Standard and Non-standard Adverbial Markers:
A Diachronic Analysis in Modern Chinese Literature

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Abstract

This paper investigates the use of standard and non-standard adverbial markers in modern Chinese literature. In Chinese, adverbials can be derived from many adjectives, adverbs and verbs with the suffix "de". The suffix has a standard and a non-standard written form, both of which are frequently used. Contrastive research on these two competing forms has mostly been qualitative or limited to small text samples. In this first large-scale quantitative study, we present statistics on 346 adverbial types from an 8-million-character text corpus drawn from Chinese literature in the 20th century. We present a semantic analysis of the verbs modified by adverbs with standard and non-standard markers, and a chronological analysis of marker choice among six prominent modern Chinese authors. We show that the non-standard form is more frequently used when the adverbial modifies an emotion verb. Further, we demonstrate that marker choice is correlated to text genre and register, as well as the writing style of the author.

1 Introduction

In many languages, adverbs can be derived from words of other parts-of-speech and are morphologically marked in the derivation process. In English, the '-ly' suffix is used to derive the adverb 'happily', for example, from the adjective 'happy'. Analogously, in Chinese, the '-de' suffix[1] can form adverbials from many adjectives, adverbs, and verbs. For example, the adverbial phrase *gaoxing-de* 'happily' is derived from the adjective *gaoxing* 'happy'. This paper analyzes the use of this adverbial marker, which has a standard written form (地 *de*) and a non-standard written form (的

de), with no difference in pronunciation. We will henceforth refer to the standard form as DI[2], and the non-standard form as DE.

The DE vs. DI choice is a language phenomenon that remains poorly understood. Unlike the case for Germanic vs. Latinate affixes in English text (Bauer, 2001), the choice is not directly tied to vocabulary, since every suffixed adverbial in Chinese can be rendered in one of the two competing forms, which we will refer to as the "DE-adverbial" (e.g., *gaoxing-DE* 高兴的 'happily') and the "DI-adverbial" (e.g., *gaoxing-DI* 高兴地 'happily'). It is not related to phonological factors, which can explain suffix choice in nonce-word nominalization (Cutler, 1980), such as the choice between the suffix '-ness' or '-ity' following an adjective. Nor is there a clear semantic distinction, as is the case for prefix choice in negation (Kjellmer, 2005), such as the choice between the prefix 'non-' or 'un-' for an adjective. It is also not a language change "from below" (Claes, 2015), since the standard form DI was proposed by the elites, at the beginning of the 20th century. Unlike language regularization phenomena, the non-standard form persisted and is frequently used even to this day.

It has been suggested that the choice is motivated by stylistic and expressional effects (Zhang, 2012). More often associated with actions, DI emphasizes the manner of the action, whereas DE emphasizes other elements of the situation, such as the agent, patient, instrument, time, and place, etc. For example, in the sentence *ta manman-DI zou* 他慢慢地走 'he slowly walked', the DI-adverbial highlights the slowness. In contrast, in the sentence *ta gaoxing-DE paole* 他高兴的跑了 'he happily ran away', the DE-adverbial not only characterizes the action but also brings out the attitudinal status of

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[1]More exactly, '-de' is an enclitic since it is used here to form a phrase rather than a word. However, we will use the more common term "suffix" in this paper.

[2]The shorthand DI is based on the character's pronunciation *di* in other contexts.

the subject 'he'.

Previous studies have postulated that marker choice may be due at least in part to habit or social factors, or even some randomness (Zhang, 2012). In contrast, we set out to focus on the DE vs. DI marker choice that is intentionally made. To do so, we examine adverbials in the writings of six prominent authors in Chinese literature in the 20th century. Unlike most previous research, which offered only anecdotal examples and limited quantitative analysis to small samples (Ho, 2015), we present statistics on 346 adverbial types from an 8-million-character corpus of literary texts. Specifically, we address the following research questions:

Semantic analysis : Whether adverbial marker choice is influenced by the semantic category of the head word, i.e. the verb modified by the adverbial (Section 5);

Diachronic analysis : Whether adverbial marker choice can reflect the writing style of an author (Section 6).

2   Metrics for adverbial marker choice

Similar to other languages, Chinese adverbials can be non-derived, or derived from base words of various parts-of-speech, typically through reduplication and suffixation (Biq and Huang, 2016). During suffixation, the base word is morphologically marked with the DI (地 *de*) suffix, analogous to the English '–ly' suffix. For example, the adjective *gaoxing* 高兴 'happy' serves as the base word of the adverbial *gaoxing-DI* 高兴地 'happily'. As an alternative to the standard form DI, the adverbial marker is also written as the non-standard DE (的 *de*).

Following previous analyses on Chinese adverbial markers, we adopt the **DE ratio** as the quantitative metric. This ratio is the percentage of suffixed adverbials, in a text or a collection of texts, that use DE rather than DI. More precisely, the ratio is the number of DE-adverbials in the text, divided by the total number of DE- and DI-adverbials.

The DE ratio can be computed for a specific *base word*, by restricting the counts to adverbials derived from that base word. A base word is called "DE-leaning" if its DE ratio exceeds 50%, and "DI-leaning" otherwise. The percentage of DE-leaning base words, out of all base words in the text, can also characterize marker choice. This metric gives equal weight to each base word, in contrast to the

DE ratio which can be swayed by the more frequent base words. Together, the two metrics provide a more comprehensive view of adverbial marker usage.

3   Linguistic background

3.1   DE vs. DI as adverbial marker

The distinction between attributive and adverbial markers emerged during the Tang Dynasty (618-907 CE), with the suffix DI marking adverbials, and the suffix *de*, written as the character 底, marking attributives. These two markers began to be merged in the Yuan Dynasty (1271-1368 CE), and eventually gave way to DE. Adverbial constructions could be formed by affixing "any preformed idiomatic phrase or syntactic construction to DI or DE" in vernacular Chinese before the 20th century (Gunn, 1991, p.264). Vernacular novels such as *Water Margin*, *Dream of the Red Chamber* and *Unofficial History of the Scholars* used mostly DE and only sporadically DI (Sun, 1995).

The Vernacular Movement started in China in 1919. In translating foreign literature, Chinese intellectuals were exposed to languages in which adjectives and adverbs can be distinguished by their suffix. They proposed to use DE to mark attributives and DI to mark adverbials (Table 1). As adverbial suffixation became more widespread after 1919, most writers observed this division of labor to some extent. The DE/DI convention fluctuated in the 1930s during the Latinization movement, and also in the 1950s during the 'normalization' movement, an effort to regulate standard Mandarin. By the end of that decade, the convention had become well established (Cordes, 2014, p.116) and was eventually endorsed by almost all grammar books.

Both DE and DI remain in frequent use today. Seeing the division as artificial, some scholars nonetheless advocated unified use of DE and claimed that it would neither cause ambiguity nor reduce reading speed and comprehension. Others argued that unified use would cause ambiguity in sentence structure, since DE and DI are syntactically different markers.

3.2   Corpus-based studies on marker choice

Most corpus-based studies on adverbials in literary texts concentrated on the frequency of suffix use (Cordes, 2014) and its productivity in adverbial derivation (Kubler, 1985). In the only study on marker choice in literary text, Ho (2015) reported

Type	Marker	Status	Example
Adverbial	DI	standard	*gaoxing-DI shuo* 高兴地说 'happily say'
	DE	non-standard	*gaoxing-DE shuo* 高兴的说 'happily say'
Attributive	DE	standard	*gaoxing-DE rizi* 高兴的日子 'happy day'

Table 1: Standard and non-standard adverbial marker in Chinese; the latter shares the same character as the attributive marker

that Qiong Yao always used DE, Eileen Chang always used DI, while Lu Xun's DE ratio was 91.8%. The analysis was based however on only three texts per author.

The most in-depth study to-date focused on adverbials derived from adverbs (Zhang, 2012). Four factors for marker choice were identified: conventional usage, random usage, syntactic usage, and conscious usage. "Conventional usage" governs lexicalized adverbials, where the suffix can be viewed as part of a fixed expression. "Random usage" means the writer makes the choice unconsciously from habit, background and knowledge, which may in turn depend on social factors such as educational level, age, and gender. For example, a higher level of education is a strong predictor for DI. Thirdly, "syntactic usage" refers to cases where the syntactic environment determines the choice. For example, when the adverbial modifies a deverbal object, DE is favored to "harmonize" with a verb in nominalized form. Most relevant to this study is "conscious usage", where the writer deliberately makes the choice for stylistic purposes. Statistics from two corpora of contemporary Chinese suggested that the choice is correlated with adverb categories (Zhang, 2012).

The present study differs from previous research by focusing on marker choice in literature, in which marker choice was likely more carefully and intentionally made, and by presenting a diachronic analysis of well-known authors.

4 Data

There is no publicly available, large-scale corpus of Chinese text with annotations on adverbial markers. This section describes the automatic creation of such a corpus to support this study. After presenting the textual material of the corpus (Section 4.1), we describe the adverbial identification algoritm (Section 4.2) and its evaluation (Section 4.3).

Author	# texts	# characters
Guo Moruo	40	255,198
Lao She	405	1,752,079
Lu Xun (non-translation)	283	652,788
Lu Xun (translation)	107	2,205,225
Mao Dun	76	1,439,051
Shen Congwen	241	1,846,914
Yu Dafu	44	317,356
Total	1,196	8,468,611

Table 2: Statistics on the six authors represented in our corpus

4.1 Textual material

Literary texts are ideal for studying adverbials since the marker choices therein are more likely to be consciously rather than randomly made. We compiled a corpus of literary texts written during and after the Vernacular Movement, when the DE/DI choice was formalized. We downloaded from the *Baiwan Shuku* website[3] all texts written by six prominent Chinese authors: Guo Moruo, Lao She, Lu Xun, Mao Dun, Shen Congwen and Yu Dafu. As shown in Table 2, this corpus consists of over 8 million characters in 1,089 texts.

Just as there are lexical differences between translational and non-translational Chinese text (Xiao, 2010), there can potentially be differences in marker choice, since translators are exposed to the adverbial suffixes in the source text. More generally, adverbial constructions could be influenced by literal translations from Japanese and European languages (Gunn, 1991, p.264). To determine if the influence from translation might be a confounding variable in our study, we divided the writings of Lu Xun, who has the largest amount of translation works among the six authors in our corpus, into the "translation" and "non-translation" portions (Table 2).

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[3]http://www.millionbook.com/mj/index.html

Semantic category	DE ratio	% DE-leaning
Communication	54.7%	78.6%
Caused-motion	58.1%	57.1%
Perception	58.7%	74.4%
Cognition	69.5%	75.0%
Emotion	**84.9%**	**84.8%**

Table 3: DE ratio of adverbials modifying verbs in different semantic categories, and the % of DE-leaning base words

Author	DE Ratio	% DE-leaning
Mao Dun	19.2%	12.7%
Guo Muoro	29.3%	25.4%
Lu Xun	57.2%	62.2%
Yu Dafu	81.4%	83.4%
Lao She	86.5%	90.8%
Shen Congwen	97.6%	99.3%
Overall	60.7%	61.2%

Table 4: DE ratio and percentage of DE-leaning base words by author

4.2 Automatic adverbial identification

Existing adverbial identification algorithms (Xing et al., 2020) assume the standard marker DI. In a word-segmented Chinese text, DI-adverbials can be reliably identified by searching for DI and its preceding word. For DE-adverbials, however, a similar search for DE would yield low precision, since it also matches DE that marks attributives.

We adopted the adverbial identification algorithm proposed by Xie et al. (2021), based on word segmentation, POS tagging and dependency parsing by the HanLP Chinese parser.[4] This algorithm first identifies candidate base words, i.e. defined as all words followed by DE or DI. It then retrieves its head word, i.e. the parent of the candidate base word in the dependency tree. If the part-of-speech (POS) of the head word is a noun, DE marks an attributive and the instance should be excluded; if the head word is an adjective or verb, DE marks an adverbial and the instance should be included.

4.3 Evaluation

To ensure an adequate level of annotation accuracy, we evaluated the performance of the adverbial identification algorithm. A native speaker of Chinese with formal training in linguistics examined 1196 occurrences of three candidate base words[5] in the writings of Guo Moruo, Mao Dun, Lao She, and Lu Xun. Each occurrence was labeled as one of the following: base word in a DE-adverbial; base word in a DI-adverbial; adverb with no suffix; or, not used as an adverb.

As expected, the extracted adverbials were almost always true positives, with precision at 100% for DI-adverbials and 97.25% for DE-adverbials. Recall for DI-adverbials reached 93.56%, with the false negatives mostly caused by word segmenta-

tion errors on the base word. Recall was lower for DE-adverbials (79.20%) because of POS ambiguity for the head word.

5 Semantic categories of head word

The verb modified by the adverbial, which we refer to as the "head word", may influence the choice of adverbial marker. Specifically, we examine if there is any correlation between the semantic category of the head word and marker choice. We adopted the frame categories in Mandarin VerbNet (MVN)[6] as the semantic taxonomy for testing this hypothesis. A widely used verbal semantic database, MVN uses a schema-based meaning representation and constructional patterns for its frames (Liu and Chiang, 2008).

MVN provides a list of verbs for each frame. Our analysis centers on the five top-level frames (Table 3) with the largest number of verbs attested in our corpus. In the Communication frame (64 verbs), a speaker conveys a message or interlocutors make a conversation. The Caused-motion frame (39 verbs) is concerned with an agent causing a figure to move. Perception (47 verbs) involves a perceiver perceiving a phenomenon through his or her body part. A cognizer in the Cognition frame (21 verbs) either conducts a mental/intellectual activity, or undergoes a mental/intellectual state. Finally, the Emotion frame (62 verbs) describes the emotional state of an experiencer or affectee, which may be provoked by a stimulus or caused volitionally by an affector.

As shown in Table 3, the Emotion verbs have notably higher DE ratio (84.9%) and DE-leaning base words (84.8%) than other categories. The large number of stative verbs, which highlight the description of the situation (Zhang, 2012), may account for the preference for the non-standard
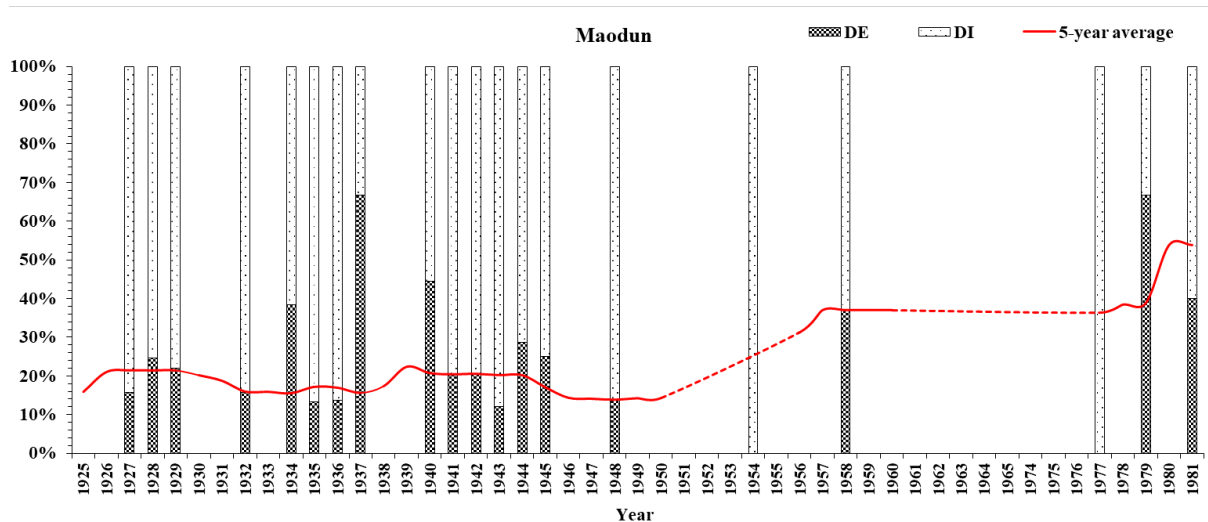
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[4]https://github.com/hankcs/pyhanlp
[5]慢慢 *manman* 'slow', 客气 *keqi* 'courteous' and 高兴 *gaoxing* 'happy'

[6]http://verbnet.lt.cityu.edu.hk

Figure 1: DE ratio of Mao Dun

marker. This explanation would also be consistent with the fact that the `Cognition` category, which also contains many stative verbs, attained the second-highest ratio (69.5%). In comparison, categories with more dynamic verb phrases, such as `Caused-motion`, are more likely to use DI.

6 Analysis

Our analysis focuses on the four authors with the most text in our corpus (Table 2), namely, Lu Xun, widely regarded as the founder of modern Chinese literature; followed by Shen Congwen, Lao She and Mao Dun, who inherited his innovations but also developed their own distinctive styles. Literary critics have distilled their writing styles as follows: "historical" and "political" for Mao Dun; "melodramatic" and "farcical" for Lao She; and "lyrical" and "nativist" for Shen Congwen (Wang, 1992, p.292).

We automatically annotated all adverbials in our corpus with the adverbial identification algorithm. The overall marker choice by the authors are shown in Table 4, ranging from Shen Congwen who was highly partial to DE, to Mao Dun who heavily leaned DI. A diachronic analysis reveals significant evolution in marker choice for some of the authors. Figures 1 to 5 plot the DE ratio for each year during which the author's works contained at least 5 instances of DE-/DI-adverbials. The overall trend, which can be obscured by yearly fluctuations, is often better visualized with a moving average. Hence, the figures also provide curves that plot the average DE ratio within the 5-year window centered on each year.

6.1 Preference for standard marker

Mao Dun consistently preferred the standard marker DI throughout his career. Both his DE ratio (19.2%) and percentage of DE-leaning base words (12.7%) are by far the lowest among the six authors. As a moving average, his DE ratio rarely exceeded 20% before 1950 and increased only slightly thereafter (Figure 1).[7]

Mao Dun played a major role in introducing Western literary ideas and masterpieces to China. His conscientious adoption of the standard adverbial marker is consistent not only with his compliance with the new punctuation standards (Tan, 2006), but also his advocacy for "European-style" grammar. Further, Mao Dun is celebrated for his "historical" novels, which interweave real and fictional episodes. Relative to other genres, these novels are favorable to DI usage with their description of historical events.

6.2 Preference for non-standard marker

At the other end of the spectrum lies Shen Congwen, who hardly adopted the DI and scored 97.6% in DE ratio. His strong preference for the non-standard marker endured throughout his career (Figure 2).[8] Indeed, all but two base words are DE-leaning in his writing (99.3%).

Shen Congwen is known for his "lyrical style", a style that exhibits "features of poetic expression",

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[7]The occasional spikes were caused by relatively small samples sizes, between 8 to 11 instances for the years 1934, 1937, 1940, 1944 and 1945.

[8]The only exception was in 1949, when there were 2 DE instances and 3 DI instances.
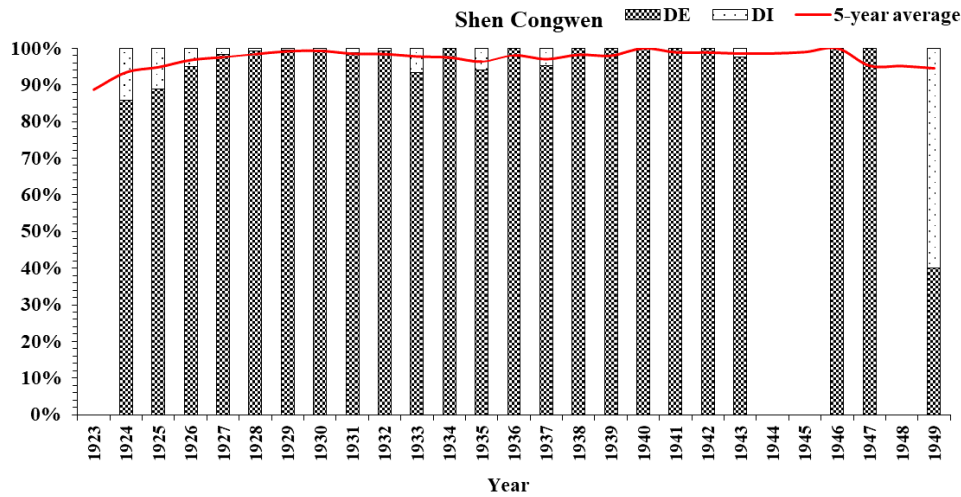
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Figure 2: DE ratio of Shen Congwen

with "emphasis on an intensified expression of emotion" (Wang, 1992, p.224). The strong association of emotion verbs to the non-standard marker (Section 5) is consistent with his high DE ratio. Furthermore, in Modern Chinese literature, Shen is considered the most important of the "native soil" writers, who emphasized regional identity in their writing. Shen captured the landscape and lives of his provincial home in West Hunan. Since his works focused on local communities and regional culture, his literary language was likely less influenced by foreign languages. On the contrary, it may have been influenced more by classics such as the *Dream of the Red Chamber*, along with their DE usage, since Shen combined classical Chinese writing techniques with the vernacular style. Both factors would contribute to the absence of the standard marker in his writing.

6.3 From non-standard to standard marker

Second only to Shen Congwen, Lao She has a DE ratio of 86.5%. Lao She mostly used the non-standard marker: 90.8% of his base words are DE-leaning. Although Lao She at first glance resembles Shen in marker usage, diachronic analysis reveals a dramatic change over his career.

Until 1946, Lao She's pattern is comparable to Shen Congwen, with DE ratio consistently over 90% as a moving average (Figure 3). Among the first to adopt the vernacular in fiction, Lao She is known for his incorporation of colloquialisms, especially Beijing idiomatic speech, in his writing. Many adverbial phrases and onomatopoeia employ the non-standard marker, as is the case for a major-

ity of the examples given by (Cui, 2008, p.87-90) to illustrate his oral style of writing. Furthermore, Lao She exhibited "emotional spectacle", "gestural hyperbole", and "verbal extravagance", in contrast to the "emotional restraint", "symbolic subtlety", and "linguistic economy" of Lu Xun (Wang, 1992, p.18). The prevalence of DE can thus be partially explained by the association of emotion verbs to the non-standard marker (Section 5).

The early 1950s saw the beginning of the 'normalization' movement, which appeared to have a significant effect on Lao She's marker choice. Lao She began to decrease the amount of regional speech and local dialect in his writing in favor of the style of the "common language" or Putonghua (Gunn, 1991, p.115). Reflecting this change, his DE ratio drastically decreased from over 70% to only 20% in 1952. Thereafter the standard marker remained his preferred choice, in line with the fact that his last novel, published in 1961, contained much fewer non-standard sentences than earlier ones (Cui, 2008, p.236).

6.4 From non-standard to standard and back

Figures 4 and 5 show the marker usage in the non-translation and translation works of Lu Xun, who has an overall DE ratio of 57.2%, with 62.2% of his base words DE-leaning (Table 4). The similarity between these two figures visualizes the fact that translation did not have a statistically significant impact on marker choice (cf. Section 3.2).

Three phases in Lu Xun's marker usage may be discerned from these figures. An initial period, dominated by the non-standard marker, lasted from
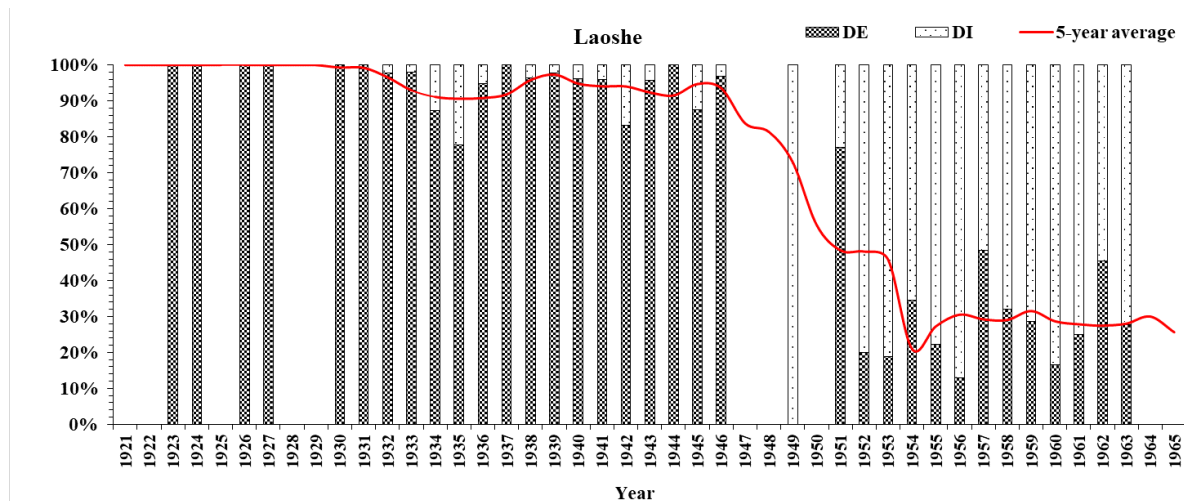
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Figure 3: DE ratio of Lao She

1917 to 1924. Lu Xun's preference for DE in this period explains the 91.78% DE ratio reported by Ho (2015), which is much higher than the 57.2% in our corpus (Table 4). The ratio in Ho's study considered only three texts, all of which were written during this period; in contrast, our corpus also includes works from the two subsequent periods.

As Lu Xun absorbed mixed language features during the Vernacular Movement, he entered a second period around 1924-25. The DE ratio dropped[9] from 86.4% in 1924 to 23.9% in 1925, a dramatic change reflecting the "innovative work in style" in 1925 noted by Gunn (1991, p.95). The standard marker became prevalent, for example, in the novels *The Divorce*, *Articles under the Lamplight* and *What Happened to Nora After She Left*. His DE ratio would remain low into the early 1930s with his literary language under the influence of Europeanization.

In the 1930s, Lu Xun returned to the non-standard marker as he became an activist advocating for reform and simplification of the Chinese language. The call for a "mass language" gathered steam towards the end of the Vernacular Movement, with the goals of eradicating illiteracy and giving ordinary people access to writing. Subsequently the Latinized New Writing movement blurred the distinction between the two markers, leading to the re-emergence of the unified use of DE. An advocate of Latinization, Lu Xun reverted to non-standard market, returning to the high DE ratio in the initial period.

7 Conclusion

We have presented the first large-scale, quantitative study on adverbial markers in modern Chinese literature. Drawing on over 8 million characters of literary texts, we investigated the usage of standard and non-standard adverbial markers among six major authors in the 20th century. A semantic analysis reveals that the non-standard marker DE is more frequent when when the adverbial modifies a head word that expresses emotion, compared to other semantic categories. Further, a diachronic analysis shows that marker choice is correlated to text genre and register, for example Mao Dun's preference for the standard marker and Shen Congwen's preference for the non-standard. Marker choice also reflects the evolution of writing style amidst historical linguistic developments, as shown in the case of Lu Xun and Lao She.

This research can be extended in several dimensions. The influence of the base word can be further examined. More fine-grained semantic taxonomies on head words can potentially yield new insights. Finally, as language change continues to affect marker choice, it would be interesting to study whether and how contemporary writers differ from their counterparts in the 20th century.
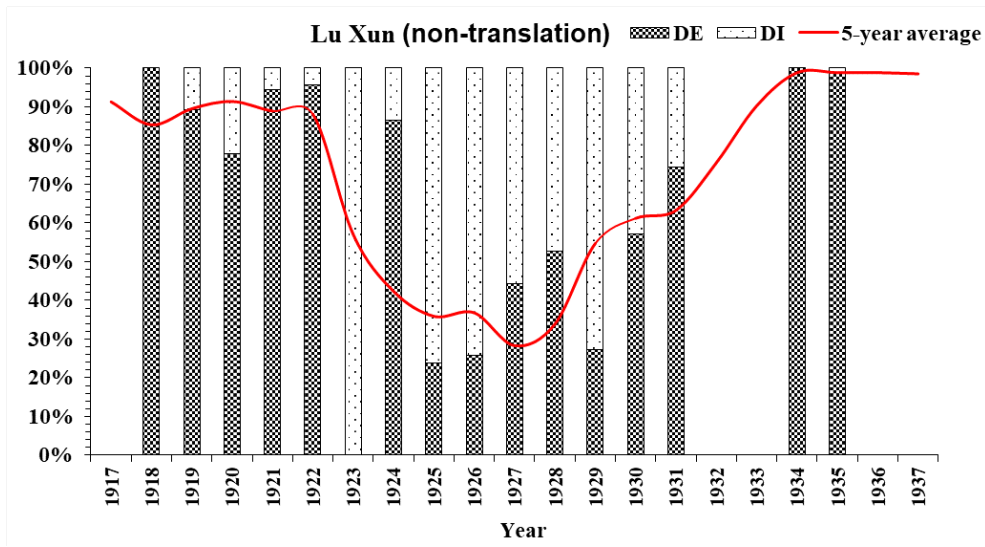
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[9]Lu Xun also used more DI than DE in 1923, but there were only 5 samples in that year.
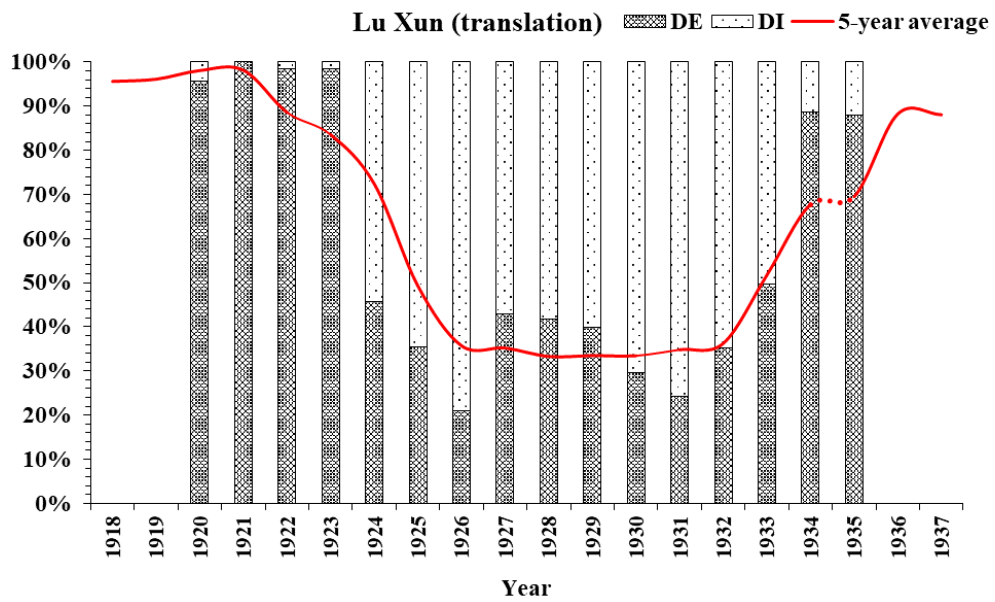
Figure 4: DE ratio of Lu Xun (non-translation)

Figure 5: DE ratio of Lu Xun (translation)

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