Epistemic Marker, Event Type and Factivity in Emotion Expressions

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Abstract

Epistemic markers are shown to be an effective linguistic device to introduce cause events of emotions. Linguistically, epistemicity is highly related to factivity. Yet the possible interaction between emotion-causing event types and factivity has not been explored before. This paper reports a corpus-based study on factivity related issues, focusing on the construction "subject + emotion word + epistemic marker + cause event". The interaction between the epistemic marker and event type in sentences with HAPPINESS emotion, and the factivity of negative epistemic marker are analyzed to present a clear picture of the relationship between epistemic marker and emotion. Our study shows that MOVEMENT and LIFE are the two most frequent event types which are introduced by epistemic markers. Moreover, negative epistemic markers do not have any effect of the factivity of the proposition in complement clause and the polarity of emotions. The emotion of the whole sentence depends on the reversal of the event and the negative epistemic marker.

1 Introduction

It is common that the utterance that we make marks our stance. Specifically, people often use stance markers explicitly or implicitly to express their perspectives, evaluations and attitudes. The stance markers include epistemic marker, evidential marker and attitudinal marker. It is found that epistemic markers are often employed to introduce cause event in the construction "subject + emotion word + epistemic marker + cause event" (Lee 2010, 2019; Lee and Huang, 2018). Although some researchers have directed their attention to Chinese epistemic markers, they focus more on the meaning and grammaticalization of these epistemic markers (Yap and Chor 2014, 2019). Other elements in the utterance and the interaction with emotion are often neglected.

The current study aims to examine the construction "subject + emotion word + epistemic marker + cause event" in terms of event type and factivity in emotion expressions. Since it is shown that epistemic markers are most frequently used with HAPPINESS emotion (Lee et al. 2013, Lee 2019) and far exceeding any other emotion, we will also focus on the emotion of happiness in this study. The two research questions are as follows:

1. Which type of cause event is most frequently introduced by epistemic markers in HAPPINESS emotion, especially in terms of factivity?
2. Will the absence of epistemic markers, hence under-specification of factivity, influence the polarity of the emotion?

This paper is organized as follows. In Section 2, we will give an overview of the previous studies in relation to the epistemic marker and their interaction with emotion. Then cause event types introduced by epistemic markers in HAPPINESS emotion will be presented in Section 3. Section 4 will discuss the factivity in setences with negative epistemic markers. Finally, we conclude the paper in Section 5.

2 Related Work

Emotion as an essential facet of cognition has been studied in many different disciplines, such as

linguistics, psychology, sociology, neuroscience and computer science. It is found that transitivity and epistemicity are two factors related to emotion expressions linguistically (Lee 2010, 2019; Lee and Huang, 2018). The definition of epistemicity refers to 'pertaining to how a person views the facts of the world, or how they view another person's view of such facts' (Givón, 2009: 315). Although the concept of epistemicity is still debatable, there is a general agreement that epistemicity indicates the certainty of a proposition which shows the attitude of the speaker. There are three types of words that always reveal the epistemicity: (1) epistemic verbs (e.g. think, see); (2) epistemic adverbs (e.g. perhaps, supposedly); (3) modal auxiliaries (e.g. might, may). Epistemic verbs are the verbs which 'perceive or cognize a state or an event, or utters a proposition concerning a state or event' (Givón 1993, I:133), and they are often perception-cognition-utterance (PCU) verbs. The definition of PCU verbs is '(1) the main clause codes mental or verbal activity, with a verb (or adjective) of perception, cognition, mental attitude or verbal utterance; (2) the state or event coded in the complement clause is the object of the mental or verbal activity coded by the main verb; (3) no coreference restrictions hold between arguments of the main clause and complement clause' (Givón 1993, II:4).

There are three types of PCU verbs which are divided by semantic criteria: PCU verbs with preference/aversion, PUC verbs with epistemic attitude, and utterance verbs. For epistemic verbs (PCU verbs with epistemic attitude), they code the relative certainty which shows the reality of the state or event in the complement clause. There are four types of epistemic verbs which code the different degree of the certainty: (1) high epistemic certainty; (2) weak epistemic certainty; (3) low epistemic certainty; and (4) negative epistemic certainty. Givón (1993) argues that epistemic verbs with high epistemic certainty are marked as factive or pre-suppositional which means that the proposition in the complement clause is believed to be true in spite of the main-clause proposition's truth value.

Factivity is a significant feature for epistemic verbs. Kiparsky and Kiparsky (1971: 348) defined factivity as follows:

> The speaker presupposes that the embedded clause expresses a true proposition, and makes some assertion about that prop-

osition. All predicates which behave syntactically as factives have this semantic property.

Factivity includes four categories: (1) factive; (2) semi-factive; (3) non-factive; (4) negative factive. The different epistemic markers are corresponding with different degree of factivity. Table 1 shows the epistemic certainty continuum (Givón, 1993; Lee, 2019: 73).

Epistemicity	Factivity	Epistemic verbs
Strong epistemic certainty	Factive	*know, remember, forget, see*
Weak epistemic certainty	Semi-factive	*think, assume, guess, suspect*
Epistemic uncertainty	Non-factive	*hope, wonder, doubt*
Negative epistemic certainty	Negative factive	*pretend, lie*

Table1: Epistemic certainty continuum (Givón, 1993; Lee, 2019: 73)

Lee (2010, 2019) and Lee and Huang (2018) found that there was a close relationship between epistemic markers and emotion causes. They argued that epistemic markers were often employed to introduce a cause event of the emotion, and they tended to collocate with change-of-state emotion verbs rather than homogeneous ones. In order to verify the hypothesis, a corpus-based approach was applied in their study. The findings indicated that there were five categories of epistemic verbs: SEEING, HEARING, KNOWING, DISCOVERY and EXISTENCE. SEEING epistemic verbs were most frequently used in the corpus, followed by EXISTENCE epistemic verbs, DISCOVERY epistemic verbs, KNOWING epistemic verbs and HEARING epistemic verbs. Five basic emotions were analyzed and it was found that HAPPINESS most frequently occurred with epistemic markers marking causes, followed by SURPRISE and FEAR. ANGER emotion and SADNESS emotion had limited ability to attach epistemic markers. The epistemic markers have eliminated their original meaning and tend to express the cognitive awareness of the experiencer. The explicit usage of epistemic markers indicates the high motivation for experiencers to claim the certainty of the emotion, e.g., HAPPINESS and SURPRISE, while epistemic markers do not tend to associate with emotions which are triggered by

obscure and unknown events, e.g., SADNESS. The frequency of epistemic markers co-occurred with emotions is HAPPINESS > SURPRISE > FEAR > ANGER >SADNESS.

3 Cause Event Types in HAPPINESS Emotion

Lee (2010, 2019) and Lee and Huang (2018) stated that cause events were always followed by different epistemic markers and epistemic markers were most frequently used explicitly in HAPPINESS emotion to mark causes. The epistemic markers were always followed by the emotion words and finally formed a construction "(subject) + emotion word + epistemic marker + cause event". However, which type(s) of cause event tend to co-occur with epistemic markers and HAPPINESS emotions?

In order to analyze this issue, the data in our study were extracted from BLCU Corpus Center (BCC, Xun, 2016), which contains 15 billion characters. Data from BCC is mainly retrieved from news, literature, *weibo*, etc. The reason why we use this corpus is Chang et al (2000) and Lee (2010, 2019) have been focused on two influential corpora Sinica Corpus and Chinese Gigaword Corpus respectively. Another reason is that constructions can be easily searched in BCC. Then six epistemic markers were chosen in five subcategories as the keywords combined with emotion word 高兴 *gāoxìng* 'glad' to search in the corpus. The six epistemic markers were 看到 *kàndào* 'to see' (SEEING), 听到 *tīngdào* 'to hear' (HEARING), 知道 *zhīdào* 'to know' (KNOWING), 得知 *dézhī* 'to know' (KNOWING), 发现 *fāxiàn* 'to find' (DISCOVERY), 有 *yǒu* 'to have' (EXISTENCE). Two KNOWING epistemic markers are chosen due to the limited data in the corpus. The construction "高兴+看到 *gāoxìng* + *kàndào* 'glad to see'" will be treated as keyword to search in the corpus. In order to balance the genres of data, both *Weibo* data and 多领域 (various fields) data are considered. Table 2 shows the distribution of different constructions.

	看到 *kàndào* 'to see'	听到 *tīngdào* 'to hear'	知道/得知 *zhīdào* /*dézhī* 'to know'	发现 *fāxiàn* 'to find'	有 *yǒu* 'to have'	Total
Weibo	138	12	7	1	281	439
Various fields	526	204	80	16	653	1479
Total	664	216	87	17	934	1918

Table 2: Distribution of "高兴 *gāoxìng* 'glad' + epistemic markers" in the corpus

But some epistemic markers in these entries do not function as epistemic markers. For example, 看到你的博文 *kàndào nǐde bówén* 'to see your posts' is a whole embedded clause, and 看到 *kàndào* 'to see' would be better to be a part of the embedded clause rather than the epistemic marker in (1). While 看到 *kàndào* 'to see' in (2) is regarded as an epistemic marker because 看到 *kàndào* 'to see' is the cognitive perception rather than the real seeing and the embedded clause 一切进行得非常顺利 *yíqiē jìnháng dé fēicháng shùnlì* 'all things go very well' is the cause event of HAPPINESS emotion.

(1) 很高兴<u>看到</u>你的博文，希望保持联系。
hěn gāoxìng kàndào nǐde bówén
very glad see your post
xīwàng bǎochíliánxì
hope keep in touch
'(I am) glad to see your posts and hope we can keep in touch.'

(2) 可娜很高兴<u>看到</u>一切进行得非常顺利。
Kěnà hěn gāoxìng kàndào yíqiè
Kena very glad to see all things
jìnxíng de fēicháng shùnlì
go DE very well
'Kena was very glad to see that all things went very well.'

After filtering the data without the function of epistemic marker, data would be annotated based on the annotation scheme. The event classification which is employed in this study is Automatic Content Extraction (ACE). There are eight types of event: LIFE, MOVEMENT, TRANSACTION, BUSINESS, CONFLICT, CONTACT, PERSONELL, and JUSTICE. The annotation scheme is divided into two parts. Firstly, read the whole sentence and identify if the sentence involves negation (as in (3)) or interrogative (as in (4)) because sentences with this two features may result in neutrality and lose the ability to express HAPPINESS emotion. The emotions in both (3) and (4) are neutral, so we do not include these sentences. The next step is to identify the event type if the sentence contains both epistemic marker and cause event. For example, 知道 *zhīdào* 'to know' is the KNOWING epistemic marker in (5) followed by the cause event of the HAPPINESS emotion 她急着想离婚、想嫁给那个宝贝银行家 *tā jízhe xiǎng líhūn xiǎng jiàgěi nàge bǎobèi yínhángjiā* 'she wants to divorce quickly and marries that banker'. The cause event is about divorce and remarriage, so this cause event is classified as LIFE.

(3) 城妈妈好像并不高兴**看到**捣蛋的孩子回来。
Chéng māma hǎoxiàng bìng bù
Cheng mother seem at all NEG
gāoxìng kàndào dǎodàn de háizi
happy to see naughty DE children
huílai
come back
'Mother Cheng seems not happy to see that naughty children came back.'

(4) 你是不是很高兴**知道**别人都怕你？
nǐ shì bù shì hěn gāoxìng zhīdào
you be NEG be very glad to know
biérén dōu pà nǐ
others all be afraid of you
'Are you very glad to know that other people are afraid of you?'

(5) 他很高兴**知道**她急着想离婚、想嫁给那个宝贝银行家。
tā hěn gāoxìng zhīdào tā jízhe
he very glad to know she eager
xiǎng líhūn xiǎng jiàgěi nàge
want divorce want marry to that
bǎobèi yínhángjiā
darling banker
'He was very glad to know that she was eager to divorce quickly and married that banker.'

Table 3 shows the distribution of event types which is introduced by different epistemic markers in our dataset. As shown in Table 3, the most frequent epistemic marker in HAPPINESS emotion expressions is SEEING 看到 *kàndào* 'to see', followed by EXISTENCE 有 *yǒu* 'to have', HEARING 听到 *tīngdào* 'to hear', KNOWING 知道 *zhīdào*/得知 *dézhī* 'to know', DISCOVERY 发现 *fāxiàn* 'to find', which is mostly the same as the work done by Lee (2019). The only difference is the frequency of HEARING and KNOWING epistemic markers which may due to two knowing epistemic markers are included in our study, but it will not affect the result of this study. It is also found that 34% of these six words are used as epistemic markers co-occurring with emotion words in the construction "emotion word + epistemic marker + cause event". As for event types, MOVEMENT is most frequently employed as cause event in HAPPINESS emotion, followed by BUSINESS, LIFE, CONTACT, PERSONELL, CONFLICT, JUSTICE and TRANSACTION.

Epistemic marker	看到 *kàndào* 'to see'		听到 *tīngdào* 'to hear'		知道/得知 *zhīdào* /*dézhī* 'to know'		发现 *fāxiàn* 'to find'		有 *yǒu* 'to have'		Total	
	Token	%	Token	%	Token	%	Token	%	Token	%	Token	%
BUSINESS	95	28	10	14	8	13	0	0	9	5	122	18.8
CONFLICT	17	5	4	6	3	5	2	15	16	10	42	6.5
CONTACT	14	4	10	14	8	13	4	31	80	48	116	17.9

JUSTICE	10	3	2	3	1	2	0	0	0	0	13	2.0
LIFE	61	18	19	28	15	25	3	23	23	14	121	18.7
MOVEMENT	111	33	17	25	21	35	3	23	24	14	176	27.2
PERSONELL	31	9	7	10	3	5	1	8	14	8	56	8.6
TRANSACTION	0	0	0	0	1	2	0	0	1	1	2	0.3
TOTAL	339	100	69	100	60	100	13	100	167	100	648	100

Table 3: Distribution of event types introduced by epistemic markers

Compared with the distribution of event types which is introduced by epistemic markers in *Weibo* posts, the result seems a little bit different. As shown in Table 4, the most frequent cause event type which triggers HAPPINESS emotion and is introduced by epistemic markers is LIFE, followed by CONTACT, MOVEMENT and BUSINESS. It shows that people prefer to show their own feelings through their own life experience or events occurred that have around them in social media. For example, 你们结婚晒幸福 *nǐmen jiéhūn shài xìngfú* 'you marry and show off your happiness' is the embedded clause of the 看到 *kàndào* 'to see', and it is also the cause event of HAPPINESS emotion, which is identified as LIFE because the main idea is about marriage.

(6) 姐妹们，很高兴**看到**你们结婚晒幸福。
jiěmèi men hěn gāoxìng kàndào nǐmen
bestie PL very glad to see your
jiéhūn shài xìngfú
marry show off happiness
'Besties, (I was) so glad to see that you marry and show off your happiness.'

Epistemic marker	看到 *kàndào* 'to see'	听到 *tīngdào* 'to hear'	知道[1] *zhīdào* 'to know'	发现 *fāxiàn* 'to find'	有 *yǒu* 'to have'	Total
BUSINESS	17	0	0	0	3	20
CONFLICT	0	0	0	0	8	8
CONTACT	3	0	0	0	27	30
JUSTICE	3	4	0	0	0	7
LIFE	28	1	3	1	11	44
MOVEMENT	11	1	1	0	15	28
PERSONELL	10	0	1	0	6	17
TRANSACTION	0	0	0	0	0	0
TOTAL	72	6	5	1	70	154

Table 4: Distribution of event types introduced by epistemic markers in *Weibo* posts

HAPPINESS emotion is most frequently used with epistemic markers and SEEING epistemic marker is the most frequent one. It is found that sensory verbs no longer indicate the sensory perception of the cause event, but reflect the cognitive mental process of the cause event. HAPPINESS emotion tends to use epistemic markers because

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[1] There is not "高兴得知" *Weibo* data in the corpus.

some motivations need to stimulate experiencers to cause HAPPINESS emotion, compared with other negative emotions (Lee and Huang 2018). As for the cause events, HAPPINESS emotion tends to be stimulated by events which are aspiring (MOVEMENT) and life-oriented (LIFE). The two most frequent event types show that the cause event in HAPPINESS emotion should be factive and then evoke the emotion of happiness, but it is rare in negative emotions. The result is also consistent with Huang and Chang (1996) which indicates that aspectual –qilai can only co-occur with a UP metaphor and emotion, and the construction has semantic and syntactic restrictions on the collocation with other elements. These cause events which are introduced by epistemic markers imply that experiencers express HAPPINESS emotion by means of sensory organs and the cause events are factive.

4 Factivity in Sentences with Negative Epistemic Markers

Lee (2010, 2019) and Lee and Huang (2018) found that epistemic markers often introduced the cause event. As in example (7), epistemic marker 看到 kàndào 'to see' is between the emotion words 高兴 gāoxìng 'glad' and cause event 他能一直坚持这项事业 tā néng yizhí jiānchí zhè xiàng shìyè 'he can insist on this business all the time' and it introduces the cause event of emotion HAPPINESS. The presupposition that the embedded clause 他能一直坚持这项事业 tā néng yizhí jiānchí zhè xiàng shìyè 'he can insist on this business all the time' is a true proposition regardless of the truth value of the main-clause, so the usage of the strong epistemic marker 看到 kàndào 'to see' presuppose the truth of the propositions which means that it is factive. Therefore, the embedded clause in (7) not only codes the high certainty of the event, but also causes the HAPPINESS emotion.

(7) 我们很**高兴看到**他能一直坚持这项事业。
wǒmen hěn gāoxìng kàndào tā néng
we very happy to see he can
yizhí jiānchí zhè xiàng shìyè
all the time insist this CL business
'We were very glad to see that he can insist on this business all the time.'

Two types of presupposition tests are always used to test the presupposition whether remains present when other elements modify in certain aspects. The two classical presupposition tests are constancy under negation and constancy under yes/no question. If the epistemic verbs are factive predicates, they can bear the test. If they are non-factive verbs, the presupposition tests do not work. As in (8), the propositions of the embedded clause in (8a, 8b and 8c) are all true due to the factive epistemic verbs 知道 zhīdào 'to know' regardless of the negation or yes/no question test of the sentence.

(8) a. 他**知道**小明已经到了。
              >> Xiaoming has arrived
tā zhīdào Xiǎomíng yǐjīng dào le
he know Xiaoming already arrive LE
'He knew that Xiaoming had arrived.'

b. 他不知道小明已经到了。
              >> Xiaoming has arrived
tā bù zhīdào Xiǎomíng yǐjīng dào
he NEG know Xiaoming already arrive
le
LE
He didn't know that Xiaoming had arrived.

c. 他知道小明已经到了吗？
              >> Xiaoming has arrived
tā zhīdào Xiǎomíng yǐjīng dào le
he know Xiaoming already arrive LE
ma
SFP
'Did he know that Xiaoming had arrived?'

But when the negation test is applied in (9a), different findings are observed. There are two interpretations when negator 没 méi is used in (9b) due to the scope of the negator. The first interpretation indicates that the proposition in the complement clause 他获奖 tā huò jiǎng 'he receives an award' is not true which can be regarded as negative factive as defined by Givón (1993) when the scope of the negator only includes the epistemic marker 听到 tīngdào 'to hear'. Another interpretation states the proposition in the complement clause can be either true or false because the scope of the negator is the whole parts followed by it. We cannot identify if he receives an award or not from the second interpretation. But in this paper, we will

focus on the first interpretation and discuss the factivity in this construction. This complex construction involves four elements: the adjectival emotion words, negator, epistemic marker, and complement clause. These four elements will contribute to the whole sentence in terms of syntax and semantics.

Apter (2007) pointed out that there were three types of reversal: contingent reversal, frustration reversal and satiation reversal. Contingent reversal is the first level which is represented by lexical opposite pairs triggered by external context. The second level can be linked to frustration reversal which caused by rejection of the original state and the negator signals this rejection. The last level is the satiation reversal which means that the reversal is implicitly marked which will present through the contrary of the meaning. As in (9b), the proposition in complement clause shows the rejection of the original state 他获奖 *tā huò jiǎng* 'he receives an award' but it reverses to failure because of the frustration reversal. The negator 没 *méi* marked the whole sentence and the proposition of the complement clause is still true and it is factive rather than negative factive. Although the complement clause indicates his failure, the emotion of the sentence is still HAPPINESS. Therefore, the emotion of the whole sentence depends on the reversal of the event and the negative epistemic marker. The negative epistemic markers will not influence the polarity of emotion.

(9) a. 我很**高兴**<u>听到</u>他获奖了。
>> he receives an award
wǒ hěn gāoxìng tīngdào tā huò
I   very glad   to hear   he receive
jiǎng le
award LE
'I was very glad to hear that he received an award.'

b. 我很**高兴**<u>没听到</u>他获奖。
>> reversal of 'he receives an award'
wǒ hěn gāoxìng méi   tīngdào tā
I   very glad   NEG   to hear   he
huò   jiǎng
receive award
'I was very glad not to hear that he received an award.'

5   Conclusion

This paper explores how epistemic marker interacts with emotions in terms of event type and factivity. We show that the epistemic marker is frequently used in the construction "subject + emotion word + epistemic marker + cause event" and then analyze the cause event types in HAPPINESS emotion sentences that epistemic markers are most frequently used. MOVEMENT and LIFE are two event types which have been most frequently found to be introduced by epistemic markers. These cause events which are introduced by epistemic markers suggest that experiencers express HAPPINESS emotions with the help of sensory organs. Moreover, we found that negative epistemic marker will not affect the factivity of the proposition in complement clauses and the polarity of the emotion. The emotion of the whole sentence relies on the reversal of the event and the negative epistemic marker.

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