Korean Journal of English Language and Linguistics, Vol 24, January 2024, pp. 15-34
DOI: 10.15738/kjell.24..202401.15

KOREAN JOURNAL OF ENGLISH LANGUAGE AND LINGUISTICS

ISSN: 1598-1398 / e-ISSN 2586-7474

http://journal.kasell.or.kr

The Role of Cause in the L2 Acquisition of English Psychological Verbs

Jihyun Kim · Taegoo Chung (Korea University)

Received: November 4, 2023
Revised: December 27, 2023
Accepted: January 6, 2024

Jihyun Kim (First author)
Lecturer, Department of English Language Education
Korea University
E-mail: jihyunkim@korea.ac.kr

Taegoo Chung
(Corresponding author)
Professor, Department of English Language Education
Korea University
E-mail: tchung@korea.ac.kr

ABSTRACT

Kim, Jihyun and Taegoo Chung. 2024. The role of cause in the L2 acquisition of English psychological verbs. *Korean Journal of English Language and Linguistics* 24, 15-34.

This study investigates the influence of the semantic feature [Cause] on the L2 acquisition of English psychological verbs by L1 Korean speakers. In an English normal sentence an argument with either of the features, [Volition] and [Cause], can be mapped to subject. This study places particular emphasis on [Cause] due to its distinctive role in Korean; an argument with the feature is not generally mapped to subject. To explore the role of [Cause] in L2 English, it is compared with [Volition] in Experiencer-Subject (ES) and Experiencer-Object (EO) verbs. The study employs a naturalness judgment test with ninety-three L1-Korean speakers and fifty-four L1-English speakers. From the statistical analysis of the results, we have found three major findings. The first finding is that causative EO verbs are more difficult for L2 English learners than non-causative ES verbs. It corresponds with the findings of the previous studies and it also demonstrates a strong effect of [Cause]. The second finding is that non-volitional EO (causative) verbs are more challenging than volitional EO (causative) verbs. That is, the L2 English learners are reluctant to accept a causative but non-volitional subject. The third finding is that the strength of the feature [Cause] in L2 English speakers is stronger than the strength in L1 English speaker. Collectively, three findings underscore the pivotal role of [Cause] in the L2 acquisition of English psychological verbs, which is believed to be due to L1 influence; Korean doesn't allow a [Cause] subject. The findings offer clarification on why EO verbs present greater difficulties than ES verbs, and why, within EO verbs, non-volitional EO verbs are particularly challenging for L2 English learners. This study also presents a pedagogical implication that teachers and English text books put special focus on psychological verbs, especially non-volitional causative verbs such as *The news concerned me*, which is often considered bad or not produced by L2 English learners.

KEYWORDS

second language (L2) acquisition, L1 influence, English psychological verbs, EO verbs, ES verbs, cause, volition, subject selection

1. Introduction

Second language learners are known to experience difficulties in learning English psychological verbs. While previous research has primarily focused on how L2 learners map thematic roles to the correct syntactic positions, this study adopts a different approach by examining the influence of semantic features on the acquisition of English psych verbs. Specifically, the present study aims to identify which semantic features of arguments pose difficulties for L1-Korean speakers when mapped to the subject position of English psych verbs. The study places special emphasis on the feature [Cause], as it functions differently in English and Korean.

Psych verbs are divided into two types based on whether the Experiencer argument is mapped to the subject or object; the first type is called Experiencer-Subject verbs (henceforth, ES verbs) and the second type Experiencer-Object verbs (henceforth, EO verbs) (Belletti and Rizzi 1988, Levin 1993, Grimshaw 1990, Pesetsky 1995). EO verbs have been argued to violate general linking rules, making them challenging for L2 learners to acquire (Sato 2003, White et al. 1999). Additionally, EO verbs in English lack explicit morphology to denote causative meaning. Consequently, L2 learners whose L1s require explicit causative morphemes in EO verbs are expected to struggle with L2 English EO verbs (Chen 1996, Juffs 1996, Montrul 2001, Sato 2003, White et al.1999). However, these accounts would be hard to reconcile with recent findings that not all EO verbs pose equal challenges for L1-Korean speakers learning L2-English (Kim 2018, Lee 2013). The differences among EO verbs in L2 acquisition, despite their similar linking pattern and causative meaning, indicate that some other factors might be at play.

The feature [Cause] classifies psych verbs into two types: causative EO verbs and non-causative ES verbs. While EO verbs describe causative events, ES verbs describe non-causative situations (Grimshaw 1990, Pesetsky, 1995, Talmy 1985). Moreover, [Cause] also distinguishes languages into [+Cause-subject] languages and [-Cause-subject] languages (Guilfoyle 2000, Wolff et al. 2009).[1] A [+Cause-subject] language allows a [+Cause] NP argument to be mapped to the subject position, as in English, while a [-Cause-subject] language does not, as in Korean. For example, in English, the sentence like (1a) sounds very natural where the NP *the rock* possessing [+Cause] is the subject, but the corresponding sentence in Korean (1b) where the NP *bawi* 'the rock' is the subject sounds very unnatural.

(1) a. The rock broke the windshield.
b. ??Bawi-ga ap-yuli-lul kkatteuly-ess-ta
the rock-NOM the windshield-Acc break-PST-DEC
(NOM: nominative case, PST: past tense, DEC: declarative)

As shown in the examples above, the feature [Cause] plays distinct roles in English and Korean. We believe that the feature complicates the acquisition of English psych verbs for L1-Korean speakers and deserves careful attention in understanding the L2 acquisition of English psych verbs. By focusing on the feature [Cause], we expect to gain insights that can account for differences in the acquisition of EO verbs, which cannot be explained solely by the factors such as linking rules and L1 morphology examined in the previous studies.

This paper is organized as follows. Section 2 examines two approaches to English psych verbs and the L2

[1] While Guilfoyle (2000) and Wolff et al. (2009) didn't explicitly employ the terminology, [±Cause-subject], our classification is in line with their approach. They classified languages to two types, A and B: "Type A languages restrict the subject position to entities that can initiate events, that is, mostly intentional agents or natural forces, and type B languages allow any entity in the subject position as long as it participates in the causal chain." (Wolff et al. 2009, p. 173)

learnability problems associated with the verbs. Section 3 presents an experimental study conducted on Korean college and graduate school students. Section 4 examines the results and discusses the role of [Cause] in the L2 acquisition of English psych verbs. Section 5 concludes the study.

2. Linguistic Backgrounds and Literature Review

2.1 Subject of English Psych Verb Constructions

Psych verbs refer to a group of verbs that describe states of mind or changes in states of mind. These verbs include the words we frequently use to express emotion, such as *admire, enjoy, favor,* and *astonish* among others (Levin 1993). By nature, psych verbs involve at least one argument, Experiencer, referring to a sentient entity, typically a human being, who is capable of experiencing a state of mind described by the verb.

The class of psych verbs in English can be divided according to whether the Experiencer argument is mapped either to the syntactic subject (ES verbs) as in (2a) or to the syntactic object (EO verbs) as in (2b).

(2) a. The children fear dinosaurs.
b. Dinosaurs frighten the children.

In (2), the Experiencer of a psych verb is mapped to the subject or object. One major issue in the study of English psych verbs is which argument of the psych verbs is mapped to the subject. Regarding the issue, we will examine two approaches, the Thematic Approach and the Semantic Feature Approach.

2.1.1. Thematic Approach

One of the central issues of the syntax-semantics interface is how to link the semantic information of verbs to their syntactic structures. It is generally agreed that there are some linking patterns between thematic roles and syntactic positions, such as the Uniformity of Theta Assignment Hypothesis (Baker 1988),[2] which states that syntactic structure reflects thematic hierarchy or argument structure. It is argued that thematic roles have a hierarchical structure as in (3).

(3) The Universal Thematic Hierarchy (Grimshaw 1990, p. 8)
Agent > Experiencer > Goal/Source/Location > Theme

Arguments with thematic roles are projected to specific positions in syntactic structure according to the Universal Thematic Hierarchy. That is, an argument bearing an Agent role appears in the highest argument position of a sentence, an argument bearing an Experiencer role appears in the next highest argument position, and so on.

[2] Baker's Uniformity of Theta Assignment Hypothesis (UTAH) is as follows:

> Identical thematic relationships between items are represented by identical structural relationships between those items at the level of D-structure. (Baker 1988, p. 46)

According to the UTAH, the argument structure itself is structured in accordance with the Universal Thematic Hierarchy and the D-structure of a sentence is simply a direct projection of the hierarchically structures argument structure of its verb.

Thus, in an argument structure of a predicate, the argument with the highest role in the thematic hierarchy is mapped to the subject. For example, in the argument structure, <Agent, Theme> of the verb, *break*, the argument with the Agent is mapped to the subject, the one with the Theme to the object.

However, constructions of psych verbs pose a problem for the thematic approach. Two arguments, i.e. an Experiencer and a non-Experiencer, are hierarchically positioned differently in ES and EO verbs, as already seen in (2). Arguments of an ES verb are mapped to syntactic positions, following the thematic hierarchy, where the Experiencer is mapped to the subject, and the non-Experiencer is mapped to the object. However, arguments of EO verbs don't follow the linking pattern; the non-Experiencer is mapped to the subject and the Experiencer to the object.

On the other hand, Pesetsky (1995) proposes a new thematic hierarchy with new thematic roles for psych verbs. He suggests that the non-Experiencer argument of EO verbs is the Causer, while that of ES verbs is the Target/Subject Matter. He presents a thematic hierarchy for psych verbs in (4).

(4) Causer > Experiencer > Target/Subject Matter (T/SM) (Pesetsky, 1995, p. 59)

In the hierarchy in (4), the Causer is the highest role, and the Experiencer the second highest. Thus, if an argument bears the Causer role, it is mapped to the subject, and if Cause doesn't exist, an argument bearing the Experiencer role is mapped to the subject. The thematic hierarchy in (4) correctly predicts which argument of an English psych verb is mapped to the subject.

Over the years, it has become clear that these thematic roles are simply too coarse to capture the linguistic facts. For example, it is very difficult to define each thematic role; what is Agent, Theme, or Experiencer? There have not been satisfactory linguistic definitions of thematic roles. Furthermore, the thematic hierarchy is not agreed by linguists; There are several different versions of thematic hierarchies.[3] Without clear answers or solutions to the problems or questions, an approach based on the thematic hierarchy will be problematic.

2.1.2. Semantic Feature Approach

In selecting the subject argument, Dowty (1991) proposes to take semantic features rather than thematic roles. He proposes that thematic roles are not discrete categories but rather a cluster of concepts; Thematic roles are not primitives, but rather derived notions. Predicates impose lexical entailment on their arguments, which can be divided into two groups: those that express agent-like properties (forming together a 'Proto-Agent role'), and those that express patient-like properties (forming a 'Proto-Patient role'). Dowty presents the entailments forming the Proto-Agent role and the Proto-Patient roles in (5) and (6).

(5) Contributing properties for the Agent Proto-Role (Dowty 1991, p. 572 (27)):
a. volitional involvement in the event or state
b. sentience (and/or perception)
c. causing an event or change of state in another participant

[3] The following shows the diversity of thematic hierarchies:
i) Actor > Pat/Ben > Th > G/S/L (Jackendoff, 1990)
ii) Agt > Inst > Th/Pat > G/L (Baker, 1988)
(L= Location, S=Source, G=Goal, Inst=Instrument, Pat=Patient, Th= Theme)
Unlike Grimshaw's (1990) thematic hierarchy as shown in (3), Goal and Location ranked below Theme/Patient.

d. movement (relative to the position of another participant)

(6) Contributing properties for the Patient Proto-Role (Dowty 1991, p. 572 (27)):
a. undergoes change of state
b. incremental theme
c. causally affected by another participant
d. stationary relative to movement of another participant

Based on the properties above, subject or object is selected by the principle in (7) below.

(7) Argument Selection Principle
In predicates with grammatical subject and object, the argument for which the predicate entails the greatest number of Proto-Agent properties will be lexicalized as the subject of the predicate; the argument having the greatest number of Proto-Patient entailments will be lexicalized as the direct object. (Dowty 1991, p. 576)

The principle in (7) states that an argument of a predicate becomes the subject when the argument has the greatest number of Proto-Agent properties, and an argument becomes the object when it has the greatest number of Proto-Patient properties. As an example, suppose that a verb has two arguments, A and B, and A has three properties of the Proto-Agent and one property of the Proto-Patient, and B has one property of the Proto-Agent and two properties of the Proto-Patient. Following the principle in (7), argument A is selected as the subject and argument B as the object.

The semantic feature approach to argument selection or subjecthood, however, has two problems. The first problem is that the approach makes a wrong prediction. It is predicted that if two arguments of a predicate have the same number of the Proto-Agent properties, either argument can be a subject. In fact, Dowty (1991) points out that Experiencer alternates between subject and object position. However, either of the two arguments can't be the subject in a language; only one of them is selected as the subject.

Furthermore, the semantic feature approach has an empirical problem. The approach is based on the assumption that there is no difference in the hierarchy between the Proto-Agent properties, or the Proto-Patient properties.[4] For example, there is no hierarchical difference between the properties in (5). But we have already seen in Pesetsky's hierarchy of thematic roles of psych verbs in (4) that Causer ('causing an event') is higher or stronger than Experiencer ('sentience').

The present study will adopt neither the thematic approach nor the semantic feature approach by Dowty (1991). We will suggest a semantic feature approach where each feature has a different degree of strength or hierarchal status.

2.2 Semantic Features of Arguments of English Psych Verbs

In this section we will examine some of the properties of the Proto-Agent in (5), which are entailed by the English psych verbs. They are [Sentience], [Volition], and [Cause] which are major semantic features of arguments of English psych verbs. First, the feature, [Sentience], is a key property of the Experiencer argument of psych verbs. According to Dowty (1991), the notion of sentience involves more than being a sentient entity; it is rather

[4] We may say that properties of the Proto-Agent are higher than those of the Proto-Patient, as a group.

sentience with respect to the event or state denoted by the verb. This feature will not be considered in the present study; it is controlled.

The second feature, [Volition], refers to volitional involvement in the event or state (Dowty, 1991). Volition is different from the notion of Agent or Actor. Volition is a concept that distinguishes intentional actions from non-intentional ones. Consider the sentences *I intentionally kicked her doll* and *I accidentally kicked her doll*. In both instances, 'I' serves as the Agent, but the former sentence denotes a volitional action, indicating a purposeful intention, while the latter describes a non-volitional action, implying an unintentional occurrence.

The feature [Volition] subdivides the Experiencer to two types; volitional and non-volitional Experiencer. Some psych verbs have [+Volition] Experiencer and others [-Volition] Experiencer. As noted by DiDesidero (1999), Experiencers of certain ES verbs such as *favor* and *enjoy* actively exercise volition, intent, and control over the emotions expressed by the verbs. However, ES verbs such as *fear* and *envy*, don't denote such volitional situations. Thus, volitional ES verbs have the feature [+Volition], while non-volitional ES verbs have [-Volition].

The third feature is [Cause], which pertains to the causation of an event or a change of state in another participant (Dowty 1991). This feature is listed among the Proto-Agent properties in (5). [Cause] subdivides the Experiencer to two groups: causative Experiencer (of EO verbs) and non-causative Experiencer (of ES verbs). And arguments of [Cause] can be divided to two types by the feature [Volition], volitional and non-volitional Causes. Subjects of EO verbs like *frighten* have the features [+Volition, +Cause] (although there are instances where they can exhibit [-Volition, +Cause]) whereas those of EO verbs like *concern* have [-Volition, +Cause].

The feature [Cause] differs from the first two features in two points. First, [Cause] stands out from the other features in that it alone is a sufficient determinant of being the subject in some languages, such as English. For example, in the sentence *The mask frightens the children*, the subject *the mask* is an entity causing the Experiencer (*the children*) to enter a state of being frightened; it doesn't have any volition. This special status of the feature [Cause] is noticed and discussed by various linguists (Ackerman and Moore 2001, Davis 2001, Dowty 1991, Grimshaw 1990).[5]

Second, the strength or special status of the feature [Cause] is known to be closely related to the presence of morphological case in a given language (Guilfoyle 2000, Hawkins 1985, Wolff et al. 2009). Languages with little or no morphological case tend to have a broader range of subjects compared to languages with morphological case. Hawkins (1985) argues that the loss of the case system in English is ultimately responsible for the greater semantic diversity observed in basic grammatical relations. With the loss of the comparable case system in English, the merging of case forms emerges among various NPs. This phenomenon, referred to as "case syncretism", results in a more fixed word order. On the other hand, the distinct surface cases in German are available to express a variety of semantic roles for arguments. This situation leads to reduced semantic diversity concerning primary grammatical relations, such as subjects and objects, as the oblique roles like experiencers, instruments, and goals have their own distinct morphological characteristics. This is the case in Korean; Korean has diverse case markers - nominative, accusative, dative and oblique case markers.

Hawkins's (1985) proposal finds a stark contrast in English and Korean. In English, a language that lacks

[5] Though Dowty (1991) assumes that there are no priorities among the entailments in either proto-role cluster with respect to subject or object selection, he acknowledges that perhaps not all proto-role entailments contribute equally (Dowty 1991, p. 574, 581, 607). He cites [Cause] as the Proto-Agent entailment with the most weight for subject selection. In line with this, Ackerman and Moore (2001, p. 52), Davis (2001, p. 66-72), and Davis and Koenig (2000, p. 74-76) also argue that [Cause] outranks the other Proto-Agent entailments in subject selection: an argument with [Cause] is always subject. Grimshaw(1990, p. 25) also points out that in a conflict between the two hierarchies, the thematic and causal hierarchies, [Cause] is the most prominent.

morphological case, subjects exhibit greater semantic diversity than those in Korean. As shown earlier in the examples in (1), a [+Cause] NP argument can be mapped to the subject position, as demonstrated in (1a). However, this mapping doesn't occur in Korean, a language with morphological case marking, as evident from (1b).

2.3 The Subjects of ES and EO Verbs

In this section we examine the three semantic features of subject arguments of psych verbs in English. First, the feature [Cause] plays a key role in classifying the psych verbs. While ES verbs describe simple non-causative events, EO verbs describe complex causative events, as shown below.

(8) a. The children fear the mask.
[x < *PSYCHOLOGICAL STATE*> y]
b. The mask frightens the children.
[x_e CAUSE [BECOME [y <*STATE*>][6] (DiDesidero 1999, p. 191,196)

In (8a), the subject experiences the emotion described by the verb. The subject argument of an ES verb has the feature [-Cause]. That is, the ES verb is a non-causative verb. In contrast, in (8b), the subject is an entity that causes Experiencer to get into a state of being frightened. The subject argument of an EO verb has the feature [+Cause]. The EO verb is a causative verb.

The other semantic features [Sentience] and [Volition] are also involved in the subject argument of ES verbs and EO verbs. The subject argument of all the ES verbs has the feature [Sentience]. However, they differ in [Volition], with some carrying this feature while others don't, as already classified as volitional ES verbs and non-volitional ES verbs. We present the semantic features of the subject argument of the of ES verbs as follows:

(9) Subject of ES (Non-causative) verbs
a. Non-volitional ES verbs: [-Cause, -Volition, +Sentience]
(e.g. The boy feared strange people.)
b. Volitional ES verbs: [-Cause, +Volition, +Sentience]
(e.g. The mother favored her youngest son the most.)

Now consider the features of the subject of EO verbs. The subject of all the EO verbs possesses the feature [+Cause] that serves as the cause of the emotional state. However, as for the feature, [Volition], the verbs are divided to two types: [+Volition] and [-Volition]. The examples are shown in (10).[7]

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[6] DiDesidero (1999, p. 182-183) suggests that where the ordinary variable x denotes an individual as a participant in an event, the variable x_e denotes an event that occurs in mental space. This event involves the Experiencer's mental experience of the entity named by the noun phrase associated with it.

[7] Arad (1998) points out three distinct readings for EO verbs: 'agentive', 'eventive', and 'stative', which are shown in the following examples.
a. Nina frightened Laura deliberately.
b. Nina frightened Laura unintentionally.
c. Nuclear war frightened Nina. (Arad 1998, p. 3)
Sentence (a) is volitional whereas sentences (b) and (c) are non-volitional. The difference between (b) and (c) is stativity; (b) is non-stative and (c) stative. The present study is not concerned with the feature stativity, and thus the example in (c) belongs to the group of (b) here, [+Cause, -Volition].

(10) a. Nina frightened Laura deliberately.
b. Nina frightened Laura unintentionally. (Arad 1998, p. 3)

The subject in (10a) is understood as acting intentionally or volitionally to bring about a change of state in Experiencer. Sentence (10b) has an eventive reading in which the subject is not understood as acting intentionally. When the subject is inanimate, or otherwise understood as lacking control or volition, we get a non-volitional eventive reading. Thus, the subjects of EO verbs have the features in (11):

(11) Subject of EO (Causative) verbs
a. Volitional EO verbs: [+Cause, +Volition, (+Sentience)]
(e.g. Nina frightened Laura deliberately).
b. Non-volitional EO verbs: [+Cause, -Volition, (±Sentience)]
(e.g. Nina frightened Laura unintentionally. This problem concerned Nina.)

Note that EO verbs don't impose any entailment on the subject argument for the feature sentience; the subject can be either sentient or non-sentient. To show this entailment relation, the feature is in parentheses in (11).

2.4 English Psych Verbs in Second Language Acquisition

While there have been several L2 studies on psych verbs, much of the focus has been on the errors made by L2 learners when comprehending and producing ES and EO verbs. Generally, L2 learners seem to have little difficulty with ES verbs, correctly mapping thematic roles to syntactic positions. However, they encounter challenges with EO verbs; they don't often accept non-animate subjects of the verbs.

Some researchers (Chen 1996, Juffs 1996, White et al. 1999) claim that these errors originate from language-universal factors. They suggest that while ES verbs follow canonical linking rules, linking Experiencers to subjects, EO verbs deviate from the rules, causing more difficulty. On the other hand, some researchers (Chen 1996, Montrul 2001, Sato 2003, Son and Kim 2011, White et al. 1999) argue that the difficulty L2 learners face with EO verbs is influenced by their L1 morphology, particularly for those whose native languages have explicit morphemes for causative meanings. The lack of explicit causative markers in English EO verbs, which lexically encode causative meaning, poses challenges for L2 learners whose native languages have explicit morphemes for causativity. Consequently, when acquiring English psych verbs, they often fail to recognize the causative meaning of EO verbs, treating them as ES verbs instead, which leads to errors.

Other studies (Dehghan and Jabbari 2011, Hwang 2000, Kim 2015) suggest that the difficulty with learning L2 English EO verbs stems from another L1 factor, strong preference for animate subjects, prevalent in many Asian languages. The researchers claim that the L2-English learners whose L1s prefer animate subjects face significant challenges with the EO verb constructions.

However, when it comes to L1-Korean speakers, there is a puzzle unsolved. Studies by Lee (2013) and Kim (2018) have shown that not all EO verb sentences are necessarily more difficult for advanced L1-Korean speakers of English to acquire than ES verb sentences. The accuracy rates for certain volitional EO verb sentences were

found to be higher than those for non-volitional ES verb sentences, contradicting the expectations of the previous accounts.[8] This observation suggests that the learnability problems with English psych verbs for L1-Korean speakers would involve other factors beyond the general linking rule or zero causative morphology or animacy, as previously suggested.

While Lee (2013) and Kim (2018) examined the acquisition of four types of English psych verbs by L1-Korean speakers, based on the features [Cause] and [Volition], they didn't address why the [Cause] feature poses particular challenges for L1-Korean speakers. Furthermore, they didn't explore how [Cause] and [Volition] influence the acquisition of English psych verbs or the relationship between these features and the acquisition. In this study, we believe that the [Cause] feature is especially challenging for L1-Korean speakers, given its distinct roles in English and Korean. We will investigate the influence of each feature on the acquisition of English psych verbs and aim to gain valuable insights into the learnability problems faced by L1-Korean learners.[9]

2.5 Hypotheses and Predictions

To investigate the role of the feature [Cause], the current study proposes the following hypotheses.

Hypothesis 1: Causative psych verbs are more difficult for L2 English speakers than non-causative psych verbs are.
Hypothesis 2: Non-volitional causative psych verbs are more challenging for L2 English speakers than volitional causative psych verbs.
Hypothesis 3: The strength of the feature [Cause] in L2 English is stronger than that of the feature in L1 English.

Hypothesis 1 predicts that causative psych (EO) verbs are more difficult for Korean learners of L2 English than non-causative psych (ES) verbs. Due to L1 influence, L1-Korean speakers would prefer a sentence with Experiencer subject to one with non-Experiencer [+Cause] subject. Hypothesis 2 predicts that among the causative (EO) verbs, the L1-Korean speakers would not readily accept the verb constructions with non-volitional subjects. This is attributed to the preference in their L1, Korean, for volitional subjects over non-volitional subjects. This prediction will be tested in the present study. Finally, hypothesis 3 posits that the effect of the feature [Cause] in L2 English is stronger than the effect in L1 English. This implies that the feature [Cause] is pivotal for the L1-Korean speakers in acquiring L2 English.

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[8] Lee (2013) employs the dichotomy of 'controller' versus 'non-controller', while Kim (2018) uses the terminology of 'agentive' versus 'non-agentive'. These terms correspond to the differentiation between 'volitional' and 'non-volitional', as applied in our research.

[9] For the L1 morphology influence, we don't examine causative morphology of Korean here because the language doesn't have a systematic morphology of causation. The general system for causation in the present Korean is not morphology but a syntactic construction, *-key hata* ('cause someone to do/be ...'); *julkep-ta* ('be amused') and *julkep-key hata* ('cause someone to be amused'). Only one of the verbs in Korean corresponding to the ten EO verbs in English examined in the current study has a morphological morpheme *-ki-* for causative meaning; *nolla-ta* 'be surprised', *nollay-ki-ta* 'cause someone to be surprised. However, this morphological causative verb form is used infrequently in the modern Korean; instead, its syntactic causative construction *nolla-key hata* is frequently used. According to the Modern Korean Corpus Engine (http://riksdb.korea.ac.kr/) operated by the Research Institute of Korean Studies, the frequency of *nolla-key-hata* was 273 times, whereas *nollay-ki-ta* appeared only 2 times. Thus, we assume that L1 morphology doesn't play a significant role in the L2 acquisition of L2 English psych verbs by Korean people.

3. Study

3.1 Participants

A total of one hundred forty-seven participants took part in the experiment, including ninety-three L2-English learners and fifty-four L1-English speakers who served as a reference group. The L2-English learners were students from various majors at a university in Seoul, with ages ranging from 20 to 28 years. Considering the challenges L2 learners face with English EO verbs, as highlighted in previous studies (Chen 1996, Sato 2003, Son and Kim 2011, White et al. 1999), we specifically recruited participants who were assumed to understand the causative meanings of EO verbs. Therefore, only students who achieved specific scores or higher on standardized tests like the TOEFL or TOEIC were recruited.[10] Table 1 displays the number of participants of L2 English and L1 English participants.[11]

Table 1. The Participants in the Study

Language Group	Number
L2-English learners (upper intermediate & advanced)	93
L1-English speakers	54

The group of the L1 English speakers consists of adult participants, all native English speakers ranging in age from 20s to 70s voluntarily participated in the survey through a linguistics-related online platform. Among them, 38 were from the U.S., 7 from Canada, 5 from the U.K., and 4 from Australia.

3.2 Materials and Procedures

The participants were informed that the task involved judging the naturalness of English sentences. They were specifically instructed that the task was about assessing the relative naturalness of the sentences, rather than making judgments based solely on grammaticality. An illustrative example of the test sentence is provided in (12).

		completely unnatural				completely natural
(12)	The robber frightened people with a gun.	1	2	3	4	5

[10] The TOEFL iBT (Internet-Based Test) and TOEIC scores that correspond to levels 3 and 4 as per ALTE (The Association of Language Testers in Europe) standards are as follows.

ALTE	Level 3	Level 4
TOEFL iBT	72-94	95~
TOEIC	785-944	945~

[11] Originally, we divided the L1-Korean group into two proficiency groups. However, our analysis indicates a striking similarity in the behavior of these two proficiency groups. Consequently, we decided not to proceed with the separation.

For this naturalness judgment task, a set of 10 causative EO and non-causative ES psych verbs was chosen, including 5 volitional verbs and 5 non-volitional verbs for each category, as shown in Table 2. The categorization is based on the distinctions made in DiDesidero (1999) and Grafmiller (2013).

Table 2. Psych Verbs Employed in the Study

Verb Class	Verbs Employed
Volitional E-O verbs	*amuse, anger, annoy, frighten, surprise*
Non-volitional E-O verbs	*amaze, bore, concern, depress, fascinate*
Volitional E-S verbs	*admire, enjoy, favor, ignore, love,*
Non-volitional E-S verbs	*dread, envy, fear, hate, miss*

The test sentences were designed to have different values for each semantic feature, [Cause] and [Volition], as in Table 3. Note that EO verbs are causative and ES verbs are not. The four verb classes in Table 2 have the features, [+C, +V], [+C, -V], [-C, +V], and [-C, -V] respectively, as in (13) and an example of each subgroup is illustrated.

(13) a. [+C, +V]: The robber frightened people with a gun.
b. [+C, -V]: The sick child concerned his parents with ill health.
c. [-C, +V]: The mother favored her youngest son the most.
d. [-C, -V]: The boy feared strange people.

In this task the feature [Sentience] is not considered; it is controlled. The subject of an ES verb in the test is an Experiencer, a sentient being, as in (13c, d). For the EO verbs, we exclusively employed sentient subjects, as shown in the examples in (13a, b).

Each verb class in (13) consists of 5 test sentences and thus the total number of the test sentences is 20. Additionally, the test also has 20 filler sentences. All the filler sentences consist of incorrect EO and ES verb structures with reversed mappings (e.g., **People bored a repetitive daily life, *Wars feared people*). These filler sentences were used as a test to gauge whether the learners had a basic understanding of psych verb sentences. By employing this test, we ensure that the learners' judgment could be attributed to the specific semantic characteristics of the verbs or subjects under investigation, rather than general linking rules or causative morphology. Participants with four errors (20%) or more in the fillers were excluded from the final analysis. We made this decision because those who got more than 20% of the total fillers wrong were considered unlikely to have a good understanding of the causative meanings of English EO verbs.

4. Results and Discussion

4.1 General Results

Table 3 presents the mean acceptability ratings of the four classes of the psych verbs for both L2-English and L1-English groups.

Table 3. Mean of Acceptability by Language Group and Verb Class

	L2-English			L1-English		
Verb Class	Mean	SD	N	Mean	SD	N
[+C, +V]	4.381	0.4384	93	4.878	0.1755	54
[+C, -V]	3.335	0.5958	93	4.474	0.2728	54
[-C, +V]	4.535	0.3969	93	4.815	0.2294	54
[-C, -V]	4.320	0.4829	93	4.737	0.2824	54

The results in Table 3 are graphically shown in Figure 1.

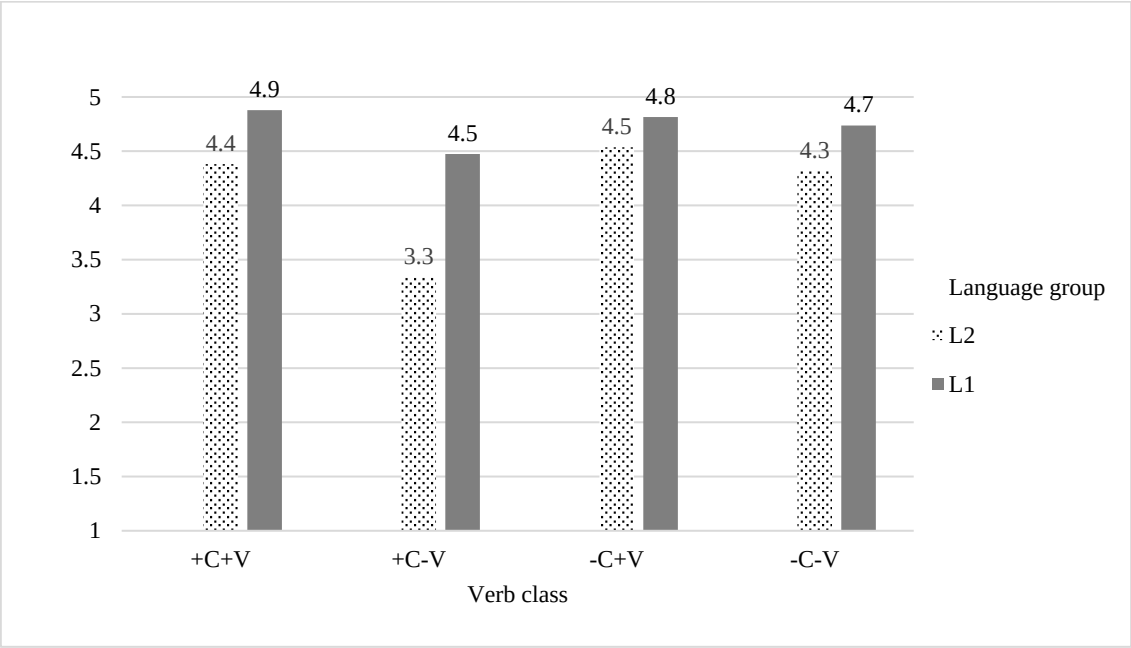

Figure 1. Mean of Acceptability by Language Group and Verb Class

Table 3 and Figure 1 demonstrate the effects of verb class and language groups on the acceptability ratings. Notably, the verb class that shows the lowest rating for both L1 and L2 groups is [+C, -V], while the one that receives the highest rating is [-C, +V] (by the L2 group), and [+C, +V] (by the L1 group). Additionally, the language group also has a significant effect on the ratings. In general, the L2 group consistently exhibits lower ratings than the L1 group. The most marked verb class is [+C, -V], the causative non-volitional verbs, which shows the lowest rating for L2 English speakers, resulting in a significant difference between L2 and L1 groups.

4.2 Language Groups and Four Verb Class

The results were submitted to a two-way ANOVA; language group (L1 and L2 English) and verb class (four classes by feature) were independent variables, and the rating of the sentences by the participants was the dependent variable. Table 4 shows the results.

Table 4. Effects of Language Group and Verb Class

Source	Type III Sum of Squares	df	Mean Square	*F*	Sig
Language Group	46.433	1	46.433	272.383	0.000
Verb Class	52.654	3	17.551	102.957	0.000
Language Group * Verb Class	14.894	3	4.965	29.123	0.000
Error	98.873	580	0.170		

Table 4 indicates a significant main effect of the language group (F=272.383, $p < .01$), as well as a significant main effect of the verb class by feature (F=102.957, $p < .01$). Furthermore, the analysis reveals a significant interaction between the language group and verb class (F=29.123, $p < .01$). Taken together, these findings underscore the combined influence of both language group and verb class on the acceptability ratings of psych verb sentences. Moreover, the significant interaction suggests that the effect of the verb class on the ratings depends on the language group, and vice versa.

We further examined the results from L2 English speakers, the Koreans. To see whether there are any significant differences between the four verb classes, we conducted a *post-hoc* test using Scheffé, and Table 5 shows the results.

Table 5. Differences between Four Verb Classes (L2-English learners)

Verb Class	N	Subset		
		a	b	c
[+C, -V]	93	3.335		
[-C, -V]	93		4.320	
[+C, +V]	93		4.381	4.381
[-C, +V]	93			4.535
Sig		1.000	0.869	0.193

In Table 5 we see that in the rating, the verb class of [-C, +V] is significantly higher than the class of [-C, -V] which is significantly higher than the group of [+C, -V]. And the class of [+C, +V] is significantly higher than the class of [+C, -V]. However, there are no significant differences between the classes [+C, +V] and [-C, -V], [+C, +V] and [-C, +V].

We observed that the ratings of the four verb classes by L2 group are lower than those by L1 group, and the differences in the ratings between L1 and L2 groups are all significant in the results of the *t*-test as shown in Table 6.

Although the differences between L1 and L2 groups are all significant, the difference in the [+C, -V] verb class is largest (t = -10.460); the second largest class is [+C, +V]. It suggests that the feature [Cause] is a crucial factor in the L2 acquisition of English psych verbs by L1 Korean speakers.

Table 6. Differences in the Acceptability between L1 and L2 Groups

Verb Class	Language Group	Mean	SD	*t*	*p*
[-C, +V]	L2	4.535	.501	-3.489	.001**
	L1	4.815	.392		
[+C, +V]	L2	4.381	.461	-7.489	.000**
	L1	4.878	.216		
[-C, -V]	L2	4.320	.493	-5.147	.000**
	L1	4.737	.442		
[+C, -V]	L2	3.335	.734	-10.460	.000**
	L1	4.474	.424		

$^{**}p < .01$

4.3 Causative (EO) and Non-Causative (ES) Psych Verbs

Table 7 shows the means of acceptability by language group (L1 and L2 English) and the two verb classes (causative and non-causative), which are often called EO and ES verbs.

Table 7. Mean of Acceptability by Language Group and [±Cause] Class

	L2-English			L1-English		
	Mean	SD	N	Mean	SD	N
[+C]	3.858	0.422	93	4.676	0.188	54
[-C]	4.428	0.309	93	4.776	0.230	54

A two-way ANOVA was conducted to examine the effects of the feature [Cause]; language group and verb class were independent variables and the rating of the sentences was a dependent variable. Table 8 shows the results.

Table 8 presents significant main effects of language group (F=225.547, $p < .01$) and [±Cause] verb class (F=74.469, $p < .01$). Additionally, the analysis reveals a significant interaction between language group and verb class (F=36.641, $p < .01$). These findings suggest that the [Cause] feature has a significant effect on the ratings of psych verb sentences, and moreover, its effect varies depending on the language group.

Table 8. Effects of the Feature [Cause] in L1 and L2 English

Source	Type III Sum of Squares	df	Mean Square	*F*	Sig
Language Group	23.217	1	23.217	225.547	0.000
Verb Class	7.665	1	7.665	74.469	0.000
Language Group * Verb Class	3.772	1	3.772	36.641	0.000
Error	29.851	290	0.103		

This substantial interaction between language group and [±Cause] verb class highlights the influence of L1. As explained previously, English, characterized as a [+Cause-subject] language, permits the mapping of a [+Cause] NP argument to the subject position, which contrasts with Korean, a [-Cause-subject] language. Consequently, the

L1 Korean learners of L2 English would be very likely to reject a [+Cause] NP as subject, resulting in varying ratings based on [±Cause]. These results support Hypothesis 1 and confirm that the feature [Cause] indeed plays a significant role in the L2 acquisition of English psych verbs by L2 group.

4.4 Volitional and Non-volitional Psych Verbs

Table 9 shows the means of acceptability by language group (L1 and L2 English) and the two verb classes, volitional and non-volitional EO verbs.

Table 9. Mean of Acceptability by Language Group and [±Volition] Verb Class

	L2-English			L1-English		
	Mean	SD	N	Mean	SD	N
[+V]	4.458	0.304	93	4.846	0.190	54
[-V]	3.828	0.432	93	4.606	0.216	54

To see the effects of the feature [Volition], the results were submitted to a two-way ANOVA; language group and verb class were independent variables and the rating of the sentences was a dependent variable. Table 10 shows the effects.

Table 10 Effects of Language Group and [±Volition] Verb Class

Source	Type III Sum of Squares	df	Mean Square	*F*	Sig
Language Group	23.217	1	23.217	224.007	0.000
Verb Class	12.954	1	12.954	124.990	0.000
Language Group* Verb Class	2.590	1	2.590	24.987	0.000
Error	30.056	290	0.104		

Table 10 shows a significant main effect of language group (F=224.007, $p < .01$) and [±Volition] verb class (F=124.990, $p < .01$). A significant interaction between the language group and verb class (F=24.987, $p < .01$) is also noted. These findings indicate that the [Volition] feature significantly influences the ratings of psych verb sentences, and also the effect of [Volition] varies according to the language group.

The significant main effect of [Volition] supports the theoretical claim that [Volition] is a universal determinant of what can serve as subject; numerous languages show a preference for volitional subjects over non-volitional subjects (Comrie 1989, DeLancey 1983, Schlesinger, 1989). This corresponds with psycholinguistic research findings suggesting that language speakers are very sensitive to [Volition]. Fausey et al. (2010) found that both English and Japanese speakers preferred using animate noun phrases as subject when describing events intentionally caused by a person. Conversely, when events were unintentionally caused, they were less inclined to use animate noun phrases as subjects. This implies that in general language speakers including L1 Korean speakers favor volitional subjects over non-volitional ones.

In this respect, it's worth noting that some studies (Dehghan and Jabbari 2011, Hwang 2000, Kim 2015) have proposed that L2 English learners whose L1 languages favor animate subjects would face considerable challenges

with EO verb constructions. However, the significant main effect of [Volition] observed in the present study, despite controlling for all subject NPs as sentient, implies that the challenges encountered by L1 Korean speakers reach further than insentient subjects, encompassing non-volitional subjects. In other words, if an NP argument is non-volitional, even when it is sentient, L1 Korean speakers are unlikely to map it to the subject position.

Table 11 shows the differences in acceptability between volitional and non-volitional EO verbs, and L1 and L2 groups.

Table 11. Mean of Acceptability by Language Group and [±Volition] Causative Verbs

	L2-English			L1-English		
	Mean	SD	N	Mean	SD	N
[+V]	4.381	0.438	93	4.878	0.176	54
[-V]	3.335	0.596	93	4.474	0.273	54

The difference in Koreans' acceptability between volitional and non-volitional causative verbs is much larger than that in English native speakers, although the differences in both language groups were significant; it is 1.05 for L2 English speakers whereas it is 0.42 for L1 speakers. The difference with the L2 English group between [+V] and [-V] verbs is found to be significant in a *t*-test (t=8.527) at the level p = .01. These findings in Table 10 and 11 support Hypothesis 2.

These findings correlate with earlier findings by Lee (2013) and Kim (2018). These studies reported that not all EO verbs present the same level of difficulty for L2 learners. This suggests that the difficulties L2 learners face when acquiring English psych verbs cannot be attributed merely to causative morphology or general linking rules.[12]

This variation between the two classes of the EO verbs becomes clearer when considering the properties of their subjects, as proposed by Grimshaw (1990) and Arad (1998). When an NP is interpreted as having both [Cause] and [Volition], [Volition] would serve as a cue for L2 learners, resulting in fairly high ratings. However, when [Cause] appears independently without [Volition], learners' ratings drop significantly. This finding underscores the crucial role of the feature [Cause] in learning L2 English psych verbs.

To summarize the discussion so far, it appears that both [Cause] and [Volition] influence L2 groups' ratings of psych verb sentences, but their effects exhibit differences. While [-Cause] yields higher ratings than [+Cause], suggesting a negative effect, [+Volition] results in higher ratings than [-Volition], implying positive effects. In essence, [-Cause] and [+Volition] contribute to higher ratings, whereas [+Cause] and [-Volition] lead to lower ratings. This rationale explains why causative EO verbs are more challenging than non-causative ES verbs, as well as why within causative EO verbs, non-volitional causative EO verbs are particularly difficult.

4.5 How Strong is the Feature [Cause] for L2 English Learners?

We observed that the two features [Volition] and [Cause] have main effects for L1 and L2 English speakers.

[12] As mentioned in the footnote 6, the Korean verb *nolla-ta* ('be surprised') has a causative morpheme for the causative meaning, *nolla-ki-ta* ('cause someone to be surprised'). We found that its corresponding verb *surprise* in English is not exceptional in the acceptability; its mean of acceptability is 4.29 which is the same as that of *annoy*. The means of *frighten, annoy, amuse* and *anger* are 4.40. 4.42, 4.29 and 4.51, respectively. We assume that the acceptability of Korean participants is not influenced by their L1 morphology.

To see the strength of the feature [Cause] compared with the feature [Volition], we examined the correlation between each feature and the acceptability rating. Given that our features are dichotomous, we first coded [+Cause] as 1 and [-Cause] as 0, and [+Volition] as 1 and [-Volition] as 0, and then we conducted Pearson correlation analyses with the rating.[13]

Table 12 displays correlation coefficients for the two features across the two language groups. According to Cohen (1988: 79-80), a correlation coefficient is considered small when r = .10, medium when r = .30, and large when r = .50. A positive correlation would indicate that the presence of the feature, be it [Cause] or [Volition] (coded as 1), is associated with higher acceptability ratings, while the absence of the feature (coded as 0) is linked to lower ratings. Conversely, a negative correlation would imply the inverse relationship.

Table 12. Correlation Coefficients for [Volition] and [Cause]

Language Group	Volition	Cause
L2	.647**	-.612**
L1	.513**	.-234*

**p < .01, *p < .05

From the results in Table 12, the correlation coefficient of [Volition] appears to be similar for both the L2 and L1 groups, exhibiting a strong positive correlation in each case (r=.647 for the L2 group and r=.513 for the L1 group). This consistency suggests that the influence of [Volition] on the ratings is robust across different language groups, underscoring its significance as a universal feature of the subject.

However, a marked contrast emerges when considering the correlation coefficient of [Cause] between the two language groups. Although [Cause] demonstrates a negative correlation with the ratings in both groups, the inverse relationship is much more pronounced in the L2 group (r= -.612) than in the L1 group (r= -.234). This large discrepancy suggests that the [Cause] feature would pose particular challenges or hold distinct implications for L2 learners compared to L1 speakers.

These findings support Hypothesis 3: The strength of the feature [Cause] in L2 English speakers is stronger than the strength in L1 English speakers. The marked difference in the correlation coefficients of [Cause] between L2 and L1 groups underscores the critical roles of [Cause] for the L2 English learners. We believe that the crucial role of [Cause] shown in the current study is indeed attributed to the learners' L1. As mentioned previously, Korean is a [-Cause-subject] language, which does not allow a non-volitional [+Cause] noun phrase as subject.

On the other hand, the remarkable role of [Volition] can be attributed to its universal feature that serves as subject; Across various languages, a preference for volitional subjects over non-volitional ones is evident. Essentially, both the [Volition] and [Cause] features have a profound impact on L2 acquisition, although the strengths of their roles differ based on the learners' L1s.

[13] In principle, a point-biserial correlation is used to measure the strength and direction of the association that exists between one dichotomous variable and one continuous variable. However, when the dichotomous variable is coded as 0 and 1, the result from the Pearson correlation coefficient aligns with the point-biserial correlation, given that the latter is a specific case of the Pearson's product-moment correlation. In our study, when we performed the point-biserial correlation as an additional measure, the outcomes matched those of Pearson's correlation.

5. Implications and Concluding Remarks

The present study examined how semantic features influence the acquisition of L2 English psych verbs. Specifically, the study identified the semantic feature that poses difficulties for L1-Korean speakers in acquiring English psych verbs. The findings of this study demonstrated that both [Cause] and [Volition] play important roles for Korean learners of L2 English psych verbs, yet their effects are different. While [-Cause] leads to higher ratings compared to [+Cause], implying a negative impact, [+Volition] yields higher ratings than [-Volition], indicating positive effects. In essence, [-Cause] and [+Volition] contribute to higher ratings, while [+Cause] and [-Volition] result in lower ratings. This illustrates why causative EO verbs pose greater challenges than non-causative ES verbs. Furthermore, it explains why, within causative EO verbs, non-volitional causative EO verbs are particularly demanding for L2 English learners.

The implications of the findings shown in the current study are twofold. Firstly, it supports the idea that the L2 acquisition of psych verbs goes beyond just syntactic and morphological factors. We suggest that semantic features of arguments also play critical roles in subject selection. Secondly, the study highlights that the role of [Cause] on subject selection is critical for L2 learners when their L1 differs from L2 in terms of the factor, [±Cause-subject].

Considering how the feature [Cause] persistently poses challenges in the interlanguage of advanced learners, this study makes several pedagogical suggestions. Firstly, teachers should place more emphasis on teaching [Cause] by explicitly conveying that a [Cause] argument alone can fully function as subject in English. Secondly, providing learners with various types of input is crucial. Learners tend to be exposed to only certain semantic features of subjects in psych verb sentences, leading to potential mistaken overgeneralizations. Therefore, it is essential for L1-Korean speakers to encounter psych verb sentences with diverse subjects. However, as various researchers have argued, input alone is insufficient for successful second language acquisition. Given that [Cause] remains a challenging feature for Korean EFL learners even at an advanced level, explicit instruction is beneficial. Learners need to be explicitly taught that subject selection in Korean significantly differs from English, and that a feature that is not strong enough to determine subjecthood in their L1 can be indeed sufficient to determine subjecthood in the target language. By providing targeted instruction and exposure to diverse sentence structures, educators can help L1-Korean speakers better grasp English psych verbs.

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