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A Multimodal Contrastive Study of Chinese and English Medical Texts – A Case Study of Patient Information Leaflets of Cold and Fever Medications

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Abstract: ***In an era of globalized pharmaceuticals, the cross-border flow of medicines underscores the critical role of Patient Information Leaflets (PILs) in ensuring safe medication use. This study conducts a comparative multimodal discourse analysis of Chinese and British PILs for common cold and fever medications, framed within Systemic Functional Linguistics. Utilizing a self-built "explanatory" discourse through a higher Standardized Type-Token Ratio (STTR), patient-focused thematic progression, and frequent use of second-person pronouns and mental process clauses. In contrast, Chinese PILs form an authoritative, "summarizing" discourse characterized by condensed syntax, dense terminology, and context-oriented thematic structures. Regarding non-linguistic modalities, English texts employ narrative images, color codes, and warning symbols to establish high-modality, user-friendly guidance, whereas Chinese texts rely primarily on the authoritative contrast of black text on a white background and bold typography, resulting in more monolithic visual salience. The study interprets these disparities through socio-regulatory and cultural lenses, proposing concrete strategies for optimizing the translation and design of Chinese PILs for global audiences. These recommendations aim to enhance cross-cultural communicative efficacy and support the international expansion of Chinese pharmaceutical brands.***

Keywords: Cold and fever medicines, Patient information leaflets in China and the U.K., Multimodal discourse analysis**.**

1. Introduction

The globalization of healthcare and the post-pandemic era have intensified the cross-border exchange and collaboration of medical knowledge and pharmaceutical products. Within this context, the translation of medical texts serves as a vital medium for international knowledge sharing, while the quality of Patient Information Leaflets (PILs) is critical to medication safety and therapeutic efficacy. As legally mandated documents provided by pharmaceutical manufacturers, PILs serve as a key vehicle for communicating essential drug information to both healthcare professionals and patients, playing an indispensable role in clinical decision-making and medication guidance.

With the accelerating internationalization of China's pharmaceutical industry, enhancing the cross-cultural communicative efficacy of PILs has become a pressing practical concern. Current international scholarship on PILs primarily centers on two strands: one focuses on text readability, exemplified by Luk's use of the Flesch-Kincaid Grade Level to compare reading difficulty across countries (2010), and work by Bernardini (2001), and Pires & Cavaco (2014), who investigate user preferences for graphic design and information density from a reception studies perspective. The other strand involves bilingual comparative studies, such as Puato's analysis of linguistic features in Italian and German PILs (2012), and Pierini's comparison of medical term handling in British and Italian versions (2015). Research within China can be broadly categorized into three areas: First, pragmatic function studies, such as Xia and Zhang's exploration of interpersonal meaning in PIL translations (2017); second, translation strategy research, including Cheng's skopos-theory-based analysis of errors in TCM PIL translations (2021), and An's application of the traditional Chinese translation theory called "Faithfulness, Expressiveness and Elegance" principle to guide the Russian translation of TCM manuals for epidemic prevention (2022); third, studies on current status and improvement proposals, such as Zhao et al.'s recommendations for standardizing domestic PILs by referencing US and EU regulatory models (2020), and Fu's discussion of policy incentives for pharmaceutical companies to proactively revise package inserts (2022).

Despite these diverse scholarly approaches, a systematic multimodal comparison of Chinese and English PILs remains under-explored. PILs are inherently multimodal discourses that integrate verbal text, images, and layout, constructing meaning through the synergy of multiple semiotic resources. Although multimodal discourse analysis in China has developed a robust theoretical framework (Zhang, 2009, 2018, 2022; Feng, 2011, 2015) and applications (Li, 2013; Wu & Zhong, 2014; Meng, 2020), empirical and contrastive research on the multimodal translation and design of technical texts, particularly pharmaceutical leaflets, is still insufficient. Li and Tang (2021) also highlight the need for more application-oriented, cross-cultural comparative studies in this domain. Against this backdrop, and considering the widespread use of cold and fever medications during the COVID-19 pandemic, this study selects PILs for common over-the-counter cold and fever drugs from China and the UK as its corpus. Employing multimodal discourse analysis, it systematically investigates the following research questions:

(1) What similarities and differences exist between Chinese and British PILs across linguistic and non-linguistic modalities?

(2) How can these findings inform specific strategies for optimizing the translation and multimodal design of Chinese PILs?

2. Theoretical Framework

The theoretical foundation of multimodal discourse analysis is rooted in Halliday's Systemic Functional Linguistics (SFL). A central tenet of this theory is that language fulfills three meta-functions: the ideational, the interpersonal, and the textual (Halliday, 1994). The ideational function involves the representation of human experiences, both internal and external. The interpersonal function is concerned with the enactment of social roles, the negotiation of relationships, and the expression of attitudes. The textual function organizes language into coherent and situationally relevant discourses through mechanisms of information structure and cohesion (Yang, 2006: 61-64). These three meta-functions provide a multi-layered and integrated theoretical model for analyzing how language operates in social communication.

Building on this foundation, Kress & Van Leeuwen (1996: 114-115) extended the core principles of SFL to semiotic systems beyond language, constructing a visual grammar focused particularly on images. This theory posits that visual design, like language, can realize three types of meaning. The representational meaning of images corresponds to the ideational meta-function, constructs representations of the world. It is divided into narrative and conceptual processes, with narrative representations distinguished by the presence of a "vector." Meanwhile, the interactive meaning expresses the interpersonal meta-function, is realized through elements such as contact, social distance, perspective, and modality. It establishes specific relations between the viewer and the represented world. The compositional meaning corresponds to the textual meta-function, integrates disparate elements into a coherent visual whole through the layout of informational value, salience, and framing (Dong & Yuan, 2021: 79-80). Visual grammar thus provides a comprehensive and effective tool for the semiotic interpretation of images by systematically examining the integrated role of visual elements—such as imagery, color, and layout—within multimodal discourse (Xu, 2019: 84). This study will employ this theoretical framework to construct an analytical model for the multimodal comparison of Chinese and British PILs.

3. Research Design

This study selected 10 commonly used over-the-counter cold and fever medications from both China and the UK, employing a combined qualitative and quantitative analytical approach. Chinese patient information leaflets (PILs) were sourced from printed versions, covering medications such as 999 Cold Remedy, Ibuprofen Sustained-Release Capsules, Shuangyang Throat Relief Granules, Pudilan Anti-Inflammatory Tablets, Compound Paracetamol Tablets, Cekeping Capsules, Cefradine Capsules, Lianhua Qingwen Granules, Qinghuo Zhimao Granules, Shuanghuanglian Oral Liquid, among other commonly used domestic medications. English PILs were obtained from the authoritative drug information website (http://www.medicines.org.uk/emc) in electronic format, primarily including Day & Night Nurse, Nurofen, Lemsip, Benylin, Sudafed, Strepsils, Paracetamol, Beechams, Ibuprofen, Calpol, and other commonly used drugs. The author extracted six core information categories closely related to patient medication safety (dosage and administration, indications, adverse reactions, contraindications, side effects, and precautions), thereby constructing two monolingual corpora: the Chinese PILs Corpus (CHN) and the English PILs Corpus (ENG). The corpus analysis tool employed was LancsBox 6.0, developed by Lancaster University in the UK. The software incorporates the Tree Tagger part-of-speech tagger, eliminating the need for pre-annotation of the raw corpora. The Brown Corpus and LCMC Modern Chinese Corpus were selected as reference corpora. Utilizing LancsBox's Keyword in Context (KWIC), vocabulary analysis (Words), and word distribution (Whelk) functions, contextual information within the text was identified and keyword lists generated. To eliminate the impact of corpus size differences on frequency statistics, raw frequencies were uniformly converted to standard frequencies (occurrences per 100 words) for analysis.

4. Results and Discussion

Multimodal discourse analysis comprehensively examines all symbolic resources and investigates their roles in meaning construction (Feng 2017: 8). Therefore, this study will explore the differences and underlying reasons in meaning construction between Chinese and English PILs from both linguistic and non-linguistic modalities.

4.1 Analysis of Linguistic Modality

One of the primary components of PILs is the text section, which details crucial information such as drug composition, administration methods, precautions, and contraindications. This section serves as the primary channel for audiences to obtain essential information.

4.1.1 A Comparative Analysis of Lexical Density and Syntactic Features

Lexical density, commonly measured by the type-token ratio (TTR), serves as an indicator of a text's vocabulary size and lexical variation (Yang, 2002: 153). In Chinese texts, tokens can be understood as the total number of characters, while types refer to the number of unique characters. The TTR is the ratio of types to tokens in a corpus. However, it is important to note that TTR is sensitive to text length, posing limitations when comparing corpora of substantially different sizes—as in this study, where the British corpus contains 13,119 tokens, far exceeding the Chinese corpus's 3,458 tokens. To obtain a more robust measure, the Standardized Type-Token Ratio (STTR), calculated based on 1,000-word segments, was adopted. The corpora were analyzed using LancsBox 6.0 to generate data on corpus size, TTR, STTR, and average sentence length, as summarized in Table 1. The results indicate systematic differences between the two in terms of both lexical density and syntactic structures.

In terms of lexical density, the British PILs have a significantly higher token count (13,119) compared to the Chinese PILs (3,458), indicating greater length and the presence of more explanatory language to enhance clarity. Furthermore, the British PILs exhibit a higher STTR value (49.24) than their Chinese counterparts (44.28). This suggests that, after controlling for text length, the English texts demonstrate greater lexical variation and richness. This can be attributed to their use of more diverse vocabulary and

expressions to achieve precision and comprehensiveness in describing drug effects, contraindications, and adverse reactions. In contrast, the relatively lower STTR of the Chinese PILs reflects a highly formulaic and concise style, reliant on repeated core terminology and fixed structures (e.g., four-character patterns), leading to a reduction in standardized lexical density.

Regarding syntactic complexity, the average sentence length in Chinese PILs (26.6 characters) is greater than in British PILs (16.97 words). As a hypotactic language, English makes logical relations explicit. Despite their informational density, the English texts often decompose information into shorter sentences, coordinate structures, and bulleted lists to manage clause complexity, potentially enhancing processing efficiency for non-specialist readers. Chinese, as a paratactic language, relies on semantic coherence rather than formal connectors, allowing multiple information points to be linearly arranged within a single, extended sentential unit. Consequently, the longer average sentence length in the Chinese sample reflects a stylistic preference for clause integration and information condensation to achieve efficient communication.

Table 1: Statistical Overview of Core Linguistic Features in Chinese and British PILs

	Tokens	Types	TTR	STTR (1000)	Average Sentence Length (ASL)
ENG	13119	1528	11.64	49.24	16.97
CHN	3458	856	24.75	44.28	26.60

eg.1 This medicine may be associated with a small increased risk of heart attack (myocardial infarction) or stroke, allergic reactions, such as skin rashes(urticaria). (From “Possible side effects” of the British drug “Nurofen”)

eg.2 少数患者可出现暂时性血尿素氮升高, 血清氨基转移酶、血清碱性磷酸酶、胆红素, 乳酸脱氢酶一过性升高。长期使用可能导致菌群失调、维生素缺乏或二重感染, 偶见阴道念珠菌病。(From “Possible side effects” of the Chinese drug”头孢拉定胶囊说明书”)

These quantitative characteristics collectively point to two distinct text construction strategies. As shown in Example (1), the British text immediately annotates the term “heart attack” with its technical counterpart “myocardial infarction”; similarly, “skin rashes” is followed by the scientific name “urticaria.” This pattern of “lay expression first, technical term annotated after” reflects a patient-centered, explanatory orientation, aiming to maximize patient comprehension through linguistic accessibility and serving the pragmatic purpose of public health education.

In contrast, the Chinese text in Example (2) employs a series of highly specialized terms such as “血尿素氮” (blood urea nitrogen), “血清氨基转移酶” (serum aminotransferase), “菌群失调” (microflora imbalance), and “阴道念珠菌病” (vaginal candidiasis) without any explanatory gloss. This “purely terminological” mode of expression embodies a “professional norm-oriented,” summarizing approach, where the primary function is to ensure informational specialization and precision.

This study argues that the root of this divergence can be traced to differing regulatory stipulations from the respective national medicinal agencies. A report from the UK’s MHRA (2005: 123) explicitly advocates using clear non-technical vocabulary and defining symptoms to enhance text readability. Conversely, Article 10 of China’s Provisions for Drug Package Insert and Labeling (2006: 3) mandates the use of “nationwide uniformly issued or standardized technical terminology.” In the corpus used for this study, approximately two-thirds of the Chinese samples contained such unexplained technical terms. These regulations directly shape the final textual forms: British texts employ an explanatory strategy committed to the democratization of information, whereas Chinese texts utilize a summarizing strategy to maintain professional authority.

4.1.2 A Comparative Analysis of Ideational Meaning

Within the framework of Systemic Functional Linguistics, ideational meaning is understood as a product of the interaction between human cognitive and linguistic systems, where the lexicogrammar transforms fragments of experience into conceptual structures (Halliday & Matthiessen, 2008). Consequently, analyzing high-frequency verbs and their transitivity processes in a specific register can reveal the conceptual meaning constructed within it. Through a keyword analysis of the Chinese and English PILs corpora (with a keyness threshold set above 20), the high-frequency thematic verbs in the English corpus were identified as: take, have, use, talk, feel, affect, contain, cause, stop, tell, help, follow. The Chinese corpus yielded high-frequency verbs such as “使用” (use), “服用” (take), “过敏” (allergy), “发生” (occur), “出现” (appear), “禁用” (contraindication), “咨询” (consult), “用于” (is used for), “缓解” (relieve), and “治疗” (treat). The analysis indicates that both corpora are predominantly composed of material and behavioral process clauses, which dynamically construct core information regarding drug usage, contraindications, and precautions. However, the British corpus distinctly features mental process clauses, such as “feel better/worse”, “forget”, and “preferred”, expressions entirely absent from the Chinese corpus. To quantify this difference further, this study classified the transitivity processes of these thematic verbs in concordance lines, using “本品” (this product), “患者” (patient), “you”, and “the medicine” as key participants, with results presented in Table 2. The statistical results show that mental processes account for 5% of the processes in the British PILs, whereas no such processes were identified in the Chinese PILs. Material and behavioral processes collectively fulfill the functions of instruction and information; relational processes statically define the properties of the drug and its target population. The unique value of mental processes lies in their ability to represent the perceptions, emotions, and cognitive states of the medication user, thereby extending the text’s focus from mere drug description to the patient’s subjective experience and feelings.

Based on the aforementioned ideational meaning features, it is evident that the Chinese corpus is highly focused on the usage norms and objective effects of the drug itself, with its discourse function concentrated on directive and declarative

statements. The British corpus, in contrast, incorporates an additional layer of attention to the patient's psychological dimension. This difference results in Chinese texts exhibiting a stronger directive force, widening the psychological distance between the information sender and receiver. In comparison, by incorporating the patient's subjective experience, the British texts construct a more interactive and empathetic dialogic relationship, thereby enhancing the focus on the individual patient.

Table 2: Distribution of Transitivity Process Types in Chinese and British PILs

	CHN	Percentage (%)	ENG	Percentage (%)
Material Process	68	38	176	32
Relational Process	24	14	70	13
Behavioral Process	88	48	282	50
Mental Process	0	0	26	5

4.1.3 A Comparative Analysis of Interpersonal Meaning

The interpersonal function in language is realized not only through the mood and modality systems but also through specific lexical choices such as personal pronouns and attitudinal verbs, nouns, adjectives, and adverbs (Zhu & Yan, 2001: 65). In Patient Information Leaflets (PILs), the choice of personal pronoun systems particularly reflects the role relationships and power structure between the information sender and receiver. Table 3 illustrates that the frequency of the second-person pronoun in British PILs (562) is significantly higher than in the general reference corpus (42.12), while the first-person pronoun is markedly infrequent (raw frequency 1, standardized frequency 39.07). Specifically, "you" and "your" rank 2nd and 10th respectively in the keyword list, indicating their prominence in the discourse. An examination of concordance lines—such as "How to store your medicine?", "what you need to know before you take this medicine", and "If you are pregnant or breast-feeding..." — demonstrates that "you" consistently refers to the discourse audience, namely the medicine user. The choice of "you" directly addressing the user, rather than a generic term like "the patient," constructs a pseudo-dialogue context within the text. This simulates direct communication between the pharmaceutical producer and the consumer, effectively reducing the psychological distance between them and implying an equal and close interactive relationship. In contrast, the Chinese PIL corpus avoids using first- and second-person pronouns entirely (both with raw frequencies of 0). The discourse refers to the reader solely as "患者" (patient) and denotes the medicine objectively by its proprietary name. This depersonalized referential strategy reflects the text producer's intentional minimization of personal involvement, reinforcing a professional image and authoritative stance. Consequently, it establishes a significant power differential between the information provider and the recipient, emphasizing that the patient should strictly adhere to the professional directives represented by the text.

Table 3: Frequency of Personal Pronouns in Chinese and British PILs

	CHN			ENG		
	expression	frequency	standard frequency	expression	frequency	standard frequency
First person (plural)	我们(的)	0	19.66	we, our	1	39.07
General reference to the medicine	本品	68	0.12	this medicine/product	197	1.17
Second person	你, 您	0	30.87	you/your	562	42.12
Generic references to the audience	患者	47	0.39	patients	8	1.23

This divergence in the construction of interpersonal meaning reflects deeper distinctions in cultural conventions and audience positioning. British PILs, by directly employing the second person, establish a "guide–patient" dialogic relationship, embodying a communication orientation centered on the non-specialist patient. The resulting texts exhibit high interactivity and readability, serving the function of public medication education. In contrast, Chinese PILs, through objective reference and the dense use of technical terminology, reinforce their authoritative status as statutory technical documents. Their implied readership encompasses both patients and healthcare professionals. While emphasizing professional standards and legal force, the texts also cultivate a more formal and distanced communicative stance.

4.1.4 A Comparative Analysis of Textual Meaning

Textual meaning relies on the internal mechanisms of text organization to create coherent discourse that effectively expresses ideational and interpersonal meanings. The analysis of thematic structure helps reveal the information layout and progression logic of a text Huang (2001: 66). Therefore, this study conducted a statistical comparison of thematic progression in Chinese and English PILs based on the four patterns of thematic progression proposed by Zhu (1995), with the results presented in Table 4.

Table 4: Distribution of Thematic Progression Patterns in Chinese and British PILs

Patterns Texts	Parallel Progression (%)	Focused Progression (%)	Continuous Progression (%)	Overlapped Progression (%)
ENG	65.69	11.41	17.6	5.3
CHN	52.5	22.5	18.75	6.25

The statistical data in Table 4 indicate that while Chinese and English PILs share certain commonalities in their use of thematic progression patterns, they also exhibit significant differences. In terms of commonalities, the most frequently used pattern in both corpora is the parallel progression, which is predominantly concentrated in core sections such as "Precautions." This pattern, by reiterating the same theme while varying the rhemes, elaborates on a single topic from multiple perspectives. It helps maintain topical focus and clarity of information within the discourse, thereby reinforcing the transmission of key information. Regarding differences, the parallel progression occurs more frequently in English PILs, whereas focused progression is more prevalent in Chinese PILs. Furthermore, English PILs often position the medicine user as the theme, while Chinese PILs typically place the medication context, body parts, or abstract conditions in the thematic position. This tendency contributes

to the higher frequency of the constant rheme pattern in Chinese texts.

Thus, the choice of thematic progression pattern serves distinct communicative purposes and reader orientations. English texts, through the consistent thematization of the "patient," construct a user-centered, action-oriented, and dynamic explanatory process. Chinese texts, by thematizing the "medication context" and employing pharmacological outcomes as a constant rheme, establish a cause-and-effect logic chain centered on objective conditions and static description.

4.2 Analysis of Non-Linguistic Modality

Another primary modality constituting PILs is the visual modality, which integrates with linguistic resources through color, layout, and other visual elements to attract attention and perform reminding or warning functions. The analysis below examines visual representations through the lenses of representational, interactive, and compositional meaning.

4.2.1 A Comparative Analysis of Representational Meaning

Representation meaning pertains to the construction of image resources and external world experiences, which can be broadly categorized into two types: narrative representation and conceptual representation. Narrative representation typically relies on vectors, where image elements are connected by diagonal lines to form a vector, linking participants and illustrating action or reaction processes, thus reproducing textual meaning (Zheng & Zhang, 2015: 47).

Figure 1: Dry & Tickly Cough Syrup PIL

In Chinese PILs, the use of visual imagery is relatively limited, mostly confined to pharmaceutical manufacturers' logos, such as "葵花药业" (Sunflower Pharma) and "百灵鸟" (Lark). These images primarily serve corporate identification functions. Their representational meaning aligns more with static, classificatory conceptual representation, lacking dynamic narrative connections to medication usage or therapeutic effects. In contrast, the representational meaning in British PILs is more diverse. Beyond manufacturer logos, their imagery often includes simplified diagrams reflecting disease symptoms or body parts. As shown in Figure 1, the human figure in the lower left includes clear vectors formed by arrows radiating from the throat area, constituting a typical narrative representation. This image focuses visual attention on the throat and trachea, complementing the verbal text above- "relieves irritated sore throats"—through multimodal synergy. This coordinated representational approach transforms abstract efficacy into an embodied visual narrative, more intuitively guiding patients to understand the drug's function and applicable contexts.

Thus, marked differences exist in the visual representational strategies between Chinese and British PILs: Chinese texts emphasize brand identification through logos, with representation being primarily conceptual and identificatory; British texts, however, skillfully employ narrative imagery to construct an interactive relationship between the body and the medication, using visual vectors to guide readers' understanding of drug efficacy.

4.2.2 A Comparative Analysis of Interactive Meaning

Within the visual design system of PILs, color fundamentally determines the style of the overall visual system. In the framework of visual grammar, color is a core resource for constructing the interactive meaning of images. Its stylistic orientation is closely linked to modality value and can be examined through parameters such as color saturation, differentiation, and hue (Kress & Van Leeuwen, 1996). A color statistical analysis was conducted on the collected corpus of 20 PILs. As the base combination of black text on a white background can coexist with other colored elements in the main body, the sum of the percentages in the respective columns does not equal 100%. The statistical data on color composition for both corpora are presented in Table 5. The results indicate that both Chinese and English PILs primarily employ the highly salient black-on-white scheme to ensure informational clarity and readability. However, British PILs demonstrate considerably greater diversity in color application. Beyond the fundamental black and white, they extensively utilize colors such as (light) dark blue, red, and orange, with red and blue appearing most frequently.

Table 5: Distribution of Color Schemes in Chinese and British PILs

Text Modality	CHN(%)	ENG(%)
Full text in black on white	90	70
Color Forms (Patterns)	20	40
Color font tips	10	80

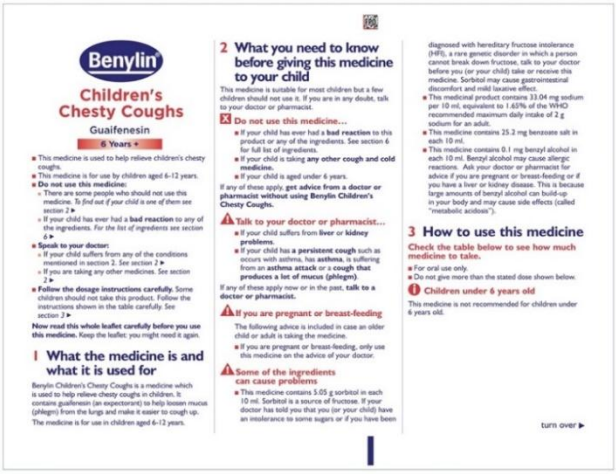

Figure 2: Children's Chesty Coughs PIL

Taking the "Benylin Cold and Flu" range as an example, its "Children's Chesty Coughs" leaflet (Figure 2) employs a combination of red and dark blue. Here, red functions as a high-alert color, used to emphasize critical risk information such as pediatric dosage, thereby heightening user vigilance. In contrast, the "Day & Night" product leaflet (Figure 3) utilizes a white background combined with shades of blue to symbolize the transition between day and night, visually indicating the intended timing for medication administration. These color schemes not only demonstrate high saturation and differentiation but also achieve harmonious complementarity, collectively establishing a high modality of authenticity. This enhances the instructional value of the text and its user affinity. In comparison, 90% of the Chinese PILs collected for this study feature a plain black-on-white design, using only bold black typeface to highlight subheadings and precautions. The sole exception is the "999 Ganmao Ling Capsule" leaflet (Figure 4), which incorporates a green border along its edge, yet still lacks any systematic color coding overall. This visual characteristic is closely linked to explicit stipulations from China's National Medical Products Administration (2006), which mandates that the generic name of a drug must be presented in either black or white. Furthermore, from a cultural dimension, black in Chinese tradition has long been associated with authority and solemnity (exemplified by the dark imperial robes of the Qin and Han dynasties). Its dominant use in PILs implicitly reinforces the text's authority as a professional directive, shaping a formal and distanced communicative stance.


Benylin
DAY & NIGHT TABLETS
Paracetamol, Diphenhydramine, Pseudoephedrine
1 What the medicine is for
2 Before taking this medicine

Figure 3: DAY& NIGHT Tablets PIL

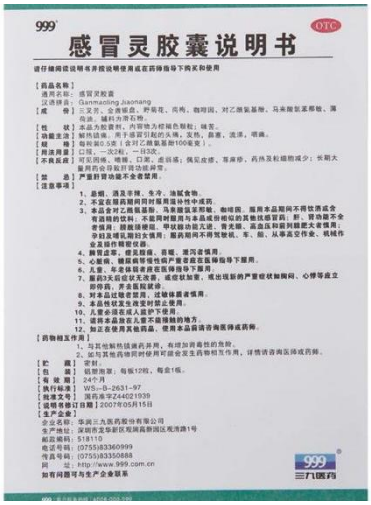
999
感冒灵胶囊说明书
OTC

Figure 4: 999 Cold Spirit Capsules PIL

Thus, the difference in color strategy reflects a fundamental distinction in reader positioning and interactive intent. British PILs utilize polychromatic coding to create visual guidance and situational simulation, striving to enhance the patient's user experience and information adherence. Chinese PILs, conversely, leverage the stark contrast of black and white to reinforce their professional authority and normative weight, maintaining a psychological distance between the information sender and receiver on a visual level.

4.2.3 A Comparative Analysis of Compositional Meaning

The compositional meaning in visual grammar is realized through three core resources: informational value, salience, and framing. Among these, informational value and salience depend on the position and presentation of elements within the composition, serving to indicate hierarchical differences and guide the viewer's attention path (Kress & van Leeuwen, 1996). Analysis reveals that both Chinese and British PILs position the drug name in the ideal information space at the top of the layout, employing large font sizes and size contrast to establish its core salience, aligning with universal design conventions. However, systematic differences exist in their specific strategies for highlighting information and structural organization. British PILs employ multimodal resources more extensively to enhance informational salience. As shown in Figure 2, the "6 years+" label utilizes an overlay of three colors to create strong chromatic contrast. Simultaneously, for critical sections like "Contraindications" and "Precautions," they are not only positioned centrally but also prefixed with warning icons such as a red square with a cross and a red triangle with an exclamation mark. This constructs a multi-layered, high-intensity visual alert mechanism.

In contrast, Chinese PILs (Figure 4) rely predominantly on a single textual enhancement method—boldface type—to mark precautions. Although these are placed in the central area of the layout, the overall visual hierarchy remains flat, devoid of supporting symbolic or color reinforcement. Furthermore, the two exhibit significant distinctions in the sequence and proportional weighting of information structures. The body text of Chinese PILs (including name, composition, properties, indications, etc.) is arranged in a compact, dense manner. Notably, the "Contraindications" section is omitted in half of the Chinese samples studied, a structural arrangement that may conceal medication safety risks. Conversely, English PILs place "Composition," "Precautions before taking," and "Dosage and Administration" at the forefront, allocating substantially more space to them, reflecting a heightened emphasis on medication safety assessment.

5. Implications and Recommendations

Based on a systematic comparison of Chinese and British OTC patient information leaflet (PIL), this study identifies significant differences in expression, use of visual resources, and information structure at both linguistic and non-linguistic modal levels. To effectively serve target English-speaking audiences and enhance the cross-cultural communicative efficacy of Chinese PILs, their translation and adaptation should prioritize improved readability and user-friendliness while maintaining professional accuracy. Accordingly, this study proposes the following optimization strategies:

First, regarding linguistic modality, information presentation

should be restructured to align with target readers' cognitive habits. Translation and adaptation should go beyond faithful rendering of professional information to include necessary discourse restructuring. Specifically, it can involve simplifying technical terminology, dividing long sentences, optimizing thematic structure (e.g., thematizing the drug or the patient), and consciously employing mental process clauses and second-person pronouns to establish a dialogic interaction with patients. This approach not only enhances textual affinity and empathetic effect but also significantly reduces comprehension load for non-specialist readers. Furthermore, following conventions of English PILs, content such as "precautions before use" should be emphasized and positioned prominently in translations to proactively prevent medication risks.

Second, concerning non-linguistic modality, a multi-layered visual symbol system needs to be constructed to reinforce key information. Rational layout design and visual guidance help readers quickly locate core content. It is recommended to systematically employ visual means such as uppercase/large fonts, boldface contrast, italics, warning icons, and high-saturation colors in translations to multi-modally highlight critical information like contraindications and precautions. Simultaneously, simplified drawings, schematic diagrams, or tables could be appropriately introduced as non-verbal modalities to provide intuitive supplementation and reinforcement of complex textual content. While ensuring professionalism, enhancing visual expressiveness can effectively improve the text's vividness, salience, and information transmission efficiency.

Third, implement layered design to provide differentiated texts for distinct reader groups. To balance the information needs of both professionals and general patients, developing differentiated leaflet versions should be considered. For professional groups like doctors and pharmacists, standardized texts with precise terminology and comprehensive information can be provided. For non-specialist patients, simplified versions should be developed drawing on British PIL strategies, featuring plain language, reader-friendly layouts, and high readability. This tiered service model can simultaneously meet professional demands for in-depth information and effectively safeguard patients' medication safety and right to know.

6. Conclusion

This study employed multimodal discourse analysis combined with corpus tools to systematically examine the similarities and differences between Chinese and British Patient Information Leaflets (PILs) for cold and fever medications across both linguistic and non-linguistic modalities. The findings reveal that the two differ significantly in lexical and syntactic features, handling of technical terminology, deployment of visual resources, information structure and layout, as well as the elaboration of contraindications and thematic progression patterns. These differences directly impact how drug information is conveyed and received by readers. Against the backdrop of deepening global pharmaceutical cooperation and heightened health awareness in the post-pandemic era, China's pharmaceutical industry is accelerating its internationalization. To facilitate the successful entry of domestic drugs into overseas markets and provide international users with clear and safe information guidance, the translation and adaptation of English-language PILs must adhere to the norms and conventions of the target market. As a typical form of multimodal discourse, PIL translation requires the coordinated integration of multiple semiotic resources, including language, images, and layout. British PILs offer a valuable reference in terms of design philosophy and format, providing Chinese translators with models for creating internationally-oriented texts that are both professionally accurate and accessible. Based on the comparative analysis, this study has proposed specific optimization strategies focusing on the reconstruction of linguistic modality, enhancement of non-linguistic modalities, and implementation of reader-tiered services to improve the communicative effectiveness of translated texts.

This study has certain limitations. First, the corpus scale was limited; including PILs from a wider range of non-prescription drug categories in future research would enhance the generalizability of the findings. Second, the study did not conduct a strictly controlled comparative analysis of Chinese and English versions of the same drug. Subsequent research could strengthen control in this dimension to more precisely reveal the influence of cultural and regulatory factors on multimodal discourse construction.

Looking ahead, there remains considerable scope for deepening research on the multimodal discourse of PILs. For example, how various modalities collaboratively affect patients' cognitive processing and comprehension is a question worthy of further investigation through experimental methods. Furthermore, as an initial attempt to analyze PILs from a multimodal perspective, the analytical framework developed in this study could be extended to cross-cultural comparisons of other types of service-oriented texts (such as product manuals and public health notices), thereby promoting the joint development of discourse analysis theory and practical applications.

Data Availability Statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Author contributions

LF: Conceptualization, Methodology, Supervision, Writing-Review & Editing. JY: Data Curation, Investigation, Writing-Original Draft Preparation. All authors have read and approved the final version of the manuscript.

Declaration of Conflicting Interests

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