

ISSN Online: 2327-5960 ISSN Print: 2327-5952

An Analysis to the Structure and Semantic Function of "Shang(up)/Xia(down) + Quantity (+X)" That Indicates Quantity of Range*

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How to cite this paper: S.H. Liang and Liu, H. (2019) An Analysis to the Structure and Semantic Function of "Shang(up)/Xia (down) + Quantity (+X)" That Indicates Quantity of Range. Open Journal of Social Sciences, 7, 75-85.

https://doi.org/10.4236/jss.2019.79007

Received: August 5, 2019 Accepted: September 6, 2019 Published: September 9, 2019

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Abstract

Structure "shang(up)/xia(down) + quantity (+X)" is not a simple combination of locality and quantity, instead, it is formed to mark a subcategory of the category indicating quantity of range. In the structure, "shang(up)/xia(down)" is of fixed direction, quantity is often seen to be expressed by singular numeral "yi", the majority of measure words are ordinal ones, and X is mainly nominal and could often be omitted. "Shang(up)/xia(down) + quantity (+X)" is constructed in a unique way: the directionality and demarcation of "shang(up)/xia(down)" would clearly highlight quantitative words' significance of referring to a complex, while the boundaries of orientated "shang(up)/xia(down)".

Keywords

Quantity of Range, "Shang(up)/Xia(down)", Quantity

1. Introduction

Linguists have conducted a series of studies on the combination of "localizer + quantifier" which is quite commonly seen in Chinese, and research results are reflected in the following aspects:

Study of spatial significance [1]; study of the meaning of time [2]; study of cognitive metaphor [3] [4]; and the comparative study of acquisition, are mostly seen in graduate students' dissertations. Previous studies have focused mainly on *Supported by MOE (Ministry of Education in China) Project of Humanities and Social Sciences (A Study on Patterning and De-patterning of Speech under National Construction of Linguistic Competence, Project No. 19YJA740003).

components of localizer or quantities. There are few studies on the combination rules of structures, and illustrations of structures in general are mostly limited to time categories. Based on the research of the predecessors we find, through the comparison and analysis of corpus, that there are two types of structure levels and relationships in "localizer + quantity (+X)", one of which represents a unique grammatical meaning—"range quantity".

The first category: "Localizer + Quantity $(+X)^1$ " is grouped together to indicate the localization and quantities of things modified, as in Example 1):

1) Paohuo ting yihou, yese zhong zhijian xiamian yitiao huibai dao, women wu jiang ta dangzuo minggugong jichang paodao, tuitou xiaqu. (When the gunfire stopped, in the night we could only see a grey-white road below. We mistook it for the runway of the Ming Palace Museum Airport and pushed it forward.)²

The second category: the "localizer + quantity + (X)" group functions as a whole, indicating the range of the thing referred. Sometimes "X" does not appear, as in example 2); sometimes "X" appears, as in example 3):

- 2) Yishang liudian, jie "yanzhizaozao", zuyi bochi Zhao Wen de zaoyao. (The six points mentioned above are all "chiseled words", more than sufficient to refute Zhao's rumors.)
- 3) Genju shuangfang dacheng de xieyi, meizhou julebu tongyi zai xia liangge saiji zhong meiyue zhifu Luobeisi 15 wan meiyuan, cong'er shi zhewei agentingren chaoguo balagui qiuxing Dulinuokaerduosuo (nianxin 140 wan meiyuan). (According to an agreement reached by both sides, the Club of America agreed to pay Lobes 150,000 dollars per month for the next two competition seasons, which would enable the Argentine to surpass Paraguay star Sadurino Caldoso (\$1.4 million a year).)

In example 2), "six points mentioned above" indicates a generalization of contents, while "X" does not and does not have to appear, and the localizer and quantity words contribute to the phrase at the same level. The structure of "the next two competition seasons" in example 3) seems similar with "a grey-white road below" in example 1), however the two components differ in hierarchy division and inner relation. The hierarchy and relationship of "the next two competition seasons" are: localizer//quantity/+X. "The next two" as a whole represents the specific scope of "competition season", which is shown in quantitative way. We refer to the quantity of the specified range represented by the "localizer + quantity + (X)" in examples 2) and 3) as the range quantity, and range quantity is not a simple combination of localizer and quantity. It is a sub-category of the quantity category generated through reanalysis and recombination of localizer and quantity.

In this paper, we take the commonly used monosyllabic component

¹X refers words of all parts-of-speech.

²All but a few tagging examples are from CCL corpus.

"up/down" as example, trying to analyze the components and way of composing of structure "localizer//quantity/+(X)".

2. Semantic Function of "Shang(up)/Xia(down) + Quantity"

According to different characteristics of the numerals, we divide the "shang(up)/xia(down) + quantity (+X)" structure into two categories:

The first category:

1a shang ban jie - xia ban jie (the first half - the second half)

shang ban duan - xia ban duan (the first half - the second half)

shang ban nian - xia ban nian (the first half of the year - the second half of the year)

shang ban ye - xia ban ye nian (the first half of the night - the second half of the night)

shang ban chang - xia ban chang (the first half - the second half)

shang ban shi - xia ban shi (the first half hour - the second half hour)

1b shang lian - xia lian (the first line of a couplet on a scroll - the second line of a couplet)

shang ceng - xia ceng (upper layer - lower layer)

shang xun - xia xun (fisrt ten-day period of a month - last ten-day period of a month)

The second category:

2a shang/xia N ceng (upper layer - lower layer)

shang/xia NP pai/lie (upper line - lower line)

2b shang/xia N juan (upper volume - lower volume)

shang/xia N zhang (upper chapter - lower chapter)

shang/xia N jie (upper section - lower section)

2c shang/xia N zhou (last week - next week)

shang/xia N nian (last year - next year)

shang/xia N (ge) yue/jidu/shiji (last month/season/century - next month/season/century)

2d shang/xia N jie/dai/bei (last generation - next generation)

2e shang/xia N ci (last time - next time)

shang/xia N tang (last time - next time)

In the first category, there's no numeral or "ban" which means a half appears, and the structural meaning is solidified as a word. In the second category, N is a number, the significance and relations of the components obviously are well constructed, and this is what we're going to talk about in this paper.

2.1. The Meanings and Functions of "Shang(up)/Xia(down)"

The meanings of "shang(up)/xia(down)" as localizers in the "Modern Chinese Dictionary" (seventh edition) are as follows:

Shang₁: 1) the position is high; 2) high grade or quality; 3) the order or time is in front.

Shang₂ (neutral): 1) used after a noun to indicate the surface of the object; 2) used after a noun to indicate the scope is within something; 3) to indicate one aspect.

Xia: 1) the position is low; 2) low grade or quality; 3) the order or time is in the back; 4) to indicate that it belongs to certain ranges, situations or conditions in "(zai) + NP + xia"; 5) to indicate certain times; 6) used after numerals to indicate an aspect or orientation.

As is shown in the dictionary, "shang(up)/xia(down)" has to be used after a noun when it means a range, and "shang(up)" has to be neutral in tone, which makes it totally different with the "shang/xia" in "shang(up)/xia(down) + quantity (+X)". We could tell that meaning of range does not come from "shang(up)/xia(down)", and then what is the meaning of "shang(up)/xia(down)" in "shang(up)/xia(down)//+quantity/(+X)"?

2.1.1. The First Category of "Shang(up)/Xia(down)" Has the Meaning of Symmetry

[5] [6] pointed out that "shang(up)" has the meaning of "directionality", and "shang(up)/xia(down)" in the "localization//numeral/+(X)" structure is also directional. The performance of "shang(up)" is related to the terms of "shang(up)" in the dictionary, indicating direction of "high, excellent, front", while when it comes to "xia" the direction is oppositely shown as "low, bad, rear".

In example 1a "ban" means a half, and "shang(up)" and "xia(down)" symmetrically complement each other, making "shang(up)/xia(down) + ban(half) + quantity" directionally refer to half of a whole. Missing of numerals in example 1b further strengthens the symmetrically directive meaning of "shang(up)/xia(down)". In the first category, except that "shang/xia banjie" (the first/second half) and "shang/xia banduan" (the first/second half) are category terms, all listed phrases are fixed as a term in the dictionary, indicating a specific time or thing or an extended meaning. For example, "shangceng" has extended from its original meaning of "upper level of layers" to an abstract meaning of "upper class in a society or an organization".

2.1.2. The Second Category of "Shang(up)/Xia(down)" Functions Directionality and Relative Localization

In the second category when the numeral is "yt" which means one, there are two cases. In the first case, things modified or referred to by "localizer + quantity(yt) (+X)" can be divided into two parts: the "shang" part and "xia" part. "Yt" could be omitted, compressing the case into category 1b. In the second case, things modified or referred to by "localizer//+quantity/(+X)" are composed by more than two parts. "shang"(up) and "xia"(down) are antonyms, but they are not complement to each other, instead they are directional referring to a point which could be flexible. In a word, the localizing function of "localizer + quantity(yt) (+X)" works on the basis of specific context.

When "shang(up)/xia(down)" combines with different categories of quantitative phrases, the function of directionality differentiates slightly. Examples in 2a

represent a three-dimensional spatial relation, the framework of which show the basic usage of "shang(up)" and "xia(down)"—in the vertical direction. In this case "shang(up)"/"xia(down)" cannot be replaced by "qian"/"hou", which mean front and rear-in the horizontal direction. Examples in 2b are abstraction of the three-dimensional space, and the coordinate axis has changed from vertical to horizontal, shown as front and rear. If the abstract space represents a direct projection of the physical space, "shang(up)/xia(down)" and "qian(front)/ hou(rear)" could be replaced randomly, say "shang liangzhang" and "qian liangzhang" are the same, both meaning "the first two chapters". However, if it is a general projection of the physical space, "shang(up)/xia(down)" would be forbidden. For example, we could say "qian sandian" which means "the first three points", but "*shang sandian" would be forbidden here. "shang(up)" and "xia(down)" in examples 2c, 2d and 2e are extended from spatial to temporal meaning through metaphorical projection. "Shang" in 2c means the past and "xia" the future. When "shang(up)/xia(down)" are replaced by "qian"/"hou", numerals cannot be omitted. "shang"(up) and "xia"(down) in 2d and 2e implicitly mean orders, and meaning of "counting direction3" is quite clear here. The larger the number is, the clearer the meaning of order is, and "shang"(up)/ "xia" (down) could always be replaced by "qian(front)"/"hou(rear)". From the analysis of 2a-2e we can see, the prototype meaning of "shang(up)/xia(down)" is to indicate the vertical direction and localization in the 3-d space, however, when used before the quantity phrase to indicate the horizontal direction of the abstract space and time, meaning of front and rare has become dominant.

From the corpus we can see that "shang(up)" and "xia(down)" are unbalanced in frequency of usage. When indicating space relations, "shang"(up) and "xia" (down) always go together. When indicating time or order, "shang"(up) is more frequently used than "xia"(down). This is related to the way people perceive the world.

When the current time is used as a reference point, many things and events that existed in the past can be summarized as an assemble because of their homogeneity in a certain aspect. This assemble, as a summary of a certain amount of time, is realistic and easily accepted.

Time represented by "xia(down) + quantity" phrase is about the future, which is planed and unknown whether the current expectation can be realized later. Generally speaking, words of summarizing are more commonly used than words of planning. In addition, events and actions can be cut off at the current time, and there is no need for future continuity. Therefore, under normal circumstances, "shang(up)" is used more frequently than "xia(down)". We also noticed the special case where "xia yige" which means next one is used more frequently than "shang yige" can be used independently as a word for calling up, and there's no such a usage in "shang yige".

³"counting direction" refers to the counting order in an ordinal entity arrangement. Chen Zhenyu, *The cognitive Model of Temporal System*, Shanghai: Academe Press, 2007, p.75.

"Shang" (up) and "xia" (down) in the dictionary are marked as localizers. From the analysis given above, we can see "Shang(up)/xia(down)" performs differently from meaning to usage when being placed in different positions and combining with different words. [7] called localizers used before quantities distinguishing words because of their nature of symmetry and preposition, according to which we believe that "shang(up)" and "xia(down)" in the first category are adhering and prepositive components of words and can be called the distinguishing morpheme of localizer. "shang" (up) and "xia" (down) in the second category should be used before quantity phrases without the support of specific references, indicating direction rather than position, functioning as localizers which are usually adhesive and cannot be used independently. Neither of these two categories are the typical meaning of "shang" (up) and "xia" (down). Only when "shang" (up) and "xia" (down) are used after nouns are localizers indicating both position and direction. These three types of "shang(up)/xia(down)" can form a typical to atypical sequence:

localizer as word > direction word > localizer as distinguishing morpheme

2.2. Characteristics of Quantitative Phrases

2.2.1. Selection of Numerals

1) The Phrase Is Freer When the Numeral is "yi" (One) Rather Than Other Forms of Numbers

According to the corpus, numerals in "localizer//numeral/(+X)" have to be cardinal numbers or approximate numbers rather than ordinal numbers. "Yi" might appear in all forms of "localizer//numeral/(+X)" phrases, while in some formats, sentences with numbers greater than "vi(one)" are few or invalid. For example, there are sentences with "shang/xia yibian" (last/next time), "shang/xia yige" (last/next one), and these sentences are false when "yi(one)" is replaced by other numbers. Therefore, we can infer that in the coordinate, the reference-point of which is current time, as long as "yi" (one) is the radius of a drawn circle, the intersections of the circle and the coordinate axis, in both horizontal axis (space) and the vertical axis (time), could be oriented by "shang(up)/xia(down)". When the numeral is greater than "one", it is not a typical range defined by "shang(up)/xia(down)". Numerals modified by "shang(up)/xia(down)" are generally less than "five", and so far no example is found to be greater than "ten", and the common numerals greater than "one" is "two" and "several", thus we may get one conclusion that "localizer//quantities/(+X)" indicates a small range.

There are reasons for the phrase of "localizer//quantities/(+X)" indicating a small range.

First of all, the typical meanings of "shang" (up) and "xia" (down) are complementary, "shang" (up) and "xia" (down) each accounting for one-half. As numerals go greater, the function of "counting direction" is strengthened to highlight the sequential significance, which are comparatively easily expressed through "qian (front)/hou (rear)" rather than "shang(up)/xia (down)", therefore

"qian(front)/hou(rear)" is used more frequently when numeral goes greater. Secondly, simple things could be divided into two parts whilst complex things might be divided into multiple parts, and for the latter "qian(front)/hou(rear)" is better. In addition, if several elements are contained in the info of "X", complicated expressions are preferred compared to simple ways or localization. For example, as for the preposition phrase "cong ershi ceng dao sishi ceng" (from twentieth to fortieth layers), we seldom say "*shang ershi ceng". In conclusion, "shang(up)/xia(down)" is suitable for a range in which the radius is "yi"(one), and "qian(front)/hou(rear)" is suitable for the intersection points where in the horizontal direction the reference point is greater than "one", and when the number is greater than "ten", comparatively complicated phrases are preferred.

2) Omission of numerals

When the number "yi" (one) appears, the position of the time phrase is flexible and can be used independently. However, the omission of "vi(one)" basically does not affect the meaning of words, it is often omitted in the sentence driven by economic principles. When expressing spatial meaning, the "quantity" is usually a monosyllabic noun morpheme. Numbers of syllabus in "shang(up)/xia(down) + quantity" structure is consistent with the typical form of words, thus most of the structures have been solidified into words. When "Shang(up)/xia(down) + quantity" is used to indicate sequence or time, the form of "quantity" could be either a single syllable or multi-syllable, and "Shang/xia + quantity" could be a word or a phrase that forms like a word. The frequency of occurrence and the flexibility of use are affected when "yi(one)" is omitted. Take the time phrases in 2c as an example, except for "shang/xia zhou" (last/next week) being frequently and flexibly used, and one example of "shang yue" (last month) is found in CCL corpus, rest of the phrases in 2c cannot be used independently in a sentence. Time words, as environmental factors, can usually be used independently. However, the intrinsic tendency of phrases omitting "yi(one)" in 2c class indicates that they do not typically belong to the category of words. Some have been lexicalized, while some are still in transition between words and phrases, thus being functionally limited. These words/phrases need to be more frequently used to be typical time words.

When the number is greater than "yi" (one), it cannot be omitted, and the "localizer//quantity/(+X)" structure belongs to the category of a phrase.

2.2.2. Quantifiers Are Mainly Ordinal Quantifiers

From the previous analysis, we know that examples in 2d, 2e are obviously in sequence, examples in 2a, 2b, 2c are also sequential, thus we can say the entities that "Shang(up)/xia(down) + quantity (+X)" refer to are homogeneous, discrete, and sequential. "shang"(up) and "xia"(down) have directional and relative positioning functions, though, they cannot determine the sequence of the phrase, which is mainly indicated by the quantitative component. We already know that the numbers in the structure cannot be ordinal ones, then the sequential meaning of the quantity phrase comes from the quantifiers which should be ordinal

ones. Among the nominal quantifiers the ones indicating time-point and portion are the most intense in sequentiality, whilst among the verbal quantifiers the full-time ones like "ci"(time), "hui"(time), "xia (down), "bian"(time), "tang"(time) are about sequence, both can be the "X" in the "Shang(up)/xia(down) + quantity (+X)" phrase. Quantifiers of measurement, showing no meaning of sequence, cannot be the "X". A few non-sequence quantifiers can be the "X" under limited conditions, say "ge" (measure word) has to be placed before time word, the latter making up for the former's deficiency in expressing sequence.

In "shang(up)/xia(down) + quantity (+X)" indicating range of either space of time, the quantitative phrases are always with internal sequence, since it's hard for those with no sequence to be integrated as a whole. The sequential meaning of the quantitative phrases also make up for the deficiency of "shang(up)/xia(down)" which could just orient rather than to localize, thus enhancing the integrity of the things modified with a clearer range.

2.3. The Significance of "Shang(up)/Xia(down) + Quantity (+X)"

Both the localizer "shang(up)/xia(down)" and quantitative phrases can mark the category of a structure, thus "shang(up)/xia(down) + quantity" might be regarded as either a localizer or a quantitative phrase, in latter quantifier being the core. However, in the "shang(up)/xia(down) + quantity" phrase, the function of neither part is prominent, thus the localizer "shang(up)/xia(down)" and quantitative phrases influence each other and interact to form the significance of the whole phrase.

When the number is greater than "one", the quantitative phrase is ambiguous indicating either a sum-up or a singular. The ambiguity is more obvious, when the quantifier is a concurrent word of ordinal quantifier and measure word. For example, "san juan" may refer to "the third volume" which is a singular and it may also refer to "three volumes" which is a sum-up. In "shang(up)/xia(down) + quantity" phrase, the function of orientation and demarcation of "shang/xia" increases the tendency of a combination/ sum-up of the quantitative phrase. "shang(up)/xia(down)" orients with a reference point, according to which we could tell the position of up and down.

Indicated things range above of before the reference point of "Shang", and below or after the reference of "xia". Indicated things within the boundaries are discrete individuals but sequentially listed, thus the individual's particularity is no longer taken seriously, and the commonality is highlighted. Therefore, the quantitative words in the phrase "shang/xia + quantity" indicate a combined quantity, and when the number is greater than "one", it can usually be replaced with "ji" (several), which further proves the significance of combining of quantitative words.

In short, the directionality of "shang(up)/xia(down)" introduces a cut-off point, initially categorizing individuals and discrete things. Quantitative words bound the infinite range which is defined only by direction. Meanwhile, the de-

limitation of "shang(up)/xia(down)" highlight the quantitative phrase' functioning of summing-up. When the numeral is "one", "shang(up)/xia(down) + quantity" also means a sum-up, and there is only one member in the set modified by "shang(up)/xia(down)".

In general, "shang(up)/xia(down) + quantity (+X)" refers to a bounded and sequential set, indicating full or half quality rather than partial one. The number expressed through the full or half quantity is limited to a small range, and might be either general or specific.

3. Type of X Modified by "Shang(up)/Xia(down) + Quantity" Phrases

"X" in "shang(up)/xia(down) + quantity (+X)" generally would be nominal and can often be omitted. Individual nouns and mass nouns among the common nouns, which in intense state of materiality⁴, could be the "X" in "shang(up)/xia(down) + quantity/(+X)". Time nouns and ordered nouns among the special nouns, with their sequentiality in consistent with the individuals within the range of "shang(up)/xia(down) + quantity", could also be the "X". The collective nouns and relational nouns, however, with no state of homogeneity or discreteness, are not the right "X" in the format. The same applies to abstract nouns and location nouns.

"X" in "shang(up)/xia(down)// + Quantity/(+X)" could also be verbal. The mobility of "X" will be weakened by the meaning of range of the format. The phrase does not indicate an action, but the event caused by an action. For example:

4) Su: Bubi tixing wo, wo quanshenguanzhu de ting zhe ne.

Tai: Sugeladi, zai ni shang liang ci chahua zhijian, wo shuole xie shenme?

(Su: Don't remind me. I'm with both ears.

Tai: Socrates, what did I say between your last two interruptions?)

- 5) Ta shang liangci lai, songwenfu dou you houli xiang song. Zheci songli geng zhong, chu song gei ta sanbai liang yinzi, hai song le jijian minggui zihua he guwan. (On his last two visits, Song Wenfu gave generous gifts. The present one was heavier. In addition to three silver coins, he also gave several valuable calligraphies, paintings and antiques.)
- 6) Shishi shang, makuisita shang liangci de hangxing dou shi kuiben de, zhe yeshi ta weishenme hui jieshou chengke—yige zai pingchang zhuangkuang xia jue bu keneng de shiqing.

In example 4), "shang(up)/xia(down) + quantity + verb" is an embedded component, functioning as the object in a prepositional phrase. The mobility of verb "chahua (to interrupt)" has been weakened, thus indicating the event of interjection rather than an action. In example 5) "ta shang liangci lai" (he came twice previously) is not an embedded component, though, it's neither the sen-

⁴The "intense state of materiality" refers to a state of discreteness of objects in the space of dimensions, which connect with other things of the same state in the objective world, Chu Zexiang: Latent Form of Noun in Modern Chinese-about Studying Locative after Noun. 1995, 1, pp.49.

tence trunk. It functions as a time adverb of the clause that comes after. "Lai" (come), as a degraded second-level predicate, has no effect on the whole meaning of the sentence. In example 6), "de" as a nominal mark has been put between "shang + Quantity" (shang liangci-last two times) and the verb (hangxing - to travel), making the phrase functio nominally.

In general, "shang(up)/xia(down) + quantity" may modify nouns or verbs, "shang(up)/xia(down) + quantity + noun/verb" may indicate events, as is shown in example 7); indicate a person, as is shown in example 8); indicate an abstract thing, as is shown in example 9):

- 7) Shang jici saodang, ta hen diao, pa si, tuibingtuogu dou mei xiaxiang, dao tuo ren shao xie dongxi huijia. (On the last few sweeps, he was very shrewd, afraid of dying, and did not go to the countryside on medical grounds. He only asked others to take some things home.)
- 8) Zheci huijian tamen de bushi shang liangci de ren, huanle ling yiwei mishu. (It was not the people who met them in the previous two times. It was another secretary.)
- 9) Waizhang tongshi biaoshi: "Zhongguo zhengfu ye yuanyi danren fei zhengfu zuzhi luntan de dongdaoguo, genju shang jici funv shijie wenti huiyi de chuantong, ta shi funv wenti huiyi de fuzhu huiyi". (At the same time, the foreign minister said: "The Chinese government is also willing to host the NGO Forum. According to the tradition of the previous World Conference on Women, it is a subsidiary meeting of the Conference on Women".)

"Shang(up)/xia(down) + quantity (+X)" can be used as subject, object and attributive modifier. It can also go together with a preposition, acting as an adverbial modifier. We could find no example in which the phrase functions as predicate or complement. This has something to do with the meaning of the phrase-quantity of range, which is often indicated by nominal words and does not act as a statement.

4. Conclusions

"Shang(up)/xia(down) + quantity (+X)" can indicate the quantity of spatial range and time range, wherein "shang(up)/xia(down)" is differentiated into two types: localizer (morpheme) and localizer (word). Both of the types have functions of orientation and delimitation, thus highlighting the quantities' meaning of congregation. The boundedness of quatitives gets the oriented and unlimited range bounded, and the phrase becomes bounded, with its internal components sequential. "Shang(up)/xia(down) + quantity (+X)" is not a simple sum-up of localizer and quantity categories but a restructuring into a new category of "range quantity", which mainly indicates full or a half of the range given. The full and half quantities are relatively small in number, thus can be regarded as a small quantity of range.

Based on linguistic facts, this study makes a comprehensive and in-depth analysis of the semantics, grammar and pragmatics of the "shang(up)/xia(down)

+ quantity (+X)" structure. However, if more linguistic theories can be applied to further reveal the formation mechanism of solidification and categorization of "up/down + quantity (+X)" structure, the article may have more theoretical value to be referred to. In addition, besides "shang(up)/xia(down)", there are also "shangmian(upper)/xiamian(lower), yishang (above)/yixia(below)" and so on. These localizers and quantities can also indicate the quantity of range, each category connected and also differentiated from others. We could further study how and what kind of continuums these categories are in.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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