

Schematic meaning and pragmatic inference: the Mandarin adverbs *hai*, *you* and *zai*

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Abstract

In this study, we provide a unitary account for three functionally complementary adverbs in Mandarin Chinese: *hai*, *you* and *zai*. Contrastive schematic meanings are proposed as core semantic input from which various pragmatic inferences are derived in context. A multifactorial analysis based on corpus data reveals collocation patterns both in terms of discourse type and linguistic structure. The quantitative findings confirm semantic coherences predicted on the basis of the proposed schematic meanings. The study demonstrates the analytical strengths of cognitive semantic schemata over the fractional view of meaning.

1. Introduction

From the conceptualist perspective, linguistic units are symbolic units conveying schematic meanings. The derivation of messages from the schematic meaning is enabled and facilitated by the ability of humans to draw on experience and encyclopaedic knowledge of the world, including knowledge of language (Langacker, 1987; Taylor, 2002; Diver, 1995; Contini-Morava, 1995; and Evans and Green, 2006). A brief example would serve to illustrate this basic assumption. The word *in*, according to Tobin (1990: 61), has the schematic meaning LIMITED BY BOUNDARIES. This meaning is abstract enough to span a spatio-temporal-existential cline instead of being limited to only one conceptual domain. In specific uses, for instance, in *in the room*, *in the morning* and *the 'in' group*, this abstract meaning gives rise to the respective contextual messages 'within spatial boundaries', 'within temporal boundaries' and 'within social boundaries'. In order to arrive at these concrete understandings, the hearer employs his knowledge of the lexicon and of the world to narrow down the semantic range of the schematic meaning in a given context.

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This paper explores the semantics of three Mandarin Chinese relational adverbs, *hai*, *you* and *zai*, as used in the three examples, below, which are adapted from Ma (2000: 210):³

- (1) 我*還/又/*再看了一遍那篇文章。
*wo *hai/you/*zai kan-le yibian na pian wenzhang.*
 1SG again look-PFV once that CL article
 ‘I read that article again.’
- (2) 你*還/又/*再看一遍這封信。
*ni *hai/*you/zai kan yibian zhe feng xin.*
 2SG again look once this CL letter
 ‘Read this letter again.’
- (3) 明天還/?又/再吃面條，我可受不了了。
ingtian hai/?you/zai chi miantiao, wo ke shoubuliao le.
 tomorrow again eat noodles, 1SG but stand CRS
 ‘If (we) eat noodles again tomorrow, I won’t stand it.’

Although all three items may loosely translate into ‘again’, as in Examples 1 to 3, they differ significantly in meaning. Replacing one with another would cause semantic infelicity, as indicated by the asterisks in Examples 1 and 2. Even where they appear to be interchangeable, they do not give rise to the same interpretation, nor are they intuitively equal in their degree of acceptability, as in Example 3. So, it seems unlikely that the distributions of the three words are arbitrary. Yet, as will be discussed in the next section, much confusion exists in the understanding of how and why these words are used or not used (Ma, 2000; Jiang and Jin, 1997; and Hou, 1998). Our goal in this paper is to attempt to explain the semantic differences between *hai*, *you* and *zai*. We do so by taking the schematic meaning as the motivation that systematically distinguishes one sign from another within a semantic domain. Specifically, we propose that the adverbs in question are members of the semantic system of Location of Additional Entity in Speaker’s Perceptual Range where their meanings contrast (see Section 3). We will show that the schematic meanings of the words within such a semantic system provide the sole linguistic input that gives rise to various pragmatic inferences in communication.

2. Previous analyses

The adverbs *hai*, *you* and *zai* have each been assigned a variety of distinct meanings in most grammars of Mandarin Chinese. Liu *et al.* (2001: 232–42),

³ See Appendix A for the abbreviations adopted in the glosses.

for example, propose seven denotations for *hai*, four for *you*, and three for *zai*:

hai

- (i) continuation of an action or state
- (ii) addition
- (iii) upgrading
- (iv) downgrading (hedge)
- (v) concession
- (vi) temporal remoteness
- (vii) emotion (irony)

you

- (i) repetition of an action, past
- (ii) simultaneity of two situations or qualities
- (iii) succession of actions
- (iv) intensification of illocutionary force

zai

- (i) repetition or continuation of an action, future
- (ii) postponing an action
- (iii) increasing degree or extent

In the systematic absence of any attempt to explain the interrelation of the denotations, it appears as though the individual denotations were distinct semantic values. The mere juxtaposition of them does not, of course, constitute a principled account of their semantic differences. Note further that, on the one hand, the three words seem to overlap in their denotational range and, on the other hand, one and the same word appears to designate contradictory things (e.g., *hai* (iii) and (iv)). Let us consider the discussions of some examples in Liu *et al.* (2001) to see the problems with an approach that fails to separate input from inference. Consider Examples 4 to 7 which allegedly illustrate the respective denotations numbered as (i) to (vii), above:

- (4) 已經五月了天還這麼冷。
yijing wuyue le tian hai zheme leng.
 already May CRS day HAI this cold
 ‘It’s May already, and it is still so cold.’
- (5) 這次旅游到上海，我們看了看市容，
zhe ci lüyou dao Shanghai, women kan le kan shirong,
 this CL travel to PN 1PL look PFV look city:appearance
 ‘This time when we travelled to Shanghai, we took a look at the city

還嘗了嘗上海小吃。
hai chang le chang Shanghai xiaochi.
 HAI taste PFV taste PN snack
 and tasted the local snacks.'

- (6) 聲速快，光速比聲速還快。
shengsu kuai, guangsu bi shengsu hai kuai.
 sound:speed fast light:speed compare sound:speed HAI fast
 'Sound is fast, light is still faster than sound.'
- (7) – 這部小說寫得怎麼樣？
 – *zhe bu xiaoshuo xie de zenme yang?*
 this CL novel write COM how manner
 'How is this novel?'
- 還不錯，值得一看。
 – *hai bucuo, zhide yi kan.*
 HAI not:wrong, worth one look
 'Not bad, it's worth reading.'

Note that, at the surface of the particular uses, the denotations postulated by Liu *et al.* seem to work in conveying the individual messages communicated by the respective sentences. Examples 6 and 7, for instance, may have conveyed the respective messages 'upgrading' and 'downgrading'. However, in point of fact, the sense of upgrading versus downgrading should not be attributed to the meaning of *hai*. In Example 6, the comparative construction *X bi Y N* (*X* and *Y* are the entities being compared, and *N* is the attribute with regard to which *X* and *Y* are compared) encodes the concept of 'upgrading'. In Example 7, the qualifying word *bucuo* 'not bad', which is a marked alternative to the unmarked word 'good', conveys the very message of downgrading. By the same token, the meanings (v) to (vii) of *hai*, as illustrated in Examples 8 to 10, below, are based on inferences of the complete sentential input:

- (8) 課文他還念不好呢，怎么能背出來？
kewen ta hai nian bu hao ne, zenme neng bei de chulai!
 text 3SG HAI read not well MP, how can recite COM out:come
 'He can't even read the text well, how can he recite it!'
- (9) 這件毛衣還是我十歲的時候我母親給我
zhe jian maoyi hai shi wo shi sui de shihou wo muqin gei wo
 this CL wool:dress HAI COP 1SG ten year ASSOC time 1SG
 mother BNF 1SG
 'As for this sweater, it is when I was ten that my mother

織的呢。
zhi de ne
 knit NOM MP
 knitted it for me.'

- (10) 還是大學生呢，這麼容易的題都不會！
hai shi daxuesheng ne, zheme rongyi de ti dou bu hui!
 HAI COP college:student MP, this easy ASSOC problem even not
 can
 'Being a college student, you can't even solve so easy a problem!'

The sense of 'concession', the putative meaning (v) of *hai* in Example 8, is inferred from the statement of the person's inability to read the text plus the real-world experience of the relative difficulty involved in reciting as compared with reading. In Example 9, the emphasising of *shi sui de shihou* 'at age ten' by means of the focus construction *shi...de* gives rise to 'temporal remoteness'. In Example 10, again, the 'emotion' or 'irony' originates in the real-world incongruity between what is usually expected of a college student and his exhibited ability that violates the expectation.

Shen (2006) proposes the term 'meta-linguistic increase' to explain the concessive sense (v) and the emotional sense (vi). This is, to some extent, a sensible proposal because it recognises the common subjectivity underlying the two uses. But it fails to capture the intuition that subjectivity is also present in other uses—for example, (iv) 'downgrading' and (vi) 'temporal remoteness.' As we shall argue later in this paper, a more abstract meaning that has psychological reality will be able to accommodate the subjective or discursive senses of the adverb in question.

Now returning to Liu *et al.*'s examples, we may state that the alleged denotations of *hai* derive either from other linguistic processes in the sentences or extra-linguistic factors. In short, they are contextual inferences. If the meanings of *hai* are, as it were, actually due to pragmatic/contextual inferencing, then these meanings cannot be attributed to distinct senses of *hai*.

Furthermore, if *hai* indeed had several denotations, as assumed, one would expect that its denotational variation is subject to certain syntactic constraints (see Goldberg's (1995: 67) Principle of No Synonymy). That is, the different denotations of *hai* might have derived from the different meanings of different syntactic constructions of which it is a component. However, as soon as we examine the grammatical forms of the above examples, we notice the absence of any systematic constraints at the level of syntax. To be specific, *hai* invariably precedes the predicate of a clause which may be a verbal phrase or an adjectival phrase. Since verbal phrases and adjectival phrases exhibit the same syntactic behaviour in Mandarin Chinese (Chao, 1968), the collocation of *hai* with either of the two categories does not suggest the possibility of a syntactic constraint. On the other hand, different denotations of *hai* are associated with either a perfective event as marked

by a perfective suffix such as *-le*, as in Example 5, or with an imperfective situation as marked by the suffix *-ne* (Lü, 1955; and Shi, 2000), as in Examples 8, 9 and 10. Thus, aspect marking also fails to serve as a syntactic constraint on the putative semantic difference amongst the various uses of *hai*. In the absence of syntactic constraints, the denotational difference must be deemed arbitrary.

The same arbitrariness besets Liu *et al.*'s analysis of *you* and *zai*. However, since we have gone into great detail concerning their treatment of *hai*, we do not want to repeat our critical review with regard to *you* and *zai* at this point. Instead, we shall embed our critical review of Liu *et al.*'s analysis of these two items in Sections 5.2 and 5.3, where we contrast our analysis with theirs and explain the denotations they postulate in terms of our findings. For now, our overview of Liu *et al.*'s analysis of *hai* may be taken as providing an illustration of their general approach to all three adverbs. The fundamental weaknesses of that approach can be summarised as follows. First, they suggest too many overlapping meanings and this raises questions of (i) whether the different meanings postulated all have some sort of psycholinguistic reality that can be validated on the basis of more than the analyst's intuition (for discussion, see Sandra and Rice, 1995); (ii) what the motivation is for the connections between the senses of each of the words; and (iii) what the connection is between the senses of the three words.

On the other hand, where *hai*, *you* and *zai* are semantically- and functionally compared, a similar arbitrariness is observable. Ma (2000), for instance, refers to the three signs as 'adverbs of repetition' and regards them as differing across the semantic categories of tense and mood (see Jiang and Jin, 1997; and Lü, 1980). Ma specifies the tense-relevant (past versus future) and mood-relevant (indicative versus subjunctive) contrast between the three signs with regard to the meanings of 'repetition' and 'addition'. The following list is adapted from Tables 1 and 2 in Ma (2000: 216, 221), where the abbreviations 'exc.' and 'res.' stand for 'with exceptions' and 'with restrictions', respectively.

(i) past

(a) indicative:

hai: [-repetition, +addition], exc.
you: [+repetition, +addition]
zai: [-repetition, -addition], exc. with *youyu* 'because'

(b) subjunctive:

hai: [-repetition, +addition], exc.
you: [-repetition, -addition], exc. with *neng* 'can'
zai: [+repetition, +addition]

(ii) future

(a) nonhypothetical

- hai*: [+repetition, +addition], res.
you: [-repetition, -addition], exc.
zai: [+repetition, +addition]

(b) hypothetical

- hai*: [+repetition, +addition], res.
you: [+repetition, +addition], [-desirable]
 [-repetition, -addition], [+desirable]
zai: [+repetition, +addition]

There are three major irregularities in the list above. First, the denotations proposed are often subject to restrictions and so ‘exceptional’ uses may be observed often. Secondly, although a distinction is made between the ‘nonhypothetical’ and the ‘hypothetical’ within the future tense, the two notions are undefined. Thirdly, the use of the adverb *you* in the hypothetical sense seems to be subject to an extra semantic parameter—namely, the desirability of the event, which is an instance of the grammarian’s introspection. To illustrate the analytical inconsistency, let us consider some of the examples discussed by Ma:

- (11) 他去年去了英國，今年*還/又去了法國。
*ta qunian qu le Yingguo, jinnian *hai/you qu le Faguo.*
 3SG last year go PFV PN this year YOU go PFV PN
 ‘He went to England last year, and this year he went to France.’
- (12) 他這兩年老出國，去年去了英國，
ta zhe liang nian lao chu guo, qunian qu le Yingguo,
 3SG this two year always exit country last year go PFV PN
 ‘These years he’s travelled abroad a lot, last year he went to England
 今年還/又去了法國。
jinnian hai/you qu le Faguo.
 this year HAI/YOU go PFV PN
 and this year he went to France.’

Ma states that both *hai* and *you* may denote ‘addition’ when referring to past events. But *hai* cannot be used to denote addition across time spans, whilst *you* is not subject to that restriction. Thus, in Example 11 where two different time spans, *qu nian* ‘last year’ and *jin nian* ‘this year’, are being communicated, *hai* is deemed infelicitous. However, Ma also states that if

the speaker considers the two times as belonging in one time span, *hai* can be used as felicitously as *you*, as in Example 12. These two examples suggest that whatever we know about the meaning of *hai* versus *you* should explain the felicitous collocation of *you* with both ways of temporal perception and *hai*'s preference of only one time span. However, the meanings of *hai* and *you* as proposed by Ma are nearly identical, distinguishable only in terms of the observable restrictions as illustrated by Examples 11 and 12. Yet these restrictions remain inexplicable in the absence of a deeper semantic differentiation. Obviously, the proposal of the meanings 'restricted addition' versus 'unrestricted addition' for *hai* and *you* is not only too obfuscated to work, but gives rise to circular argumentation. The failure to postulate meanings that would reflect and explain restrictions in use repeats itself throughout Ma's discussion and is most noteworthy in the analysis of the 'future-hypothetical' denotations of the three signs. Consider Example 13:

- (13) 如果明天還/*又/再吃面條就好了。
*ruguo mingtian hai/*you/zai chi miantiao jiu hao le.*
 if tomorrow HAI/*YOU/ZAI eat noodles then good CRS
 'It'll be good if (we) eat noodles again tomorrow.'

Here the 'desirability' of a situation inherent in an explicit wish is said to be compatible with both *hai* and *zai*, but not with *you*. Again, this contrast is not, and cannot be, explained by the denotations of the three signs because they are given as nearly identical. What might have differentiated their semantics is treated as minor 'restrictions' the nature of which is left unstudied. Clearly, differential meanings rather than 'restricted identical denotations' are what we need if we wish to explain the particulars of uses as exemplified by Example 13. Critically, the denotations proposed by Ma are largely preconceived and unexamined categories. The temporal sense of 'past' and 'future', for example, can be independently derived from the time adverbials *qunian* 'last year' and *jinnian* 'this year' in Example 11 and *mingtian* 'tomorrow' in Example 13 and is not necessarily inherent in the semantics of the adverbs under investigation. Thus, again, the confusion of semantic input with contextual inference contributes to the absence of a true semantic distinction in the denotations postulated by Ma. That said, however, the denotations as specified by Ma seem to point to the generalisation that might be discovered at an abstract level if we disregard all the restrictions and exceptions she adds to the list. This generalisation is that all three items can signal either 'addition' or 'repetition' at some point in some context. This is important because it provides us with the basic semantic substance that constitutes a system consisting of contrastive signals.

Now, can we find the 'semantic substance'? The answer is 'yes'. Our first step would be to conciliate 'addition' with 'repetition' by considering the two as one and the same thing: addition. More specifically, if the added entity is the same as the given entity, we will be dealing with 'repetition'. In other words, repetition is a special case of addition. Bearing this in mind, we

would be able to proceed to discover in what particular manner this additional entity is perceived when the speaker uses the respective adverbs to introduce it. We shall return to this point later.

For the moment, let us summarise the problems with previous analyses. Given the fact that Ma markedly limits her discussion to the description of the uses of the words, the peculiarities with regard to the restrictions, exceptions and the extra parameter remain unexplained.

The following statements are, on the whole, justified with respect to the weaknesses of the previous analyses: since inferences have been taken as semantic input, the meanings being postulated appear largely arbitrary and ad hoc—they are either as diverse as the actual uses, (e.g., in Liu *et al.*'s analysis), or nearly identical (as in Ma's analysis). As such, these meanings fail to differentiate the words semantically. In other words, there is no systematic contrast at all because the semantic contrast is obtained at the level of contextual inference. Consequently, nothing of considerable consistency can be said of the differential meanings of the three words. This randomness and lack of precision, we shall argue, is a result of the 'fractional' view of meaning that confuses contextual inference with semantic value (Huffman, 1995). As we shall argue in this study, the various 'meanings' or 'denotations' of an adverb as conceived on the fractional view really are contextual messages conveyed by one and the same schematic meaning of the adverb in concrete communicative environments. While the schematic meaning is spare, the messages to which it contributes can be rich.

3. The hypothesis

In this paper, we shall treat the three adverbs as signs in semantic opposition. We shall assign each word a schematic meaning as a salient component of a semantic system in which they contrast. In what way, the question arises, do they contrast if, as we have discovered in the previous section, all three adverbs introduce an additional entity? Clues to the answer are available in the observation that the uses of the three words cut across tense and mood. This implies that their semantic contrast can be neither at the temporal level nor at the logical level of truth-condition. Rather, it must be at a more general experiential level and this, we propose, is the level of perceptual range. Within this system, the meanings of the words signal alternative perceptual ranges within which it is possible to describe an added entity. Thus, we put forward the System of Location of Additional Entity in Speaker's Perceptual Range or, in short, the System of Perceptual Range, which is schematised in Figure 1:

Here, the three meanings being postulated exhaust the semantic substance that we call Perceptual Range. The notion of range is understood not in terms of one conceptual domain, such as time or space, but in terms of a 'spatio-temporal-existential cline', as per Tobin (1990, 1995). Accordingly, Perceptual Range is defined as the scope within which the additional entity

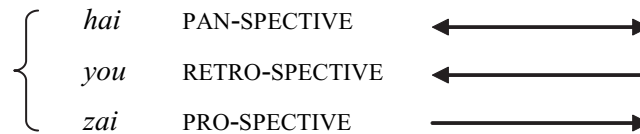


Figure 1: The System of Perceptual Range

is perceived on such a cline. The term *entity*, too, is taken in its broader sense that encompasses palpable objects, complex events and abstract states of affairs. Within the system of Perceptual Range, each schematic meaning elaborates the particular range of perception in which to locate the added entity. Since perception presupposes a perceiver, the position of the perceiver is inherent in each schematic meaning that is postulated.

The fact that the meanings being postulated are fairly vague might be unattractive to those who insist on the referentiality of linguistic meaning. However, because of the conceptual nature of language as a system of a finite number of symbolic form-meaning pairs for the expression of infinite ideas, linguistic meaning is bound to be instructional rather than referential. This view is not only central to Saussurean approaches, but also prevalent in Cognitive Linguistics. Evans and Green (2006: 8), for instance, point out that ‘what language encodes is not thought in its complex entirety, but instead rudimentary instructions to the conceptual system to access or create rich and elaborate ideas’. These instructions are rudimentary and minimal, and have been called ‘prompts’ (Langacker, 1987: 164) for the far richer conceptual structures to which they provide access. Givón (1998: 44) speaks of concepts as ‘types of conventionalized experience’ derived from abstraction and generalisation of ‘unique but similar individual experiences’. As far as our postulations are concerned, the concept of perceptual range is preferred not only because of its sufficient generality but, more importantly, for its experiential fundamentality. In other words, we analyse the linguistic structure in terms of the more basic cognitive systems of human perception and generalisation (Langacker, 1998: 1).

The PAN-SPECTIVE meaning of *hai* entails that the perception of the added entity is continuous in that the entity is perceived as an integral part of a spatio-temporal-existential experience. The RETRO-SPECTIVE meaning of *you* and the PRO-SPECTIVE meaning of *zai* both entail partial boundedness and that the boundary coincides with the point at which the speaker engages the perception, as illustrated by the tail ends of the arrows. The two differ in that the respective Perceptual Ranges extend in opposite directions, as indicated by the arrowheads. The schematic meaning of each word is the sole semantic input from which contextual inference is made in communication. It is this view that we shall defend in this study.

Central to the notion of conceptual schematicity is the assumption that the semantic contribution made by the schematic meaning of each

sign within the system remains constant wherever it is employed. There is naturally, therefore, an inferential gap between the schematic meaning and its corresponding contextual message. This gap can be bridged by idiosyncratic lexical input in an utterance together with our encyclopaedic knowledge of the world, or the ‘human factor’ (Diver, 1995; Contini-Morava, 1995). To be accurate, the human factor refers to the ability of humans to utilise all kinds of knowledge, including knowledge of language as well as world and cultural knowledge, and the ability to pick up contextual cues in discourse to discern the message being conveyed.

Now, based on the hypothesis of the system of Perceptual Range as the semantic motivation and based on the human factor as the inferential orientation, we may assume that speakers will use redundant linguistic devices in communication to get their message across to the hearer who, in turn, needs multiple cues to make a suitable inference. Thus, the multiple devices that co-occur in a text as an instance of communication will be semantically compatible to produce a coherent message (Davis, 2004: 158–9). Semantic compatibility based on the principle of discourse coherence and redundancy entails that in actual language use the three signs will show different collocational preferences. In other words, a given sign is likely to co-occur with other signs in its discourse environment that are semantically compatible. Therefore, we may be able to make the following predictions of collocational preferences:

- (i) *Hai*, with the PAN-SPECTIVE meaning, will be most appropriately used with unbounded entities; *you* and *zai*, on the other hand, with the RETRO-SPECTIVE and PRO-SPECTIVE meanings, respectively, are likely to be used with bounded entities and their configurations of bounding will demonstrate a mirror-image effect;
- (ii) Following (i), *hai*, *you* and *zai* will show differing preferences in terms of the temporal reference of the event they introduce. Specifically, *hai* may refer to both past and non-past (i.e., present or future) events; *you* is likely to refer to past events; *zai*, being the mirror image of *you*, is more likely to refer to non-past events. The difference in temporal reference, however, is a general, and not absolute, tendency. There are two foreseeable situations in which the general tendency can be violated. Both have to do with the fact that the boundary of a perceptual range (as regarding *you* and *zai*) coincides with the point at which the speaker engages the perception. In the case of *you*, if the perceptual range of an entity is limited to the boundary point which also happens to be the moment of communication – that is, the present – then *you* refers to the present state of the entity. In the case of *zai*, if the point of perception does not coincide with the moment of communication – say, in the narration of a historical event – then *zai* refers to a past event.

- (iii) Following (ii), the three items may show preferences of discourse type, or genre. Specifically, we expect *you* to prefer narrative and *zai* non-narrative: *hai* may or may not show genre-based preferences.

In the next section, we shall present quantitative analyses based on corpus data to confirm the predictions in order to validate our hypothesis.

4. The empirical analysis

4.1 Data and methods

The analysis presented here is based on authentic data. We consulted two corpora: corpus H is a collection of fifteen non-fiction non-narrative on-line blog units of about 50,000 characters by one male author (Huang, 2006); corpus W is Wang (2000), a fiction of 50,000 characters by a male author. Both texts are written in the first person. The style of corpus H is best described as argumentative and that of corpus W, narrative.⁴ For corpus H, we first retrieved all instances of the three words in the electronic document. Then we manually filtered out all homographs with non-adverbial lexical meanings. For corpus W, we manually retrieved all adverbial instances of the three words. Manual annotation was applied in our investigation of the following aspects of the instances found:

- (a) The relative frequencies of the adverbs across the two corpora as representatives of two genres.
- (b) The types of entities introduced by the adverbs:
 - bounded:
action verbs marked by:
 - (i) verbal suffixes signaling TELICITY including perfective *-le*, completive *-wan*, experiential *-guo* and various resultative, directive and extentative suffixes, as in *you chuan-shang na tiao duanku* ‘and put **on** those shorts’; and,

⁴ We are fully aware of the limited size and range of our data. On the one hand, the limitations are due to the heavy manual annotation involved in the investigation of individual event structure (telicity and temporality). On the other hand, the size and range of our corpora are compromised for the purpose of ensuring that style/genre be the only variable in comparing the two texts. To this end, we constrained our choice of writers to one gender. In addition, we found it appropriate to adopt the web-blog units (corpus H) instead of conventional argumentative writings. The reason for this is that the blog writer’s argumentative style is more colloquial by nature—a trait of corpus W, which is notable for its colloquialism. Naturally, a more extensive study involving larger corpora shall be pursued in future research to overcome the weaknesses apparent here.

- (ii) preverbal action quantifier *yi*, as in *zai yi wen* ‘asked **once** again’.
 unbounded:
 adjectives: as in *zai ku zai lei* ‘no matter how **bitter**, how **tiresome**’
 modal verbs: *yao* ‘will’, *yinggai* ‘should’, *bixu* ‘must’, *etc.*
 copula *shi*
 static verbs denoting mental state: *juede* ‘feel’, *xiang* ‘would like’ or possession *you* ‘have’
 verbs marked by imperfective aspectual markers: *zai*, *-zhe*, *-ne*
 verbs preceded by the negator: *mei* ‘not yet’ signalling the negation of a perfective situation, thus semantic unboundedness, as in *hai mei piping wan ne* ‘haven’t finished criticizing’.
- (c) The temporal reference of the entities introduced by the adverbs. Since tense is not grammatically marked in Mandarin Chinese, we identify the temporal reference on account of the given discourse contexts.

Our dataset is multifactorial by nature, which calls for multifactorial methods of analysis. More specifically, we have a full factorial design with four variables:

- CORPUS: narrative v. non-narrative;
- TEMP_REF: non-past v. past;
- ENTITY: bounded v. unbounded;
- ADVERB: *hai* v. *you* v. *zai*.

To analyse the data, we computed a hierarchical configural frequency analysis (HCFA; see von Eye, 1990). A HCFA is a method for the analysis of multidimensional frequency tables that is conceptually similar to chi-square tests. It has two main characteristics, however, that set it apart from these. First, a HCFA generates all possible (or all user-defined) sub-tables for the data set in question and tests all of these for significant deviations from expected frequencies. Secondly, a HCFA does not only test complete tables for significance, but also tests each individual cell in each table for significance. Cells whose observed frequencies are higher than their expected frequencies are referred to as *types*, while cells whose observed frequencies are lower than their expected frequencies are referred to as *antitypes*.

4.2 Results and discussion

We used the program HCFA 3.2 (Gries, 2004), which uses Holm’s correction for multiple post hoc tests. These individual tests avoid inflating the risk of accepting the alternative hypothesis erroneously, just because multiple test

<i>Variable combination</i>	<i>Statistics</i>
CORPUS × ADVERB × TEMP_REF × ENTITY	$\chi^2 = 672.623; df = 18; p < 0.001$
ADVERB × TEMP_REF × ENTITY	$\chi^2 = 511.24; df = 7; p < 0.001$
CORPUS × ADVERB × ENTITY	$\chi^2 = 254.291; df = 7; p < 0.001$
CORPUS × ADVERB × TEMP_REF	$\chi^2 = 209.732; df = 7; p < 0.001$
ADVERB × ENTITY	$\chi^2 = 200.277; df = 2; p < 0.001$
ADVERB × TEMP_REF	$\chi^2 = 125.559; df = 2; p < 0.001$
CORPUS × ADVERB	$\chi^2 = 33.838; df = 2; p < 0.001$
ADVERB	$\chi^2 = 68.597; df = 2; p < 0.001$

Table 1: Significant sub-tables of the present data set as determined by a HCFA

are performed on the same data set. In what follows, we only discuss the sub-tables that contain the variable ADVERB. The following sub-tables exhibited significant associations.

We shall now discuss the significant types and antitypes for each adverb in turn. In order to explain how the method works, we will discuss one particular example, *hai*, in very much detail and then offer only concise summaries of the results we obtained for *you* and *zai*. For *hai*, the following significant types (‘>’) and antitypes (‘<’) were obtained.

According to Table 2, the strongest type (as measured by the effect size Q) shows that *hai* is strongly preferred with non-past reference and, at the same time, unbounded entities. The second strongest type, which is only slightly weaker, shows that *hai* is also strongly preferred with unbounded entities in general (i.e., irrespective of its temporal reference). The data become interesting if we look at the third type, which shows that *hai* is preferred with non-past reference and unbounded entities in the non-narrative corpus. This, however, is something we would already have inferred from the first two stronger types we already looked at: this type is a subset of the types already discussed and at the same time has a smaller effect size, which is why it can be discarded; for this feature, the higher-order interaction does not tell us anything we did not already know. The fourth type shows that *hai* is preferred with non-past reference. The remaining types also follow from types we have already discussed.

As regards antitypes, the strongest antitype shows that *hai* disfavours use with bounded entities. Antitypes two, three, five, six, seven, eight and twelve do not provide new information since they only show that this disfavouring is also true with both temporal references, both corpus parts, and all combinations thereof. The fourth antitype shows that *hai* is disfavoured with past reference, which is also reinforced by the seventh antitype. The most interesting antitypes, however, are at the bottom of the list: the third antitype from the bottom and the last one indicate that *hai* is disfavoured

<i>Obs-exp</i>	<i>Corpus</i>	<i>Temporal reference</i>	<i>Entity type</i>	$p_{\text{Holm-adj}}$	Q
>	–	non-past	unbounded	1.23E-019	0.22
>	–	–	unbounded	3.23E-012	0.21
>	non-narrative	non-past	unbounded	1.88E-016	0.12
>	–	non-past	–	5.82E-004	0.11
>	non-narrative	–	unbounded	1.3E-008	0.10
>	non-narrative	non-past	–	8.95E-006	0.08
>	narrative	–	unbounded	3.17E-003	0.07
>	narrative	non-past	unbounded	8.53E-004	0.07
<	–	–	bounded	1.85E-024	0.18
<	–	non-past	bounded	1.22E-016	0.12
<	narrative	–	bounded	5.07E-014	0.10
<	–	past	–	7.40E-007	0.09
<	narrative	non-past	bounded	2.64E-008	0.07
<	non-narrative	–	bounded	4.33E-009	0.06
<	–	past	bounded	9.49E-007	0.05
<	non-narrative	past	bounded	9.08E-008	0.04
<	non-narrative	past	–	3.85E-005	0.04
<	narrative	past	–	1.59E-002	0.04
<	–	past	unbounded	1.94E-002	0.03
<	narrative	past	bounded	4.71E-005	0.03
<	non-narrative	past	unbounded	1.96E-003	0.03

Table 2: Significant types and antitypes for *hai*

with past reference and unbounded entities (especially in non-narrative text). This is interesting because it shows that there is a significant higher order interaction: when we looked at the types, we saw that *hai* prefers unbounded entities and especially unbounded entities with past reference in non-narrative data. Here, however, we now see that unbounded entities in non-narrative data can also be disfavoured – namely, when they co-occur with past reference. This is something that can only be discovered once a multifactorial strategy is adopted: simple two-dimensional tables would not reveal this higher-order interaction. To summarise, *hai*:

- prefers non-past reference and disfavours past reference (in both corpus parts);
- prefers unbounded entities and disfavours bounded entities (in both corpus parts); but,
- disfavours unbounded entities when they occur with past reference.

After this detailed discussion of *hai*, we can now abbreviate the corresponding discussions for *you* and *zai*.⁵ For *you*, the findings can be

⁵ However, see Appendix B for a list of all significant types and antitypes of *you* and *zai*.

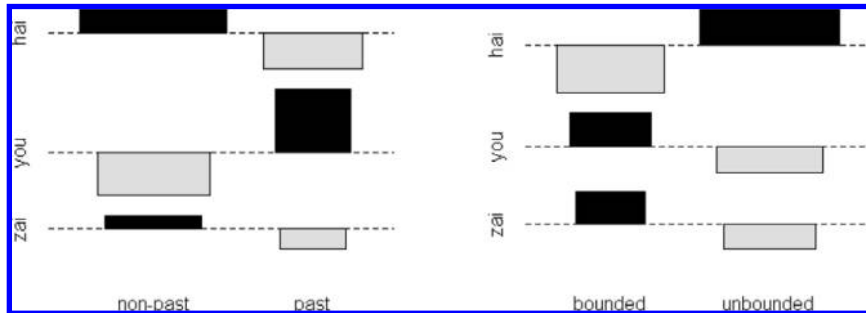


Figure 2: Association plots for $\text{TEMP_REF} \times \text{ADVERB}$ and $\text{ENTITY} \times \text{ADVERB}$

summarised as follows:

- *you* favours past reference (but only with bounded entities and especially in narratives) and disfavours non-past reference throughout; and,
- *you* favours bounded entities (but only when used with past reference and especially in narratives) and disfavours unbounded entities throughout (i.e., regardless of temporal reference and in both corpus parts) as well as bounded entities with non-past reference.

Finally, the findings for *zai* can be summarised as follows:

- favours non-past reference (especially with bounded entities) and disfavours past reference (especially with unbounded entities); and,
- favours bounded entities in both corpus parts (especially with non-past reference) and disfavours unbounded entities throughout.

At a coarser resolution, we can also compare the adverbs' behaviour with regard to both the features `ENTITY` and `TEMP_REF`. With regard to temporal reference, *hai* and *zai* pattern similarly. Meanwhile, with regard to entity type, *you* and *zai* pattern similarly, which is also obvious from the association plot shown under Figure 2.⁶

We can now evaluate the data with an eye to the first two predictions we posited earlier. It seems that our first prediction is confirmed: as hypothesised, *hai* is strongly favoured with unbounded entities while *you* and *zai* are strongly favoured with bounded entities. As to our second hypothesis, *hai* is used for both temporal references, but is favoured with non-past

⁶ In these so-called Cohen-friendly association plots, black and grey boxes indicate observed frequencies that are greater or less than the expected frequencies respectively. The sizes of the areas of the boxes are proportional to the differences between observed and expected frequencies.

CORPUS	ADVERB			Totals
	<i>hai</i>	<i>you</i>	<i>zai</i>	
Narrative	154 (172.4)	130 (100.6)	64 (74.98)	348
Non-narrative	115 (96.6)	27 (56.4)	53 (42.02)	195
Totals	269	157	117	543

Table 3: Observed frequencies (with expected frequencies in parentheses) of CORPUS \times ADVERB

reference, *you* is strongly favoured with past reference as predicted, but *zai* favours non-past reference.

While this concludes the discussion of the corpus findings with regard to the distribution of the adverbs, we still need to comment on the third prediction and address briefly the role of the two corpus parts. Note that, in the above discussion of the three adverbs, the different registers did not contribute to any of the interesting types and antitypes, although Table 1 shows that there were highly significant interactions in which the variable CORPUS was involved. In addition, we saw that there is a significant interaction of CORPUS and ADVERB. Let us now comment briefly on these two aspects of the data. As to the latter, the distribution for CORPUS \times ADVERB is shown in Table 3.

There is an intermediate and statistically significant correlation between the kind of adverb and the genre ($\chi^2 = 33.84$; $df = 2$; $p < 0.001$; Cramer's $V = 0.25$). In narrative writing, *you* is strongly preferred while *hai* and *zai* are disfavoured; however, this disfavouring does not reach exploratory levels of significance, (Pearson residual > -1.4). On the other hand, the non-narrative data strongly disfavour *you*, but have (exploratorily non-significant) preferences for *hai* and *zai*, (Pearson residuals < 1.87). It is more intuitively obvious in the association plot in Figure 3 that *hai* and *zai* tend to pattern in similar ways.

Thus, the corpus parts do exhibit different preferences for the adverbs. More specifically, *you* favours narrative text while *zai* prefers non-narrative text, conforming exactly to our third prediction.

However, in the light of this, we must return to our earlier question: why do the corpus parts not show marked differences for the types and antitypes? This can best be explained on the basis of an example, say, the distribution of the table ADVERB \times ENTITY. As shown in Table 1, these two variables already exhibit a highly significant interaction, $\chi^2 = 200.277$. It is, therefore, unsurprising that the table CORPUS \times ADVERB \times ENTITY is also significant, but note that the χ^2 value only increases moderately to 254.291. Thus, the whole table is significant, but the newly added variable CORPUS does not contribute much to that. In other words, the preferences of the adverbs for particular entities remain the same: in ADVERB \times ENTITY, *hai* favours unbounded entities while *you* and *zai* favour bounded entities.

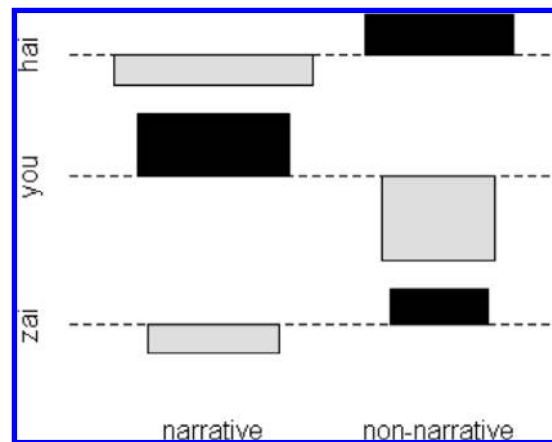


Figure 3: Association plots for CORPUS × ADVERB

But the same result is obtained in CORPUS × ADVERB × ENTITY such that the finer resolution added by the inclusion of CORPUS only shows that *hai* favours unbounded entities in both narrative and non-narrative text while *you* and *zai* favour bounded entities in both narrative and non-narrative text. Thus, the interaction as a whole is significant, but the corpus parts do not account for any significant shift of the adverbs' preferences. Furthermore, since this is true of the other interactions involving CORPUS, it explains why CORPUS plays little role in our explanation of the adverbs' preferences.

On the whole, the patterns of collocation preferences and dispreferences that emerged from the quantitative analyses conducted here have confirmed our predictions. Since these predictions arose from our hypothesis of the semantics of the three words, their confirmation also lends support, ultimately, to our postulations of the schematic meanings. So, within the System of Perceptual Range, *hai* signals PAN-SPECTIVE, *you* signals RETRO-SPECTIVE and *zai* signals PRO-SPECTIVE.

4.3 Excursus: adverb frequencies in the UCLA Corpus of Written Mandarin Chinese

In order to determine to what degree at least the overall frequencies obtained in our more specialised corpora are representative, we conducted frequency counts in a larger corpus – the UCLA written Chinese Corpus (Tao and Xiao, 2007). Figure 4 summarises the frequencies we obtained in all fifteen corpus genres (and see Appendix C for a breakdown of the corpus parts).

The frequencies across the fifteen genres show several trends. First, on the whole, and, with the exception of the outlier genres A ('press: reportage') and H ('miscellaneous'), the adverbs' frequencies are strongly,

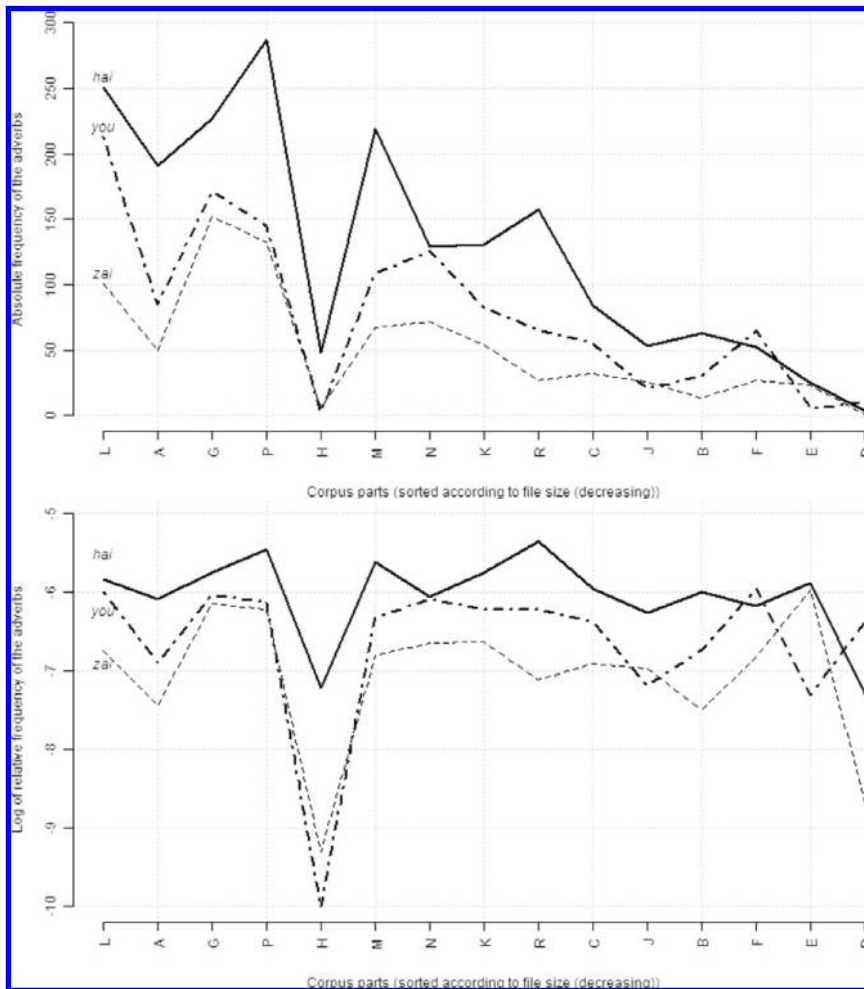


Figure 4: Absolute frequencies and relative frequencies (upper and lower panel respectively) of *hai*, *you* and *zai* in the UCLA corpus of written Chinese

linearly and positively correlated with the genre: the larger the genre, the more adverbs occur. Secondly, the adverb frequencies are also strongly, linearly and positively correlated with one another. The fact that these correlations are so strong across rather different genres is *prima facie* support for the assumption that the observed frequencies of the adverbs in question do not vary in ways that are completely unsystematic across corpora, but that they behave rather similarly in different genres—as the majority of closed-class words probably would. Ultimately, it would of course take a fine-grained analysis with controlled manual annotations to demonstrate the collocation patterns of the items in question.

5. From meaning to message

Having validated the hypothesis of the System of Perceptual Range, we shall now discuss how the rather abstract schematic meanings conceived at the level of the word give rise to various concrete messages in different contexts. Specifically, we shall redress the various ‘denotations’ offered by previous analyses by showing how each of them arises from the same semantic motivation and how all of them can be explained on the semantic basis established here in terms of the schematic meanings.

5.1 The meaning of *hai* and its pragmatic inferences

Let us begin by considering the denotations of *hai* in Liu *et al.*’s list, which is reintroduced here for the sake of convenience:

hai:

- (i) continuation of an action or state
- (ii) addition
- (iii) upgrading
- (iv) downgrading (hedge)
- (v) concession
- (vi) temporal remoteness
- (vii) emotion (irony)

A pan-spective view of an action or state treats the action or state in its spatio-temporal-existential continuity, thus giving rise to the message of ‘continuation and open-endedness’ (denotation (i)), as exemplified in Example 14, which is adapted from Liu *et al.* (2001: 232):

- (14) 幾年沒見，你還/*又/*再是老樣子。
*ji nian mei jian, ni hai/*you/*zai shi lao yangzi.*
 several year NEG see, 2SG HAI be old look
 ‘I haven’t seen you for several years and you’re still your old self.’

Since *you* and *zai*, as per their respective schematic meanings, put boundaries against the perceptual range in which to view an action or state, they cannot replace *hai* in Example 14. Similarly, because a pan-spective view treats the addition of an entity (denotation (ii)) as an integral part of a spatio-temporal-existential continuum, *hai* instead of *you* or *zai* is used in Example 15:

- (15) 按照規定，復試者還/*又/*再要唱一支外國歌。
*anzhao guiding, fushizhe hai/*you/*zai yao chang yi zhi waiguo ge.*
 according-to requirement candidate HAI should sing one CL foreign song
 ‘According to the requirements, the candidates should also sing a foreign song.’

Here, the singing of a foreign song is perceived as part of the total requirements and so its addition occurs within the pan-spective perceptual range. While denotations (i) and (ii) can be easily understood as instantiations of the meaning of PAN-SPECTIVE perceptual range, the semantic link between this schematic meaning and denotations (iii) to (vii) is not readily obvious.

As for the use of *hai* as an ‘upgrading’ device (denotation (iii)), Liu *et al.* propose that *hai* is a synonym of *geng* ‘more’ expressing superiority in degree. If we consider the degree of a certain property as an existential cline, a higher degree of that property is necessarily perceived as an indefinite extension on this cline with regard to the degree being compared to. Thus, by using *hai*, the speaker instructs the hearer to view the degree being talked about pan-spectively as an indefinite extension of a relevant known degree, as in Example 16:

- (16) 你急啊，我比你還/*又/*再急。
*ni ji a? wo bi ni hai/*you/*zai ji.*
 2SG anxious P, 1SG compare 2SG HAI anxious
 ‘You are anxious? I’m even more anxious than you.’

Note that the message of higher degree cannot be inferred from the meaning of *hai* alone, but only in the context in which a comparison is communicated by *bi* ‘compare’. *Hai* is used to specify the perceptual range in which to view the scalar relation between the entities being compared. A similar argument applies to the message of ‘downgrading’ (denotation (iv)), a message that does not arise from the meaning of *hai*, but derives from the context in which the meaning of *hai* is employed. Example 17 illustrates this point:

- (17) 您最近身體好嗎？
nin zuijin shenti hao ma?
 2SG-POL recently body good MP?
 ‘Are you in good health recently?’

還可以。
hai keyi
 HAI okay
 ‘I’m okay.’

In the context of the conversation in Example 17, the answer *hai keyi* does seem to imply a downgrading of the property being talked about. However, *hai* itself can hardly be held responsible for this message. Critically, it is the contextual interaction between the adjective *hao* ‘good’ in the question that constitutes the preceding discourse, the adverb *hai*, and the adjective *keyi* ‘okay’ in the answer that leads us to infer such a message. To be specific, *keyi* ‘okay’ is, in its own right, a downgrading of *hao* ‘good’, and *hai* merely asserts that the property being talked about is perceived as being consistent

with the qualitative range specified by the meaning of *keyi*. Clearly, *hai* does not mean ‘downgrading’ at all; rather, its use in this context serves to relativise the downgrading that emerges from the contrast between *keyi* and *hao* by putting the property in question into perspective.

The messages of concession (*v*), temporal remoteness (*vi*), and socio-emotional message (*vii*) can all be explained along similar lines. Consider Examples 18 to 20 as the illustrations of these messages, respectively:

- (18) 他走路還走不穩呢，就想跑？
ta zou lu hai zou bu wen ne, jiu xiang pao?
 3SG walk road HAI walk NEG steady MP, already want run
 ‘She can’t even walk steadily and she wants to run already?’
- (19) 這張照片還是我考小學的時候照的呢。
zhe zhang zhaopian hai shi wo kao xiaoxue de shihou zhao de ne.
 this CL photo HAI COP 1SG exam elementary-school ASSOC
 time take NOM MP
 ‘As for this photo, it was taken when I was taking the exams for the elementary school.’
- (20) 你還是哥哥呢，帶著弟弟淘氣！
ni hai shi gege ne, dai-zhe didi taoqi!
 2SG HAI COP older-brother MP, lead-DUR younger-brother do-
 mischief
 ‘(It’s outrageous that) you, being the older brother, lead your younger brother to do mischief!’

In Example 18, the sense of concession emerges pragmatically in what can be inferred from the contrast between the two clauses with the help of knowledge of the world. Thus, the extra-linguistic knowledge that walking pertains to a more fundamental developmental stage than running is at work to allow the inference that one should not attempt to run before one can walk. The adverb *jiu* in the second clause, meaning ‘already, earlier than expected’, also contributes to the sense of concession. The role of *hai*, again, is to assert that the person’s ability to walk is construed as being somewhere in the open range of ‘walking unsteadily’ and nowhere beyond that. In Example 19, likewise, the inference of temporal remoteness relies on the pragmatic information about the temporal remoteness of the period of time specified by ‘when I was taking the exams for elementary school’. The adverb *hai* simply instructs the hearer to consider the age of the photo as being located somewhere on the time span being thus described and no more recent than that. The hearer, given the knowledge of the speaker’s current age, will be able to draw the conclusion of ‘temporal remoteness’ which is not the meaning of *hai*, but a message conveyed by the interaction of multiple factors – linguistic and extra-linguistic. The sense of moral indignation in Example 20 arises in the pragmatic incongruity inferred from the mere

juxtaposition of the first statement ‘you’re older brother’ and the second ‘you lead your younger brother to conduct mischief’. The first statement reminds the hearer of the obvious fact about his socio-cultural standing in the familial hierarchy, and the second recognises an offensive behaviour which is inadequate for the socio-cultural standing. The pragmatic incongruity is understood with the help of the underlying knowledge of particular cultural expectations of the older brother with regard to moral duties. The use of *hai* contributes to this incongruity by asserting that the hearer’s place in the familial hierarchy is perceived to be consistent with the socio-cultural status of elder brother and not lower than this. This assertion makes more obvious the moral questionability of the hearer’s deed, as stated in the second clause.

In all of these examples, we note that *hai*, with the meaning PAN-SPECTIVE perceptual range, conveys the sense of ‘somewhere in this range and nowhere beyond it’. This conveyance is only possible because a PAN-SPECTIVE perceptual range rejects the sense of a rupture or inconsistency, understood as ‘beyond’ the perceptual range being communicated. It is also noteworthy that *hai* is used with the imperfective suffix *-ne* in all three sentences, suggesting the unbounded nature of the situation being introduced by *hai*. As our data on *hai* have demonstrated, the strongest type of *hai* is one that is used in the non-past and with an unbounded entity, followed by one with an unbounded entity regardless of the time reference. This collocational preference is motivated by the semantic compatibility of the schematic meaning of *hai* with the meaning of the imperfective marker.

This line of argument also explains a number of observations made by Ma in which *hai* is subject to restrictions. First, as has been discussed in Section 2, *hai* cannot be used in a sentence containing two different time frames, as in Example 11, which is reintroduced here as Example 21. Yet if the two time frames are explicitly integrated as part of one broader time frame, the use of *hai* can be saved, as in Example 12, which is reintroduced here as Example 22:

- (21) 他去年去了英國，今年*還/又去了法國。
*ta qunian qu le Yingguo, jinnian *hai/you qu le Faguo.*
 3SG last year go PFV PN this year YOU go PFV PN
 ‘He went to England last year, and this year he went to France.’
- (22) 他這兩年老出國，去年去了英國，
ta zhe liang nian lao chuguo, qunian qu le Yingguo,
 3SG this two year always exit-country last year go PFV PN
 ‘These years he’s travelled abroad a lot, last year he went to
 England
 今年還/又去了法國。
jinnian hai/you qu le Faguo.
 this year HAI/YOU go PFV PN
 and this year he went to France.’

The integration of two different time frames is a pan-spective manoeuvre of putting two distinct entities into one perceptual range, thus matching the meaning of *hai*.

Another observation by Ma is that *hai* cannot be used with a verbal phrase that contains a resultative complement, whereas *zai* and *you* can be used felicitously with such a structure, as in Example 23, which is adapted from Ma, (2000: 10, Example 30a/b):

- (23) 這件衣服要是*還/再/又穿破了，你可別來擾我。
*zhe jian yifu yaoshi *hai/zai/you chuan-po-le, ni ke bie lai rao wo.*
 this CL dress if *HAI/ZAI/YOU wear-broken-PFV 2SG but NEG
 come bother 1SG
 ‘If this dress gets worn again, don’t you come and bother me with it.’

The reason for *hai*’s failure to accommodate a resultative verbal phrase in Example 23 is that the utterance contains two distinct time frames. The time frame in which the statement is uttered and the time frame in which the hypothetical event is envisaged by the speaker are discontinuous. It is this discontinuity that is semantically incompatible with the pan-spective meaning of *hai*. Resultative verbal phrase may or may not play a role here.⁷

In a similar vein, *hai*’s preference for unbounded entities also explains Shen’s (2006: 127) observation that (a) *hai* cannot be used in the imperative for the issuance of a request, for which *zai* is the proper adverb, but (b) *hai* can be used in a sentence that echoes a preceding imperative sentence. Consider Shen’s two examples:

- (24) 唱了一個，再/*還唱一個!
*chang-le yi-ge, zai/*hai chang yi-ge!*
 sing-PFV one-CL ZAI/*HAI sing one-CL
 ‘You’ve sung a song, sing another one!’
- (25) (什麼？唱了一個) 還唱一個？
(shenme? Chang-le yi-ge) Hai chang yi-ge?
 what sing-PFV one-CL HAI sing one-CL
 ‘(What? I sang a song and) I should sing one more?’

⁷ One reviewer provided the following sentence in which *hai* is perfectly compatible with a resultative structure:

ciwai, ben jie bisai hai dapo le ji xiang ouzhou jilu.
 this aside, this CL contest HAI break PFV several European record
 ‘In addition, this contest broke several European records.’

Note that the event being discussed here involves only one time frame – the one within which the contest is located. This confirms the observation that the global temporal structure of the event is a more reliable predictor of the use of *hai* than the lexical meaning of the verbal predicate.

Note that the speaker in Example 24 issues a request and that the speaker of Example 25 reacts to the request, and their real-world perspectives are very different. The requester's goal here is to receive an extra performance from the performer, one that is worth looking forward to. Therefore, his preferred way to make the request is to construe the added performance not only as a pro-spective entity, but as a special entity that is distinct from the previous performance. This requires the use of *zai* which is a signal of PRO-SPECTIVE perceptual range and as such strongly prefers a bounded entity. By contrast, the performer, congruent with his pronounced disbelief at the request, perceives his own performance in its entirety; the demanded addition of a song is seen as an indistinct extension. Thus, *hai* which signals PAN-SPECTIVE perceptual range and prefers an unbounded entity well suits this view.

5.2 The meaning of *you* and its pragmatic inferences

Let us now turn to *you* and see how its schematic meaning RETRO-SPECTIVE perceptual range influences the messages where it is used. Again Liu *et al.*'s list of denotations is reintroduced here:

you:

- (i) repetition of an action, past
- (ii) simultaneity of two situations or qualities
- (iii) succession of actions
- (iv) intensification of illocutionary force

The meaning of RETRO-SPECTIVE perceptual range claims that the entity being communicated is available to the speaker as part of his experience at the moment of communication. On the grounds of this experiential availability, the first three denotations in the above list can be easily reconciled. Consider Examples 26 to 29:

- (26) 這份試卷張老師看了一遍，李老師又看了一遍。
zhe fen shijuan Zhang laoshi kan le yibian, Li laoshi you kan le yibian.
 this CL test PN teacher look PFV once PN teacher YOU look PFV once.
 'As for this test, Teacher Zhang read it, and then Teacher Li read it.'
- (27) 周末又到了，你又能跟你的好朋友見面了。
zhoumo you dao le, ni you neng gen ni de hao pengyou jianmian le.

weekend YOU arrive CRS, 2SG YOU can with 2SG ASSOC good
 friend meet CRS
 ‘It’s weekend again, you can meet with your good friend again.’

- (28) 聽說我要到中國來學習，媽媽高興，又不高興。
ting shuo wo yao dao Zhongguo lai xuexi, mama gaoxing, you bu gaoxing.
 hear say 1SG want arrive China come study mother happy YOU
 NEG happy
 ‘Upon hearing that I’m coming to China to study, my mother is
 both happy and unhappy.’
- (29) 孩子們唱了一個歌，又跳了一個舞。
haizi-men chang le yi zhi ge, you tiao le yi ge wu.
 child-PL sing PFV one CL song YOU jump PFV one CL dance
 ‘The children sang a song and then performed a dance.’

All the added entities introduced by *you* are experientially available and may be looked ‘back’ upon. These include those that may seem to belong to non-past temporal frames. Example 27, for instance, communicates a future entity as part of a predictable conventional cycle. Thus, the meaning RETRO-SPECTIVE perceptual range is able to explain not only the perfective events in Examples 26 and 29, as marked by *-le*, but also the imperfective situations in Examples 27 and 28. The unitary explanation has the effect that the differences between the examples in terms of temporal reference, (e.g., Example 26 v. Example 27), or whether an action is performed by the same agent or not, (e.g., Example 26 v. Example 29), or whether a state of being is experienced by the same person, (e.g., Example 28), are overcome as differences at the level of contextual message. Thus, repetition (denotation (i)), simultaneity (denotation (ii)) and succession (denotation (iii)) are treated as related messages derived from one and the same schematic meaning.

Let us now consider the use of *you* for the purpose of ‘intensifying illocutionary force’ (denotation (iv)) in light of its schematic meaning. Examples 30 to 32 are given by Liu *et al.*:

- (30) 有件事想告訴你，又怕你不高興。
you jian shi xiang gaosu ni, you pa ni ting le bu gaoxing.
 have CL matter desire tell 2SG YOU fear 2SG hear PFV NEG
 happy
 ‘I’ve got something to tell you, yet I fear that you’ll be unhappy
 when you hear it.’
- (31) 現在，你身上這套衣服的款式已經是普通又普通了。
*xianzai, ni shen shang zhe tao yifu de kuanshi yijing shi putong
 you putong le.*

now 2SG body up this CL clothes ASSOC style already COP
 common YOU common CRS
 ‘Nowadays, the style of the clothes you’re wearing is already
 extremely common.’

- (32) 路又不遠，何必要坐車去呢？
lu you bu yuan, hebi yao zuo che qu ne?
 way YOU NEG far, why necessary want take vehicle go Q
 ‘It’s really not the case that it’s far away, why do we have to take
 a ride?’

The use of *you* in Example 30 is said to reinforce the contrast between the two clauses connected by *you*. However, this message really is an inference from the interaction of the meanings of the two clauses and the use of *you*. The two clauses express a contradiction of ideas independent of any connector. The first one expresses a wish as described by *xiang* ‘desire’ and the second a worry described by *pa* ‘fear’. By introducing the worry as an addition to the wish, *you* makes it clear that the added emotion is a distinct entity. Moreover, the use of *you* requests that the worry be thought of as already available to retrospection in the speaker’s experience. The equal experiential availability thus calls for the hearer’s attention to the presentation of the two distinct ideas as constituting a dilemma.

The use of *you* in Example 31 to add a reduplication to the adjective serves to increase the degree of the quality described by the adjective by creating the MORE OF FORM IS MORE OF CONTENT metaphor as explicated by Lakoff and Johnson (1980: 127). The use of *you* can enable such a metaphor because it treats the quality described by the adjective *putong* ‘common’ as a bounded quantifiable entity available to the speaker’s retrospection.

Example 32 is interesting in its own way. Here, the use of *you* does not introduce an extra entity in reality, but construes the situation being described as if it were an addition to something. Furthermore, this function of *you* always involves a negative entity, or a denial of a proposition. At the pragmatic level, we need to seek explanation for the pseudo-addition of the negation. It is also important to note that the negation of the proposition serves as a pre-emption of a potential condition under which the opposite of what the speaker asserts in the adjacent clause could be true, (e.g., ‘if it were the case that it is a long way to go, we might have had to take a ride’). By using *you*, the speaker construes the pre-emption of the potential circumstance as an additional argument to the assertion he makes in the adjacent clause. Moreover, this addition is made available for retrospection. Thus, the addition of an entity signalled by *you* occurs not at the propositional level, but at the discursive level, e.g., the message it conveys can be formulated as ‘I shall add the fact for your retrospection that it is not the case. . .’ This pseudo-addition strategy may have given rise to the message that *you* strengthens the illocutionary force of the negation. However, what it

really reinforces is not the negation, but the adjacent assertion across the boundary of the clause. In the narrative (corpus W), we examined those expressions in which this use of *you* was observed. In contrast with the introspective data, such as Example 32, the negative clause with *you* is (a) consistently (i.e., on eleven out of eleven occasions) the non-initial clause of a sentence—that is, as a follow-up argument or reinforcement and (b) consistently (i.e., on eleven out of eleven occasions) part of a confrontational discourse. Consider, for example, the discourse in Example 33, taken from corpus W:

- (33) (a) “你就等著我說這句話呢吧？”
“ni jiu deng-zhe wo shuo zhe ju hua ne ba?”
 2SG just wait-DUR 1SG say this CL word IMP Q
 ‘Aren’t you waiting for me to say this word?’
- (b) 你就逼著，折磨我好讓這話從我嘴里說出來呢吧？”
ni jiu bi-zhe, zhemo wo hao rang zhe hua cong wo zui li shuo chulai ne ba?”
 2SG just force-DUR, torture 1SG thus let this word from 1SG mouth inside say out IMP Q
 ‘You forced me and tortured me so that this word would get said out of my mouth?’
- (c) 杜梅惡狠狠地逼到我面前，“你早盼著跟我離婚呢吧？”
Dumei ehenhendi bi dao wo mianqian, “ni zao pan-zhe gen wo lihun ne ba?”
 PN aggressively press to 1SG face front 1SG early hope-DUR with 1SG divorce IMP Q
 Dumei pressed on towards me aggressively, ‘You’ve long since been looking forward to divorcing me?’
- (d) 一天到晚琢磨的就是這個。”
yi tian dao wan zuomo de jiu shi zhe ge.”
 one day to night ponder NOM just be this CL
 ‘That’s what you keep thinking about from morning to night.’
- (e) “到底誰逼誰啊？又不是我先說的離婚。”
“daodi shei bi shei a? you bu shi wo xian shuo de lihun.”
 to bottom who force who Q YOU NEG be 1SG first say NOM divorce
 ‘Who the heck forced whom? (I shall add the fact for your retrospection that) it was not me who first talked about divorce!’

In Example 33e, the speaker refutes a claim made by his interlocutor in the preceding discourse by using a non-informational question to call that claim into question. This speech act is reinforced by the pre-emption of a hypothetical condition under which the refutation could be invalidated. Both the position of the clause with *you* within the sentence and the

confrontational nature of the discourse are non-arbitrary, but consistent with the schematic meaning of *you* and its corresponding function to introduce a discursive reinforcement. This example shows the extent to which the schematic meaning can be exploited in communication. Apparently, the gap between the schematic meaning and the contextual inference is vast and it would be a mistake to confuse the two.

5.3 The meaning of *zai* and its pragmatic inferences

In what follows, we shall concentrate on *zai* with regard to the contextual inferences its schematic meaning motivates in communication. Below is the list of *zai*'s denotations in Liu *et al.*:

zai:

- (i) repetition or continuation of an action, future
- (ii) postponing an action
- (iii) increasing degree or extent

As the meaning of PRO-SPECTIVE perceptual range claims, and as our quantitative data on the distributions of *zai* have confirmed, *zai* prefers non-past events and disprefers past events. This meaning allows the inference that *zai*, by default, is used to refer to future events. Furthermore, when *zai* introduces an additional entity, whether the addition is a repetition, continuation, or a postponed realisation of a given entity depends on the context, as in Examples 34 to 36:

- (34) 你如果還有困難，明天*還/*又/再來。
*ni ruguo hai you kunnan, mingtian *hai/*you/zai lai.*
 2SG if HAI have difficulty tomorrow ZAI come
 'If you still have difficulties, come again tomorrow.'
- (35) 他？還/*又/再不來，咱們就不等了。
*ta ?hai/*you/zai bu lai, zanmen jiu bu deng le.*
 3SG ZAI NEG come 1PL-INCL just NEG wait CRS
 'If he still doesn't come, we'll stop waiting for him.'
- (36) 你讓我辦的事，等我病好了*還/*又/再給你辦。
*ni rang wo ban de shi, deng wo bing hao le *hai/*you/zai gei ni ban.*
 2SG let 1SG handle NOM matter wait 1SG sick good PFV ZAI
 BNF 2SG handle
 'The thing you asked me to do, I'll do it for you when I've recovered from my illness.'

It is unnecessary to postulate separate denotations to reflect the contextual variation between repetition, continuation and postponing. The employment of the schematic meaning as the sole semantic input never takes place in a pragmatic vacuum. Rather, redundant contextual cues and real-world knowledge always facilitate the inference of particular messages. Thus, in Example 34, the use of *zai* indicates that the time reference signalled by *mingtian* ‘tomorrow’ is regarded by the speaker as distinct from the moment of speech, and the action denoted by *lai* ‘come’ is bounded to this time frame. This indication is consistent with the speaker’s intention as can be inferred from the first clause of this sentence. By specifying the unique condition under which the future action is deemed appropriate, the speaker intends to set the action within temporal boundaries. In other words, the condition expressed in the first clause is a bounding factor imposed on the event referred to in the second clause. By contrast, because *hai* does not signal any bounding, its use in this sentence would indicate that the event ‘come’ is considered continuous from the moment of speech to the future time referred to by ‘tomorrow’. Such a message, however, is incompatible with what the speaker intends to say with the whole sentence containing a bounding condition. Note that without the first conditional clause, either *hai* or *zai* could be felicitously used in the second clause. This example shows how the speaker’s intention constrains the selection of meaning.⁸ The reason why *you* is bad in this sentence is the obvious mismatch of future time frame and *you*’s retro-spective meaning. Note that denotation (i) fails to explain why *hai* cannot replace *zai* because it does not entail bounding which, as our quantitative data suggest, is an important semantic aspect that sets the two morphemes apart. The same point can be made with regard to Examples 35 and 36.

As for denotation (iii), *zai* is alleged to resemble the word *geng* ‘more’ expressing superiority in degree. Recall that the same thing has been said of *hai* in Liu *et al.* (2001). Yet as soon as we see exactly how *zai* is used in association with the enhancement of degree, we will realise that the resemblance is tenuous, if not absent altogether. Consider the conversation in

⁸ One of the reviewers observed that both *hai* and *zai* can be used in a sentence like *ta shuo ta mingtian hai/zai lai* ‘He said he’d come again tomorrow.’ If *zai* is used, the sentence can have two readings, (i) repetition (e.g., he came today and will come again tomorrow) or (ii) postponement (e.g., he did not come today but will tomorrow). If, however, *hai* is used, there can be only one reading, namely repetition. This can be explained by the meanings we postulate for *hai* and *zai* and how they may be contextually exploited. Since *hai*, being pan-spective, entails continuity, it is impossible for it to conjoin two events as distinct as a non-event (i.e., ‘did not come’) and an event (i.e., ‘come’). However, it is perfectly possible for it to connect two instances of the same action across two time frames. In this case, the two time frames are seen as continuous. In contrast to *hai*, *zai* entails boundary and when it connects two events, the two events are always seen as distinct entities. These can be a non-event and an event or two distinct instances of the same event within two distinct time frames. This example demonstrates that, even though two linguistic signs may appear to be interchangeable in use, they do not have the same meaning. On the contrary, they describe entirely different experiences and intentions, though the difference may be as subtle as a person’s perspective regarding one and the same truth-condition.

Example 37, attested in corpus W, where *geng* and *zai* are used in non-free variation:

- (37) S1—“我們醫院漂亮姑娘多了，還有更/*再好的呢。”
 “... *women yiyuan piaoliang guniang duo le, hai you geng/*zai hao de ne.*”
 1PL hospital pretty girl many CRS still have more good NOM MP
 ‘There’re many a pretty girl in our hospital, we have even better ones (than this one).’
- S2—“好的再/*更多，也得一個個來。”
 “*hao de zai/*geng duo, ye dei yi-ge-ge lai.*”
 good NOM ZAI many, also must one-CL-CL come
 ‘No matter how many of them there may be, I have to take on them one by one.’

The first speaker (S1) uses *geng* to enhance the degree of *hao* ‘good’ and the second speaker (S2) uses *zai* to enhance the degree of *duo* ‘many, much’. The two uses are not freely interchangeable because the two signs possess different schematic meanings. The word *geng*, we propose, signals that the superiority in degree being communicated is a knowledge that is available to the speaker. By contrast, the word *zai* which signals PRO-SPECTIVE perceptual range indicates that the superiority in degree being communicated is as yet unavailable to the speaker, but that the speaker is willing to entertain the prospect of its truthfulness as offered by the interlocutor. Thus, as our translation of S2 shows, *zai* conveys a hypothesised indefinite potential and must therefore be differentiated from *geng*. This differentiation, needless to say, is enabled by the schematic meaning of *zai*. Furthermore, the meaning of *zai* is compatible with the notion of a subjunctive mood that is often associated with the use of *zai*. However, just as *zai* is not limited to the future tense, it is not limited to the subjunctive mood.

6. Concluding remarks

In this study, we have proposed that the three adverbs *hai*, *you* and *zai* are members of the semantic system of Location of Additional Entity in Speaker’s Perceptual Range. Within this system, the three words stand in semantic contrast: *hai* signals that the additional entity being introduced is viewed in a PAN-SPECTIVE perceptual range, *you* signals that the additional entity being introduced is viewed in a RETRO-SPECTIVE perceptual range, and *zai* signals that the additional entity being introduced is viewed in a PRO-SPECTIVE perceptual range.

The schematic meaning that we postulate for each word is the sole semantic input that it contributes to the conveyance of a concrete message in communication. Contextual cues, as well as extra-linguistic, encyclopedic

knowledge, are necessary for bridging the inferential gap between the schematic meaning and the message.

Based on the schematic meanings, we have made predictions with regard to the distributions of the three words in authentic language use. Specifically, we predicted that the occurrences of the three words will covary with regard to: (a) the boundedness of the entity, (b) the time reference associated with the entity, and (c) the broader discourse type in which the adverb is used to introduce an additional entity. To test these predictions, we conducted a multifactorial analysis of the data obtained from two corpora, and the results of the analyses have confirmed all the predictions. This supports the hypothesis of the System of Location of Additional Entity in Speaker's Perceptual Range consisting of the three words with their corresponding schematic meanings. Furthermore, we have succeeded in showing that the various denotations proposed by other researchers really are contextual inferences motivated by the schematic meanings as the singular semantic input made by the respective words. In so doing, not only were we able to lift the descriptive obfuscation surrounding the fractional view of meaning that treats every inference as a distinct denotation, but, more importantly, we were able to explain the apparently distinct denotations by giving them a deeper semantic and conceptual grounding. This unitary treatment overcomes the fundamental weaknesses of previous approaches as stated in Section 2: the issue of validating the analysis on the basis of empirical data other than intuition as well as the arbitrariness of the connections between senses of one word and across a range of words. As we noted under Section 4.1, the conclusions we have arrived at in this study should be treated as tentative, given the size of our corpora, and we await further support in the future.

In addition to the above, we would like to conclude by also pointing out the importance of empirical methodology. We submit that this study has two advantages over many previous works. The first advantage is that it is based on the analysis of authentic data as opposed to our intuitions as to what can be said and what cannot. However, while there is a growing number of quantitative corpus-based studies, we submit that the choice of appropriate quantitative methods is also particularly important. Thus, the second advantage is that the present study addresses a multifactorial phenomenon quantitatively and multifactorially as opposed to just with separate monofactorial tests. Both of these advantages are crucial because even moderately complex interrelations quickly defy intuitive analysis, which is why intuitive analysis benefit from additional, more rigorous empirical approaches (see, for example, Gries, 2002; or Hoffmann, 2006). We hope to have shown, also, that a multifactorial question and an empirical approach not only theoretically necessitate a multifactorial approach, but also benefit from it: it is only by taking into consideration multiple (higher-order) interaction that has allowed us to discern (i) which of the higher-order interactions are in fact significant and important and (ii) which of the higher-order interactions are not and thus allowed us to formulate, for example, generalisations across corpora. We therefore hope to stimulate further studies along just these lines.

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Appendix A: Abbreviations in glosses

ASSOC	associative
BNF	benefactive
CL	classifier
COM	complement
COP	copula
CRS	current relevant state marker
DUR	durative
IMP	imperfective
MP	modal particle
NEG	negator
NOM	nominaliser
PFV	perfective
P	particle
PL	plural
PN	proper name
1PL	first person plural
1PL-INCL	first person plural inclusive
1SG	first person singular
2SG	second person singular
2SG-POL	second person singular polite form
3SG	third person singular
Q	question
HAI	the adverb <i>hai</i>
YOU	the adverb <i>you</i>
ZAI	the adverb <i>zai</i>

Appendix B: Statistical results for *you* and *zai*Types and antitypes for *you*

<i>Obs-exp</i>	<i>Corpus</i>	<i>Temporal reference</i>	<i>Entity type</i>	$P_{\text{Holm-adj}}$	Q
>	–	past	bounded	6.24E-033	0.13
>	narrative	past	bounded	4.80E-038	0.13
>	narrative	past	–	5.3E-019	0.12
>	–	past	–	1.75E-012	0.11
>	narrative	–	bounded	2.35E-012	0.10
>	–	–	bounded	6.32E-008	0.09
>	narrative	–	–	4.89E-003	0.07
<	–	non-past	–	6.21E-010	0.13
<	–	non-past	unbounded	3.71E-007	0.10
<	narrative	non-past	–	9.01E-005	0.07
<	–	–	unbounded	2.41E-004	0.06
<	non-narrative	–	–	2.63E-005	0.06
<	–	non-past	bounded	7.47E-006	0.05
<	non-narrative	non-past	–	6.26E-005	0.05
<	non-narrative	–	unbounded	2.18E-005	0.05
<	narrative	–	unbounded	1.09E-002	0.04
<	narrative	non-past	bounded	1.95E-003	0.03
<	–	past	unbounded	5.7E-003	0.03
<	non-narrative	non-past	unbounded	9.73E-003	0.03
<	non-narrative	non-past	bounded	4.04E-002	0.02
<	non-narrative	past	unbounded	1.32E-002	0.02

Appendix B (*continued*): Statistical results for *you* and *zai*Types and antitypes for *zai*

<i>Obs-exp</i>	<i>Corpus</i>	<i>Temporal reference</i>	<i>Entity type</i>	$p_{\text{Holm-adj}}$	Q
>	–	–	bounded	3.93E-007	0.07
>	–	non-past	bounded	4.14E-008	0.07
>	non-narrative	–	bounded	3.06E-005	0.04
>	non-narrative	non-past	bounded	4.41E-006	0.04
>	non-narrative	non-past	–	5.94E-003	0.04
>	–	non-past	–	4.62E-002	0.03
>	narrative	–	bounded	1.04E-002	0.03
>	narrative	non-past	bounded	1.24E-002	0.03
<	–	–	unbounded	8.99E-007	0.08
<	narrative	–	unbounded	4.54E-005	0.05
<	–	non-past	unbounded	3.12E-003	0.04
<	narrative	non-past	unbounded	2.42E-003	0.04
<	–	past	unbounded	1.13E-003	0.03
<	–	past	–	1.03E-002	0.03
<	non-narrative	past	unbounded	2.45E-002	0.01

Appendix C: Genres and total tokens of the UCLA corpus

<i>Code</i>	<i>Genre</i>	<i>Tokens</i>
A	Press: reportage	84,302
B	Press: editorials	25,155
C	Press: reviews	32,223
D	Religion	5,885
E	Skills, trades and hobbies	8,925
F	Popular lore	24,854
G	Essays and biographies	71,169
H	Misc. (reports and official documents)	65,705
J	Academic prose	27,652
K	General fiction	40,999
L	Mystery and detective stories	85,317
M	Science fiction	60,378
N	Adventure stories	55,253
P	Romantic fiction	66,849
R	Humour	32,968
	Total number of tokens	687,634
	Total number of types	32,212