Translation study

1. Introduction

The depth of needle insertion is one of the key factors determining the clinical efficacy of acupuncture treatment (Wu et al., 2024). Shallow needling refers to a technique in which the needle is inserted shallowly into acupoints to stimulate qi, dredge meridians, regulate the functions of the internal organs and balance yin and yang, thereby treating diseases (Li et al., 2022). Studies have shown that shallow needling has a wide range of applications and provides significant therapeutic effects for various conditions (Gong & Wang, 2023; Li et al., 2022; Cong et al., 2022; Li et al., 2021). Furthermore, this technique is almost painless and thus more acceptable to patients abroad. Many overseas acupuncturists also focus on the clinical application and research of shallow needling. For instance, the "Sugar Acupuncture — Comfort-Oriented Acupuncture" method in the United States is a developed form of this approach (Wang, 2022).

As early as two thousand years ago, Chinese physicians placed great emphasis on the depth of needle insertion. While both deep and shallow needling were discussed, shallow needling was predominant (Mo & Xu, 2019). The *Huangdi Neijing* (hereafter referred to as *Neijing*) contains extensive discussions on shallow needling, including relevant theories, instruments, techniques, and clinical applications, particularly in chapters such as *Pibu Lun (皮部论)*, *Jiuzhen Shier Yuan (九针十二原)*, *Guan Zhen (官针)*, *Xiao Zhen Jie (小针解)*, and *Zhong Shi (终始)* (Yu et al., 2021). These chapters provide significant guidance for modern clinical acupuncture (Yu et al., 2021) and hold great value for the international dissemination of the shallow needling technique.

This study builds a bilingual corpus based on the original text of *Neijing* and its two complete English translations. Through a combination of qualitative and quantitative analysis, it examines lexical, syntactic, and discursive features of shallow needling-related chapters in the two translations. The objective is to uncover the reasons behind translation differences and offer insights for the English translation and overseas dissemination of shallow needling.

2. Corpus and Translation Studies on *Neijing*

The term "Corpus Translation Studies (CTS)" was first proposed by Baker (1993), who pioneered the application of corpora in translation studies. In China, Yang Huizhong (1993) was among the earliest scholars to explore the relationship between corpus linguistics and machine translation, nearly in parallel with the international development of CTS (Yang & Bai, 2010). According to the literature reviewed by the author, the earliest application of corpora to *Neijing* began around 2008, mainly focused on the construction of corpus frameworks. In 2015, Zhu Jianfei (2015) built a bilingual corpus of *Neijing* and used it to explore translation strategies for classical Chinese medicine texts. Based on a parallel corpus, Ye Xiao et al. (2015) conducted a comparative study of pulse terminology translations. Liu Chunmei (2016) illustrated how to construct a bilingual parallel corpus using selected content from *Neijing*. Two years later, He Nanna et al. (2018) applied corpus analysis to the translation of neurological disease names in *Neijing*, comparing them with standardized medical terminologies. In

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recent years, studies combining corpus methods and the classic have increased. Pan Hai'ou (2022) constructed a corpus for the chapter *Yinyang Yingxiang Dalun (阴阳应象大论)* and analyzed vocabulary and translation strategies across versions by Ilza Veith, Maoshing Ni, and Yang Mingshan. Lu Dechao et al. (2024) used corpus tools to examine the translation of *qi* in Wiseman's translation of *Suwen (素问)*. However, little research has specifically addressed the English translation of shallow needling in *Neijing*. Some existing work only briefly mentions related techniques such as bloodletting. In addition, the combination of corpus methodology with translation studies of shallow needling remains relatively scarce. This study aims to fill that gap by conducting a qualitative and quantitative investigation of shallow needling related chapters in two English versions of *Neijing*, offering a more objective and comprehensive view of translation features and their implications for the international communication of this acupuncture technique.

3. Research Design

3.1 Research Corpus and Questions

3.1.1 Research Corpus

This study selects five chapters from *Neijing* that are related to shallow needling: *Pibu Lun* from *Suwen*, which establishes the theoretical basis of shallow needling, and *Jiuzhen Shier Yuan*, *Guan Zhen*, *Xiao Zhen Jie*, and *Zhong Shi* from *Lingshu (灵枢)*, which discuss instruments, techniques, and clinical applications. Since discussions of shallow needling are scattered throughout *Neijing*, chapters with fewer mentions were excluded. The study uses two complete English translations of *Neijing*: the version by Prof. Li Zhaoguo from Shanghai University of Traditional Chinese Medicine (Li, 2005; 2008), hereafter referred to as "Li's Version", and the version by Chinese-American acupuncturists Wu Liansheng and Wu Qi (Wu, 1997), hereafter "Wu's Version". The total word count of the extracted chapters is 15,156 in the Li Version and 12,556 in the Wu Version.

3.1.2 Research Questions

This study aims to examine similarities and differences in vocabulary, syntax, and discourse cohesion between the two translations, explore the reasons behind their differences, and summarize implications for future English translations and international communication of shallow needling. Specifically, the following questions are addressed:

1) What are the similarities and differences between the two translations in terms of lexical, syntactic, and discourse levels?

2) What are the causes of these translation differences?

3) What insights can these differences provide for the future translation and global dissemination of shallow needling?

3.2 Research Tools and Indicators

3.2.1 Research Tools

ABBYY FineReader 12 was used to convert *Neijing* into UTF-8 formatted TXT files. Relevant content

was cleaned using EmEditor. The corpus was analyzed using WordSmith 4.0 and AntConc 3.4.4w for lexical, syntactic, and discourse-level features. SPSS 26 was used for quantitative analysis. For indicators that met the assumption of normality (e.g., type-token ratio, mean sentence length, high-frequency conjunctions), independent samples t-tests were conducted. Non-parametric tests were used for variables not meeting normality. Ridit analysis was applied to compare word length distributions. A significance level of $P < 0.05$ was used.

3.2.2 Research Indicators

Based on the framework by Lv Pengfei et al. (2021), this study selects the following indicators:

1) Lexical level: type-token ratio, lexical density, average word length, high-frequency words, and culturally loaded terms

2) Syntactic level: mean sentence length, sentence length standard deviation

3) Discourse level: conjunction usage, coherence, and cohesion in the text

4 Statistical Results and Analysis of Causes

4.1 Lexical Level

The lexical features of the translations are analyzed from the perspectives of Standardized Type-Token Ratio (STTR), lexical density, average word length, high-frequency words, and culturally loaded terms.

4.1.1 Standardized Type-Token Ratio (STTR) and Lexical Density

In corpus translation studies, a type refers to a unique word, while a token refers to every instance of a word, including repetitions. The ratio of types to tokens (TTR) reflects lexical richness or lexical density (Zhang, 2024). Generally, a higher TTR indicates a more diverse vocabulary, whereas a lower TTR reflects limited lexical variety. Lexical density refers to the proportion of content words (nouns, verbs, adjectives, adverbs) within a text. A higher lexical density suggests more information-rich content, which may enhance the accuracy of conveying the original meaning but might also result in verbosity. Conversely, a lower lexical density may imply a more concise translation but could risk omitting implicit meaning embedded in the classical Chinese language in *Neijing*. However, when the corpus is long, an increase in function words can significantly affect the TTR, making it less reliable for evaluating lexical richness. Therefore, Scott (2001) proposed the Standardized Type-Token Ratio (STTR), which calculates the TTR at fixed intervals (usually every 1,000 words) and then averages the values, thereby minimizing the impact of corpus length and improving the accuracy of lexical density assessment.

Table 1. STTR Comparison between the Two Translations

	Li's Version	Wu's Version
Types	1728	1557
Tokens	15156	12556

TTR	11	12
STTR	30.27	28.26*

Note. Compared with the Li version, $P > 0.05$.

As shown in Table 1, the number of tokens in Li's version is considerably higher than that in Wu's version. The primary reason lies in the translation strategies adopted by the two versions. Li frequently employs a combination of transliteration and literal translation for traditional Chinese medicine (TCM) terms, followed by explanatory notes appended to the end of each chapter. This approach leads to a higher number of tokens. In contrast, Wu does not provide any annotations and tends to adopt a more liberal translation strategy.

For example, the term Fuci (浮刺), referring to a technique within the shallow needling method, is translated in Wu's version as "superficial-puncture," using a free translation strategy. However, in Li's version, it appears as "Fuci (floating needling)," accompanied by a footnote: "Fuci (浮刺): It refers to a kind of oblique and shallow needling." This not only adds transliterated terms but also lengthens the translated text through additional explanations.
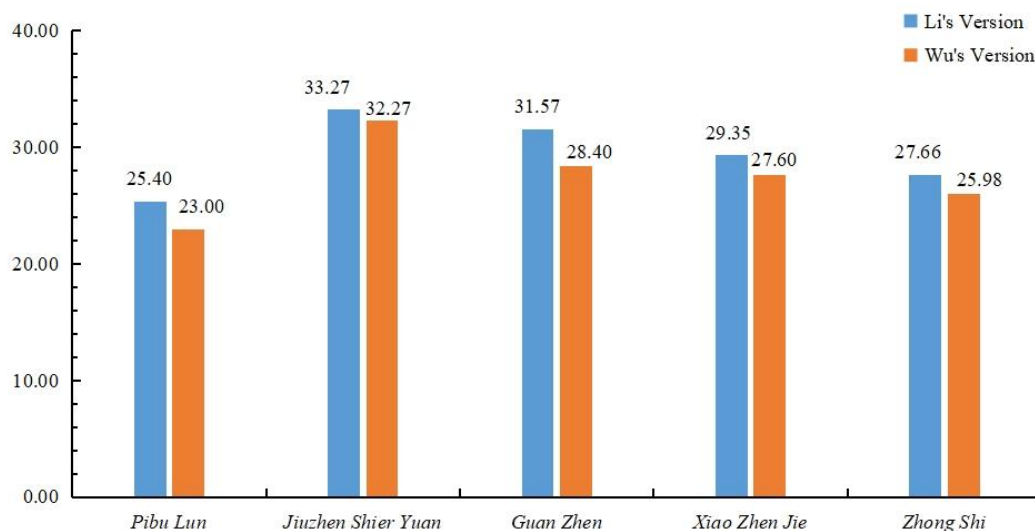

Figure 1. STTR Distribution across Five Chapters in the Two Translations

The STTR for the five chapters in Li's version is 30.27, with an average STTR of 29.45. In Wu's version, the average STTR across the five chapters is 28.26, with an overall average STTR of 27.45. An independent samples t-test was conducted using SPSS 26, and the results indicated no statistically significant difference in lexical richness between the two translations ($t = 0.971$, $P > 0.05$). This suggests that the two versions do not differ significantly in terms of vocabulary quantity or lexical diversity.

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4.1.2 Average Word Length and Its Distribution

Another way to examine lexical features is through the average word length, which reflects the average number of letters per word in the corpus. This metric provides insight into the translator's lexical choices and stylistic preferences. In this study, WordSmith 4.0 was used to calculate the average word length and the distribution of words of various lengths in both translations. A bar chart was generated to illustrate the distribution of word lengths and to highlight the lexical differences between Wu's version and Li's version.
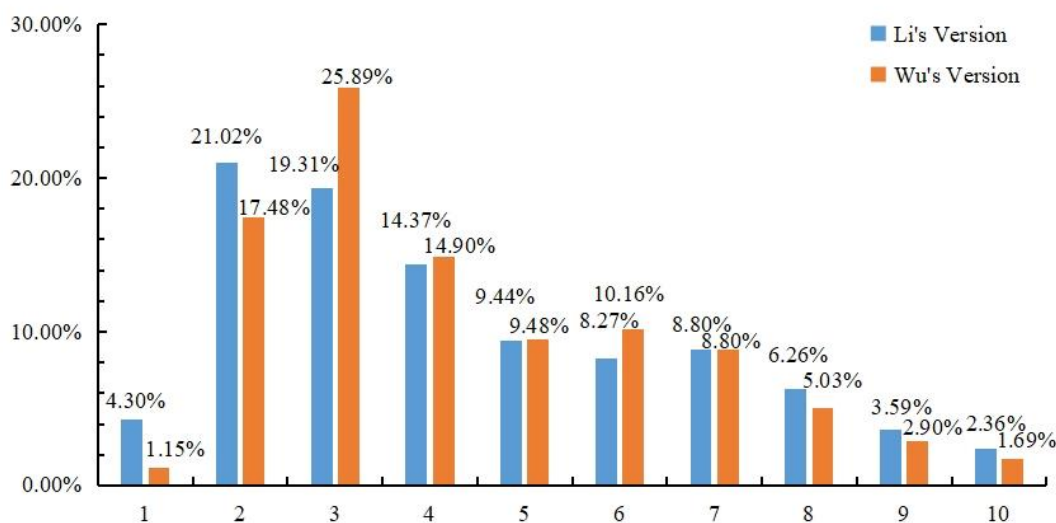

Figure 2. Word Length Distribution in the Translations

The corpus data show that the average word length in Li's version is 4.53 with a standard deviation of 2.54, while Wu's version has an average word length of 4.56 and a standard deviation of 2.38. As illustrated in Figure 2, the majority of words in both translations consist of 2 to 4 letters. In Li's version, two-letter words are the most frequent, accounting for 21.02% of the total, whereas three-letter words dominate in Wu's version, making up 25.89%. Words with fewer than 8 letters constitute over 91% of all words in both versions.

A Ridit analysis conducted via SPSS 26 on the raw word-length data revealed a statistically significant difference between the two versions ($r = 0.51$, $t = 5.24$, $P < 0.01$), indicating a considerable disparity in word length. Specifically, Wu's version contains longer and more complex words compared to Li's version. This variation is primarily attributed to differences in word choice and stylistic preferences between the translators.

4.1.3 High-Frequency Words and Culturally Loaded Terms

1) High-Frequency Words

High-frequency words can reflect a translator's linguistic tendencies and stylistic preferences. In this study, AntConc 3.4.4w was used to extract the top 50 high-frequency words in each translation. The

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statistical results are presented as follows:

Table 2. Comparison of Top 50 High-Frequency Words in the Two Translations

No.	Li's Version			Wu's Version		
	Words	Frequency	Percentage	Words	Frequency	Percentage
1	the	1544	10.19%	the	1876	14.94%
2	of	614	4.05%	of	504	4.01%
3	and	495	3.27%	and	494	3.93%
4	to	472	3.11%	is	390	3.11%
5	is	431	2.84%	to	259	2.06%
6	in	275	1.81%	when	259	2.06%
7	qi	259	1.71%	energy	242	1.93%
8	that	217	1.43%	be	201	1.60%
9	be	199	1.31%	in	188	1.50%
10	needling	180	1.19%	it	170	1.35%
11	it	160	1.06%	channel	169	1.35%
12	needle	143	0.94%	will	127	1.01%
13	are	122	0.80%	needle	123	0.98%
14	means	122	0.80%	pricking	123	0.98%
15	channel	109	0.72%	called	118	0.94%
16	a	100	0.66%	are	104	0.83%
17	if	98	0.65%	disease	103	0.82%
18	when	97	0.64%	a	102	0.81%
19	channels	91	0.60%	evil	96	0.76%
20	yang	88	0.58%	one	95	0.76%
21	yin	88	0.58%	should	95	0.76%
22	disease	86	0.57%	can	94	0.75%
23	should	85	0.56%	so	93	0.74%
24	can	82	0.54%	patient	92	0.73%
25	by	79	0.52%	with	90	0.72%
26	which	74	0.49%	not	88	0.70%
27	called	73	0.48%	which	78	0.62%
28	acupoints	71	0.47%	yang	71	0.57%

29	on	69	0.46%	yin	67	0.53%
30	as	63	0.42%	means	66	0.53%
31	will	60	0.40%	on	62	0.49%
32	with	60	0.40%	prick	62	0.49%
33	used	58	0.38%	as	60	0.48%
34	treat	57	0.38%	must	57	0.45%
35	evil	56	0.37%	skin	50	0.40%
36	one	54	0.36%	foot	47	0.37%
37	into	52	0.34%	if	47	0.37%
38	pulse	51	0.34%	pulse	46	0.37%
39	reducing	51	0.34%	or	44	0.35%
40	not	50	0.33%	kind	42	0.33%
41	part	50	0.33%	he	39	0.31%
42	body	49	0.32%	pricked	38	0.30%
43	techniques	49	0.32%	collaterals	37	0.29%
44	pathogenic	47	0.31%	five	37	0.29%
45	located	46	0.30%	purging	37	0.29%
46	idea	45	0.30%	acupoints	36	0.29%
47	or	45	0.30%	channels	36	0.29%
48	organs	45	0.30%	has	35	0.28%
49	reinforcing	45	0.30%	treat	35	0.28%
50	this	44	0.29%	large	34	0.27%

According to the data in Table 2, the top five high-frequency words in both translations are "the," "and," "of," "is," and "to." Words such as "of," "and," "if," "when," "to," "in," "on," "which," "or," "as," and "with" are present in both versions, while "that," "by," and "into" are unique to Li's version, and "so" appears only in Wu's version. These words primarily serve to convey various grammatical and logical relations—such as coordination, possession, condition, location, and accompaniment. Overall, both translations demonstrate an emphasis on conjunctions and prepositions to clearly represent relationships within the text.

Both versions frequently use the pronoun "it" to refer to previously mentioned content, thus avoiding redundancy. The term "经络" is consistently translated as "channels and collaterals," "阴阳" is transliterated as "yin and yang," and "脉" is rendered as "pulse" in both translations. The modal verb "will" is also found among the top 50 high-frequency words in both versions and is mainly used to

express future possibility or hypothetical scenarios. Wu's version uses it more frequently, often in conjunction with subordinate clauses introduced by "when" or "if."

The pronoun "one" appears in both translations, mainly functioning anaphorically and occasionally as a numeral. Wu's version uses it more often, typically positioning "one" as the subject of a sentence, occasionally replaced with "patient," and frequently referring to "one" using the pronoun "he."

The word "evil" appears in both translations as the equivalent of the traditional Chinese concept "邪". Wu's version adopts a direct translation—"evil"—while Li's version uses a hybrid transliteration and translation, such as "Xie (Evil)," and sometimes opts for the term "pathogenic." Consequently, "pathogenic" is among the top 50 high-frequency words only in Li's version. "Acupoints" is also included in the top 50 in both translations to represent "穴位", but appears less frequently in Wu's version, which also uses the more general term "point."

"Energy" in Wu's version and "qi" in Li's version are tied for seventh place, illustrating a divergence in their lexical choices for the term "气". Wu translates terms like "邪气" and "病气" as "evil energy" or "pathogenic energy," whereas Li uses the transliteration "qi." The author argues that "energy" does not fully convey the inherent cultural and conceptual richness of "气," and that Li's use of "qi" better preserves the cultural uniqueness of TCM.

The word "that" only appears in Li's top 50 list, where it primarily functions as a clause introducer—e.g., in predicative or attributive clauses—and occasionally serves as a pronoun. The relatively high frequency of "by" and "used" in Li's version is due to a preference for passive constructions such as "be treated by" or "be used to," which contribute to a more objective tone. The preposition "into" is frequently used in Li's version with verbs like "get" or "insert" to describe either the internal invasion of pathogenic factors or the insertion of needles.

Words like "part" and "body" appear more frequently in Li's version, typically in expressions such as "part of the body." The word "located" is often used to describe the position of acupoints or pathological conditions. "Idea" is used to enhance logical flow or clarity, as in "[The idea that]…" "Organs" is employed by Li to translate "脏腑", as in "Five-Zang Organs," while Wu alternates between "organ" and "viscera."

The word "techniques" appears only in Li's high-frequency list, reflecting his translation strategy for reinforcing and reducing methods, commonly rendered as "reinforcing techniques" and "reducing techniques." This emphasizes the procedural nature of these methods. Wu, on the other hand, uses "invigorating" and "purging" and rarely translates "techniques" directly.

The word "so" is found only in Wu's top 50 list. It is often used in conjunction with "called" to form adjectival phrases such as "The so-called 'easy to relate'…" or as a conjunction introducing adverbial clauses. Both versions use "called" to introduce acupuncture instruments or acupoints. Wu also uses "kind" to categorize types of instruments, and "large" to express magnitudes, such as in "four times as large as," whereas Li prefers the term "great."

The verb "pricked" appears frequently in Wu's version as a translation of "刺", often combined with

modal verbs like "should," "can," or "must" (e.g., "should be pricked"). In translating the term "针刺", Li's version favors "needling," while Wu prefers "pricking." For instance, "浅刺" is translated as "shallow pricking" in Wu's version, and "shallow needling" in Li's. The author contends that Wu's use of "pricking" merely conveys the action of piercing the skin with a sharp object and lacks specificity. In contrast, Li's use of "needling" makes the use of a needle explicit, which facilitates international understanding and dissemination of the shallow needling technique.

2) Culturally Loaded Terms

Culturally loaded terms refer to words, phrases, or idioms that represent concepts unique to a specific culture. These terms encapsulate practices, beliefs, and values that have been shaped over long periods and are distinct from those of other cultures (Nida, 1964). This study, using the original chapters on shallow needling from the *Neijing* as a reference, identifies several culturally loaded terms related to shallow needling. With the assistance of the corpus tool AntConc 3.4.4w, the following keyword list was compiled:

Table 3. Translation of Culturally Loaded Terms

	Li's Version	Wu's Version
络刺 (Luoci)	Luoci	blood-letting-needling
大泻刺 (Daxieci)	Daxieci	drainage-needling
毛刺 (Maoci)	Maoci	skin-needling
浮刺 (Fuci)	Fuci (floating needling)	superficial-puncture
直针刺 (Zhizhenci)	Zhizhenci (direct needling)	perpendicular-needling
锋针 (Fengzhen)	Fengzhen (sharp needle)	ensiform needle
井 (Jing)	Jing - Well	Jing (well)
荥 (Ying)	Ying - Spring	Xing

From Table 3, it can be seen that Li's version tends to adopt a foreignization strategy, frequently employing transliteration or a combination of transliteration and literal translation, supplemented by annotations to explain the culturally loaded terms. In contrast, Wu's version is more inclined toward domestication, typically using a single translation strategy—either free translation or transliteration—without providing further cultural explanations. This divergence is mainly related to the translators' purposes. Li's version places more emphasis on preserving the philosophical and cultural ideas of *Neijing*, aiming to promote traditional Chinese medical culture. Wu's version, however, was originally created to provide a complete English translation for international learners of Chinese medicine, thus placing more focus on the medical content's comprehensibility for foreign readers (Li, 2020).

In terms of culturally loaded terms, the foreignization strategy is more conducive to the international

dissemination of Chinese culture. Although this strategy may affect comprehension to some extent, such limitations can be compensated for through the use of annotations (Chen & Wang, 2022). Therefore, Li's version can be seen as striking a balance between understandability and cultural transmission.

4.2 Syntactic Level

At the syntactic level, stylistic features are analyzed through average sentence length and sentence length standard deviation. Average sentence length is calculated by dividing the total number of tokens by the number of sentence-final punctuation marks, such as periods, question marks, and exclamation points. A longer average sentence length indicates more complex sentence structures and higher syntactic maturity, whereas a shorter one reflects simpler structures. The sentence length standard deviation reveals the variation in sentence lengths throughout the text. A larger standard deviation indicates greater fluctuation in sentence length, while a smaller one suggests more consistency and stability in sentence structure.

Table 4. Syntactic Features of the Two Translations

	李本	吴本
The Number of Sentences	658	346
Sentence Length（$\bar{x}$±s）	23±15.28	36±26.24[*]

Note. Compared to Li's version, [*]P<0.05.

As shown in Table 4, the average sentence length in Wu's version is 13 words longer than that in Li's version, indicating a substantial difference. An independent-samples t-test conducted using SPSS 26 on the average sentence lengths across each chapter revealed a significant difference between the two translations (t = -3.95, P < 0.01). This suggests that Wu's version generally favors longer sentences, reflecting greater syntactic maturity and complexity. Additionally, Wu's version also shows a higher standard deviation in sentence length, indicating a wider variation across sentences. In contrast, Li's version exhibits more uniform sentence lengths, demonstrating structural balance that to some extent maintains the format of the original text. This difference again correlates with the translators' respective purposes.

For instance, in the chapter *Xiao Zhen Jie*, the following sentence illustrates this stylistic divergence.

Original Text:"针太深则邪气反沉"者，言浅浮之病，不欲深刺也，深则邪气从之入，故曰反沉也。"皮肉筋脉各有所处"者，言经络各有所主也。

Li's Version: [The idea that to use] deep needling [to treat the disease that is superficial] leads to internal invasion of Xieqi (Evil - Qi) means that mild disease should not be [treated by] deep needling lest Xieqi (Evil - Qi) deepen [its invasion into the body] with the thrusting [of the needle]. That is why it is said that [deep needling may] worsen the disease. [The idea that] the locations of [the diseases in]

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the skin, muscles, sinews and vessels are different means that [the skin, muscles, sinews and vessels] are controlled respectively by Channels.

Wu's Version: The so called "when the pricking is too deep, the evil energy will, on the contrary, become sunken" means to the disease of which its evil energy is on a shallow position, do not prick deeply, otherwise, it will, cause the evil energy to penetrate inside, so, it is on the contrary to become sunken. The so called "the skin, muscle, tendon and channel are having their regular position" means the skin, muscle, tendon are on their regular positions respectively, and there are the definite positions in the channels and collaterals for treating the various diseases.

In this example, Li's version uses round brackets to provide current translations or explanations immediately after transliterated terms or culturally specific concepts, while square brackets are employed to differentiate annotations from the main text. This approach aligns with Li's pre-translation principle: "Translate classical texts in a classical style, with no modern adornments." thereby preserving the structural integrity of the original. In contrast, Wu's version employs more conjunctions, resulting in longer sentences that convey more detailed information. For instance, the phrase "for treating the various diseases" in Wu's version makes explicit a meaning that is only implied in the original text, thereby reflecting the translator's intention to convey medical experience and instructional purpose (Chen, 2021). Wu's translation does not follow the original sentence structure and places greater emphasis on the transmission of information.

4.3 Discourse Level

Cohesion is a semantic concept achieved through grammatical and lexical means, allowing sentences to be logically connected. Coherence, also a semantic concept, refers to the resulting semantic relationships established by cohesive ties. Both cohesion and coherence are crucial in forming a comprehensible discourse. English, being a hypotactic language, heavily relies on explicit cohesive devices such as conjunctions. In contrast, *Neijing*, as a classical Chinese text, features parataxis with a high degree of implicitness. Thus, when translating such texts into English, cohesive markers like conjunctions are often necessary to articulate semantic relationships between clauses and sentences. At the discourse level, this study analyzes the coherence and cohesion of the two versions by examining the use of conjunctions. Using the Wordlist function in AntConc 3.4.4w, the five most frequently used conjunctions in each version were identified and analyzed.

Table 5. Top Five Conjunctions in Each Translation

	Li's Version		Wu's Version	
	Frequency	Percentage (%)	Frequency	Percentage (%)
and	495	3.27%	494	3.93%
when	97	0.64%	259*	2.06%
if	98	0.65%	47	0.37%

or	45	0.30%	44	0.35%
but	22	0.15%	16	0.13%
总计	757	4.99%	860	6.85%

Note. *P < 0.05 compared to Li's frequency of "when".

A non-parametric test using SPSS 26 showed no statistically significant differences between the two datasets (z = -0.104, P > 0.05), suggesting that both translators emphasized the use of conjunctions to convey semantic relationships in the source text, including coordination, contrast, time, and condition. However, an independent sample t-test on the conjunction "when" revealed a significant difference between the two versions (t = -4.511, P < 0.05), with Wu's version using it more frequently. Wu commonly uses "when" to introduce subordinate clauses, while Li tends to use "if" or omit the conjunction altogether. This reflects differences in stylistic preference and expression.

For instance, in the chapter *Pibu (The Skin Regions)*, the following original sentence is translated differently.

Original Text: 邪中之则腠理开，开则入客于络脉，留而不去，传入于经，留而不去，传入于府，廪于肠胃……。

Li's Version: Attacked by Xie (Evil), the Couli (muscular interstice) opens, giving rise to the invasion of Xie (Evil) into the Collaterals. [**If** it] lingers [in the Collaterals], it enters the Channel; [**if** it] lingers [in the Channels], it enters the Fu-Organs and accumulates in the intestines and stomach...

Wu's Version：**When** the evil attacks the skin, the striae will be kept openned and the evil-energy will invade the collaterals, **when** the evil retains long, it will be transmited into the channel inside, **when** it retains in the channel long, it will be transmited into the intestine and stomach…

From the above, we see that in translating "邪中之则腠理开，开则入客于络脉," Wu's version uses "when" to introduce adverbial clauses, while Li's version omits conjunctions. For the subsequent sentences, both versions use different conjunctions to express conditionality, but Wu prefers "when" whereas Li prefers "if." This accounts for the higher frequency of "when" in Wu's translation.

5 Conclusion and Implications

The *Neijing* contains extensive discussions on shallow needling, and analyzing the translation features and differences in the two English versions provides valuable insights for future translation practices. This study finds that both translations share common features: there are no significant differences in lexical density, vocabulary size, and richness; at the discourse level, both emphasize the use of conjunctions. The differences lie in several areas: at the lexical level, Li often employs a foreignization strategy using transliteration with literal translation and annotation, preserving cultural nuances. Wu, on the other hand, typically favors free translation, leaning toward domestication. At the sentence level, Li's version has lower average sentence length and smaller standard deviation, resulting in more

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balanced sentences that better preserve the original structure. At the discourse level, Wu frequently uses "when" to introduce clauses, while Li prefers "if" to express conditionality.

These differences are primarily due to the translators' goals, strategies, and stylistic preferences. Based on the findings, several implications emerge: First, due to inherent conceptual differences between Chinese and Western medicine and cultural thinking, translating traditional Chinese medical terminology remains a challenge. Li's strategy of combining transliteration, literal translation, and annotations better preserves cultural meaning and facilitates cultural transmission. Wu's free translation approach may sometimes lead to mismatches—for instance, equating "Qi" with "energy"—which can cause conceptual inaccuracies. Second, the proper application of shallow needling is highly conditional, requiring precise expression of logical relationships between clauses in translation. Differences between parataxis in Chinese and hypotaxis in English necessitate explicit cohesion in English translations. The use of conjunctions by both translators enhances coherence and provides useful models for translating medical classical texts and classical Chinese literature more broadly. Lastly, regarding translation purpose and methods, Li focuses on preserving the cultural, philosophical, and structural aspects of *Neijing*, using foreignization strategies to appeal to scholars interested in the cultural and philosophical foundations of shallow needling. Wu emphasizes the transmission of medical knowledge, adopting domestication strategies to enhance readability, aimed at learners seeking technical understanding. Therefore, Li's approach is more suitable for cultural dissemination, while Wu's emphasis on explicating medical concepts also offers important insights for specialized medical translation.

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