

A NEW COGNITIVE GRAMMATICAL RESEARCH ON THE EVIDENTIAL USE OF ENGLISH PERCEPTION VERB CONSTRUCTIONS

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Abstract

Human perception is closely related to physical activity and higher-level cognition. Inference and information transmission based on perception play a major role in the behavior of sensing the presence of other individuals or sensing intentions from some kind of perceptual evidence. Perceptual processes are deeply related to inference and judgment, and therefore in linguistics, they have often been discussed in relation to modality and factivity. In addition to these concepts, a relationship with evidentiality has traditionally been pointed out. Evidentiality represents the information source for a proposition that a speaker perceives as true, and is often studied in relation to (or in contrast to) cognitive modality.

Keywords: evidentiality, deicticism, perception, subject constructions, control cycle

1. Introduction

In recent years, modality and related phenomena have been analyzed based on the framework of cognitive linguistics, which attempts to understand language in relation to general cognitive abilities. In the system of cognitive linguistics, language is considered to be the product of human subjective conceptualization, and attention is paid to the involvement of language's subjectivity and physicality. Cognitive linguistic research on the perceptual process is dominated by research on the relationship between perception and the physical activity that accompanies perception. However, there are relatively few studies that focus on perception and cognition. The English perceptual verb construction, the linking perceptual verb construction, is closely related to the acquisition and reception of sensory information and is one of the phenomena that exhibit behavior that clearly reflects physical activity and bodily experience, but even in this case, there have been few studies that focus on its relationship with cognitive concepts. In this paper, I will mainly

describe linguistic facts related to modality such as evidentiality and deicticism in linking perceptual verb constructions, while comparing them with perceptual verb constructions with experiencer subjects. As a methodology, I will describe and discuss the findings using the embodied approach and the control cycle, which is one of the models in Langacker's cognitive grammar theory. This paper is structured as follows. First, in Section 2, I will provide an overview of previous research on evidentiality and English perceptual verb constructions, and compare linking perceptual verb constructions with perceptual verb constructions with experiencer subjects. In Section 3, we present the theoretical framework of this paper and describe and discuss the linking perception verb construction. In Section 4, we summarize this paper.

2. Previous research on perception verbs and evidentiality

Conjunctive perception verb constructions have often been described in relation to evidentiality (cf. Anderson 1986,

Chafe and Nichols 1986, Whitt 2011, etc.).

Conjunctive perception verb constructions take various complements, as in (1), and Gisborne (2010) argues that all of these cases express evidential meanings such as inferences based on hearing.

- (1) a. *Jane sounded scared.* (adjective)
- b. *Jane sounded a fool.* (noun phrase)
- c. *Jane sounded like a fool.* (like prepositional phrase)
- d. *Jane sounded to be a fool/ scared.* (to be phrase)
- e. *Jane sounded like she was scared.* (like clause)

(Gisborne 2010: 251)

Gisborne further proposes a classification of usage from the perspective of evidentiality. We will look at this in detail in Section 2.3.

In addition, the following experiencer subject constructions with a finite clause as the complement also seem to show evidential meaning.

- (2) *I could hear from her quivering voice that Peter had been fighting.*
- (3) *I heard from John that Peter had been fighting.*

(Dik and Hengeveld 1991:248)

Section 2.1 briefly discusses evidentiality. Section 2.2 refers to Viberg's (1983) classification of traditional perception verbs. We then provide an overview of previous research on experiencer subject constructions and linking perception verb constructions.

2.1 Evidentiality

Discussions of evidentiality can be divided into two main categories: semantic classification and its formal manifestation. First, regarding semantic arguments, Palmer (2001) positions it as a subcategory of modality.¹ According to Palmer (2001), evidentiality (or evidential modality) is a

subcategory of "propositional modality" that is related to the speaker's judgment about a proposition, and represents an information source for the propositional content that the speaker considers to be true.

Cognitive Modality

(4) Propositional Modality  Evidential Modalities

Reportive

(5) Evidential Modalities  Sensory

(Palmer 2001: 22)

Reported evidentiality is based on reports from others, whereas sensory evidentiality is based on the five senses.

Evidentiality is expressed in two ways in individual languages (Aikhenvald 2004).

(6) a. Grammatical evidentiality: Coding by grammatical categories (function words)

b. Lexical evidentiality: Coding by lexical expressions (content words)

Grammatical evidentiality is particularly found in minority languages such as Tariana (Arawakan languages; Brazil) and Jarawara (Arawakan languages; Brazil). In these languages, evidentiality tends to be included in grammatical elements such as inflections and function words. On the other hand, in many Indo-European languages, grammatical evidentiality is not found, and evidentiality is often ubiquitous in lexical expressions. For example, in English, evidentiality is seen primarily in the usage of perception verbs, cognition/thinking verbs, and modal adverbs (e.g. evidently), as seen at the beginning of Section 2. 2.2 Three classifications of perception verbs Viberg (1983) recognizes three classifications of perception verbs. The three classifications are divided into activity, experience, and source-based copulative verb classes, as shown in Table 1 below.

Table 1. Three classifications of perception verbs (Viberg 1983: 128)³

ACTIVITY (controlled) EXPERIENCE (noncontrolled) SOURCE-BASED (copulative)

Sight	Look at	See	Look
Hearing	Listen to	Hear	Sound
Touch	Feel ₁	Feel ₂	Feel ₃
Taste	Taste ₁	Taste ₂	Taste ₃
Smell	Smell ₁	Smell ₂	Smell ₃

The difference between the activity perception verb class and the experience perception verb class is whether or not the perceiver intends to perceive. Activity verbs (look at, listen to, ...) are intentional actions, while experience verbs (see, hear, ...) are unintentional actions. Copula usage is an intransitive perception verb that takes a complement such as a predicate adjective.

Experiencer subject constructions and linking perception verb constructions occur with experience and copula type perception verbs, respectively.

2.3 Experiencer subject constructions

The correspondence between the complements of experiencer subject constructions and the meanings they express is often pointed out. According to Dik and Hengeveld (1991), there are two types of perception verb constructions with experiencer subjects that take finite clauses as complements, and they express meanings different from direct perception. They are divided into "mental perception of propositional content" and "reception of propositional content of speech act." Mental perception of propositional content refers to inference based on perception, and reception of propositional content of speech act refers to hearsay knowledge from others.

The following are examples of each.

(7) a. *I could hear from her quivering voice that Peter had been fighting.*

b. *I saw on her face that Peter had been fighting.*

(8) a. *I heard from John that Peter had been fighting.*

b. *I saw in the newspaper that Peter had been fighting.*

(Dik and Hengeveld 1991: 247)

As the examples show, the example of mental perception of the propositional content in (7) expresses a meaning equivalent to sensory evidentiality in Palmer (2001), while the example of the reception of the propositional content of a speech act in (8) expresses a meaning equivalent to reportive evidentiality.

What I would like to point out in particular is the following difference between these constructions.

(9) *I could taste that the toast was burnt (* but it turns out that it wasn't).*

(Dik and Hengeveld 1991:248)

(10) *I heard (from John) that Mary had caught a cold (but it turns out that she hadn't).*

(ibid.)

In cases of sensory evidentiality, the propositional content of the that-clause is semi-realistic, and is semantically inconsistent with clauses such as *but*, which negate the truth. On the other hand, in cases of reported evidentiality, the propositional content of the that-clause is non-realistic, and can co-occur with clauses that negate the truth. In other words, in the experiencer subject construction, the one that expresses sensory evidentiality indicates content that the speaker perceives as fact, and the one that expresses reported evidentiality can also indicate content that the speaker does not perceive as fact.

2.4 Conjunctive Perception Verb Constructions

Gisborne classifies the uses of conjunctive perception verb constructions from the perspective of the modal properties such as evidentiality and deicticity, and the directness of perception as follows: those expressing perceptual impressions without inference (e.g. *This music sounds lovely.*), those expressing judgments including inferences by the perceiver (e.g. *He sounds foreign.*), and those in which the subject is an indirect object of perception rather than a direct object of perception (e.g. (*I've heard the forecast and*) *tomorrow's weather sounds fine.*).

(11) Attributive use

- a. *This music sounds lovely.*
- b. *Peter's face looks lived-in.*
- c. *This cloth feels sticky.*
- d. *This food smells spicy.*
- e. *This food tastes rancid.*

(Gisborne 2010: 245)

Attributive use is considered to have a similar meaning to predicative sentences with the verb *be*. In other words, when it takes an adjectival complement of value evaluation like (11), it is considered to be an attributive use with a meaning equivalent to a predicative adjective sentence expressing a particular sense of perception (example corresponding to (11a): *This music is lovely.*). This is also shown by the fact that it cannot be followed by a clause that negates the fact like (12).

- (12) a. **This music sounds lovely, but it isn't really.*
b. **Peter's face looks lived-in, but it isn't really.*
c. **This cloth feels sticky, but it isn't really.*
d. **This food smells spicy, but it isn't really.*
e. **This food tastes rancid, but it isn't really.*

(Gisborne 2010: 245)

The following two usages are related to evidential properties. Two types of usages have been pointed out: direct evidence usage and indirect evidence usage, and (13) and (14) are examples.

(13) Evidential-1 use a. He sounds foreign. b. He looks ill. c. The fabric feels old. d. The wine smells delicious. e. The food tastes fantastic. (14) Evidential-2 use a.

Unlike attributional usage, these usages can be followed by a clause that negates the factuality ((13a): He sounds foreign but he isn't). They can also be rephrased with the phrase "To judge by..." ((13a): To judge by his sound, he is foreign). In this respect, they are considered to be usages that express evidence-based reasoning.

The difference between direct evidence usage and indirect evidence usage is whether the subject's referent is a direct perceptual object or not. In direct evidence usage, the subject is verbalized as a direct perceptual object. On the other hand, in indirect evidence usage, the subject "tomorrow's weather" is not a directly perceptual object, but is recognized through an indirect information source, the weather forecast.

From the perspective of cognitive grammar, it can be said to be a process of perceiving information transmission means such as the words of others or the media as reference points (Langacker 1993) and acquiring target knowledge from them⁵.

As mentioned above, Gisborne (2010) classifies usages, but there is little explanation of the relationship between the three usages and other constructions. In addition, there is little consideration of physical and cognitive aspects, and motivation is not clear. Gisborne (2010) states that the verb in the main clause causes the non-finite clause to be interpreted as a proposition, and that "the perception verb in question expresses the modal nature of the perception verb by "modalizing" the referent of the complement as a proposition" (ibid.: 252). It seems that the verb occurring in the linking perception verb construction is perceived as a so-called motivation because the initiator (initiator) of the sentence is a proposition and the endpoint (endpoint) is the speaker, which may be somewhat related to the explanation based on cognitive grammar (cf. Taniguchi 1997), but a detailed explanation has not been given.

2.5 Summary of previous research

The commonalities and differences between the experiencer subject construction and the linking perception verb construction that express evidentiality can be summarized as (15) and (16) below.

(15) Commonalities between the experiencer subject construction and the linking perception verb construction

- a. They have constructions that show sensory evidentiality with verbs of the five senses
- b. They have constructions that show reportable evidentiality with verbs of vision and hearing
- c. Examples that show reportable evidentiality can be interpreted non-descriptively

(16) Differences between the experiencer subject construction and the linking perception verb construction

- a. Linking perception verb constructions apply to a variety of complements, but the experiencer subject construction is limited to constructions that take finite complements
- b. Differences in descriptiveness of examples that show sensory evidentiality

The differences in descriptiveness in (16b) are as follows:

(17) The deictic nature of experiencer subject constructions expressing evidentiality

- a. Sensory evidentiality ... deictic (factive)
- b. Reporting evidentiality ... non-factive (non-factive)

(18) The deictic nature of linking perception verb constructions expressing evidentiality

- a. Sensory evidentiality ... non-factive (non-factive)
- b. Reporting evidentiality ... non-factive (non-factive)

The above are the commonalities and differences in the meaning and usage of both constructions. In the next section, from the standpoint of cognitive grammar, we will consider the usage related to evidentiality of perception verb constructions and their motivations.

3. A cognitive linguistic analysis of evidentiality usage

How should we explain the difference between experiencer subject constructions and linking perception verb constructions seen in section 2? In section 3.1, we refer to the analysis of the difference in visual experience between look and see (Fukada 2001), and apply a similar analysis

to sound and hear. In section 3.2, we use Langacker's (2002) control cycle to discuss the difference in deicticism of linking perception verb constructions. In section 3.3, we describe the classification of evidentiality shown by linking perception verb constructions.

3.1 Body-theoretic explanation for the difference between look vs. see and sound vs. hear

Here, we show that the difference in deicticism seen in section 2 can be explained by grasping the body-theoretic properties inherent in the verbs. First, we look at Fukada's (2001) analysis of the usage of the visual verbs look and see, and show that a similar analysis can be applied to sound and hear.

Fukada (2001) considers the establishment of the linking perception verb construction of look and its relationship to subjectification.

Comparing the visual experience of the visual verb look, which has a linking perception verb construction, and the visual experience of see, which does not, based on the findings of neuropsychology and Gruber (1967) and Yamanashi (1995), I have summarized it as follows (Fukada 2001: 27).

(19) <Visual experience behind the semantic extension of the visual verb look>

a. (Movement)

To turn one's eyes to an object or an event

b. (Perception)

To get a visual impression of the object or an event

c. (Higher cognition)

To judge what the object or an event is from the visual impression of the object or an event, and to infer something further from it

d. (Movement)

To deal with the object or event

(20) <Visual experience behind the semantic extension of the visual verb see>

a. (Movement)

To turn one's eyes to an object or an event, and to capture it (completely) in one's field of vision

b. (perception)

Acquire visual information about the object or event. c. (higher-level cognition) Understand the object or event and make some inference about it. d. (movement)

Act on the object or event. Fukada (2001) explains that part of the reason why the visual verb look developed its inferential meaning in the process of establishing the copula usage is attributed to the difference in visual experience mentioned above. The visual verb look has the original meaning of turning one's eyes to an object, while the visual verb see inherently implies not only turning one's eyes but also capturing it in one's field of vision. Linguistically, this appears as a difference

in meaning between the visual verbs look and see, and it is argued that look, which reflects the visual experience of not implying capturing a visual object in one's field of vision, does not presuppose truth, whereas see does. Fukada (2001) does not extend the above explanation to other perceptual modalities. However, in reality, in parallel with the comparison between look and see above, the auditory experience behind the semantic extension of sound and hear can also be summarized as follows: (21) <Auditory experience behind the semantic extension of the auditory verb "sound")

a. (Perception) The auditory stimulus of an object is emitted, and an auditory impression of the object or an event is obtained.

b. (Higher cognition) From the auditory impression of the object or an event, one judges what it is, and makes further inferences from it.

(22) <Auditory experience behind the semantic extension of the auditory verb "hear")

a. (Perception) The auditory organs (completely) capture the auditory stimulus from an object or an event, and obtain visual information about the object or event.

b. (Higher cognition) Understand the object or event, and make some inferences about it.

c. (Movement) Deal with the object or event (such as the meaning of "follow").

Hearing is a perceptual experience with a high degree of stimuli salience, in terms of the asymmetric relationship between the experiencer and the perceptual stimulus in the experience of human perception of the outside world. Neither hear, which occurs in an experiencer subject construction, nor sound, which occurs in a linking perception verb construction, implies a physical movement such as "listening to one's ears." However, hear, like the visual verb see, implies the experience of capturing a stimulus. Furthermore, the auditory verb sound, which appears in a linking perception verb construction, is intransitive, unlike hear and listen (to), and does not symbolize the sensory reception of the experiencer as in (23), but only the emission of a stimulus. (23) a. The food began to smell. b. The bell began to sound. (Taniguchi 2005: 221)

From these differences, it is thought that the use of sound and hear, which is similar to the difference between look/see, has developed in which sound does not presuppose truth when it occurs in a linking perception verb construction, whereas hear in an experiencer subject construction presupposes truth.

3.2 Description of differences in deicticism using the control cycle

In this section, we describe linking perception verb constructions based on the control cycle, a cognitive model in Langacker (2002, 2009). In particular, we show that the description of the differences in deicticism of linking perception verb constructions, as pointed out in previous studies, can be comprehensively grasped using the epistemic control cycle from the syntactic and semantic perspectives that will be discussed later.

However, it should be noted that this cognitive model is a model that attempts to capture a very wide range of processes in terms of the concepts of acquisition and avoidance, and the types of information sources in evidentiality and the means of incorporation into reality are generalized (Langacker 2009: 201).

Humans acquire various knowledge subjectively through perception, inference, hearsay, etc., and this knowledge is incorporated as part of reality, but the control cycle itself ignores the mode of acquisition at the cognitive level. Therefore, the classification of evidentiality will be considered separately in Section 3.3.

3.2.1 What is the control cycle?

The control cycle is a cognitive model that integrates various processes as a process in which an entity brings an object under its control. Langacker introduces this cognitive model to attempt to unify various linguistic expressions that seem to be ubiquitous in a chaotic way. In the most general model (Figure 1), entities are called "actors" and objects are called "targets." The "dominion", the area surrounding the subject, indicates the area over which the subject exercises control. The "field", the whole area, is the subject's sphere of awareness (or the scope of consciousness). In the control cycle, the interaction process consists of four "phases", the baseline, potential, action, and result. The baseline is the stasis before the interaction between the subject and the target occurs. The potential is the phase in which the target appears in the subject's sphere of awareness. The action is the dynamic phase in which the interaction between the subject and the target occurs. The result is the phase in which the target is placed in the subject's dominion and is controlled. At the base of this model is the idea that opposing situations such as <force> and <tension>, or <change> and <continuity>, alternate and continue to cycle.

(24)The four stages of the control cycle

a. Baseline stage: stasis stage before subject-target interaction occurs.

There are no other entities in the subject's sphere of awareness (scope of potential interaction) except the subject, which controls several entities in its dominion.

b. Potential stage: the stage in which the target appears in the subject's sphere of awareness. Static tension.

c. Action stage: the dynamic stage in which subject-target interaction occurs.

d. Consequence stage: the stage in which the target is placed in the subject's dominion and is controlled. Stable, static state after the interaction occurs.

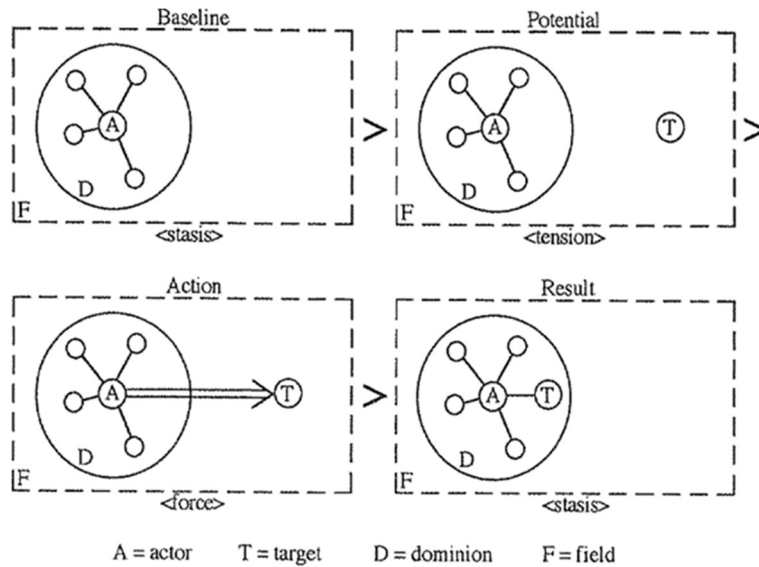


Figure 1 Control Cycle (Langacker 2002: 193)

As a concrete example, let us consider the process of a cat (subject) catching a mouse (target).

First, there is a stage (baseline stage) when the cat is resting, etc., and is unaware of the presence of a mouse.

The cat then moves to an active stage (latency stage) after the presence of the mouse is included in the cat's field of vision and the cat takes action.

The latency stage includes physical preparatory actions leading up to the action and psychological warning.

The cat then directly captures the mouse (e.g., jumping on it, catching it, injuring it, etc.), and finally reaches a stage (result stage) in which the mouse is caught.

This is an example of a physical action, but similar cognitive processes form the conceptual basis of various processes such as perception, higher-level cognition, and social activities.

The cognitive model that is the basis of the control cycle regards the process as a structure consisting of a cycle of dynamic events and static states.

Dynamic events are bounded events that include some kind of change. A static state is an unbounded state with tension that does not involve dynamic changes.

This overall structure is called the "tension cycle" (Langacker 2009: 305). The control cycle is based on this tension cycle and captures the various interactions between the subject and the target through the concepts of "capture" and "avoidance" (ibid.: 306). Capture is the act of controlling the entity/target that has invaded the subject's sphere of awareness. Avoidance is the act of excluding it from the subject's sphere of awareness.

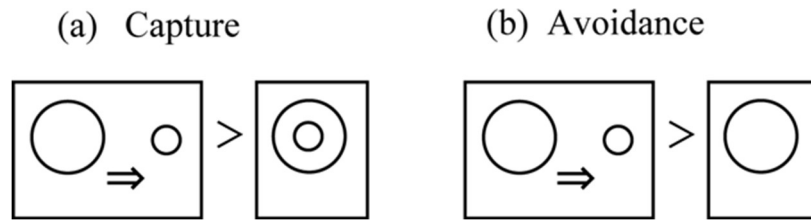


Figure 2. Acquisition and avoidance

Acquisition at the physical level is the process of incorporating an object into the subject's domain (territory, body, etc.).

Acquisition at the perceptual level is the process of acquiring or receiving a sensation as sensory information.

Acquisition at the cognitive level is the process of recognizing the fact of a proposition.

And acquisition at the social level is the process of accepting an object into the subject's social domain.

Table 2. Various acquisitions and avoidances

(Type of event)	(Example of acquisition)	Example of avoidance
Physical Events	Capture,preying,givingand receiving	Exclusion, Expulsion
Perceptual Events	Acquisition and reception of the five senses and somatosensation	Loss of sensation/paralysis
Cognitive events	Recognition or belief in a proposition	Negation of a proposition
Social phenomena	Acceptance and approval of others	Rejection, marginalization, discrimination

3.2.2 The control cycle of the epistemic levelThe control cycle of the epistemic level applies to processes related to the meaning of cognition, thinking, and reasoning, such as the concept of reality. In the control cycle of processes related to cognition and thinking, the potential stage is divided into three stages: formulation, assessment, and inclination. There are also tensions and power cycles in the cycles of perception, evaluation, and inclination, with perception being an incomplete process, evaluation being a completed process, and inclination being an incomplete process.

(25) Subdivisions of the potential stage of the epistemic control cycle

a. Formulation: The stage at which a proposition is introduced as a potential object of consideration.

b. Assessment: The stage at which the subject evaluates the reality of the proposition and makes a potential choice of the proposition.

c. Inclination: The stage at which the cognitive subject's judgment of the proposition is directed.

(26) a. *I am aware of the possibility that politicians occasionally distort the truth.* [Detection]

b. *She {wondered / considered} whether anything could be done to alleviate the situation.* [evaluation]

c. *He {thinks / believes / suspects} they will never agree to his offer.* [inclination]

d. *She {learned / discovered / decided / concluded} that her lawyer could not be trusted.* [Activities]

e. *He {believes / knows / thinks / accepts} that the earth is round.* [result]

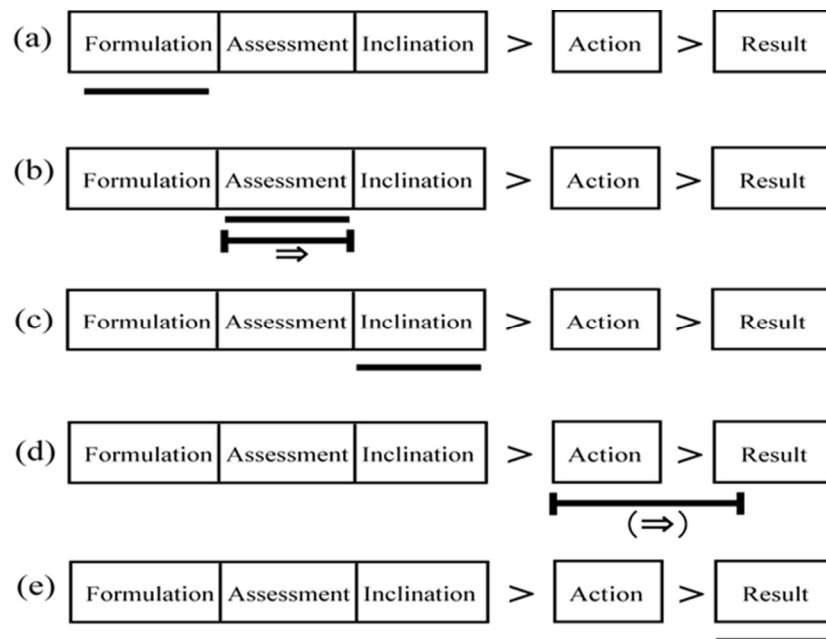


Figure 3. The control cycle at the cognitive level

In addition, the so-called "negative raising" phenomenon is observed at the intention stage (Langacker 2009: 263). This phenomenon is due to the fact that the cognitive subject's judgment is being directed and the truth or falsity of the propositional content is uncertain. As shown below, this phenomenon is not observed at other stages in the control cycle. Below are examples of personal and impersonal predicates, respectively.

(27) a. *I don't believe she has any children.* [Inclination] = *I believe she doesn't have any children.*

b. *I didn't believe (his story) that he had to work late.* [Activities] ≠ *I believe (his story) that he didn't have to work late.*

c. *I don't believe (the theory) that God is female.* [Result] ≠ *I believe (the theory) that God isn't female.*

(28) a. *It isn't possible that dolphins are smarter than people.* [Detection] ≠ *It's possible that dolphins aren't smarter than people.*

b. It isn't uncertain whether dolphins are capable of metaphor. [evaluation]

≠It isn't uncertain whether dolphins are capable of metaphor.

c. It doesn't appear that chimps will ever learn to use the subjunctive. [inclination]

= It appears that chimps will never learn to use the subjunctive.

d. It isn't certain that beer is good for you. [result]

≠It's certain that beer isn't good for you.

Moreover, the phenomenon of negation raising is also observed in evidential uses of linking perception verb constructions (Gisborne 2010: 278).

(29) a. *Jane sounds like she's not very old.*

b. Jane doesn't sound like she's very old.

c. Jane seems like she's not very old.

d. Jane doesn't seem like she's very old.

(Gisborne 2010: 278)

The above control cycle framework is applied to the three uses of the linking perception verb construction presented by Gisborne.

3.2.3 Description and consideration based on the control cycle

The use of the linking perception verb construction related to evidentiality is considered based on the control cycle. (30) to (31) are the three uses proposed by Gisborne, (30) and (31) are examples of direct evidential use and indirect evidential use, respectively, and (32) is a reprint of an example of attributional use. In addition, (33) is a predicative adjective sentence with the same meaning as the construction in (32).

(30) *He sounds foreign.* [Direct evidence usage] (=13a)

(31) *(I've heard the forecast and) tomorrow's weather sounds fine.* [Use of indirect evidence] (=14a)

(32) *This music sounds lovely (, *but it isn't really).* [Attribute usage] (=12a)

(33) *This music is lovely.* (Example)

The two evidential uses, (30) and (31), are both located in the intention stage of the control cycle. This is because the linking perception verb construction, which includes inference, is considered to be the stage where the cognitive agent's judgment of the proposition is directed. On the other hand, the attributional use (32), which expresses the meaning of value evaluation without inference, is located in the same stage as the objective predicative adjective sentence with the verb be (33). It is placed in the result stage. It indicates the state in which the subject is convinced of a certain proposition, that is, the subject recognizes that the content of the proposition is a fact.

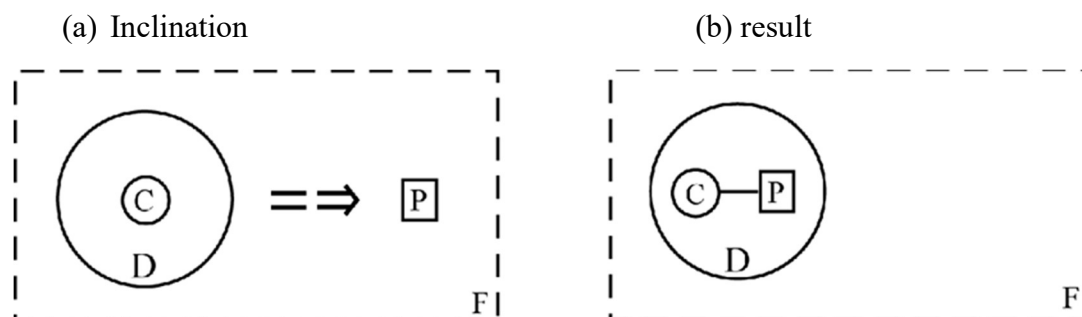


Figure 4. Intention stage and result stage

This fact is parallel to the presence or absence of co-occurrence of modal verbs in finite clauses. As in (34), finite clauses containing modal verbs represent the intention stage, while finite clauses without modal verbs represent the result stage.

(34) a. *She {may / might / could / should / will / must} be upset.* [inclination]

b. *She {is / was} upset.* [result]

3.2.4 Conjunctive perception verb constructions and finite clause complements

Here, we show that the analysis in this paper can also be applied to conjunctive perception verb constructions with finite clause complements. In the seem construction with *like*, *as if*, and *as though* clauses and in conjunctive perception verb constructions, a phenomenon called copy-raising or pseudo-raising is observed. This phenomenon is described as "a phenomenon in which the subject of a subordinate clause is raised to the subject of the main clause, leaving a copy of the coreferential pronoun in the subordinate clause (Gisborne 2010)." In transformational grammar, such pairs of constructions are analyzed as having a derivational relationship based on a transformation rule called "coreferential constraint" and expressing the same meaning. In cognitive linguistics, the difference in language form is considered to be reflected in the difference in meaning, and abstract syntactic operations are not assumed. In addition, it, which appears in non-raising constructions, has traditionally been called a "dummy" and analyzed as an element that "does not have meaning."

However, cognitive grammar emphasizes the analysis of the meaning of this *it*, and defines it as an "abstract setting". In the recent framework of Langacker (2002, 2008, 2009), while following previous descriptions such as abstract setting, the subject *it* of the impersonal construction is described as the scope of consciousness related to the proposition. This scope of consciousness coincides with the field (F) in the control cycle and is defined as part of the setting, so it is consistent with the traditional analysis of cognitive grammar and is used as a theoretical device together with models such as the control cycle. Based on Langacker's (2002, 2008, 2009) definition of the scope of consciousness and the analysis of raising constructions by Langacker (1995) and Langacker (2009: 321), the copy-raising phenomenon of the linking perception verb construction is shown using a diagram of the control cycle.

(35) a. *It sounds like/as if/as though Jane won.*

b. *Janei sounds like/as if/as though shei won.*

(36) a. *It looks like Mary is going to leave here.* (Example)

b. *Mary looks like she is going to leave here.* (Example)

(Gisborne 2010: 269)

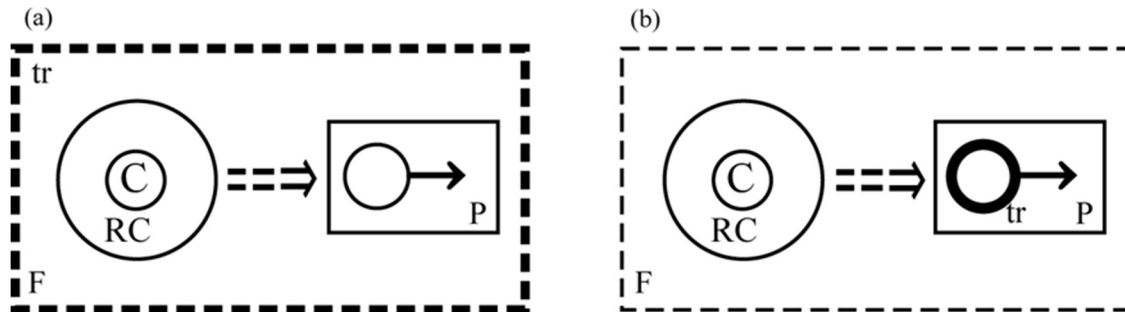


Figure 5. The phenomenon of copy-carrying

The cognitive schemas of a and b in (35) and (36) are shown in Figure 5. In (a), the abstract setting of the subject position, it, stands out as the trajector, and so the field, which is the cognitive domain of the subject, stands out. On the other hand, in (b), the entities Jane and Mary, which are the same referents as the subject in the proposition, are the trajectors and are profiled. The difference in meaning between the constructions can be reduced to the difference in profiles.

3.2.5 Application to more peripheral phenomena

The description based on the control cycle can also be applied to more peripheral phenomena listed by Gisborne (2010). Gisborne gives the example sentence (37) and states that these subjects are interpreted agentively, and the whole perceptual process is perceived as an intentional act of the referent of the subject. This can be explained within the framework of cognitive grammar and is thought to be due to the co-occurrence of elements that evoke aspects and the intention of the agent.

(37) a. *Jane is looking scary (to frighten off the boy she doesn't want to date).*

b. *Jane is sounding angry (to hide the fact she's scared).*

c. *Jane is deliberately looking scary.*

d. *The teacher is deliberately sounding angry.*

(Gisborne 2010: 265)

(38) a. *Jane looks scary.* (Example)

b. *Jane sounds angry.* (Example)

A linking perception verb construction like (38) that is not in the progressive phase is interpreted as an incomplete process. On the other hand, the example given by Gisborne is in the progressive phase and is interpreted as perfective. Furthermore, from the adverbial clause with a to-infinitive that expresses the purpose of the action and the co-occurrence of a modal adverb like deliberately, it is self-evident that the entity to which the intentionality of the process belongs is not the perceiver implied in the expression, but the trajector Jane. As for (37a), since Jane is, of course, a human

being with a will, it is quite natural to interpret her as "showing" (or as perceived by the viewer) a frightening appearance. Therefore, from the perspective of the perceiving subject, it is thought that an interpretation will arise that Jane is both the object of the perception and the agent "showing" in that way. In the control cycle, since the process is interpreted as bounded and perfective, it can be considered to be located in the action stage. However, considering that such usages⁶ arise from changes in aspect or the co-occurrence of elements expressing intention, as many previous studies have shown, the prototype of the construction is a stative sentence, and the sentences with intentional and active interpretations discussed here can be considered as extended usages. However, within the framework of cognitive linguistics and cognitive grammar, such usages can be flexibly incorporated⁷.

3.3 Evidentiality of Conjunctive Perception Verb Constructions

In Section 3.2, we described the discussion of deicticism using the control cycle. In this section, we discuss the diversity of evidentiality shown by conjunctive perception verb constructions. First, we refer to the types of evidentiality proposed by Aikhenvald (2004: 63) and discuss how conjunctive perception verb constructions in English show a very wide range of evidentiality.

Aikhenvald (2004; 63) states from his typological research that there are up to six types of evidentiality as types of grammatical evidentiality. They are divided into (i) visual, (ii) sensory (non-visual), (iii) inference, (iv) assumption, (v) hearsay (hearsay information from others), and (vi) quotative (quotation of statements by others). (i) and (ii) are classifications related to sensory evidentiality, the former being evidence based on visual perception, and the latter evidence based on sensory modalities other than visual perception. (iii) and (iv) are evidentiality related to inference, the former being inference based on clear evidence or result states, while the latter is based on evidence that is not clear or specific, including logical thinking, general knowledge, and conjecture. (v) and (vi) are subcategories of reported evidentiality, the former being reported evidence without a citation source, and the latter being reported evidence with a clear citation source. The above can be summarized as shown in the table below.

Table 3. Classification of evidentiality

	Aikhenvald's classification	nature
1. Sensory Evidence	(i), (ii)	Sensory Modalities
2. Inferential Evidence	(iii), (iv)	inference
3. Reported Evidence	(v), (vi)	The words and thoughts of others and their contents (cf. news reports)

As for the assumption of evidentiality in (iv), some constructions of look and sound are applicable. In particular, in the impersonal use of the abstract setting it as the subject, as seen in Section 3.2.4, there are cases in which the relationship between the cognitive agent and the information source (the process by which the agent comes to recognize the proposition in question) is more abstract and unclear. This type of construction has developed particularly in the construction of look and sound, and is related to the fact that complement-taking clauses such as it looks {like/ as if/ as though} ... have become conventionalized as constructions that express the speaker's subjective recognition.

(39) It looks like there could be a concerted effort on the part of our government to quietly help Iraq through this sleepy little program that USDA called the loan guarantee program so as not to offend Israel.

(COCA)

The predicate in these cases seems to express a more abstract inference rather than the original sense of perception.

Also, (40) is an example of the reportive evidentiality (particularly citational evidence) of the visual and auditory verbs look and sound.

40. a. *And from everything I've seen on the news, it looks like he's taking every precaution possible to make sure that this virus does not spread.*

b. *That's the state treasurer, Richard Mourdock, who according to polls looks like he is going to defeat Senator Richard Lugar in the primary on Tuesday, although who knows?*

c. *... from what has been reported, it sounds like these are new primary melanomas, not recurrences of the previous one, which would be the most favorable situation*

d. *... according to the police report, it sounded like he had shot my dog right in front of the kids.*

e. *The president's speech, according to an American who heard it, sounded like a campaign address to an American Jewish audience.*

(All examples are from COCA, italics added by the author)

In each of the above cases, the propositional content is information obtained indirectly from others, as indicated by the italicized prepositional phrases. (a) indicates that the knowledge was obtained through "news," (b) through "opinion polls," (c) through "reports," (d) through "police reports," and (e) through "statements from people who heard the president speak."

The following table summarizes the examples of this construction we have seen so far and the evidentiality they indicate.

Table 4. Evidentiality shown by connective perception verb constructions

	look	sound	smell	taste	feel
i. (sensory)	✓	✓	✓	✓	✓
ii. (inference)	✓	✓	✓	✓	✓
iii.(assumption)	✓	✓			
iv. (hearsay)	✓	✓			
v. (quotative)	✓	✓			

As seen in Section 2.1, English perception verb constructions show lexical evidentiality, but various meanings related to the source of information are observed due to factors such as the

embodied nature of each sensory modality, the degree of subjectivity of each, and the diversity of impersonal uses of it.

4. Conclusion

In this paper, we attempted to describe the evidential use of perception verb constructions. We considered the classification of the usage of linking perception verb constructions proposed by Gisborne (2010) in comparison with experiencer subject constructions, and described our perceptual experience behind perception verbs and cognitive concepts such as deicticism and evidentiality from the perspective of cognitive grammar. In particular, we used a comprehensive cognitive model based on Langacker's (2002) control cycle theory to show the differences in directness observed in the constructions and the resulting differences in deicticism at a more general level. In this study, we clarified that the two types of evidential usages in Gisborne (2010) are both positioned in the context of intention, while the attributional usage is positioned in the context of result. Furthermore, the analysis conducted in this paper also includes suggestions for the dynamic interpretations permitted by the construction in question, which have not been considered much up to now.

The linguistic phenomena discussed in this paper are positioned as part of a long-term theoretical study that aims to describe and explain issues related to modality. Until now, there have not been many studies that have analyzed deicticism and evidentiality based on the framework of cognitive linguistics, but the significance of this study can be found in the fact that it has demonstrated the validity of describing and explaining linguistic phenomena related to these concepts.

1. There is a lively discussion of the relationship between evidentiality and modality (especially cognitive modality), but this paper will not go into it in depth. See Aikhenvald (2004) and others.

2. Although it is said that there is no systematic grammatical evidentiality in English, there is a view that recognizes evidential uses of the modal verb must (Anderson 1986, Palmer 1986, Sawada 2006, etc.). The following examples show a high degree of certainty inference based on the evidence obtained by the subject (Anderson 1986: 275).

(i) The toast must have burned. (Anderson 1986: 275)

3. The subscripts for feel, taste, and smell in Table 1 are added to indicate that these verbs are found in all three categories.

4. Reportative evidence seems to be consistently accompanied by a non-descriptive interpretation.
(ii) is a non-deictic predicate expressing reportive evidentiality.

(i) a. *I knew that the sun is over 93 million miles away from the earth, but { it's not true/ I don't believe it.}*

b. *I have heard that the sun is over 93 million miles away from the earth, but { it's not true/ I don't believe it.}*

c. *I have been told that the sun is over 93 million miles away from the earth, but { it's not true/ I don't believe it.}*

d. *I am aware that the sun is over 93 million miles away from the earth, but { it's*

not true/ I don't believe it.}

(Nakau 1983: 560)

5. This is related to the complexity of the interaction between the experiencer and the object of perception in the inference process represented by the connective perception verb construction.

(i) a. *He looked tired; his eyes were pouchy and his clothes were rumpled as if he'd been in them a long time.*

b. *He came up, once - he looked surprised more than anything else, his face deathly white, his mouth a black O - and then disappeared again and did not come back up.*

c. *He sounded nervous, his voice catching on his first words.*

(ii) a. *"Looking back, not really," I said. "But when I saw you, I thought, here is someone I might truly love." "That's really moving," he said. He sounded sincere.*

b. *Peter was shouting something, he (=Edward) couldn't catch the words, but heard the notes. He (=Peter) sounded happy and excited.*

((iii) and (iv) are both examples from COCA.)

In each of the sentences in (iii), the content following the perception verb construction provides concrete evidence for the inference. In (iii-a), the visual evidence that motivates his state (tired), which is inferred from his appearance, is detailed in the following content (his eyes were pouchy and his clothes were rumpled as if he'd been in them a long time.), with the whole of him as the reference point. On the other hand, the underlined part in (iv-a) expresses the listener's feeling that he is sincere (sincere) after he says "That's really moving." The verb sound in this example is ambiguous in that it could be his tone of voice, his way of speaking, his choice of words, or all of these combined. On the other hand, in the context of (iv-b), Edward is not sure what Peter said (whether he shouted), but he hears the sound (i.e., Peter's tone of voice). In other words, it is inferred that Peter's state (happy and excited) was judged from his tone of voice.

6. As far as I can see, there is little previous research that directly refers to this linguistic phenomenon, but Yamaoka's (1993) comparative study of the progressive and simple constructions of the visual verb look is relevant. Yamaoka (1993) states that when the perception verb look is used in the progressive form, there is focus on the facial expression and appearance of the perceived object, and the subject's interest in the object is recognized.

7. However, further research is needed on the phenomena related to aspect and intentionality surrounding linking perception verb constructions, including progressive cases. This is because the analysis and consideration of aspect in research on linking perception verb constructions has been dominated by simple forms, and only cases with stative interpretations have been dealt with. As for Gisborne (2010) mentioned here, he also deals with examples of the progressive aspect where intentionality can be found through pragmatic implication, but it can be said that he has not yet been able to paint a complete picture of linking perception verb constructions that take the progressive aspect.

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