Temporal Marking in Korean Attributive Clauses and Linguistic Encoding of Human Memory*

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Subscribing to the widely held view among linguists that human language provides a window on the human mind, the present paper attempts to establish a connection between grammatical structures and the organization of human memory by looking at a set of temporal markers that appear in realis attributive clauses in Korean, namely, -(*u*)*n*, -*nu-n*, and -*te-n*. The central claim will be that the behavior of these three markers showcases how human language may encode "semantic memory" and "episodic memory" in the sense of Tulving (1972, 1983, 2002, 2005). The analysis proposed here provides indirect support for differentiating between semantic memory and episodic memory as well as dividing memory systems into sub-types. Additionally, the semantic properties of the Korean attributive clause markers uncovered here advances our understanding of the intricate relations that hold between grammatical categories that are known as Tense, Aspect, Mood, and Evidentiality (or TAME) in the linguistics literature.

Key words: *linguistic encoding of memory, semantic memory, episodic memory, temporal marking, TAME, Korean*

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1. Introduction

A widely held belief among linguists is that human language provides a window on the human mind (e.g., Chomsky 1968/2006; Pinker 1994, 2007). Under this belief or independently of it, a possible connection between grammatical structures and the organization of human memory has occasionally been suggested (e.g., Chafe 1973; Dahl 1983; Dahl to appear). For example, Dahl (to appear) claims that there is at least an indirect relationship between memory and linguistic phenomena related to time, i.e., Tense, Aspect, Mood, and Evidentiality (TAME), and "TAME categories may reflect how or from where the information expressed in a sentence is stored in the brain" (p. 3).[1]

The present paper is an attempt to further establish the connection between the make-up of grammar and human memory by probing a set of TAME markers that appear in realis attributive clauses in Korean, namely, *-(u)n*, *-nu-n*, and *-te-n*. The central claim will be that the behavior of these markers showcases how human language may encode "semantic memory" and "episodic memory" in the sense of Tulving (1972, 1983, 2002, 2005) and what kind of derivative relationship may hold between the two types of memory systems.

This paper is organized as follows: Section 2 offers a brief introduction to semantic memory and episodic memory, in particular how episodic memory differs from semantic memory. Section 3 demonstrates how the two types of memory systems can be encoded in a human language by using data that are made available from Korean attributive clauses. Section 4 concludes the paper with a brief summary and implications for future research.

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[1] To this end, Dahl points out how sleep gives rise to "consolidation of memory"; how in numerous unrelated languages, Tense distinctions are made on the basis of what he calls "hodiernality", i.e., referring to the day of the utterance; and how what counts as "hodiernal past" vs. "pre-hodiernal past" is determined by the time when people go to sleep in various cultures, as documented by Crane (2011) for Totela (a Bantu language spoken in Zambia).

2. Episodic Memory vs. Semantic Memory

What are known as semantic memory and episodic memory in the literature are both sub-systems of propositional memory (or declarative memory), which, along with procedural memory, constitutes human memory at the macro level.[2] In Tulving's seminal work in 1972, the two sub-types of propositional memory were believed to interact with each other at all times, but they differ in that while semantic memory is concerned with a person's "abstract, timeless, encyclopedic knowledge" of the world that he/she shares with others, episodic memory is concerned with "unique, concrete, personal experiences" dated in the rememberer's past.

More recent work by Tulving identifies more fine-grained differences between the two types of memory systems. For example, Tulving (1983) shows that they differ from each other in terms of (i) information, (ii) operation, and (iii) applications (or the role that memory plays in a broad range of human affairs), as summarized in Table 1. Among the differences between episodic memory and semantic memory listed in Table 1, three most notable are that (i) the reference for episodic memory is "self", whereas the reference for semantic memory is "the universe"; (ii) that episodic memory is later developing than semantic memory; and that (iii) episodic memory is a human-specific cognitive ability, whereas semantic memory is not.

Tulving (2005) makes additional comments on the differences between episodic memory and semantic memory. He claims that only healthy humans older than 4 years old possess what he calls "autonoetic" ("self-knowing") episodic memory, and the possession of this particular type of

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[2] Propositional memory systems differ from procedural memory systems in several respects: e.g., (i) information handled by the former has a truth value, whereas information handled by the latter does not; (ii) information retrieved from the former can be contemplated introspectively or attended to internally, whereas that retrieved from the latter cannot; and (iii) propositional knowledge about something can be communicated to others through language or other methods, whereas procedural knowledge can only be demonstrated through highly specific behavior (Tulving 1984: 224).

episodic memory allows humans to "mentally travel" both into the past and into the future through "subjective time", whereby consciously "re-living" or "re-experiencing" things that happened in the past or "foreseeing", "pre-experiencing", and/or "anticipating" things that may happen in the future. Other species clearly possess semantic memory, and they may even possess some type of episodic memory, but crucially, they lack the ability to mentally travel into the past or into the future with a clear mental awareness of doing so. That is, their episodic memory is not "autonoetic", so is far less developed than what humans possess.

Yet another important property Tulving (2005) ascribes to episodic memory is that it "represents an extension of semantic memory, both in its emergence in the course of evolution and in terms of its operations" (p. 13). More specifically, in Tulving's theoretical framework, which is known as "the serial parallel independent (SPI) model" (Tulving 1993, 1995), episodic memory is considered a derivative of semantic memory, and the two types of memory can co-exist and operate in a parallel fashion.

In more recent years, Tulving's classification of memory has been challenged. For example, Fivush (2011) takes issue with Tulving's (2002) definition of episodic memory, according to which, one of the two essential properties of episodic memory is memory of the specific "what, where, and when" of an experience, and the other of which is its "involvement with autonoetic consciousness", i.e., the awareness of self having experienced the event in the past, which involves mental travel in time. Fivush claims that only the first type of memory should constitute episodic memory and the second type should be relabeled as what he calls "autobiographical memory". His reasoning for such reclassification is that while even animals have the ability to recall specific past events including the information on the what, where, and when, only humans have the ability to recall past events involving autonoetic consciousness and notably, this ability "goes beyond the episodic memory function of guiding current and future behavior to serve social and emotional functions, including self-definition, self-in-relation, and self-regulation (Bluck & Alea 2002; Fivush 1988; Fivush et al. 2003)" (Fivush 2011: 560-561).

Despite such disagreements about exactly what counts as episodic memory and what counts as autobiographical memory, however, authors includ-

Table 1. Differences between Episodic and Semantic Memory (Tulving 1983, Table 3.1, p. 35).

Diagnostic feature	Episodic	Semantic
Information		
Source	Sensation	Comprehensive
Units	Events; episodes	Facts; ideas; concepts
Organization	Temporal	Conceptual
Reference	Self	Universe
Veridicality	Personal belief	Social agreement
Operations		
Registration	Experiential	Symbolic
Temporal coding	Present; direct	Absent; indirect
Affect	More important	Less important
Inferential capacity	Limited	Rich
Context dependency	More pronounced	Less pronounced
Vulnerability	Great	Small
Access	Deliberate	Automatic
Retrieval queries	Time? Place?	What?
Retrieval consequences	Change system	System unchanged
Retrieval mechanisms	Synergy	Unfolding
Recollective experience	Remembered past	Actualized knowledge
Retrieval report	Remember	Know
Developmental sequence	Late	Early
Childhood amnesia	Affected	Unaffected
Applications		
Education	Irrelevant	Relevant
General utility	Less useful	More useful
Artificial intelligence	Questionable	Excellent
Human intelligence	Unrelated	Related
Empirical evidence	Forgetting	Analysis of language
Laboratory tasks	Particular episodes	General knowledge
Legal testimony	Admissible; eyewitness	Inadmissible; expert
Amnesia	Involved	Not involved
Bicameral men	No	Yes

ing Fivush (2011) still unequivocally agree (i) that what Tulving calls episodic memory is a human-specific phenomenon whereas semantic memory is shared by other intelligent species; (ii) that Tulvingian episodic memory involves a conscious self engaging in experiences that link the past self to current self along a personal time line; and (iii) that Tulvingian episodic memory is late developing, typically coming into existence around age 5.

Given such consensus among authors, then, we can conclude that what Tulving calls episodic memory, i.e., a memory that involves "autonoetic consciousness", is distinct from semantic memory, and only humans possess it. And if we believe that human language provides a window on the human mind, then, we are led to hypothesize that episodic memory in the sense of Tulving is grammatically encoded, and it is likely to be encoded in ways different from semantic memory.

In what follows, I test this set of hypotheses by looking at the semantic functions of attributive clauses in Korean from the standpoint of episodic memory and semantic memory. I have chosen to examine attributive clauses rather than non-embedded clauses here because when talking about memory, humans typically talk about what they remember from the past and yet the "what" part of what they remember can be either an eventuality or some property they associate with themselves or with someone else. Hence, in order to investigate how human language grammatically encodes a Tulvigian sense of episodic memory, we need to probe an embedded clausal structure which serves as the complement of a remembering verb or as a clausal modifier of an individual-denoting expression, such as the attributive clause construction in Korean.

3. Linguistic Encoding of Episodic and Semantic Memories: A View from Korean

I begin this section by briefly introducing some of the basic properties of Korean and its attributive clause construction that we will be looking at.

3.1. Basic Properties of Realis Attributive (ATT) Clauses in Korean
Korean is morphologically an agglutinative language and syntactically a Subject Object Verb (SOV) constituent order language (Sohn 1999). Scram-

bling is possible but the language exhibits strict head-finality (e.g., the predicate always occurs at the end of a sentence).

Due to its agglutinative morphological characteristics, attributive (ATT) clauses in Korean are comprised of a verb stem and a relative clause (RC) marker, both of which are bound morphemes (although one is a right-bound morpheme and the other is a left-bound morpheme).

ATT clauses in Korean may or may not contain a gap. If they contain a gap, then they instantiate externally-headed relative clauses (RCs), which contain an empty category that is co-indexed with the head noun (i.e., the noun that an RC modifies). If they do not contain a gap, then, they instantiate gap-less noun-modifying clauses or nominalized clauses that occur in Subject or Object position.

ATT clauses in Korean can bear either realis or irrealis mood (Lee 1993; Sohn 1999), and those bearing realis mood will be our main concern here.

Realis ATT clauses in Korean end with the adnominalizer/RC marker -$(u)n$[3] and, between the verb stem and the RC marker, additional TAME markers may occur, namely, -*nu*-, -*te*-, and -*ess-te*-. To see this, consider (1), where the first four data illustrate RCs and the last illustrates a gap-less ATT clause. (Here and below, '*e*' stands for a gap or an empty category that is co-indexed with the head noun of an ATT clause.[4])

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[3] The realization of the vowel "u" in the RC marker -$(u)n$ is determined by whether the preceding stem ends in a consonant or not. If it ends in a consonant, then "u" is realized; if not, the RC marker surfaces as -*n*.

[4] In transcribing the Korean data presented here, I adopt Yale Romanization (Martin 1992), following standard practice in Korean linguistics. And for the interlinear glosses, the following abbreviations are used. But I do not gloss the morphemes -*nu*- and -*te*- here because there is a lack of consensus among authors concerning their exact syntactic/semantic status. Concerning the syntax/semantics of -*nu*-, see HS Lee 1991, 1993, Ko 2007, and references therein; concerning -*te*-, see Yang 1972, HB Choi 1983, Huh 1987, HS Lee 1993, KD Lee 1993, Ko 2007, KS Chung 2007, 2010, and C Lee 2012.

Acc: accusative case; Ant: anterior aspect; CL: classifier; Conn: connective; Cop: copula; Hon: honorific marker; Imprf: imperfective aspect; Infml: informal style; Ind: indicative sentence ending; Loc: locative; Nom: nominative case; Nml: nominalizer; N.Pst: non-past tense; Pass: passive voice; Prf; perfective aspect; Pst: past

(1) Korean Realis ATT Clauses with Differing TAME Markers:[5]

    a. [e_i (pangkum/ecey)   **ttena-Ø]-n**   saram$_i$
        [__   (just.now/yesterday)   **leave-Ant]-Rel.Rr**   person
        'a person who (has) left (just now/yesterday)'

    b. [e_i (cikum)   **ttena-nu-]-n**   saram$_i$
        [__   (now)   **leave-NU-]-Rel.Rr**   person
        'a person who is leaving (now)'

    c. [e_i (ku   ttay)   **ttena-te-]-n**   saram$_i$

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tense; Q: question ending; Ouot: quotative marker; Rel: relativizer; Rr: realis mood; Top: topic.

[5] In Korean, ATT clauses and non-ATT clauses have different TAME systems although they seem to employ similar morphemes. To illustrate, while ATT-clauses employ the null morpheme Ø to express temporal precedence in non-stative contexts, in the same contexts, non-ATT clauses employ the suffix -*ess*-, as shown in (i). In addition, when occurring in ATT clauses, the morpheme -*nu*- is compatible with -*ko iss*- but when occurring in non-ATT clauses, it is not. To see this, consider (ii).

  (i)   a. Past tense in an ATT clause:
         [e_i ecey   **ttena-Ø]-n**   Cinho$_i$
         [__   yesterday   **leave-Ant]-Rel**   C.
         'Cinho, who left yesterday'
      b. Past tense in a non-ATT clause:
         Cinho-nun   ecey   **ttena-ess**-ta.
         C.-Top   yesterday   **leave-Pst**-Ind
         'Cinho left yesterday.'

  (ii)   a. Compatibility between -*nu*- and -*ko iss*- in an ATT clause:
         [e_i cikum   ttena-**ko**   **iss-nu-]-n**   saram$_i$
         [__   now   leave-**Conn**   **exist-NU-]-Rel**   person
         'the person who is leaving now.'
      b. Incompatibility between -*nu*- and -*ko iss*- in a non-ATT clause:
         Cinho-nun   cikum   ttena-ko   iss-(***-nu-**)-ta.
         C.-Top   now   leave-Conn   exist-(NU)-Ind
         Intended: 'Cinho is leaving now.' (Note: only grammatical when -*nu*- is absent.)

        [__   (that   time)   **leave-TE-]-Rel.Rr** person

        'a person who <u>was leaving (then)</u>'

d. [e_i **ttena-ess-te-]-n** $saram_i$

        [__   **leave-Ant-TE-]-Rel.Rr** person

        'a person who <u>had left</u>'

e. [Mina-ka   **ttena-Ø]-n sasil**

        [Mina-Nom   **leave-Ant]-Rel.Rr**   **fact**

        'the <u>fact</u> that Mina <u>(has) left</u>'

As indicated by the English translations of the above data, each of the grammatical markers that occur between the verb stem and the RC marker in Korean contributes some sort of aspectual semantics, i.e., they specify the relation between the situation time and the topic time. More specifically, in (1a), the null marker Ø indicates that the situation at hand temporally precedes the topic time; that is, it behaves as if it carries the semantics of an anterior or perfective marker. In (1b), the morpheme *-nu-* indicates that the event of someone leaving is in progress at the topic time, so it seems to carry the semantics of a non-past progressive marker. In (1c), the same event was on-going at some time before the speech time, so the morpheme *-te-* seems to carry the semantics of a past progressive marker. Finally, in (1d), the event was completed before some past time, so the complex marker *-ess-te-* seems to contribute a pluperfect (i.e., 'past in the past') meaning here.

  A closer examination quickly reveals, however, that the four temporal markers just introduced are not just concerned with Aspect or Tense; rather, they have something to do with Mood, a grammatical category that is concerned with propositional attitudes or knowledge ascriptions (Aikhenvald 2004), and Evidentiality, a grammatical category that has to do with indicating informational source (Chafe & Nichols 1986; Aikhenvald & Dixon 2001). And this is particularly true of *-nu-* and *-te-* that co-occur with the RC marker. Since it is well established that *-nu-* and *-te-* behave differently when they occur as part of the RC marker as opposed to as part of the verb cluster of a non-embedded clause (e.g., Lee 1993, Lee 2012), here and below, I treat *-nu-n* and *-te-n* as complex clusters, rather than separating *-nu-* and *-te-* out from *-(u)n*.

   To illustrate the modal or evidential nature of *-nu-n* and *-te-n*, consider
first (2), which contains *-te-n*. In (2), *-te-n* has the semantics of a past
habitual marker, rather than a past progressive marker, unlike in (1c). And
interestingly enough, depending on context, this sentence may or may not
be uttered felicitously: it can be uttered felicitously in the contexts given in
(3) but not in the context given in (4). To verify this judgment, I conducted
a survey with 12 native speakers of Korean (6 males and 6 females), and
eight of them said that they can only accept sentence (2) in context (3a),
two said that they can accept it either in (3a) or (3b) but not in (3c), and the
remaining two said that they can accept it in all three contexts including (3c)
(and there was no correlation between gender and the informant's permis-
siveness on (2)).

(2) Ce   kes-i   [[yec-nal-ey Con-i e_i sal-**te**-]-n
    That   thing-Nom [[old-day-Loc C.-Nom   __   live-**TE**-]-Rel
    cip$_i$]-i-ya.
    house]-Cop-Ind.Infml
    'That is the house in which John <u>used to</u> live.'

(3) <u>Possible</u> contexts for (2):
    a. In the past, I saw John living in the house that we're looking at
        right now.
    b. John is a famous (historical) figure and everybody knows where
        he used to live in the past, namely, the house we're looking at
        right now.
    c. Someone or something I completely trust (e.g., my mother or
        the CNN news) has informed me that the house we're looking at
        right now is where John used to live.

(4) <u>Impossible</u> context for (2):
    John is someone who is not famous and I neither personally wit-
    nessed where he used to live nor learned from an entirely reliable
    source about where he used to live.

Although there is inter-speaker variation on the judgment, what matters for

our present purposes is that no speaker judges sentence (2) to be acceptable in the context given in (4) and this shows that *-te-n* can be licensed only if the speaker has reliable evidence for the situation described by the ATT clause containing it.[6] Further evidence for the evidential nature of *-te-n* comes from the fact that if the speaker does not have a truly reliable source to attribute the property described by the *-te-n* ending clause to the denotation of its head noun, then, he/she has to use a completely different ATT clause ending which involves a hear-say marker, as shown in (5).

(5) <u>Context</u>: John is not a famous person and the speaker has no direct or reliable evidence to assert that the house in front of her is where John used to live.

Ce   kes-i   [yec-nal-ey   Con-i e_i sal-**ass-ta-ko**
That thing-Nom [old-day-Loc C.-Nom   __   live-**Ant-Ind-Quot**
ha-n-un cip_i]-i-ya.
do-Imprf-Rel   house]-Cop-Ind.Infml
'That is the house <u>that they say</u> that John used to live.'

Turning now to illustrating the modal or evidential nature of *-nu-n*, typically, ATT clauses ending with *-nu-n* describe situations that are on-going at the topic time, as shown in (1b), but they can also attribute a factual property to the head noun's denotation based on what the speaker knows about the world. To see this, consider (6). Here, the content of the RC marked by *-nu-n* has not happened as yet, so it cannot be the case that the speaker directly observed it or someone or something she completely trusts has informed her about its occurrence. But from what the speaker knows, the event under description is planned to occur tomorrow, so it counts as a fact of the world.

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[6] In the literature, the evidential nature of the single morpheme *-te-* has been much discussed but the evidential nature of the complex cluster *-te-n* has not been, and authors tend to believe that only *-te-* (i.e., without the RC marker attached to it) carries evidential semantics. For discussion, see KS Chung 2012 and C Lee 2011/2012.

(6) Ce   namca-ka   [[*e_i*   **nayil**   hankwuk-ulo ttena-**nu-**]-n
    That   man-Nom   [[__   **tomorrow** Korea-to   leave-**NU-**]-Rel
    saram*_i*]-i-ya.
    person]-Cop-Ind.Infml
    'That man is the person who is leaving for Korea <u>tomorrow</u>.'

Notice that (6) cannot be followed by the speaker's hedging about the verid-
icality of the propositional content of the RC, as shown in (7), and in order
to deny its truthfulness, a hearsay ending has to be employed, as shown in
(8). Importantly, however, even in hearsay contexts like (8), the ATT clause
is marked by *-nu-n* (as is the case in (5)), and this is because according to
the speaker's knowledge of the world, what is quoted in the form of an
embedded clause is a fact.

(7) Ce   namca-ka   [[*e_i*   nayil   hankwuk-ulo ttena-**nu-**]-n
    That   man-Nom   [[__   tomorrow Korea-to   leave-**NU-**]-Rel
    saram*_i*]-i-ya.
    person]-Cop-Ind.Infml
    'That man is the person who is leaving for Korea tomorrow.'
  #Kulentey, sasil-un,   *e*   hwaksilchi-ka   an-Ø-a.
    But,   fact-Top,   __   be.sure.thing-Nom   not.be-N.Pst-Ind.
                                                                    Infrml
    'But it is, in fact, not a sure thing.'

(8) Ce   namca-ka   [[*e_i* nayil   hankwuk-ulo ttena-**n-tako**
    That   man-Nom   [[__   tomorrow Korea-to   leave-**Imprf-Quot**
    ha-nu-]-n   saram*_i*]-i-ya.
    do-NU-]-Rel   person]-Cop-Ind.Infml
    'That man is the person who <u>is said to be</u> leaving for Korea tomor-
    row.'

    Even this cursory introduction to the realis ATT clause markers in Korean
shows that they carry more than one type of grammatical meaning, and
their semantics has something to do with Mood (i.e., knowledge state)
and Evidentiality (i.e., information source), as well as Tense (i.e., relation

between speech time and topic time) and Aspect (i.e., relation between situation time and topic time). Therefore, we can call them TAME categories. In the next three subsections, I show how they divide the work in linguistically encoding episodic memory and semantic memory.

3.2. Encoding of Episodic Memory for the Past

When we reexamine ATT clauses in Korean in the light of the definitions that Endel Tulving offers for semantic memory and episodic memory, there are several reasons to think that some ATT clauses comprised of a verb stem and *-te-n* such as (1c) encode episodic memory for the past.

First of all, according to Tulving (1983), episodic memory for the past is something that people report as what they "remember" whereas semantic memory is something that they report as what they "know" (see *Retrieval Report* under *Operations* in Table 1), and notably, ATT clauses ending in *-te-n* can occur as the nominalized complement to the verb *kiekha-ta* 'to remember' but not as the nominalized complement of the verb *al-ta* 'to know'. To see this, compare (9a) and (9b).

(9) a. Na-nun   [[ku tangsi Mina-ka oscip-ul   ha-**te**-]-n
      I-Top   [[that time M.-Nom clothes.shop-Acc do-**TE**-]-Rel
      kes]-ul **kiekha-n-ta**
      Nml]-Acc **remember-N.Pst-Ind**
      'I <u>remember</u> that Mina was running a clothing store at that time.'
    b.*Na-nun   [[ku tangsi Mina-ka oscip-ul   ha-**te**-]-n
      I-Top   [[that time M.-Nom clothes.shop-Acc do-**TE**-]-Rel
      kes]-ul **al-n-ta.**
      Nml]-Acc **know-N.Pst-Ind**
      Intended: 'I <u>know</u> that Mina was running a clothing store at that time.'

Secondly, when uttered out of the blue, *-te-n*-ending ATT clauses require spatio-temporal adverbials, as exemplified in (10), and this shows that they describe episodic events or particulars, *viz*., concrete instantiations of an event type. Importantly, this property is reminiscent of how experimental queries testing episodic memory are in the form of 'when' (i.e., time?) or

'where' (i.e., place?) so that they can set the scene for the situation that is being recalled (see *Retrieval Queries* under *Operations* in Table 1).

> (10) **[(*ku ttay)/(*pwuek-ese)** e_i sakwa-lul mek-**te**-]-n   Mina$_i$
>   **[(that time)/(*kitchen-Loc)** __   apple-Acc eat-**TE**-]-Rel M.
>   Intended: 'Mina, who was eating an apple (at that time)/(in the kitchen)'

A similar phenomenon is observed by the contrast between some ATT clauses that end with -(*u*)*n* and some that end with *-te-n*. To see this, compare (11) and (12). In (11), *-te-* is not allowed because the speaker is asking the hearer about how many people he/she has dated thus far, so what is at issue is not some particular eventuality that is anchored at some particular spatio-temporal location. By contrast, in (12), *-te-* is required and this is because, here, what is at issue is some particular eventuality.

> (11) Context: the speaker is talking to someone who is well known for
>   having dated multiple individuals in the past.
>   [[**Cikum-kkaci** e_i sawi-**(-*te-)]-n**   saram$_i$]-i
>   [[**Now-up.to**   __   date-**(-TE-)]-Rel**   person]-Nom
>   myech-myeng-i-ni?
>   how.many-CL-Cop-Q.Infml
>   Intended: 'How many people have you dated thus far?

> (12) Context: the speaker is talking to someone who is well known for
>   dating several individuals at the same time.
>   [[**Ku   tangsi** e_i sawi-*****(-te-)]-n**   saram$_i$]-i
>   [[**That time**   __   date- **(-TE-)]-Rel**   person]-Nom
>   myech-myeng-i-ni?
>   how.many-CL-Cop-Q.Infml
>   'How many people were you dating at that time?

Thirdly, when a *-te-n*-ending clause reports on what the speaker personally observed in the past, its informational source is "sensation" and its reference is "self" (i.e., the person who is doing the remembering of past

eventualities), which are two of the defining properties of episodic memory that Tulving (1972, 1983, 2005) identifies. To illustrate, reconsider (2). When uttering (2) in contexts like (3a), as a Korean native speaker, I intuit that I mentally travel back to the times when I observed John's living in some contextually salient house that we are looking at. Similarly, in order to answer the question in (12) with the *-te-n* marking on the ATT clause, I must go back to the time that the speaker and I are talking about and count the number of people I was dating at that time. Interestingly, in order to respond to (11), I must also go back to some past times, but unlike the case with (12), I do not have to remember the events as if I were re-experiencing them; that is, I do not undergo sensation. Instead, for cases like (11), I only need to remember the events that instantiate my dating someone and count how many such events have existed in my life and how many individuals they have involved.

Fourth, *-te-n* can select for both adjectival and verbal predicates, but not every predicate may co-occur with it because what a *-te-n* ending clause describes must be recallable. To see this, compare first (13) and (14). In the case of (13), the head NP's referent is in the 1st person, so we can construe each datum in such a way that the speaker is recalling her own past experiences, namely, some emotive/cognitive states that she was in at some time in the past. In the case of (14), on the other hand, the head NP's referent is in the 2nd or 3rd person, and since the speaker has limited access to another individual's internal states, the entire NPs do not come out grammatical in the given discourse context.

(13) a. [e_i **pay-ka**   **kophu-te-**]-n   **na**$_i$
    [__ **stomach-Nom**   **starve-TE-**]-Rel   **I**
    Lit.: 'I̲, who was̲ hungry̲ (or whose stomach was̲ starving̲')

b. [(pi-ka   oa-se) e_i **kippu-te-**]-n   **na**$_i$
    [(rain-Nom come-because) __   **be.happy-TE-**]-Rel   **I**
    Lit.: 'I̲, who was̲ happy̲ (because it was raining or it rained)'

(14) Context̲: Mina is a friend of mine and I am talking about her.
a. *[e_i **pay-ka**   **kophu-te-**]-n   **ne**$_i$/**Mina**$_i$
    [__ **stomach-Nom**   **starve-TE-**]-Rel   **you/M**.

    Lit.: 'you/Mina, who <u>was hungry</u> (or whose stomach <u>was starv-
    ing</u>)'

b. *[(pi-ka   oa-se) e_i **kippu-te-**]-n   **ne$_i$/Mina$_i$**
   [(rain-Nomcome-because)   __   **be.happy-TE-**]-Rel   **you/M**.
   Lit.: 'you/Mina, who <u>was happy</u> (because it was raining or it
   rained)'

Notice that the data in (14) improve in grammaticality if the embedded
predicates co-occur with verbs of 'seeing' or if they are turned into verbs,
as illustrated by (15). Such changes can improve on the grammatical-
ity because they make the embedded clauses describe properties that are
observable to the speaker, which can be stored in episodic memory and can
later be retrieved.

(15) a. [e_i **kippu-e**   **po-i-te-**]-n   ne$_i$/Mina$_i$
        [__   **be.happy-Conn   see-Pass-TE**-]-Rel   you/M.
        Lit.: 'you/Mina, who <u>appeared to be happy</u>'
     b. [e_i **kippu-e**   **ha-te-**]-n   ne$_i$/Mina$_i$
        [__   **be.happy-Conn   do-TE**-]-Rel   you/M.
        Lit.: 'you/Mina, who <u>acted happy</u>'

   Additional evidence for the strong involvement of self in uttering RCs
ending with *-te-n* comes from the fact that typically, they cannot occur in
sentences that have non-first person sentential subjects. To see this, com-
pare the sentences in (16). The two sentences are identical except for the
subject's person feature (i.e., first person vs. third person), but while (16a) is
grammatical, (16b) is plain ungrammatical in the given discourse context.
Notably, when uttered by the narrator of a novel or a documentary film, (16b)
can be judged fine but in such cases, the narrator is assumed to have access
to the subject's mental state, so can represent the sensation that the subject
experiences in recalling the eventuality described by the embedded clause.

(16) a. **Na-nun** [Con-i e_i ce-cip-ey   sal-**te-n**
        I-Top   [C.-Nom   __   that-house-Loc live-**TE-Rel**
        ttay$_i$]-ka acwu   sayngsaynghakey   kiekna-n-ta.

time]-Nom   very vividly   remember-Imprf-Ind.
Ind Infml

'<u>I</u> vividly remember the time when John lived in that house.'

b. <u>Context</u>: Mina is a friend of mine and I am talking about her.

*Mina-nun   [Con-i   *e_i*   ce-cip-ey   sal-**te-n**
M.-Top   [C.-Nom __   that-house-Loc live-**TE-Rel**
ttay_i]-ka   acwu   sayngsaynghakey   kiekna-n-ta.
time]-Nom   very   vividly   remember-Imprf-
Ind.Infml

'<u>Mina</u> vividly remembers the time when John lived in that house.'

At this juncture, I should note that although remembering verbs in Korean such as *kiekna-ta* 'to recall/remember' and *sayngkakna-ta* 'to recall' may select for nominalized clauses that do not contain *-te-*, such clauses do not engender an interpretation in which the speaker vividly recalls some past eventualities as if she were re-experiencing or re-living them. To see this, consider (17). In these sentences, what is being conveyed is that the speaker simply remembers some past eventuality or the fact that *p* (where *p* stands for a proposition). That is, uttering such sentences is devoid of the involvement of self in the event described, i.e., what Tulving calls "autonoetic consciousness".

(17) a. Na-nun   [[ku   tangsi Mina-ka oscip-ul   **ha-Ø-]-n**
I-Top   [[that   time   M.-Nom clothes.shop-Acc **do-Ant-]-**
                                                              Rel

kes]-i   kiekna-n-ta.
Nml]-Nom remember-N.Pst-Ind

'I recall/remember that Mina ran a clothing store at that time.'

b. Na-nun   [Con-i   han ttay ce-cip-ey   **sal-Ø-]-n**
I-Top   [C.-Nom   one time that-house-Loc **live-Ant-]-**
                                                              Rel

kes]-i   sayngkakna-n-ta.
Nml]-Nom   recall-Imprf-Ind.Infml

'I recall that John once lived in that house.'

Let me now point out that the propositional content of some *-te-n* ending clauses is verified by looking at what the speaker remembers about the past, independently of what is true in the actual world, and this is in line with what Tulving (1983) claims about episodic memory, namely that the veridicality of episodic memory is determined by one's personal belief about his/her past experiences, regardless of what the actual experiences were like or what other people report about them. By way of illustration, suppose that I say (18) but what I remember is inaccurate because I suffer from dementia (for example, in the actual world, Mina used to run a shoes store, not a clothing shop). Even in such contexts, however, one cannot refute the content of what I remember, although they may say that (due to illness), I have an inaccurate memory of (some) past eventualities.

(18) <u>Context</u>: the speaker suffers from dementia and wrongly believes that Mina used to run a clothing shop.

Na-nun   [[ku   tangsi Mina-ka oscip-ul   ha-**te**-]-n
I-Top   [[that time   M.-Nom clothes.shop-Acc do-**TE**-]-Rel
kes]-i   sayngsaynghakey   sayngkakna-n-ta.
Nml]-Nom vividly   recall-N.Pst-Ind
'I vividly recall that Mina was running a clothing shop at that time.'

3.3. Encoding of Episodic Memory for the Future

While Korean employs *-te-n* as a way to encode episodic memory for the past, as a way to encode episodic memory for the future, it employs either *-(u)n* or *-nu-n*, and the choice between the two markers is based on the semantics of the lexical predicate at hand. In brief, if the predicate has adjectival semantics, it combines with *-(u)n*; if it has verbal semantics, then it combines with *-nu-n* (Sohn 1999; see Lee 1993 for a slightly different characterization).

To see this, compare first the data in (19). In both cases, the embedded clause describes an eventuality that exists in some possible world and talking about it involves the speaker's "mental travel into the future", a property that characterizes episodic memory (Tulving 2005). Given this, we can conclude that both *-(u)n* and *-nu-n* can encode episodic memory for the

future.

(19) a. <u>Context</u>: Mina is not smart in the actual world.

Na-nun   [e$_i$ **ttokttokha-**]-n   Mina]-lul
I-Top   [__   **smart-**]-Rel   M.]-Acc
sangsangha-ko   iss-Ø-ta.
imagine-Conn   exist-N.Pst-Ind
Lit.: 'I <u>am imagining</u> a <u>smart</u> Mina.'

b. <u>Context</u>: Mina does not run a clothing shop in the actual world.

Na-nun   [e$_i$ **oscip-ul   ha-nu-**]-n   Mina]-lul
I-Top   [__   **clothes.shop-Acc   do-NU-**]-Rel   M.]-Acc
sangsangha-ko   iss-Ø-ta.
imagine-Conn   exist-N.Pst-Ind
Lit.: 'I <u>am imagining</u> a Mina who <u>runs a clothing shop</u>.'

Consider now the paradigm in (20): (20a) shows that the adjectival predicate *ttokttokha-ta* 'to be smart' is not compatible with *-nu-*. On the other hand, (20b) shows that the verbalized predicate *ttottokhayci-ta* 'to become smart' requires the morpheme *-nu-*. Taken together, these facts show that the bare realis RC marker *-(u)n* and its more augmented variant *-nu-n* have different selectional properties, even though both can provide ways to grammatically encode episodic memory for the future.

(20) <u>Context</u>: Mina is not very smart in the actual world.

a. Na-nun   [[Mina-ka   **ttokttokha-(-*nu-)]**-n seysang]-ul
I-Top   [[M.-Nom   **smart-(-NU-)]**-Rel   world]-Acc
sangsangha-ko   iss-Ø-ta.
imagine-Conn   exist-N.Pst-Ind
Intended: 'I am imagining <u>a world where Mina is smart</u>.'

b. Na-nun   [[Mina-ka   **ttokttokhay-ci-*(-nu-)]**-n   kes]-ul
I-Top   [[M.-Nom   **smart-become-(-NU-)]**-Rel   Nml]-Acc
sangsangha-ko   iss-Ø-ta.
imagine-Conn   exist-N.Pst-Ind
Intended: 'I am imagining <u>the event of Mina becoming smart</u>.'

3.4. Encoding of Semantic Memory

Interestingly enough, in order to encode semantic memory, Korean utilizes the same set of TAME markers that it uses for encoding episodic memory for the future, namely, -(*u*)*n* and -*nu-n*.

First of all, there is ample evidence that -*nu-n* can encode semantic memory. The first piece of evidence comes from the fact that ATT clauses ending with -*nu-n* may describe generic, habitual properties of individuals that obtain at the speech time. To see this, consider (21). Notice also that when a *nu-n*-ending clause describes a generic property, its generic nature cannot be denied, as evidenced by the oddity of the discourse in (22).

(21) <u>Context</u>: I'm describing what type of person my sister Mina is by
saying that the meaning of the following expressions holds true of
her.
a. [e_i oscip-ul   ha-**nu**-]-n   saram$_i$
   [__   clothes.shop-Acc   do-**NU**-]-Rel   person
   'a person who runs a clothing store' (a generic property)
b. [e_i achim-ey   ilccik   ilena-**nu**-]-n   saram$_i$
   [__   morning-Loc   early   rise-**NU**-]-Rel   person
   'a person who gets up early in the morning' (a generic property)

(22) Mina-nun [e_i achim-ey   ilccik ilena-**nu**-]-n   saram$_i$-i-ta.
     M.-Top   [__ morning-Loc   early rise-**NU**-]-Rel person-Cop-
                                                                   Ind
     'Mina is someone who gets up early in the morning.'
     #Haciman e_i il-cwuil-ey   ney-pen-un   achim   yel-si-ey
     But   __ one-week-Loc four-time-Top morning 10-hour-
                                                                   Loc
     ilena-n-ta.
     rise-Imprf-Ind
     'But she gets up at 10 AM at least four times a week.'
     (<u>Reasoning</u>: a person who gets up at 10 AM four times a week
     cannot be considered someone who gets up early.)

The claim that *-nu-n* marking provides a way to describe generic properties or timeless facts in the world receives further support from the fact that unlike ATT clauses ending with *-te-n*, those ending with *-nu-n* do not require spatio-temporal adverbials, as illustrated in (23) (modulo the semantic difference between cases where such adverbials are present and cases where they are not, as can be seen by comparing (23) and (24)).

(23) [sakwa-lul e_i mek-**nu-**]-n   Mina$_i$
      [apple-Acc   __   eat-**NU-**]-Rel   M.
      'Mina, who <u>eats apples</u>' (a generic property)

(24) [**cikum** e_i sakwa-lul   mek-**nu-**]-n   Mina$_i$
      [**now**   __   apple-Acc   eat-**NU-**]-Rel   M.
      'Mina, who <u>is eating an apple right now</u>' (an event in progress at
      the moment)

Furthermore, ATT clauses ending in *-nu-n* can occur as part of 'what' questions which inquire about general properties of things in the world, as shown in (25), or in answer to such questions, as shown in (26)-(27). Importantly, this is reminiscent of what Tulving (1983) observes about semantic memory, namely that experimental questions testing semantic memory are in the form of 'what' (see *Retrieval Queries* under *Operations* in Table 1).

(25) Q: Taum-cwung   [[e_i sakwa-lul mek-**nu-**]-n   tongmwul$_i$]-un
          Following-among [[__apple-Acc eat-**NU-**]-Rel animal]-Top
          mues-i-ni?
          what-Cop-Q.Infml
          'Which of the following animals eat apples (as their general
          property)?'
     A: Mal-i-ya.
          Horse-Cop-Ind.Infml
          'It is horses.'

(26) Q: Mal-un   [**etten**   tongmwul]-i-ni?
          Horse-Top   [**which**   animal]-Cop-Q.Infml

'<u>What kind of animal</u> is a horse?'

A: [e_i   **sakwa-lul**   **cohaha-nu-**]-n   tongmwul_i
   [__   **apple-Acc**   **like-NU**-]-Rel   animal
   Lit.: 'an animal that <u>likes apples</u>' (a generic property)

(27) Q: Uysa-un   [**etten**   saram]-i-ni?
        doctor-Top   [**which** person]-Cop-Q.Infml
        Lit.: '<u>What kind of person</u> is a doctor?'

    A: [e_i **aphun**   **saram-ul**   **kochi-nu-**]-n   saram_i
       [__   **sick**   **person-Acc**   **fix-NU**-]-Rel   person
       Lit.: 'a person who <u>cures/treats sick people</u>' (a generic prop-
       erty)

Another notable characteristic of *-nu-n* ending clauses such as those in
(25)-(27) is that what they describe must be supported by social consen-
sus. That is, their veridicality is something that is determined by an entire
speech community rather than by a single individual, unlike the case with
-te-n ending clauses. Importantly, such property is analogous to the way in
which semantic memory behaves according to what Tulving (1983) claims.

Finally, ATT clauses ending with *-nu-n* exhibit the opposite behavior
to ATT clauses ending with *-te-n* in terms of their ability to occur as the
complements of certain propositional attitude predicates. In short, they
can occur as the nominalized complement to the verb *al-ta* 'to know' but
not as that of *kiekha-ta* 'to remember', as shown in (28). And this accords
with Tulving's (1983) claim that semantic memory is something that people
report as what they "know", rather than what they remember (see *Retrieval
Report* under *Operations* in Table 1).

(28) a.*Na-nun   [[Mina-ka sewul-ese oscip-ul   ha-**nu**-]-n
        I-Top   [[M.-Nom   Seoul-Loc clothes.shop-Acc   do-**NU**-]-
                                                              Rel

        kes]-ul   **kiekha-n-ta**
        Nml]-Acc   **remember-N.Pst-Ind**
        Intended: 'I <u>remember</u> that Mina is running a clothing store in
        Seoul.'

b. Na-nun   [[Mina-ka sewul-ese oscip-ul   ha-**nu**-]-n
   I-Top   [[M.-Nom Seoul-Loc clothes.shop-Acc do-**NU**-]-
                                                        Rel

  kes]-ul   **al-n-ta.**
  Nml]-Acc **know-N.Pst-Ind**
  'I <u>know</u> that Mina is running a clothing store in Seoul.'

Turning now to investigating when -(*u*)*n* may be employed to encode semantic memory, it turns out that it is employed whenever -*nu-n* cannot be, namely, (i) when the lexical predicate at hand is adjectival or (ii) when the semantic memory at hand is derived from some past eventuality. To see this, consider first (29). These data show that adjectival predicates are incompatible with -*nu-n*, so in order to describe timeless, semi-permanent, or generic properties of individuals, they must co-occur with -(*u*)*n*.[7]

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[7] The reason why adjectival predicates cannot co-occur with -*nu-n* is most likely to be due to the imperfective aspectual semantics of -*nu-* (Sohn 1999). For reasons not fully understood as yet, under all circumstances, Korean adjectives cannot bear imperfective aspect marking, unlike English adjectives, which are compatible with imperfective morphology although what bears the imperfective morphology in English is the copular verb (e.g., *John is <u>being kind</u>*; *You're <u>being silly</u>.*). To see this, compare (i) and (ii), which respectively exemplify imperfective aspect marking on verbal predicates and that on adjectival predicates in Korean.

(i) Imperfective aspect marking on verbal predicates:
    a. Con-un   tali-**ko**   **iss**-Ø-ta.
       C.-Top   run-**Conn**   **exist**-N.Pst-Ind
       'John <u>is running</u>.'
    b. Con-un   may-il   sip   khilo-lul   tali-**n**-Ø-ta.
       C.-Top   every-day   ten   kilometers-Acc   run-**Imprf**-N.Pst-Ind
       'John <u>runs</u> 10 miles a day.'

(ii) Imperfective aspect marking on adjectival predicates:
    a. *Con-un   chincelha-**ko**   **iss**-Ø-ta.
        C.-Top   kind-**Conn**   **exist**-N.Pst-Ind
        Intended: 'John is <u>being kind</u>.'
    b *Con-un   chilcelha-**n**-Ø-ta.
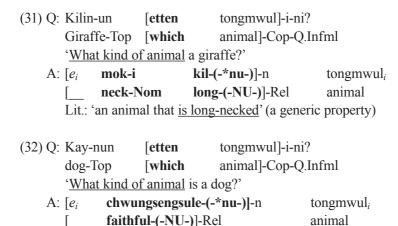   C.-Top   kind-**Imprf**-N.Pst-Ind

(29) Context: I am describing what type of person my youngest cousin
Hanna is by asserting that the properties described by the follow-
ing set of expressions hold true of her.
   a. [e_i elkwul-i   **yeppu-(-*nu-)**]-n   sonye$_i$
      [__   face-Nom   **pretty-(-NU-)**]-Rel   girl
      Intended: 'a girl with a <u>pretty</u> face' (Lit.: 'a girl whose face is
      pretty')
   b. [e_i **ttokttokha-(-*nu-)**]-n   sonye$_i$
      [__   **smart-(-NU-)**]-Rel   girl
      Intended: 'a <u>smart</u> girl'
   c. [e_i **khi-ka**   **cak-(-*nu-)**]-n   sonye$_i$
      [__   **height-Nom**   **small-(-NU-)**]-Rel   girl
      Intended: 'a <u>short</u> girl' (Lit.: 'a girl whose height is small')

Given the generic semantics of the data in (29), it is not surprising that ATT
clauses marked by -(*u*)*n* can occur as part of 'what' questions which inquire
about the general properties of things in the world or in answer to such
questions, as shown in (30)-(32), in a manner analogous to (25)-(27).

(30) Q: Taum-cwung   [[e_i mok-i   kil-(-*nu-)]-n
                                                            tongmwul$_i$]-un
        Following-among [[__   neck-Nom   long-(-**NU**-)]-Rel
                                                            animal]-Top

        mues-i-ni?
        what-Cop-Q.Infml
        'Which of the following animals is long-necked (as their gen-
        eral property)?'
     A: Kilin-i-ya.
        Giraffe-Cop-Ind.Infml
        'It is giraffes.'

        Intended: 'John <u>is typically kind</u>.'
   c. Con-un   chilcelha-Ø-ta.
      C.-Top   kind-N.Pst-Ind
      'John is <u>kind</u>.'

(31) Q: Kilin-un   [**etten**   tongmwul]-i-ni?
        Giraffe-Top   [**which**   animal]-Cop-Q.Infml
        'What kind of animal a giraffe?'
     A: [e_i **mok-i**   **kil-(-*nu-)**]-n   tongmwul$_i$
        [__   **neck-Nom**   **long-(-NU-)**]-Rel   animal
        Lit.: 'an animal that is long-necked' (a generic property)

(32) Q: Kay-nun   [**etten**   tongmwul]-i-ni?
        dog-Top   [**which**   animal]-Cop-Q.Infml
        'What kind of animal is a dog?'
     A: [e_i **chwungsengsule-(-*nu-)**]-n   tongmwul$_i$
        [__   **faithful-(-NU-)**]-Rel   animal
        Lit.: 'a faithful animal' (a generic property)

To illustrate the contexts in which an ATT clause ending with -(*u*)*n* encodes semantic memory that is derived from past eventualities, consider (33)-(34). The lexical predicates constituting the ATT clauses here are all verbal predicates and yet they co-occur with -(*u*)*n*, rather than, -*nu-n*. This is because here, each ATT clause describes a timeless, encyclopedic knowledge of the world that (almost) any Korean native speaker older than age 10 possesses, based on what they have learned from school or whatever relevant sources that deal with Korean history.

(33) Context: A mother is asking her child about Korean history.
     Q: Seycongtaywang-un   [**nwukwu**]-i-ni?
        King.Sejong-Top   [**who**]-Cop-Q.Infml
        'Who is King Sejong?'
     A: [e_i hankul-ul   **mantul-(-*nu-)**]-un   pwun$_i$
        [__   Hangul   **make-(-NU-)**]-Rel   person.Hon
        'the person who made *Hangul* (the Korean alphabet)'

(34) Context: A mother is asking her child about Korean history.
     Q: Kwangbokcel-un   [**etten**   nal]-i-ni?
        Kwangbokcel-Top   [**which**   day]-Cop-Q.Infml
        'What kind of day is *Kwangbokcel*?'

A: [[Wuri   nara]-ka e_i **haypangtoy-(-*nu-)]**-n   nal$_i$
    [[Our   country]-Nom   __   **got.liberated-(-NU-)]**-Rel   day
    'the day when our country got liberated (from Japan)'

Before closing this section, let me briefly remark on the semantics of *-te-n* and grammatical encoding of semantic memory in Korean. Based on the fact that sentence (2), repeated below, can be uttered in a context where John is a famous historical figure (i.e., context (3b)), one may suspect that just like *-(u)n*, *-te-n* may also be employed to encode semantic memory which is derived from a well-known past eventuality or a proven historical fact.
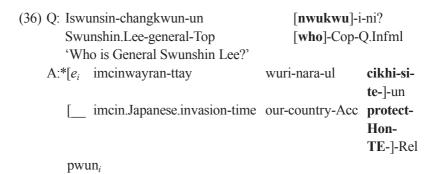
(2) Ce   kes-i   [[yec-nal-ey   Con-i e_i sal-**te**-]-n
    That   thing-Nom   [[old-day-Loc   C.-Nom   __   live-**TE**-]-Rel
    cip$_i$]-i-ya.
    house]-Cop-Ind.Infml
    'That is the house in which John <u>used to</u> live.'

(3) <u>Possible</u> contexts for (2):
    b. John is a famous (historical) figure and everybody knows where
       he used to live in the past, namely, the house we're looking at
       right now.

While such reasoning is clearly logically based, I do not think that *-te-n* has the same status as *-(u)n* even when it occurs in a sentence like (2) and is uttered in a context like (3b). One reason for drawing this conclusion is that as noted above, most Korean speakers are hesitant about accepting (2) in such contexts: recall that only 4 out of 12 speakers I have consulted judge the sentence to be acceptable in (3b). Furthermore, even those who can accept (2) in (3b) have reported to me that they prefer variants such as those given in (5) and (35), which contain hear-say markers and thus allow the speaker to remain non-committal as to the truthfulness of the propositional content of the embedded clause.
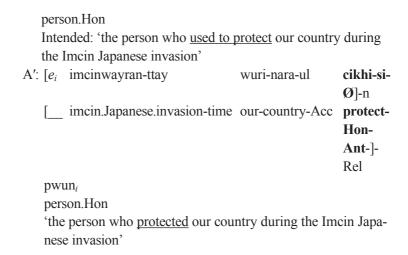
(5) Ce   kes-i   [yec-nal-ey   Con-i e_i sal-**ass-ta-ko**
    That thing-Nom [old-day-Loc C.-Nom __   live-**Ant-Ind-Quot**
    ha-n-un cip_i]-i-ya.
    do-Imprf-Rel   house]-Cop-Ind.Infml
    'That is the house <u>that they say</u> that John used to live.'

(35) Ce   kes-i   [yec-nal-ey   **rinkhen-i** e_i sal-**te-n**
    That thing-Nom [old-day-Loc **Lincoln-Nom** __   live-**TE-Rel**
    cip_i]-i-**lay**.
    house]-Cop-**Quot**.Ind.Infml
    '<u>They say that</u> that is the house in which <u>Abraham Lincoln</u> used to
    live.'

Finally, unlike -(*u*)*n* ending clauses, -*te-n* ending clauses do not make
a good candidate for the template we have been using to test semantic
memory, i.e., the question-answer pairs such as those given in (33)-(34).
To see this, consider (36). This question-answer pair has the same structure
as (33), but here, -*te-n* is used instead of -(*u*)*n* and the answer is judged to
be ungrammatical, despite the fact that (almost) any Korean speaker older
than 10 years knows that General Swunshin Lee protected Korea when the
Japanese invaded the country during the Chosun Dynasty. The ungram-
maticality of the answer in (36) is unlikely to be due to the past imperfec-
tive semantics of -*te-n* because during *Imcinwayran*, there were numerous
battles between Koreans and the Japanese and during those times, General
Lee continuously fought for Korea.

(36) Q: Iswunsin-changkwun-un   [**nwukwu**]-i-ni?
        Swunshin.Lee-general-Top   [**who**]-Cop-Q.Infml
        'Who is General Swunshin Lee?'
    A:*[e_i imcinwayran-ttay   wuri-nara-ul   **cikhi-si-**
                                                           te-]-un
        [__ imcin.Japanese.invasion-time our-country-Acc **protect-**
                                                           Hon-
                                                           TE-]-Rel

        $pwun_i$

person.Hon
Intended: 'the person who <u>used to protect</u> our country during
the Imcin Japanese invasion'

A′: [*e*ᵢ imcinwayran-ttay   wuri-nara-ul   **cikhi-si-Ø**]-n

[___ imcin.Japanese.invasion-time our-country-Acc **protect-Hon-Ant**-]-Rel

pwunᵢ
person.Hon
'the person who <u>protected</u> our country during the Imcin Japanese invasion'

What might be the reason for the unsuitability of sentences like (36A) as answers for questions like (36Q), which inquire about semantic memory? I conjecture that their unsuitability is due to the evidential semantics of *-te-n*. More concretely, because of its evidential nature illustrated in section 3.1., *-te-n* can be felicitously employed only when the speakers wishes to inform the hearer what she knows about the world based on the collection of evidence she has at her disposal (or what she has personally observed or experienced). This line of reasoning receives support from the fact that (2) can be uttered by a historian who has direct evidence to assert that the house under discussion is where John used to live but even in such contexts, the knowledge that she is sharing with the hearer is not solidly established as an encyclopedic knowledge in the speech community as yet, so it still counts as a more or less personal knowledge.

4. Summary and Conclusion

One of the main findings of this paper has been that Korean employs the ATT clause marker *-te-n* as a way to encode episodic memory for the past and *-(u)n* and *-nu-n* as a way to encode episodic memory for the future and whenever ATT clauses ending with such markers encode episodic memory, uttering them involves "autonoetic consciousness" in the sense of Tulving

Table 2. A way to encode episodic memory in Korean.

For the past		For the future	
Adjectival clauses	Verbal clauses	Adjectival clauses	Verbal clauses
-te-n	*-te-n*	*-(u)n*	*-nu-n*

Table 3. A way to encode semantic memory in Korean.

Adjectival clauses	Verbal clauses	
-(u)n	Recurring events/habits	*-nu-n*
	Based on historical facts	*-(u)n*

(2005). Another important finding has been that *-(u)n* and *-nu-n* can "double-up" as semantic memory encoders and the choice between them is made by the semantic properties of the lexical predicate at hand and the source of the semantic memory at hand. When encoding a semantic memory that is derived from observing recurring eventualities (e.g., properties of some particular species or habits of individuals), *-nu-n* is employed for verbal predicates and *-(u)n* is employed for adjectival predicates; when encoding a semantic memory that is based on historical facts, *-(u)n* is employed regardless of the predicate type of the ATT clause. These findings are summarized in tables 2 and 3.

What has been uncovered here shows that what Tulving calls episodic memory can be grammatically encoded, and this partly confirms our initial hypothesis outlined in section 2. That is, given the human-specificity of "autonoetic consciousness", a memory system that involves it will be linguistically encoded. In addition, our finding that Korean utilizes the same set of TAME markers to encode both semantic memory and future-oriented episodic memory lends support to Tulving's theory of memory even though it is slightly different from what we initially anticipated. Recall that according to Tulving (1993, 1995), episodic memory is an extension of semantic memory and hence the two types of memory can co-exist and operate in a parallel fashion. Given such relationship between semantic memory and episodic memory, if we posit that grammatical structures reflect the organization of human memory, then we can conceive of grammatical morphemes

which primarily encode semantic memory but which may also encode some of its extensions, namely, episodic memory. And this line of reasoning accounts for the initially unexpected versatility of -(*u*)*n* and -*nu-n* observed here.

While these two findings are largely in agreement with our own predictions or predictions made by the mainstream theory of memory, the way in which Korean grammatically encodes episodic memory raises several questions that may require rethinking some of the prevailing views on memory, language, and thought.

First of all, the fact that Korean employs -*te-n* to encode past-oriented episodic memory but employs -*nu-n* and -(*u*)*n* to encode future-oriented episodic memory raises the possibility that the two types of episodic memory may be qualitatively different, unlike what Tulving's (2002, 2005) analysis seems to assume.

Secondly, the fact that Korean morphologically conflates semantic memory encoders with future episodic memory encoders can be taken to suggest that episodic memory for the future may be more early developing than episodic memory for the past.

Thirdly, given the well-established finding in the psychology literature that even animals have semantic memory, the fact that Korean utilizes the same set of morphemes to encode semantic memory and future-oriented episodic memory lets us hypothesize that even animals may have a rudimentary level episodic memory for the future and what is truly uniquely human may just be the ability to recall past autobiographical eventualities with a strong sense of self-involvement and sensation, to take a somewhat extreme stance on the matters here.

Next, the fact that Korean has a grammatical way to encode past-oriented episodic memory and this morpheme is formally distinct from other memory encoders leads us to conjecture that Korean speakers may have a more remarkable ability to retrieve episodic memories from their youngest years, compared to speakers of languages that lack such grammatical devices.

The presence of an episodic memory marker in Korean also lets us predict that a relatively small number of Korean speakers will suffer from childhood amnesia, in comparison to speakers of languages that lack a

grammaticalized episodic memory marker.[8]

If these predictions are borne out, then they will also suggest that there is an intimate (causal) relation between language and thought—that is, language does shape thought, as held by advocates of linguistic relativism.

Finally, our finding that Korean has a grammatical way to encode autonoetic episodic memory makes an interesting prediction on language acquisition: Based on a series of experiments investigating children's acquisition of Evidentiality in Korean (a language with overt evidential morphology) and English (a language without overt evidential morphology), Papafragou et al. (2007) have claimed that contrary to relativistic expectations, children's ability to reason about information sources is developed independently of the properties of the exposure language, i.e., regardless of whether it has overt evidential morphology or not. But the findings reported here make us wonder whether similar results will also obtain for an experiment that inquires about Korean children's comprehension and production of *-te-n* and their ability to retrieve episodic memories or specific autobiographical events.

It is hoped that future research provides illuminating answers to the questions addressed here. Another question that I have to leave for the future is whether other languages possess evidential markers that are comparable to *-te-n* and if so, whether such markers perform a similar function of encoding episodic memory in the sense of Tulving (2002, 2005).

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[8] I thank Roman Taraban for helping me to see this possibility.

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