

Understanding as a type of knowledge: Evidence from Mandarin and Cantonese

Abstract

The knowledge account of understanding is challenged by cases in which understanding is provided by idealisations that are approximately true yet strictly false. ‘Understand’ in English has both factive and non-factive uses, also casting doubts on whether understanding is a type of knowledge. Understanding exhibits both factive and non-factive features in its linguistic uses and attribution, which I call *the factivity tension* of understanding. This paper conducts a linguistic investigation of the use of ‘understand’ in Mandarin and Cantonese to examine the factivity tension and further defend the knowledge account. The linguistic investigation suggests that ‘understand’ is only used as a non-factive when it denotes the process of understanding, which is trying to understand some true content via some non-factive basis. Understanding can only be achieved by such a process when the target content is true, and the basis is approximately accurate. Since knowledge also allows approximately accurate but strictly false bases, understanding and knowledge stand or fall together. The factivity tension does not reject the knowledge account of understanding

Keywords: understanding, knowledge, explanation, cognitive factives, truth

Data availability: All linguistic examples are drawn from publicly available language corpora—Corpus of News on the Web (NOW): <https://www.english-corpora.org/now/> and the Center for Chinese Linguistics (CCL) Corpus: http://ccl.pku.edu.cn:8080/ccl_corpus/

1 INTRODUCTION

One main view of understanding in the current literature is the knowledge account—understanding is a type of knowledge (Grimm, 2006; Kelp, 2015; Riaz, 2015; Sliwa, 2015). This knowledge account faces a persistent challenge arising from what I call *the factivity tension* of understanding: both our ordinary attributions of understanding and the use of the verb ‘understand’ in everyday English display a mixture of factive and non-factive features. The paper examines the factivity tension through a linguistic investigation of words translated as ‘understand’ in Cantonese and Mandarin, based on which I defend a novel knowledge account against the factivity tension.

1 The factivity tension is first exhibited in our attributions of understanding. On the one
2 hand, we cannot attribute understanding if the content is massively mistaken. One does not
3 understand that Donald Trump is the Prime Minister of the UK, since he is not. Nor does one
4 understand why humans need food if one believes that food merely provides good luck that
5 enables survival. On the other hand, understanding might include falsehoods (de Regt, 2017;
6 Doyle et al., 2019; Elgin, 2007). We understand the behaviour of actual gases based on the
7 ideal gas model, which is approximately true but strictly false in terms of actual gases. Children
8 believe that human beings evolved from gorillas, though this is false; we nevertheless attribute
9 an understanding of evolution to them (Elgin 2007). Non-factivists conclude that understanding
10 is non-factive and thus is not a type of knowledge (Elgin 2007).
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18 A parallel tension arises in daily language. In English, ‘understand’ exhibits both
19 factive and non-factive uses. In constructions such as ‘S understands that *p*’, ‘S understands
20 why *p*’, and ‘S understands O’, the complements are entailed to be true or real. However,
21 ‘understand’ also has four non-factive constructions: (1) ‘S understands A as B’; (2) ‘What S
22 understands is that *p*’; (3) ‘The way S understands O’; and (4) ‘S’s understanding is that *p*’.
23 Other factive verbs, such as ‘know’, ‘discover’, and ‘realise’, do not have these non-factive
24 uses. Why does ‘understand’ have factive and non-factive uses?
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31 This paper examines the factivity tension by conducting a linguistic investigation of
32 ‘understand’ in Cantonese and Mandarin. Different from ‘understand’ in English, Cantonese
33 and Mandarin both have two words that are translated as ‘understand’, one is strictly factive,
34 and the other allows the same non-factive uses as ‘understand’ in English. A further
35 investigation into different uses of the two words suggests a state-process distinction of
36 understanding. ‘Understand’ is used as a factive verb when it denotes the state of understanding.
37 The state of understanding is a factive mental state towards some true *target content*. The target
38 content of understanding that *p* is the true proposition that *p*. The target content of
39 understanding why *p* is correct answers of why *p*. The target content of understanding of O is
40 true propositions related to O. By contrast, ‘understand’ can be used as a non-factive when it
41 denotes the process of understanding. The process of understanding is trying to understand the
42 target content *based on* some background idea or beliefs that might be false. Such a process
43 can only succeed in achieving the state of understanding (so that we can replace the non-factive
44 Chinese verb with the factive one) if the basis is accurate enough. For instance, one might use
45 the energy balance model (as the basis) to understand that global warming is caused by
46 greenhouse gases (the *target content*). As the model is strictly false but accurate enough
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1 in terms of the real climate system, the process succeeds, and the state of understanding is
2 achieved.

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4 The linguistic investigation suggests that understanding is a three-place relationship
5 between the subject, the target content, and the basis. While the target content must be true, the
6 basis might only be approximately accurate but strictly false. Understanding thus does not
7 require that knowledge of some true target content plus knowledge of true theories, models, or
8 other types of representations as its basis. Rather, understanding is knowledge of the target
9 content that is achieved upon an accurate enough basis. At the same time, bases that are not
10 accurate enough cannot achieve understanding. I further argue that, as knowledge can be based
11 on an accurate but strictly false basis as well, understanding and knowledge both tolerate
12 strictly false bases, the factivity tension cannot reject the knowledge account.

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14 This paper defends the knowledge account specifically against the factivity tension. It
15 does not address other challenges in the literature, such as whether understanding is compatible
16 with epistemic luck (Hills, 2016; Pritchard, 2016) or whether understanding is a type of
17 inferential competence rather than propositional knowledge (Hills, 2016). Nevertheless, it is
18 worth noting that inferential competence can be exercised to completely false content: for
19 example, one may draw inferences from misinformation while still failing to achieve any
20 understanding, since the content is false. The examination of the factivity tension in this paper
21 also offers suggestions to proponents of the competence account, suggesting the need to add a
22 truth condition to their account understanding.

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24 Section 2 lists the factive and non-factive uses of ‘understand’ in English. Section 3
25 introduces the Mandarin and Cantonese words translated as ‘understand’. Sections 4 and 5
26 examine their factive and non-factive constructions, respectively. Section 6 argues that the
27 word that denotes the state of understanding is always factive, whereas the word that denotes
28 the process of understanding has both factive and non-factive uses, indicating that the state of
29 understanding is a factive mental state achieved through the process of trying to understand
30 some true content via a non-factive basis. Section 7 uses the state–process distinction to defend
31 the knowledge account of understanding.

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33 This analysis is based on the following corpora. Examples of ‘understand’ in English
34 are taken from *Corpus of News on the Web* (NOW) (Davies, 2016), a corpus that contains 10
35 billion words from web-based newspapers and magazines. Mandarin examples are taken from
36 the Centre for Chinese Linguistics Online Corpus (CCL) (*The Center for Chinese Linguistics*
37 (*CCL*) *Corpus*, 2009). For Cantonese, due to the limited size of its corpora at this moment,
38 examples are selected from posts on LIHKG (<https://lihkg.com/>), one of the most widely used

1 online discussion forums in Hong Kong.¹ I have also sought confirmation on acceptability
2 judgments from native Mandarin and Cantonese speakers.

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4 There are two reasons to include evidence from Mandarin and Cantonese. First, they are
5 extensively different from English. Second, Mandarin and Cantonese also differ significantly
6 from each other in terms of grammar and vocabulary. While Mandarin and Cantonese are
7 related, they aren't mutually comprehensible. It has been debated whether they should be
8 considered distinct dialects of a single language or separate languages.² A linguistic study
9 covering English, Mandarin, and Cantonese can therefore provide more cross-linguistically
10 robust insights into the nature of understanding.

11 2 FACTIVE AND NON-FACTIVE USES OF 'UNDERSTAND' IN ENGLISH

12 If 'S Φ s that p ' entails that p , Φ is a factive verb.³ Although linguists and philosophers typically
13 treat 'understand' as factive, its factivity is more mixed than is often assumed. On the one hand,
14 in some constructions, 'understand' is strictly a factive verb and always entails its complements.
15 'S understands that p ' always entails that p . 'S understands why p ' entails that p is true, and
16 that S has correct answers to why p . 'S understands the object O' entails that O exists. I will
17 call these three constructions *the basic factive constructions* of 'understand'.

18 When 'understand' triggers factivity entailment in 'S understands that p ', it cannot be
19 cancelled, as shown in the following examples:

- 20 (1) # Anna understands that her friend is upset, but in fact, her friend is not upset.

21 The following sentences are also infelicitous:

- 22 (2) # Judy understands why global warming happens, though there is no global
23 warming

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¹ Our Cantonese data are drawn exclusively from data collected in Hong Kong. Cantonese is not a homogeneous variety but comprises several major sub-varieties that differ to some extent in grammar and vocabulary. For example, Cantonese spoken in Guangxi Province, China, diverges substantially from the one used in Hong Kong. Due to the limited time and space, this paper focuses only on Guangfu Cantonese, the type of Cantonese widely spoken in Guangdong Province, Macau, and Hong Kong.

² There are concerns about how Mandarin has been influenced by European languages regarding its vocabulary, grammar, and speaking styles. Grammatical similarities between Mandarin and English may be a consequence of such a process. However, Cantonese preserves an extensive range of traditional styles of Chinese, including vocabulary and syntactic structure widely used in ancient Chinese. I will not get into details about these differences. But, given such concerns about Mandarin, I will include both Mandarin and Cantonese in my research for more convincing and diversified results.

³ Here, I will only discuss entailment but not presuppositions. I will not discuss whether the predicate will still trigger presuppositions under negation, questioning, and embedding under antecedents.

(3) # Judy understands why global warming happens, though he thought global warming is caused by too much oxygen in the atmosphere.

(4) # James understands the President of the UK.

‘Understand’ is used strictly as a factive in ‘S understands that *p*’, ‘S understands why *p*’, and ‘S understands *O*’.

On the other hand, ‘understand’ and ‘understanding’ have four non-factive constructions: (1) ‘What S understands is that *p*’; (2) ‘S understands A as B’; (3) ‘the way S understands *O*’; and (4) ‘S’s understanding is wrong’. Here, I will take the most general sense of ‘defactualization’ and call factive verbs that are used as non-factive in certain constructions or occasions as being *defactualized*. ‘Understand’ and ‘understanding’ are defactualized in those four constructions.

First, ‘What S understands is that *p*’ does not always entail that *p*. Consider the following example:

Pseudo-cleft construction:

(5) I asked him (a client) what had happened. “My boss told me I was stupid,” he said... He replied, “We discussed a project I was working on; I gave him my views, and he said my idea was a ‘no-brainer’.” I explained that ‘no-brainer’ in America is a slang expression meaning ‘complete agreement’. However, this commonly used US expression had been taken literally by my client, who is from Asia, and **what he understood was that** his boss thought he had no brain! (Chan, 2014)

The client mistakenly believes that his boss thought he had no brain. The writer knows that he misinterprets his boss’s words, yet the writer still uses the word ‘understand’.

Second, ‘S understands A as B’ does not always entail that A is B. I will call it *as construction*. See the following example:

As construction:

(6) There were those who believed that oil production would peak and begin to decline in the face of high global demand. This is essentially the peak oil argument, which many laymen mistakenly **understand as** ‘The world is running out of oil’. (NOW: Oil Price.Com, 2020)

The writer indicates that the peak oil argument should not be interpreted as running out of oil. However, many laymen mistakenly took it as such.

1 The third non-factive construction is ‘the way S understands O’. I will call it *the-way*
2 *construction*. Consider the example below:

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4 The-way construction:

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7 (7) To lose the earthly, however, is not in itself to despair, yet that is precisely what
8 this person speaks of and calls despair. What he says is in a sense true, but not **in**
9 **the way he understands** it. He is turned around and what he says must be
10 understood backwards. In other words, he stands there pointing to something that
11 is not despair (e.g. a loss of some kind), explaining that he is in despair, and yes,
12 sure enough, the despair is going on behind him but unawares. (*Provocations*,
13 2007)

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19 The writer holds that the subject is indeed in despair, but for reasons other than those the subject
20 takes himself to have. The subject is right about him being in despair. But the way he
21 ‘understands’ his despair is wrong.

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24 Finally, ‘S’s understanding is wrong’ is also felicitous. I call *this the nominalisation*
25 *construction*:

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28 Nominalisation construction:

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31 (8) He says students often share Trump's intuitive thinking about the economy, and
32 one of the big challenges that professors face is convincing them that **their**
33 **understanding is wrong**. (NOW: BBC, 2025)

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37 ‘Understand’ has factive and non-factive constructions. However, not all factives can
38 be defactualized in the above ways. For instance, we cannot replace ‘understand’ with ‘know’
39 in the above examples. ‘What S knows/realises/discovers/ is that *p*’ always entails *p*. Sentences
40 such as ‘A is mistakenly known/realised/discovered as B’; ‘S’s
41 knowledge/realisation/discovery is wrong’. ‘Something is true, but not in the way S S
42 knows/realises/discovers it’ is infelicitous.

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47 How to explain the factive and non-factive uses of ‘understand’? ‘Understand’ is not a
48 non-factive verb, as ‘S understands that *p*’ entails that *p*. However, ‘understand’ also has a
49 range of non-factive constructions that other factive verbs, such as ‘know’, ‘discover’, and
50 ‘realise’, do not share. How should we explain the special uses of ‘understand’? and more
51 importantly, at a metaphysical level, does understanding hold a truth condition the same as
52 knowledge?
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3 ‘KNOW’ AND ‘UNDERSTAND’ IN MANDARIN AND CANTONESE

In Mandarin, the verb ‘know’ is translated into *zhīdào* 知道.⁴ In Cantonese, ‘know’ is translated as *zil* 知/*zildou3* 知道.⁵ *Zil* 知 and *zildou3* 知道 are interchangeable in Cantonese. In the following discussion, *zhīdào* 知道 in Mandarin will be abbreviated as *Z_m*, and ‘*zil* 知/*zildou3* 知道 in Cantonese will be abbreviated as *Z_c*, where ‘m’ stands for Mandarin and ‘c’ for Cantonese.

In Mandarin, ‘understand’ is translated as *lǐjiě* 理解 or *míngbái* 明白. Both *lǐjiě* 理解 and *míngbái* 明白 in Mandarin are disyllabic compounds. Disyllabic compounds are very common in Mandarin Chinese—they make up more than 80 per cent of Chinese words (Lee, 2022). Disyllabic compound words are composed of two or more characters as their morphemic constituents. In English, the semantic relation between compounds and their constituents may or may not be transparent (Marslen-Wilson et al., 1994; Sandra, 1990). The semantic meaning of ‘classroom’ is transparent: it is derived from the meaning of its constituents ‘class’ and ‘room’. But the meanings of ‘butterfly’ and ‘corner’ are not obviously related to their constituents. By contrast, compounds in Chinese always have high semantic transparency—the constituent characters of Chinese compound words are semantic units carrying a part of the meaning of the compound words, and the meaning of the compound is always derived from its constituents. Recent neurolinguistic research further shows that Chinese compound word recognition relies on recognising the meaning of its morphemic constituents (Huang et al., 2011; Lee, 2022; Tsai et al., 2006). Experiments using ERP measures show that, when reading Chinese disyllabic compounds, a range of words that have the same first constituent character are activated to support the reader in recognising the meaning of the compounds.

Lǐjiě 理解 and *míngbái* 明白, while both are translated as ‘understand’, have different morphemic constituents. For ‘*lǐjiě* 理解’, its first constituent ‘*lǐ* 理’ denotes ‘the grain of jade’, ‘reason’, or ‘rationality’. ‘*Lǐ* 理’, used as a single word, originally denotes the natural grain or texture of jade, and is further metaphorically extended to denote ‘reason’ or ‘rationality’⁶. For instance, we can say ‘She refuses to stay up overnight to finish the work, because staff should not work overtime; this is the *lǐ* 理 (the reason)’. A natural translation is ‘The reason why she

⁴ The only exception is that ‘know’ in the sense of ‘know someone as an acquaintance’ is translated as ‘*renshi* (認識)’.

⁵ The exception is that ‘know’ used in ‘know how’ and ‘know someone as an acquaintance’ are both translated as ‘*sik* (識)’.

⁶ This metaphorical use may be less intuitive outside a Chinese cultural context. In classical Chinese thought, jade was frequently used as a metaphor for the morally and culturally cultivated gentleman. The smooth and warm texture of jade represents the virtue of humility; the clear, resonant sound of jade represents gentlemen’s artistic tastes; and its grain or pattern (*li* 理) represents gentlemen’s reasoning ability or good judgments. In this cultural context, *li* 理, as the natural grain or texture of jade, was later metaphorically used to denote reason or rationality.

refuses to stay up overnight to finish the work is that staff should not work overtime’. As a morphemic constituent, ‘*lǐ* 理’ can be used in ‘*jiǎnglǐ* 講理’ (talking-reasons; *being reasonable*), ‘*lǐxìng* 理性’ (reason-nature; *rationality*), ‘*dàolǐ* 道理’ (road-reason; *reasons*), and ‘*lǐlùn* 理論’ (reason-argue; *theory*). As for the second constituent, ‘*jiě* 解’ denotes ‘untie’ ‘solve’ and ‘explain’. ‘*Jiě* 解’ as a single word originally denotes ‘untie’ (e.g. a button, or a belt), and further metaphorically denotes ‘solve’ (e.g. a puzzle) and ‘explain’ (a situation). ‘*Jiě* 解’, as a morphemic constituent, can be used in compound words such as ‘*jiějué* 解決’ (solve-decide; *solve*), ‘*jiěshì* 解釋’ (explain-explain; *explain*), ‘*jiǎngjiě* 講解’ (talk-explain; *to explain orally*), ‘*qūjiě* 曲解’ (mistake-explain; *to misinterpret/to deliberately distort*). Taken morpheme by morpheme, ‘*lǐjiě* 理解’ can be glossed as ‘reason-explain’. A relevant word is ‘*lǐjiě lì* 理解力’ (reason-explain-power), denoting the ability of understanding.

‘*Míngbái* 明白’ consists of two morphemic constituents—‘*míng* 明’ and ‘*bái* 白’. ‘*míng* 明’, as a single word, denotes brightness. It can be used in compound words such as ‘*míngliàng* 明亮’ (bright-bright; *bright*), and ‘*míngyuè* 明月’ (bright-moon; *moon*). ‘*Bái* 白’ as a single word denotes whiteness. It has a synonymous compound word ‘*báisè* 白色’ (white-color; *white*). In Classical Chinese, ‘*bái* 白’ also denotes the light of sunrise. ‘*Míngbái* 明白’ can be glossed as ‘bright-white’. ‘*Míngbái* 明白’ is a polysemy: it means ‘understanding’ and ‘clear’. For instance, ‘S *míngbái* something’ can be translated as ‘S understands something’. ‘Something is *míngbái*’ can be translated as ‘Something is clear’. For instance, we can say ‘the situation is very *míngbái*’ (the situation is very clear.)

In Cantonese, ‘understand’ can be translated as ‘*lei5gaai2* 理解’ or ‘*ming4baak6* 明白’. ‘*lei5gaai2* 理解’ and ‘*lǐjiě* 理解’, and ‘*ming4baak6* 明白’ and ‘*míngbái* 明白’, are pairs of different pronunciations of the same words 理解 and 明白. ‘*lei5gaai2* 理解’ and ‘*ming4baak6* 明白’ are disyllabic compounds as well. Disyllabic compounds are slightly less common in Cantonese, but still make up the majority of Cantonese words. In Cantonese, ‘*lei5gaai2* 理解’ can be glossed as ‘reason-explain’, and ‘*ming4baak6* 明白’ can be glossed as ‘bright-white’. The only difference is that ‘*ming4* 明’ only denotes brightness in Mandarin, but in Cantonese, it denotes understanding as well, as a synonym of ‘*ming4baak6* 明白’.

As suggested by linguistic studies, Chinese compounds and their morphemic constituents have a semantically transparent relationship. Compound words recognition relies on recognising the meaning of their constituents. To preserve this feature of Chinese while maintaining a smooth reading experience for readers unfamiliar with the language, from now on, I will write ‘*lǐjiě* 理解’ as ‘reason-explain_m’, ‘*míngbái* 明白’ as ‘bright-white_m’, *lei5gaai2*

理解’ as ‘reason-explain_c’, and ‘*ming4baak6* 明白’ as ‘bright-white_c’. Here, ‘m’ stands for Mandarin, and ‘c’ stands for Cantonese.

In the following sections, I will discuss the linguistic uses of reason-explain_m and bright-white_m in Mandarin, and reason-explain_c and bright-white_c in Cantonese.

4 FACTIVE ENTAILMENT IN MANDARIN AND CANTONESE

In Mandarin and Cantonese, there is also a distinction between factive and non-factive verbs. Z_m and Z_c (know) are also considered as representatives of factive verbs (X. Zhang, 2020). In Mandarin, Z_m entails its complement to be true, as the following sentence is infelicitous:

(9) # 黛西 知道 外面 在 下雨,

Daisy Z_m outside be.at rain

但 事實 是 外面 並 沒有 下雨

but fact COP outside and not rain

Daisy knows that it is raining outside, but the fact is that it is not raining outside.

Z_c in Cantonese entails its complement as well. See the following example:

(10) # 黛西 知 出面 落緊雨,

Daisy Z_c outside rain PROG

其實 出面 冇 落雨

in fact outside have not rain

Daisy knows that it is raining outside; in fact, it is not raining outside.

‘Understand’ is also a factive in ‘S understands that *p*’ in Mandarin and Cantonese. First, reason-explain_m and bright-white_m in Mandarin is factive in ‘S understands that *p*’ and that *p* cannot be cancelled.

(11) # 她 理解/明白

She reason-explain_m/bright-white_m

藝術 源於 生活 ,

arts originate from life ,

但 藝術 並非 必然 源於 生活

but arts not necessarily originate from life ,

She understands that arts originate from life, but arts do not necessarily originate from life.

Also, it is infelicitous to say ‘S reason-explain_c/ bright-white_c *p* but *p* is not true’ in Cantonese:

(12)# 佢 理解/明白

She reason-explain_c/bright-white_c

對方 有 難處

the other person have difficulty

但 其實 對方 冇 難處

but actually the other person do not have difficulty

She understands the other person is in a difficult situation, but actually the other person is not in a difficult situation.

All versions of ‘understand’ in Cantonese and Mandarin are factives in ‘S understands that *p*’. Plus, they are also factives in ‘S understands why *p*’ and ‘S understands O’ and their complements cannot be cancelled.

5 NON-FACTIVE CONSTRUCTIONS OF REASON-EXPLAIN

Reason-explain_m and reason-explain_c share the same four non-factive constructions as ‘understand’ in English.

5.1 Pseudo-cleft construction

5.1.1 Pseudo-cleft construction in Mandarin

Reason-explain_m in pseudo-cleft constructions does not trigger factivity-entailment. Pseudo-cleft sentences in Mandarin are constructed differently than in English: they involve nominalisation (the same as a headless relative clause) and a copular structure—clause + *de* (nominalisation/relative clause marker NR) + copula *shi* + complement (Lam, 2018; Li & Thompson, 1981; Tao, 2022). In the case of reason-explain_m, the structure is ‘S reason-explain_m NR COP complement, which can be translated as ‘What S understands is that *p*’.

An article criticising views that blame everything on American imperialism writes:

(13)从而 他们 理解 的 是 ,

So *they* reason-explain_m NR COP

从 ISIS 的 形成 ,

from ISIS GEN formation,

到 烏克蘭 的 這些 事件中 ,

to Ukraine NR those event

美 帝國主義 都 要 負責

American imperialism all need responsible

其他人 不 擁有 任何 能動性 或 任何 動機 (CCL: Zibenzhuyi Weihe
Ji Yilai Minzuzhuyi, You Bei Minzuzhuyi Wajie, 2020)

other not have any autonomy or any motivation.

So **what they understand is that** from the formation of ISIS to these events in
Ukraine, US imperialism is responsible for all of them, while others do not have
any autonomy or motivation.

(14) 胡風. 先生 所 理解 的 自由競爭 實際上

Hufeng Mr. SUO reason-explain_m NR free competition actually

只是 鞏固 小集團、 小派別 無條件的 自由. 而已

just consolidating small groups、small cliques unconditional freedom just

這 絕. 不 是 什麼 正確的 自由競賽

This definitely is not what correct free competition

What Mr. Hufeng understands of free competition actually is just consolidating
the unconditional freedom of small groups and cliques, this definitely is not what
correct sense of free competition.

As indicated in the context, the writer means that US imperialism is not the only responsible
party; others are also responsible because they also have the autonomy of making their own
decision, or motivations for getting involved. What they reason-explain_m is that *p*, but it is
indicated in the context that the writer takes that *p* to be false.

Note that reason-explain_m cannot be replaced by *Z_m* (know) in the above example. We
cannot say ‘what *S Z_m* is that *p* and that *p* is not true’. Reason-explain_m cannot be replaced by
bright-white_m either. While bright-white_m can be used in pseudo-cleft constructions, ‘What *S*
bright-white_m is that *p*’ always entails that *p*. If we replace reason-explain_m with bright-white_m,
the sentence becomes infelicitous.

Examples (13) and (14) cannot be changed into the form of ‘S reason-explain_m that *p*’. For instance, ‘they understand that from the formation of ISIS to these events in Ukraine, US imperialism is responsible for all of them’ is infelicitous, as ‘from the formation of ISIS to these events in Ukraine, US imperialism is responsible for all of them’ is not true.

Also, reason-explain_m can be used in the negation of pseudo-cleft construction. The construction is ‘not *S* reason-explain_m NR’ (*not S understand of*). Its direct translation is ‘Not what we understand is that *p*’. Its meaning is that ‘what we understand is that *p*, but this is wrong/not the case’. For instance, in Mandarin, we can say, ‘Not what we hope is that he left’. It means that what we hope is that he left, but in fact, he did not leave. ‘Not what he thought was that he would pass the exam.’ It means that what he thought was that he would pass the exam, but in fact he did not. For non-factive verbs *v*, we can say ‘Not what *S vs* is that *p*’, meaning that ‘What *S vs* is that *p*, but in fact, not-*p*’. However, while reason-explain_m is not a non-factive term, ‘Not what *S* reason-explain_m is that *p*’ is also common:

- (15) 並不是 我們 理解 的
Not we reason-explain_m NR
 地位 高的人 对 地位 低的人
position high people to position low people
 就不講 禮貌。(CCL: *Wo Xiang Shizhe Lijie Zhege Shijie*, 2014)
then not saying polite
What we understood is that people with higher status would be impolite to people with lower status. But this is not the case.

Here, what *S* reason-explain_m is that *p*, but *p* is not true. The writer now realised that people with a higher status would not be impolite to people with a lower status. However, what the writer believed previously was that people with a higher status would be impolite to people with a lower status.

Neither *Z_m* nor bright-white_m can be used in ‘Not what *S* Φs is that *p*’. It is infelicitous to say ‘Not what *S* knows (*Z_m*) is that *p*’ or ‘Not what *S* bright-white_m is that *p*’.

5.1.2 Pseudo-cleft construction in Cantonese

As for Cantonese, reason-explain_c in a pseudo-cleft construction also fails to trigger a factivity entailment. See the following example.

- (16) 佢 理解 嘅 係
He reason-explain_c NR COP

幾千萬 要 平 分 ,
tens of millions should equally share,
同 大家嘅 睇法 唔同
with our thought different.

What he understands is that tens of millions of dollars should be shared equally, which is different from our thoughts.

The speaker means that the money should not be shared equally, and the person (whom the speaker referred to as ‘he’) is wrong in thinking that the money should be shared equally.

Also, just like reason-explain_m in Mandarin, reason-explain_c can be used in the negation of a pseudo-cleft sentence--‘not S reason-explain_c NR’, which can be translated as ‘Not what S understands that p’ or ‘what S understands is that p, and this is wrong.’

(17) 問吓 自己 點解 會 咁 睇 某一啲 人 ,
Ask self why would so perceive some people,
有冇 可能 唔係 你 理解 嘅 咁樣 ?
whether possible not you reason-explain_c NR so?

Ask yourself why you would perceive some people in such a way and would it be possible that (the actual cases) are different from **what you understand**.

Same as Mandarin, only reason-explain_c can be used in ‘Not what S vs is that p’. Z_c and bright-white_c cannot be used in this construction. We cannot say ‘Not what S knows (Z_c) is that p’, nor ‘Not what S bright-white_c is that p’.

5.2 As-construction

5.2.1 As-construction in Mandarin

Another non-factive construction of reason-explain_m is ‘S reason-explain_m A as B’. In Mandarin, ‘S takes A reason-explain_m as B’ is translated as ‘S understand A as B’. ‘A is reason-explain_m as B’ is translated as ‘A is understood as B’. Both constructions may fail to trigger a factivity-entailment:

(18) 將 死刑的 含義 僅僅
Take death penalty meaning only
理解 為 剝奪 生命
reason-explain_m as take away life

就 不全面了。(W. Zhang, 2006)

is incomplete.

It is incomplete to understand the meaning of death penalty as taking away life.

(19)他們 將 全面 發展

They take all-around development

理解 為 平均 發展

reason-explain_m *as equal development*

忽視了 個體 差異 (CCL: Shiwen Sixing, 2006)

ignore individual difference

They **understand** all-around development **as** equal development and thus ignore individual differences.

From the writers' perspective, the meaning of the death penalty should not be taken as taking away life; all-around development should not be taken as equal development. Nevertheless, reason-explain_m is still used.

Note that in Mandarin, as construction only allows non-factive verbs, or defactualized verbs.⁷ 'Know' (Z_m), 'discover' (*fāxiàn* 發現), 'prove' (*zhèngmíng* 證明) cannot be used in as constructions. 'Understand' (reason-explain), 'see' (*shì* 視/*kàn* 看), and 'explain' (*jiěshì* 解釋) can be used in as constructions, but they do not entail that 'A is B'. 'S reason-explain_m/sees/explains A as B' does not entail that A is B.

In Mandarin, knows (Z_m) and bright-white_m cannot be defactualized and thus cannot be used in as constructions. 'S knows (Z_m) A as B' and 'S bright-white_m A as B' are infelicitous.

⁷ Note that in English 'S Vs A as B' can take either factive or non-factive verbs. For a factive verb F, F may or may not be defactualized. First, non-factive verbs, such as 'consider' can be used in 'S considers A as B'. Second, for some factive verbs such as 'know', 'discover', and 'prove', 'S knows/discovers/proves A as B' entails that A is B. 'We all know Branden as Dr K.' entails that 'Branden is Dr K.'⁷ 'He discovered her as an artist with great potential' entails that 'She is an artist with great potential.' 'She proved herself to be the best player' entails that 'She was the best player.' However, for some factive verbs, such as 'understand', 'see', and 'explain', their as constructions do not entail that A is B. For instance, in an article criticising leftism, the writer says '...leftists understand politics as a conflict to mobilize the political willpower to implement the objective interests of the oppressed.' In the context, the writer argues that politics should not be taken as a conflict to mobilize the political willpower to implement the objective interests of the oppressed and that leftism is wrong. Here, 'S understands A as B' does not entail that A is B. 'S sees A as B' does not entail that A is B either. For instance, 'He sees a violent future as destined' does not entail the existence of a violent future. In English, for a factive verb F, 'S Fs A as B' may or may not entail that 'A is B'. Some factives verbs remain to be used as a factive in S Fs A as B', while others do not.

5.2.2 As-construction in Cantonese

In Cantonese, the ‘S reason-explain_c A as B’ in Cantonese is not factive either:

(20) 大眾 唔 應 把 參考字形

The public not should take reference glyphs

理解 作 唯一 標準

reason-explain_c *as* *only* *standard*

The public should not **understand** reference glyphs **as** the only standard.

The same as Mandarin, ‘S knows (Z_c) A as B’ is infelicitous in Cantonese. We cannot say ‘S bright-white_m A as B’ either.

5.3 The-way construction

5.3.1 The-way construction in Mandarin

‘The/this way S reason-explain_m O’ in Mandarin is non-factive as well. ‘S believes that p, this way to reason-explain_m (O) is wrong/not right/ improper’ is very common in Mandarin. In the 1503 results of ‘this way to understand’ in CCL corpus, there are 36 results of ‘this way to reason-explain_m is wrong/not right/ improper’, 63 results of ‘this way to reason-explain_m is right?’, and a lot of cases where it is indicated in the context that the way to understand O is wrong. See the following examples:

(21) 有人 认为 只要 戴上 眼镜 视力 有所 提高

Some think as long as wear glasses eyesight has improved

或 只要 眼镜 镜片 是 合格的 就 可以

or as long as glasses lenses is qualified is okay

忽视了 验光 和 配镜 的 重要性 ,

Ignored optometry and dispensing NR importance

这样 理解 是 完全 错误的 ,

this way reason-explain_m is totally wrong

相对来说 验光 和 配镜 更 重要。(CCL, online forum, 2010)

Relatively speaking optometry and dispensing more important

Some think that as long as the eyesight is improved by wearing glasses or as long as the lenses of the glasses are qualified, it will be fine, ignoring the importance of optometry and dispensing. This way of thinking (lit., This way to understand) is totally wrong. Relatively speaking, optometry and dispensing are more important.

(22)既然 沒 規定 保險 公司 無須 賠償 ,

Given that no regulation insurance company not need to compensate

則就 應當 賠償 , 那麼 , 這樣 理解 恰當嗎 ?

then should compensate, so this way reason-explain_m proper?

首先 從 邏輯 原理 上看 ,

First from logic principle look,

這樣 理解 是 無依據的.....

This way reason-explain_m is groundless...

其次 這 也 不 符合 立法者 本意 (CCL: Wuzhen, 2011)

Second this also not in accordance with legislator intention

Given that no regulation [states that] the insurance company need not pay compensay, they do have to pay: is this way of thinking (lit., way to understand) proper? First, from the perspective of logical principle, this understanding is groundless... Second, this is not in accordance with the legislator's intention.

‘The/this way S reason-explain_m O’ is a non-factive construction. It is felicitous to say ‘The/this way S reason-explain_m O is wrong’. By contrast, ‘The/this way to bright-white_m O is wrong’ is infelicitous. Z_m cannot be used in such a way as well. ‘The way S Z_m O is wrong’ is also infelicitous.⁸

⁸ ‘In English, ‘the way S understands O’ has two denotations: it may denote *the means* one understands O (e.g. the way she understands philosophy is by reading a lot of books) or *the manner* one understands O, that is *what one understands O as* (e.g. Not everyone is entitled to vote, that is the way he understands democracy). By contrast, ‘The/this way S reason-explain_m O’ in Mandarin only denotes the manner in which S understands O. By

This way S Z_m O’ only denotes the means via which one knows O. For instance, we can say ‘She took the four-year Doctor of Optometry degree, this is the way she Z_m eye care.’ ‘He reads a lot of books, that is the way he knows Paris’. We cannot say ‘optometry is not important; this is the way she Z_m eye care’. Also, ‘The way S Z_m O is wrong’ is infelicitous.

5.3.2 The-way construction in Cantonese

In Cantonese, reason-explain_c is also non-factive in the construction ‘the way S reason-explain_c O’:

(23) 你 指出 我 咁 理解 股市 係 錯,
You point out me this way reason-explain_c stock market is wrong,

我明白 , 無須 再 討論
I bright-white_c, No need again discussion,

You pointed out that this way of thinking (*lit.*, this way to understand) the stock market is wrong. I understand that. No need for further discussion.

The speaker admits that the way she understands (reason-explain_c) the stock market is wrong. She further added that she understands (bright-white_c) that she was wrong.

(24) 有人 咁 理解 呢件 事 ,
Someone this way reason-explain_c this event,

睇 睇 先。

look look first.

Someone understands this event in this way; let us have a look first
(‘look look first’ in Cantonese means to have a look first, hold off on making any judgment or decision, and wait for more information).

The speaker reports that someone understands this event in this way. ‘The way S reason-explain_c this event’ denote something that the speaker is uncertain about.

The same as Mandarin, ‘the way S bright-white_c O’ is in

5.4 Nominalisation construction

‘S’s reason-explain_m/reason-explain_c (as a noun, can be translated as understanding) is wrong’ is common in Mandarin and Cantonese. By contrast, bright-white_m and ‘bright-white_c are verbs. They cannot be used as nouns, and there are no corresponding nouns for them.

5.4.1 Nominalisation construction in Mandarin

When reason-explain_m is used as a noun, ‘S’s reason-explain_m is wrong’ is proper:

(25) 作者 對 社會政治 背景 與 文學 的 社會 意義

1 *Author to sociopolitical context and literature de social significance*
2 的 理解 是 錯誤的。 (CCL: *People's Daily*, 2000)

3
4 NR *reason-explain_m is wrong*

5 The author's understanding of the socio-political context and the social
6 significance of literature is mistaken.
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12 (26) 這對 夫妻的 理解 是 錯誤的。 (CCL: *People's Daily*, 2000)

13
14 *This couple-de reason-explain_m is wrong*

15
16 This couple's understanding is wrong.
17

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19 'S's bright-white_m is wrong' is infelicitous. Bright-white_m cannot be used as a noun.
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22 5.4.2 Nominalisation construction in Cantonese

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24 When reason-explain_c is used as a noun, 'S's reason-explain_c is wrong' is proper as well. It is
25 also comfortable to ask if someone's reason-explain_c is wrong:
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28 (27) 我 對 5G 嘅 理解 係 唔係 有錯 ?

29
30 *I to 5G NR reason-explain_c is not wrong?*

31
32 Is my understanding of 5G wrong?
33

34
35 (28) 你 對 呢條 問題 嘅 理解 係 錯嘅

36
37 *You to this question NR reason-explain_c is wrong*

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39 Your understanding of this question is wrong.
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41 In Cantonese, 'S's bright-white_m is wrong' is infelicitous. Bright-white_m cannot be used as a
42 noun.
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45 6 REASON-EXPLAIN, BRIGHT-WHITE AND UNDERSTAND

46
47 As no differences between Mandarin and Cantonese have been found in the above discussions,
48 I will not discuss them separately. In the following discussion, reason-explain stands for both
49 reason-explain_m and reason-explain_c. Bright-white stands for both bright-white_m and bright-
50 white_c.
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53 Like 'understand' in English, 'reason-explain' is strictly used as a factive verb in the
54 three basic factive constructions 'S understands (reason-explain) that *p*', 'S understands
55 (reason-explain) why *p*', and 'S understands (reason-explain) O'. 'Reason-explain' also share
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1 the same four non-factive constructions as ‘understand’ in English: (1) What S understands
2 (reason-explain) is that *p*; (2) S understands (reason-explain) A as B; (3) the way S understands
3 (reason-explain) O; and (4) S’s understanding (reason-explain) is wrong.
4

5 By contrast, ‘bright-white’ is strictly a factive verb. While ‘bright-white’ can be used
6 in the pseudo-cleft construction ‘What S understands (bright-white) is that *p*’, that *p* is always
7 entailed. ‘Bright-white’ cannot be used in ‘S Φ s A as B’, ‘the way S Φ s O’ and ‘S’s Φ ing is
8 wrong’. These three constructions can only take non-factive or defactualized verbs in Mandarin
9 and Cantonese.⁹
10

11 The factive and non-factive constructions of ‘understand’ are not accidental in English.
12 In Mandarin and Cantonese, the word ‘reason-explain’ exhibits the same factive and non-
13 factive constructions. Thus, ‘understand’ can be defactualized in the same four constructions
14 not only in English, but also in Mandarin and Cantonese. The linguistic convergence suggests
15 that any satisfactory account of understanding should either accommodate this distinctive
16 linguistic feature or provide good reasons why it should be set aside.
17

18 The investigation of ‘understand’ in Mandarin and Cantonese leads to a further question:
19 Why can ‘understand’ and ‘reason-explain’ be defactualized, but not ‘bright-white’? My
20 hypothesis is that these exist a *process-state distinction* of understanding: (1) ‘Reason-explain’
21 denotes the *process* of understanding, while ‘bright-white’ denotes the *state* of understanding.
22 (2) The state of understanding is a factive mental state; the process may fail, and the factive
23 state of understanding is not achieved.
24

25 Driving from different constituents, ‘reason-explain’ and ‘bright-white’ denote
26 different senses of understanding. The former denotes the process of understanding, while the
27 latter denotes the state of understanding. As Chinese compounds, the meanings of ‘reason-
28 explain’ and ‘bright-white’ are transparently related to their constituents. The meaning of
29 ‘reason-explain’ is derived from its constituent ‘reason’ and ‘explain’.¹⁰ Trying to identify
30 underlying reasons and provide explanations is one of the most common ways to understand.
31 Driving from the meaning of its constituents, reason-explain denotes a sense of the process of
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50 ⁹ In English, some factive verbs can be used in ‘S Φ s A as B’ ‘the way S Φ s O’ without being defactualized. For
51 instance, ‘We all know Branden as Dr K.’ entails that ‘Branden is Dr K’. ‘He discovered her as an artist with
52 great potential’ entails that ‘She is an artist with great potential’. ‘She proved herself to be the best player’
53 entails that ‘She was the best player’. ‘The situation is very risky, that is the way he observes it’. Here, ‘observe’
54 cannot be defactualized either.

55 ¹⁰ Note that, while the meanings of compounds are derived from their constituents, it is not necessarily the case
56 that the meaning of a compound can be completely read off from the meanings of its constituents. Nor do I
57 intend to argue for the nature of understanding directly from the meanings of the constituent characters of
58 Chinese compounds. Clearly, understanding is not equivalent to identifying reasons, providing explanations, or
59 having all relevant content fully transparent to oneself.
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trying to understand something. The meaning of ‘bright-white’ is derived from its constituents, ‘bright’ and ‘white’. From classical Chinese to modern Chinese, the term ‘bright’ has been commonly used as a metaphor for a clear mind, understanding, or some internally transparent mental states discussed in Daoism and Buddhism. ‘White’ means the colour white, and also means the shining of sunlight. Bright-white denotes a sense of understanding as a mental state where all the content is clear to the subject, like the lights shining and brightening all the corners.

Relevant expressions of the two words also support the process-state distinction. For instance, the term ‘*lǐjiě lì* 理解力’ (reason-explain-power) denotes the ability of understanding, and the term ‘*lǐjiěguòchéng* 理解過程’ (reason-explain-process) denotes the process of understanding. We cannot say bright-white-power or bright-white-process. ‘Bright-white’, by contrast, is a polysemy meaning both ‘understanding’ and ‘clear’ (as in, for instance, the explanation is bright-white, meaning the explanation is clear).

Further evidence comes from their aspectual uses: ‘reason-explain’ can be used in the progressive aspect, but ‘bright-white’ cannot.

(29) 歐洲 公眾 正在 理解

Europe public PROGR reason-explain_m

歐洲 單一 貨幣 的 真正 含義。 (CCL: *People's Daily*, 2010)

European single currency de true meaning

The European public is understanding (reason-explain_m ing) the true meaning of the single European currency.

(30) 王爾德 嘅 文章 , 我 本身 唔 理解 ,

Oscar Wilde de writing, I originally not reason-explain_c

但係 呢個表演過程中 , 逐漸逐漸理解緊

But this performance process in, gradually reason-explain_c PROGR

體驗 緊 屬於 佢哋嘅 愛。

experience PROGR belong their love

I didn’t originally understand Oscar Wilde’s writing, but in the process of this performance, I am gradually understanding and experiencing the love that belongs to them.

In the above cases, ‘reason-explain’ cannot be replaced with ‘bright-white’. It is infelicitous to say one is bright-whiting something.

Why, then, does ‘reason-explain’, as the process of understanding, have factive and non-factive uses? To answer this question, we need to take a closer look at the four non-factive

1 constructions of ‘reason-explain’. In its non-factive constructions, ‘reason-explain’ has two
2 objects: the target content to be understood, which is always true; and some beliefs or ideas
3 one uses to understand the target content, which may or may not be true. I will call the former
4 the *target content* of understanding, and the latter the *basis* of understanding. The process of
5 understanding is trying to understand some true content based on some beliefs or ideas.
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9 First, in the construction ‘S reason-explain A as B’, A is the target content, and B is the
10 basis in terms of which A is understood. S reason-explain A as B, but in some cases, A should
11 not be taken as B. Recall example (18):
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15 (18) It is incomplete to understand the meaning of the death penalty as taking
16 away life.
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20 Here, the target to be understood is ‘the meaning of the death penalty’, and the basis used to
21 understand the target is that the meaning of the death penalty is taking away life. The subject
22 tries to understand the meaning of the death penalty in terms of a false conception of the death
23 penalty. ‘Reason-explain’ denotes such a process. As the meaning of the death penalty should
24 be taken as taking away life, the process fails to achieve the state of understanding. Thus,
25 ‘bright-white’ as the state of the understanding cannot be used here.
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29 Second, in construction ‘the way S reason-explain O’, O is the target, and the way S
30 reason-explain O might be wrong. Recall the example (21)
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34 (21) Some think that as long as the eyesight is improved by wearing glasses
35 or as long as the lenses of the glasses are qualified, it will be fine,
36 ignoring the importance of optometry and dispensing. This way of
37 reason-explaining is totally wrong.
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45 Here, the target of understanding, which is eye care, is indicated in the context. The basis is the
46 belief that ‘as long as the eyesight is improved by wearing glasses or as long as the lenses of
47 the glasses are qualified, it will be fine’. The basis is mistaken in terms of the target, and thus,
48 the state of understanding is not achieved and ‘bright-white’ cannot be used.
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52 The third one is the pseudo-cleft construction ‘What S reason-explain is that *p*’. This
53 construction can be taken as a shortened form of ‘what S reason-explain of O is that *p*’, where
54 O is the target content and that *p* is the basis. The phrase ‘of O’ may be omitted and only
55 indicated in the context. Recall example (14) and (13):
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1 (14) **What Mr. Hufeng understands of** free competition actually **is** just
2 consolidating the unconditional freedom among small groups and cliques, this
3 definitely is not what correct sense of free competition.
4
5

6 (13) So **what they understand** (reason-explain) **is that** from the formation
7 of ISIS to these events in Ukraine, US imperialism is responsible for all
8 of them, while others do not have any autonomy or motivation.
9
10

11 In example (14), the target content is the concept of free competition. From the speaker's
12 perspective, Mr Hufeng tries to understand free competition in terms of the unconditional
13 freedom among small groups and cliques. This basis is mistaken in terms of the target content.
14 Thus, the state of understanding is not achieved. In example (13), the basis is that the US
15 imperialism is responsible for the formation of ISIS and these events in Ukraine. The target
16 content is indicated in the context, which is the current international political situation. The
17 basis is not correct in terms of the target content, and the state of understanding is also not
18 achieved. As the processes of understanding fail and the states of understanding are not
19 achieved, we cannot replace 'reason-explain' with 'bright-white' in examples (13) and (14).
20
21

22 The final construction is 'S's reason-explain of O is wrong'. Here, O is the target
23 content, and the basis is indicated in the context.
24
25

26 (25) The author's understanding of the socio-political context and the social
27 significance of literature is mistaken. (CCL: *People's Daily*, 2000)
28
29

30 Here, the target content of understanding is the socio-political context and the social
31 significance of literature. The basis is indicated in the context. From the speaker's perspective,
32 the basis is mistaken in terms of the target content.
33
34

35 Why, then, is 'reason-explain' used strictly as a factive verb in the basic factive
36 constructions 'S reason-explain that *p*', 'S reason-explain why *p*' and 'S reason-explain O'?
37 Especially, why 'reason-explain' is a non-factive in 'What S reason-explain is that *p*', but a
38 factive in 'S reason-explain that *p*'? My hypothesis is that, in the basic factive constructions,
39 the complements (that *p*, why *p*, and O) are the target content, and the target content of the
40 process of understanding must be true. By contrast, 'What S reason-explain is that *p*', in some
41 cases, is a shortened form of 'What S reason-explain of O is that *p*'. In these cases, that *p* is the
42 basis rather than the target content and thus is non-factive. However, 'S reason-explain that *p*'
43 cannot be a shortened form of 'S reason-explain of O that *p*'. Instead, it is a shortened form of
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1 ‘S reason-explain that p in terms of q ’. Here, that p is the target, rather than the basis and thus
2 must be true. Similarly, ‘S reason-explain why p ’ is a shortened form of ‘S reason-explain why
3 p in terms of q ’, Here, the question why p is the target content. ‘S reason-explain O’ is a
4 shortened form of ‘S reason-explain O in terms of p ’, O is the target content and must be
5 something that exists.
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9 In the three basic factive constructions, the complements are the target content to be
10 reason-explained, while in the non-factive constructions, the complements are what we reason-
11 explain the target content as. The target content to be reason-explained must be true, but, in the
12 process of understanding, one may reason-explain it mistakenly. Thus, reason-explain has both
13 factive and non-factive constructions.
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17 The uses of ‘reason-explain’ and ‘bright-white’ suggest that (1) the process of
18 understanding is trying to understand some true target content based on some beliefs or ideas
19 that may or may not be true; and (2) the process of understanding (denoted by reason-explain)
20 might fail to achieve the state of understanding (denoted by bright-white) if the basis is not
21 accurate enough.
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25 How about the use of ‘understand’ in English? A natural hypothesis is that ‘understand’
26 in English covers both senses of understanding, both the process and the state and thus
27 ‘understand’ exhibits both factive and non-factive uses.
28

29 30 31 32 33 34 **7 THE NATURE AND FACTIVITY OF UNDERSTANDING**

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36
37 The above linguistic investigation provides insights into the nature of understanding:
38 Understanding is a factive mental state achieved by the process of trying to understand some
39 true target content via a non-factive basis. Furthermore, if the basis is not accurate enough in
40 terms of the target content, the state of understanding cannot be achieved (linguistically,
41 ‘bright-white’ cannot be used).
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45 Both the linguistic investigation and our intuition tell us that understanding cannot be
46 achieved if the basis is massively mistaken. For instance, it is true that *Niu Huang* (cattle
47 gallstones, also known as *cattle gallstones*), a well-known Chinese medicine, is effective in
48 treating throat and gum pain. However, we cannot understand it in terms of the ancient Chinese
49 medical model, according to which gallbladders and livers are mutually treatable and treating
50 the liver can reduce throat and gum pain. Ancient Chinese medicine did not understand that
51 *Niu Huang* is effective in treating throat and gum pain. While the target content is true, the
52 theoretical basis adopted is massively mistaken.
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1 Then, does understanding require its basis be true as well? This is not the case. Cases
2 of scientific understanding are usually provided by ideal models that are approximately
3 accurate but strictly false. One example is the case of scientific understanding provided by the
4 ideal gas law, which is approximately accurate but strictly false. The ideal gas law is the
5 equation $PV = nRT$, where P is the pressure of the gas, V is the volume of the gas, n is the
6 number of moles of the gas, T is the temperature of the gas, and R is the ideal gas constant.
7 The ideal gas is an imaginary gas that has no intermolecular forces and no particle volume. The
8 equation $PV = nRT$ describes the relation between the pressure, volume, temperature, and the
9 number of moles of the ideal gas, which has no intermolecular forces and no particle volume.
10 The ideal gas does not exist. The equation describing the behaviour of the ideal gas is
11 approximately true but strictly false in terms of actual gases.
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13 The ideal gas law can provide understanding-that, understanding-why, and objectual
14 understanding. For instance, it enables us to understand that, with the same volume and number
15 of moles of an actual gas, a higher temperature leads to higher pressure. It also provides more
16 specific cases of understanding. For instance, we can understand that the volume of 1.00 mol
17 of O_2 gas at 298 K and 1.00 atm is approximately 24.45 L. We can understand why, with the
18 same volume and the number of moles, a higher temperature leads to higher pressure. It also
19 provides us with an understanding of the behaviour of actual gases. The ideal gas law thus
20 functions as a theoretical basis for understanding true target contents, such as the true
21 proposition that, with the same volume and number of moles of an actual gas, a higher
22 temperature leads to higher pressure.
23

24 Non-factivists in the current literature argue that, as understanding can be provided by
25 ideal models and flawed theories, understanding is non-factive and thus not a type of
26 knowledge (de Regt, 2017; Doyle et al., 2019; Elgin, 2007). However, they overlook that (1)
27 understanding still requires its target content to be true; (2) knowledge and understanding of
28 the same target content stand or fall together when they are formed based on strictly false
29 theoretical bases. Based on the ideal gas law, one also knows that, for example, with the same
30 volume and number of moles of an actual gas, a higher temperature leads to higher pressure.
31 By contrast, if the theoretical basis is not even approximately accurate—if it neglects not only
32 non-difference-makers such as intermolecular forces and particle volume, but also key factors
33 such as the volume of the gas—then neither knowledge nor understanding can be achieved.
34

35 Linguistic investigation and the case of the ideal gas law explain the factivity tension.
36 Understanding is a factive mental state towards some true target content. This factive mental
37 content can be achieved by the process of understanding the true target content in terms of
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1 some approximately accurate but strictly false basis. As knowledge may also be formed by
2 strictly false basis, the factivity tension does not undermine the claim that understanding is a
3 type of knowledge.
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7 **8 CONCLUSION**

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10 The paper examines the factivity tension of understanding at both the linguistic and the
11 metaphysical levels. The use of two words translated as ‘understand’ in Mandarin and
12 Cantonese shows that (1) linguistically, ‘understand’ is non-factive only when it denotes the
13 process of understanding; and (2) metaphysically, understanding is a factive mental state
14 achieved through the process of trying to understand true target contents based on some bases
15 that may be strictly false. As both understanding and knowledge allow strictly false bases, the
16 factivity tension does not undermine the knowledge account of understanding.
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Bibliography

- Chan, M. (2014, November 5). *When Does Yes Mean No?* <https://thinkers50.com/blog/when-does-yes-mean-no/>
- Davies, M. (2016). *Corpus of News on the Web (NOW)* [Data set]. <https://www.english-corpora.org/now/>.
- de Regt, H. (2017). *Understanding Scientific Understanding*. Oxford University Press.
- Doyle, Y., Egan, S., Graham, N., & Khalifa, K. (2019). Non-Factive Understanding: A Statement and Defense. *Journal for General Philosophy of Science / Zeitschrift Für Allgemeine Wissenschaftstheorie*, 50(3), 345–365. <https://doi.org/10.1007/s10838-019-09469-3>
- Elgin, C. (2007). Understanding and the facts. *Philosophical Studies*, 132(1), 33–42. <https://doi.org/10.1007/s11098-006-9054-z>
- Grimm, S. (2006). Is Understanding A Species Of Knowledge? *The British Journal for the Philosophy of Science*, 57(3), 515–535. <https://doi.org/10.1093/bjps/axl015>
- Hills, A. (2016). Understanding Why: Understanding Why. *Noûs*, 50(4), 661–688. <https://doi.org/10.1111/nous.12092>
- Huang, H.-W., Lee, C.-Y., & Ovid J-L, T. (2011). Sublexical ambiguity effect in reading Chinese disyllabic compounds. *Brain and Language*, 117(2). <https://doi.org/10.1016/j.bandl.2011.01.003>
- Kelp, C. (2015). Understanding phenomena. *Synthese*, 192(12), 3799–3816. <https://doi.org/10.1007/s11229-014-0616-x>
- Lam, C. Y. (2018). *Negation and Aspect: A comparative study of Mandarin and Cantonese varieties* [Phd diss.]. University of Cambridge.
- Lee, C.-Y. (2022). Semantic Awareness in Reading Chinese. In C.-R. Huang, I.-H. Chen, Y.-H. Lin, & Y.-Y. Hsu (Eds), *The Cambridge Handbook of Chinese Linguistics* (pp. 23–44). Cambridge University Press. <https://doi.org/10.1017/9781108329019.003>

1 Li, C., & Thompson, S. (1981). *Mandarin Chinese: A Functional Reference Grammar*.

2 University of California Press.

3
4 Marslen-Wilson, W., Tyler, L. K., Waksler, R., & Older, L. (1994). Morphology and

5
6
7 Meaning in the English Mental Lexicon. *Psychological Review*, 101(1), 3–33.

8
9
10 <https://doi.org/10.1037/0033-295x.101.1.3>

11
12 Pritchard, D. (2016). Seeing It for Oneself: Perceptual Knowledge, Understanding, and

13
14 Intellectual Autonomy. *Episteme*, 13(1), 29–42. <https://doi.org/10.1017/epi.2015.59>

15
16
17 *Provocations: Spiritual writings of Kierkegaard* (with Moore, C., E.). (2007). Orbis Books.

18
19 Riaz, A. (2015). Moral understanding and knowledge. *Philosophical Studies*, 172(1), 113–

20
21
22 128. <https://doi.org/10.1007/s11098-014-0328-6>

23
24 Sandra, D. (1990). On the Representation and Processing of Compound Words: Automatic

25
26 Access to Constituent Morphemes Does Not Occur. *The Quarterly Journal of*

27
28
29 *Experimental Psychology Section A*, 42(3), 529–567.

30
31
32 <https://doi.org/10.1080/14640749008401236>

33
34 Sliwa, P. (2015). IV-Understanding and Knowing. *Proceedings of the Aristotelian Society*

35
36
37 *(Hardback)*, 115(1pt1), 57–74. <https://doi.org/10.1111/j.1467-9264.2015.00384.x>

38
39 Tao, H. (2022). Scalar Pseudo-cleft Constructions in Mandarin Conversation: A Multimodal

40
41
42 Approach. *Lingua*, 266, 2–24. <https://doi.org/10.1016/j.lingua.2021.103202>

43
44 *The Center for Chinese Linguistics (CCL) Corpus*. (2009). [Data set].

45
46
47 http://ccl.pku.edu.cn:8080/ccl_corpus/

48
49 Tsai, J.-L., Lee, C.-Y., Lin, Y.-C., Ovid J.-L., T., & Daisy L., H. (2006). Neighborhood Size

50
51
52 Effects of Chinese Words in Lexical Decision and Reading. *Language and*

53
54
55 *Linguistics*, 7(3), 659–675.

56
57 Zhang, W. (2006). *Shiwen Sixing: Yi Zhongguo Sixingwenhua Wei Beijing*. Peking University

58
59
60 Press.

Zhang, X. (2020). *Hànyǔ xùshí wèicí yánjiū* 汉语叙实谓词研究. Fudan University press.

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