I *cosimhi* baked bread:
Code-switching adverbials
for Korean and English bilinguals

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1. INTRODUCTION

Code-switching refers to the concurrent use of two or more languages in a conversation (Macswan, 2008). Under the assumption that code-switching is a rule-governed phenomenon, researchers have proposed various theories that explain how the syntactic properties of the languages involved influence code-switching (Jake et al., 2002; Sankoff & Poplack, 1981; Macswan, 2008; Myers-Scotton, 1993). Among these works, relatively few have explored the territory of adverbs (Amuzu & Asinyor, 2016; Treffers-Daller, 1993). Thus, this paper aims to explore the relatively neglected intersection of code-switching and adverbials in Korean/English bilingual speech.

In the pilot study I conducted for a course (Syntax II) during the fall semester of 2024, I attempted to report the distribution of code-switched 'manner adverbs (ex. *carefully, quickly*)' and 'temporal adverbials (ex. *today, yesterday*)' for Korean/English bilinguals. The survey participants, all of whom were fluent bilinguals, completed acceptability judgment tasks by indicating possible positions for an adverbial in a given sentence. The participants were tested for monolingual sentences – Korean adverbial in Korean sentence, English adverbial in English sentence – as well as code-switched sentences – Korean adverbial in English sentence and English adverbial in Korean sentence. The Korean/English pair of "matrix sentence" where adverbials were inserted in remained consistent throughout the survey:

(1) na-nun ppang-ul kwu-ess-ta
I-TOP bread-ACC bake-PAST-DECL
'I baked bread'

(2) I baked bread

Going into the pilot study, it was hypothesized that the "matrix language" – the language of the matrix sentence (and hence the verb) – would dictate the position of the adverbial, as opposed to the "embedded language" – the language of the inserted adverbial[1]. On one hand, it was seen that the matrix language predicted the behavior of code-switched adverbials: the sentence-final ban against adverbials in Korean grammar, for example, accounted for the fact that code-switched English adverbials were also banned from this position.

(3) *na-nun ppang-ul kwu-ess-ta culkepkey

[1] For clarification, these terms are borrowed from Myers-Scotton (1993), but they solely refer to the language of sentence and adverbial, respectively, following the experimental design of the pilot study survey. The implications of these terms discussed in the Matrix Language Frame Model (Jake et al., 2002; Myers-Scotton, 1993) are *not* being assumed unless specified.

I-TOP bread-ACC bake-PAST-DECL joyfully
Intended: ‘I baked bread joyfully’

(4) *na-nun ppang-ul kwu-ess-ta JOYFULLY

On the other hand, the language of the adverbial could also be said to impact the distribution: consider the code-switched English adverbials in a Korean sentence below. The observation that *carefully* can directly follow the subject but *on Wednesday* cannot is mirrored in their distribution in an English sentence.

(5) (?CAREFULLY), na-nun (CAREFULLY) ppang-ul (CAREFULLY) kwu-ess-ta
I-TOP bread-ACC bake-PAST-DECL
‘I baked bread carefully’

(6) (ON WEDNESDAY), na-nun (*ON WEDNESDAY) ppang-ul (*ON WEDNESDAY)
I-TOP bread-ACC
kwu-ess-ta
bake-PAST-DECL
‘I baked bread on Wednesday’

(7) (Carefully), I (carefully) baked (*carefully) bread (carefully)

(8) (On Wednesday), I (*on Wednesday) baked (*on Wednesday) bread (on Wednesday)

In the code-switched utterances (5) & (6), assuming that the matrix language dictates the adverbial distribution would have led to an incorrect prediction. In Korean, most constituents are allowed to ‘freely’ move around, which results in what seems to be a flexible word order. This is referred to as “scrambling (Lee, 2007).”

(9) (swuyoil-ey) Nwuli-ka (swuyoil-ey) sagwa-ul (swuyoil-ey) mek-ess-ta
Wednesday-on Nwuli-NOM apple-ACC eat-PAST-DECL
‘Nwuli ate an apple on Wednesday’

(10) (elyewum eps-i) Nwuli-ka (elyewum eps-i) ppang-ul (elyewum eps-i)
difficulty not.exist-COMP Nwuli-NOM bread- ACC

kwu-ess-ta
bake-PAST-DECL
‘Nwuli baked bread without difficulty’

This led me to wonder why such flexible word order can not be derived in certain code-switched sentences, even when the matrix language is Korean. However, it was even more interesting to note the distribution of Korean/English mixed adverbials (ex. *WEDNESDAY-ey* ‘on Wednesday’): they were

composed of an English DP and a Korean P head. When inserted into a Korean sentence, they were allowed to scramble freely just like a monolingual Korean adverbial.

(11) (WEDNESDAY-ey) na-nun (WEDNESDAY-ey) ppang-ul (WEDNESDAY-ey)
Wednesday-on I-TOP bread- ACC

kwu-ess-ta (*WEDNESDAY-ey)
bake-PAST-DECL
'I baked bread on Wednesday'

Based on the lingering questions from the pilot study, the current study aims to answer the following research questions:

(12) a. Assuming that the matrix language is Korean, why are certain code-switched English adverbials unable to "scramble" freely and derive a flexible word order?

b. How can we account for the contrastive distribution between the code-switched English 'manner' and 'temporal' adverbials in a Korean sentence using monolingual theories that restrict adverbial placement?

2. BACKGROUND

2.1. Theoretical Assumptions

Before we begin, let's review the theoretical assumptions that this study is based on. I will be working within the Minimalist Program by Chomsky (1991) and assume the Borer Conjecture (Borer, 2014; Chomsky, 1995) for the purpose of restricting linguistic variation to parametric differences.

Also, I will adopt the VP-internal subject hypothesis is assumed where the subject DP is generated in Spec,*v*P for both Korean and English (Burton & Grimshaw, 1992). In English, the subject obligatorily raises to Spec,TP to satisfy the EPP (Extended Projection Principle) feature (Adger, 2003): in Korean, the EPP feature is optional, and the subject can stay *v*P internally without raising to Spec,TP (Yim, 2004). Miyagawa (2001) explains that Spec,TP position is the landing site for scrambled constituents in Japanese, which Lee (2007) assumes to be true in Korean as well.

Pertaining to verb movement, I will assume that the finite verb in English stays in-situ, and there is affix-lowering due to the agreement between V and T (Chomsky, 1981; Embick & Noyer, 2001). As for Korean, I assume that there is an overt head movement from V to *v, v* to T, and T to C. The reason for this movement is that all functional heads are affixes in Korean (Chung, 2007).

2.2. Scrambling

It is widely attested that there is heavy scrambling in Korean (Lee, 2007). The term *scrambling* has been associated with the "free order phenomena" in a language where certain (if not most) constituents can change orders while preserving the meaning of the sentence (Lee, 2007; Sato & Goto, 2014). In this section, I will discuss scrambling as a syntactic movement and talk about its restrictions pertaining to adverbials.

There have been many attempts to explain scrambling and its optionality in the realm of syntax (Bošković and Takahashi, 1998; Fukui, 1993; Sato & Gato, 2014). For one, Fukui (1993) treats scrambling as an optional, "costless" movement without any driving force; Bošković and Takahashi (1998) argue that a scrambled constituent is base-generated in its surface position but obligatorily lowers in LF to receive its theta role. While these fail to explain scrambling as a feature-driven movement, Miyagawa (2001) argues that scrambling in Japanese is A-movement triggered by the EPP. Based on the Japanese data, Miyagawa posits that the OSV word order is (13b) derived via movement from the "basic" SOV word order (13a).

(13a) Taroo-ga piza-o tabeta
Taro-NOM pizza-ACC ate
'Taro ate pizza' (Miyagawa, 2001, p. 297, (5a))

(13b) Piza-o$_i$ Taroo-ga t_i tabeta
pizza-ACC Taro-NOM t_i ate
'Taro ate pizza' (Miyagawa, 2001, p. 297, (5b))

By looking at the scopal relationship between 'all' in subject/object positions and negation, Miyagawa identifies Spec,TP as the landing site for scrambled constituents in Japanese. He argues that cases in which the object DP moves into Spec,TP and the subject DP stays in-situ are clear evidence that "the nominative Case feature is not strong (p. 300)" to trigger scrambling. Instead, it is argued that the EPP-feature is the trigger behind the subject in SOV and object in OSV to move to Spec,TP.

(14) A-scrambling is triggered by the EPP-feature on T. (Miyagawa, 2001, p. 300, (13))

Thus, a natural question arises: if A-scrambling is triggered by the EPP-feature, why can't the object DP in English move to Spec,TP instead of the subject? Why is it that in Japanese, any of the arguments can scramble? Miyagawa explains that this is due to differences in V-to-T movement: in Japanese, there is V-to-T movement which positions the subject and the object "equidistant from T, allowing the EPP feature

on T to attract either of these phrases (p. 301).” Conversely, in English, the lack of V-to-T movement means that the subject is the closest to the T: thus, “only the subject can satisfy the EPP (p. 301).[2]”

Lee (2007) adopts Miyagawa’s argument and applies it to scrambling in Korean. One of his key arguments is to explain the observation that predicates cannot scramble in Korean.

(15a) Chelswu-ka [Yenghuy-ka pap-ul mek-ess-ta-ko] malha-iss-ta
-nom -nom meal-acc eat-past-decl-comp say-past-decl
‘Chelswu said that Yenghuy ate a meal’

(15b) *Chelswu-ka [Yenghuy-ka mek-ess-ta-ko$_k$ pap-ul t$_k$] malha-iss-ta
-nom -nom eat-past-decl-comp meal-acc say-past-decl
Intended: ‘Chelswu said that Yenghuy ate a meal’ (Lee, 2007, p. 76, ex. (3-78))

Lee provides a syntactic account behind this phenomenon by drawing from Miyagawa’s analysis: scrambling in Korean is a type of A-scrambling where a constituent is moved to Spec,TP without reconstruction effects[3]. If a predicate were to scramble, it would move to Spec,TP and be unable to license its arguments or its theta-roles (Lee, 2007, p. 113). Consequently, Lee generalizes Miyagawa’s analysis by positing that only “semantically complete” constituents due to the lack of reconstruction effects in Korean’s A-scrambling. Lee notes that in formal semantics, expressions are either “semantically complete (saturated)” or “semantically incomplete (unsaturated).” Saturated expressions include entities and truth-values, whereas unsaturated meanings are functions that take an argument.

With this in mind, let’s examine the intersection between scrambling and adverbs. Chametzky (2000) remarks that “the syntax of adjuncts generally is opaque and their interaction with scrambling is problematic.” Lee (2007) automatically assumes that “Korean scrambles non-arguments such as adverbs (p. 23).” This assumption is evidenced below in (16) and (17).

(16) Chelswu-ka Younghee-lul kil-yese manna-ss-ta
-NOM -ACC street-on meet-PAST-DECL
‘Chelswu met Younghee on the street.’ (Lee, 2007, p. 24, ex. (2-24))

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[2] However, it is left unanswered why certain languages like French that have V-to-T movement, yet no A-scrambling (p. 328).

[3] Another type of scrambling, A-bar scrambling, “behaves as though it “reconstructs” to its original base position where its binding relations are determined (Büring 2005, as cited in Lee, 2007).”. Note that Turkish, which shows A-bar scrambling, allows predicates to scramble.

(17) Kil-yese Chelswu-ka Younghee-lul manna-ss-ta
street-on -NOM -ACC meet-PAST-DECL
'Chelswu met Younghee on the street.' (Lee, 2007, p. 24, ex. (2-25))

At first glance, Lee's (2007) distinction between saturated/unsaturated meaning seems to specify that adverbials are allowed to scramble. However, as we will discuss later, adverbs are argued to be functions that take FEO (Fact-Event Objects) as arguments (Ernst, 2001): for instance, 'manner adverbs' like *carefully* take SpecEvent as their FEO, and 'temporal adverbs' like *last Friday* take events as their FEO. Ernst (2001) notes how the adverbials can be "mapped onto semantic representation as the predicate ADJ (p. 170)" with its argument being an FEO. Under this definition, adverbials are functions – therefore, they are semantically incomplete and unable to scramble.

Another issue with adverbial scrambling is that scrambling is a feature driven practice (Miyagawa, 2001). In line with Miyagawa's argument, we can analyze (17) in two different ways: one possibility is that *Kil-yese* is satisfying the EPP-feature by raising to Spec,TP while the subject *Chelswu-ka* is staying in-situ; another possibility is that *Chelswu-ka* is satisfying the EPP-feature by raising to Spec,TP and *Kil-yese* is either raised by a different mechanism or is base-generated there. In order to verify what is actually happening, we need to ask: can adverbials satisfy the EPP-feature?

According to Miyagawa (2001), adverbial PPs do not contain a feature with which a feature on T can agree, so "scrambling the PP does not count as A-movement for satisfying the EPP (p. 317)." We can assume that bare adverbs and other forms of adverbials are no different in the sense that they cannot satisfy the EPP. Thus, adverbials are unable to scramble

In this section, we discussed scrambling as a syntactic movement to Spec,TP position. We reached a conclusion that adverbials are unable to scramble on several grounds: under Lee's (2007) proposal that only semantically complete elements can scramble, adverbials are functions under Ernst's (2001) theory and thus cannot scramble; also, Miyagawa (2001) considers the EPP-feature to be the trigger behind scrambling, which adverbials lack. Thus, cases in which adverbials seem to scramble are, in fact, movement of other DP arguments over said adverbials.

2.3. Adverbials

In this section, I will discuss adverbial-related theories that propose structures and restrictions to explain adverbial distribution. It should be noted that all of the theories discussed are designed based on the distribution of adverbials in monolingual speech. How these monolingual theories can account for code-switching data will be discussed in section 2.4.

We will start off the section by discussing adverbial categorization. Then, we will discuss two theories that provide a general syntactic account of adverbials. Lastly, I will introduce a few theories that are less generalized but nonetheless account for the adverbial distribution in specific positions.

2.3.1. Categorizing Adverbials

In this section, I will discuss the categorization of adverbials: throughout this paper, I will use the term "adverbials" to include a wide range of lexical items that include bare adverbs (ex. *fortunately*, *properly*, *carefully*), adverbial phrases (ex. *very fortunately*), as well as prepositional phrases (ex. *on a Wednesday, with a broom*).

Adverbs constitute an elusive category: Alexiadou (1997) claims that the words under this label are "too heterogeneous to come together as a single category (p. 4)." Several researchers have attempted to provide categories based on their semantic, morphological, and syntactic properties. In this paper, I borrow the categorization provided by Ernst (2014) that divide major adverbials into predicational, functional, and participant adverbials. Predicational adverbials are based on "gradable content predicates," such as the discourse-oriented *frankly*, epistemic *probably*, evaluative *fortunately*, subject-oriented *wisely*, exocomparative *alternatively*, and manner *cleverly*. Ernst deems manner adverbs as "verb-modifying" and the other predicationals as "clausal." It is generalized that manner adverbs are ambiguous in certain positions where they also allow for a clausal interpretation.

(18) I stupidly baked cookies.
(i) 'It was stupid of me to bake cookies.'
(ii) 'The manner in which I baked cookies was stupid.'

This is a cross-linguistic phenomenon that is also observable in Korean.

(19) na-nun mengcheng-ha-key cookie-lul kwu-ess-ta
I-TOP stupid-DO-LNK cookie-ACC bake-PAST-DECL
(i) 'It was stupid of me to bake cookies.'
(ii) 'The manner in which I baked cookies was stupid.'

The next category, functional adverbials, consists of "notions of time, quantity and information structure:" these include time expressions like *now*, *previously, already*, and *for five minutes*. Note how these include pure adverbs as well as adverbials derived from DP/PP constructions. Finally, participant-oriented PPs (PPP) introduce an extra entity through a prepositional phrase like *with a rake* or *on the hill*. It is important to distinguish between the functional adverbial PP from the participant-oriented PP: in traditional literature, the term "circumstantial adverb" was used to include both of these categories.

Let's re-trace our steps: the pilot study compared the 'manner adverbs' and the 'temporal adverbials.' Based on the categorization provided by Ernst, we can rephrase the latter as 'point-time adverbial (abbreviated as PTA)'s. This is a crucial step since the term 'temporal adverbials' include relative-time adverbials like *previously*, aspectual adverbs like *already* and *still*, and duration expressions like *for three minutes*.

The two adverbial categories in question, manner adverb and PTA, are subject to other differences beyond the semantic one: structurally, manner adverbs are often pure adverbs; PTAs, on the other hand, are mostly derived from DP/PP constructions. It has also been assumed that manner adverbs are somewhere lower in the VP (since they modify the verb) and PTAs are somewhere higher in literature. Such contrastive elements of the two adverbial categories will be elaborated in detail in the following sections.

2.3.2. Adverbial Syntax – Scopal Theory vs Specifier-F analysis

In this section, we will discuss the two schools of approaches that attempt to explain the syntax of adverbials: Scopal Theories and the Specifier-F (Spec-F) Analyses. On one hand, Scopal theories assume that adverbials are adjuncts that adjoin freely (Ernst 2001, 2007; Haider, 2004) They argue that in theory, adverbs can freely adjoin to various projections, but their distribution in practice is constrained by non-syntactic mechanisms. This school of thought is in direct contention with the Spec-F analyses: proposed by Alexiadou (1994) and Cinque (1999), they argue that adverbials are licensed in the Spec position of a corresponding head, and that these heads are nested by one another, forming a "cascade of functional projections with silent F-heads (Haider, 2004, p. 780)."

In this study, I will consider Ernst (2001) as being representative of Scopal Theory and Alexiadou (1997) for Spce-F analysis Below, I summarize the arguments from each researcher and distill what they posit to be the location for manner adverbs and PTAs in the syntax.

2.3.2.1. Scopal Theory by Ernst (2001)

In this section, I will provide a quick summary of how Ernst (2001) accounts for the syntax of adverbials within a Scopal view. Instead of stipulating adverb-specific syntax like the rigid ordering of functional heads, Ernst attempts to propose a more generalized theory that happens to account for adverbials. Before going in any further, we should review the theoretical desiderata that Ernst (2001) introduces: as discussed above, adverbials are adjuncts that are "generally attached freely (p. 93)." Also, adverbials do not move: they "should never move except for processes that are independent of their adjunct status (p, 95)." The exceptions are movements such as wh-movement, topicalization, or prosodically motivated rearrangements. With this in mind, Ernst identifies four factors that are used to account for adverbial distribution: lexicosemantic specifications, principles of semantic composition, Directionality Principles, and Weight Theory.

Lexicosemantic specification refers to how the semantics of an adverbial interacts with those around it, independent of the syntax. An easy example is how PTAs have specific lexicosemantic properties related to time: semantic incompatibility within a sentence will lead to ungrammaticality.

(20) *Mincwu will leave yesterday.

Principles of semantic composition include the FEO Calculus. FEO is short for *Fact-Event Objects*, which is what Ernst calls events and propositions. As more and more layers (e.g., adverbials, modality, aspect) are added onto FEO, it gets more complex by being converted into a higher FEO type. FEO Calculus is the rule that governs these constructions. Note that this is not relevant to this study since it is mostly used for explaining the rigid hierarchy among adverbials: interested readers may consult Chapter 6 of Ernst (2001).

Directionality Principles, on the other hand, are pertinent to this study in the sense that they help us explain the specific points of adjunction for adverbials in English and Korean. The principles themselves are much more general in the sense that they account for the direction of adjuncts, specifiers, and complements. Ernst (2001) posits that there are two distinct positions based on the distinction between complement and specifier. Complements represent the C-complex with C-complex features such as [+Lex][4] and [+S][5]. Specifiers represent the F-complex with [+F] features such as Case feature and

[4] [+Lex] defines lexical categories.

[5] [+S] indicates a head-selected element.

EPP-feature that license items from Spec. The Complement-Direction (abbreviated as C-Dir) is rightward, while the Functional Direction (abbreviated as F-Dir) is leftward. By definition, complements are attached rightward, and specifiers are attached leftward[6]. Lastly, a constituent with [+R] is linearized to the right of its sister while a constituent with [-R] is to the left. With that in mind, let's examine the principles below:

(21) Directionality Principles:
a. [+F] items are licensed only in F-Dir; otherwise

b. Languages are parameterized for whether C-Dir is active or inactive:
If C-Dir is inactive, then all XPs are [−R];
If C-Dir is active, then for any [−F] YP in XP, if X_0 or YP bears a C-complex feature, then YP is [+R]. (Ernst, 2001, p. 166, (4.40))

(21a) represents how items with [+F], Specifiers, are universally attached leftward (in both head-initial and final languages). (21b) represents the difference between a head-initial and a head-final language: the first half refers to how in head-final languages, non-heads attach leftward (represented by [-R]). The second half discusses cases in head-initial languages when there is a non-head that is either an adjunct or a complement (since YP is [-F]). For the non-head YP, it attaches to the right when either the head or the non-head bears a C-complex feature. There are two subcases: the head could be lexical (thus [+Lex], which is a C-complex feature), or the non-head could be complement, which is canonically a C-complex constituent.

While these principles are designed to explain the headedness of adjuncts, specifiers, and complements, it's only the adjuncts that this study is interested in. For a head-final language like Korean, we can assume that every adjunct adjoins leftward. For a head-initial language like English, it is more complicated: below, I present a table that demonstrates the directionality of an adjunct YP depending on whether the head is a lexical item.

(22)

YP	Head	
	[+Lex]	[-Lex]
[-F]	R	L/R

[6] Ernst (2001) explains that arguments of V are "never structurally complements." Instead, they're treated as specifiers, which leads the DP object to be to the left of the V head. This is justified by the explanation that arguments of V receive theta-roles and are thus licensed by [+F] features.

If the head is [+Lex], the adjunct always adjoins to the right by principle. Since the V head is lexical, Ernst posits that VP adjuncts should be right-adjoining. If the head is [-Lex], like in the functional projections above VP, adjuncts are free to adjoin left or right.

However, Ernst restricts the adjunction sites for predicational adverbs for functional projections above the VP: instead of being able to adjoin left or right, they uniformly adjoin leftward above VP. Simply put, Ernst explains that predicational adverbials are functioning as "semantic heads" in the semantic representation, which leads the predicational adverbs to be on the left and their complement to be on the right (p. 271).

This assumption is essential in explaining the behavior of predicationals – specifically, how they appear in different positions and derive a different and unambiguous reading. Observe below how the sentence-final adverb unambiguously allows for manner reading (23) whereas the sentence-initial adverb only allows for agent-oriented reading (24).

(23) I baked stupidly
'The manner in which I baked was stupid'

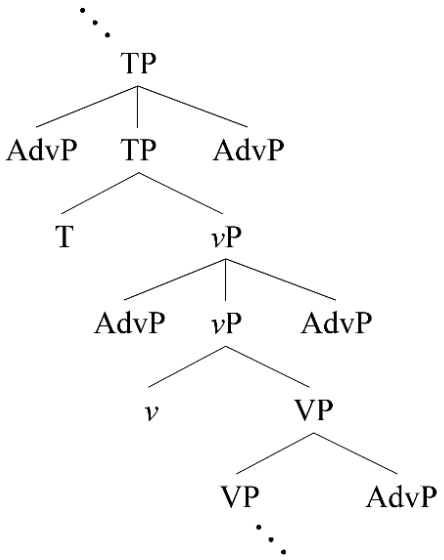
(24) Stupidly, I baked
'It was stupid of me to bake'

Based on our assumption that predicationals do not right-adjoin above the VP, we can identify *stupidly* in (23) to be in a right-adjoining VP adjunct position. Since VP doesn't allow for leftward adjunction (see above), *stupidly* in (24) can be said to be somewhere higher. Ernst (2001) relates this difference in the location in the syntax with the difference in meaning by positing the Manner Rule: predicational adverbs derive manner reading when placed within VP and PredP (which I assume to be *v*P). Thus, the manner reading is only derived in (23), not in (24).

To recapitulate, adverbials adjoining to the VP are always right-adjoining. Adverbials adjoining to higher projections can be either left or right-adjoining, except for predicational adverbials that are universally left-adjoining due to their semantic representation. This is represented in the tree diagram[7] below:

[7] Note that in the tree diagram below, the ternary branches for TP adjunct and *v*P adjunct merely signify the possibility of both leftward and rightward adjunction

(25)



Lastly, Weight Theory is used to predict the distribution of adverbials more specifically. Ernst posits the features [+Lite] and [+Heavy], which are borne out of the contrastive behavior of short, light functional adverbs (26) and phrasal adverbials composed of DP, PP, or CPs (27).

(26) a. The government has (hardly) proven its case (*hardly).
b. The actors might be (not) doing their best (*not).
c. The caravan has (just) left (*just).
(Ernst, 2001, p. 172, (4.47))

(27) a. They (*for everyone there) sang (for everyone there).
b. Ice-fishermen (*because they like it) fish (because they like it).
c. The cupcakes (*over an hour before we got there) had been finished off (over an hour before we got there).
(Ernst, 2001, p. 172, (4.48))

It is easily observable how the former group is strictly pre-verbal and the latter is post-verbal. Ernst explains that the obligatory light adverbs like *hardly, not,* and *just* bear [+Lite] feature. Adjuncts with this feature are required to be positioned leftward.

(28) [+Lite] → [-R] (Ernst, 2001, p. 172, (4.49))

On the contrary, the latter group in (27) are heavy and thus bear [+Heavy] feature. While [+Lite] is a F-complex feature (licensed leftward), [+Heavy] is a C-complex feature (licensed rightward).

(29) Sufficient weight licenses the C-complex feature [+Heavy].
(Ernst, 2001, p. 172, (4.54))

More specifically, "sufficient weight" licenses [+Heavy] feature onto an adverbial, and since [+Heavy] is a C-complex feature, it derives [+R] based on the Directionality Principles (which is repeated below).

(21b) Directionality Principles:
(…) If C-Dir is active, then for any [−F] YP in XP, if X_0 or YP bears a C-complex feature, then YP is [+R]. (Ernst, 2001, p. 166, (4.40))

It's important to note that [+Heavy] is licensed based on "sufficient" weight, which is judged relatively. For example, in (30), *at some point* is likely to be considered heavy due to its construction, but it is not "sufficiently" heavy compared to the DP object *the ship toward a star they would choose themselves*.

(30) The intent (…) was that the voyagers would at some point redirect the ship toward a star they would choose themselves.
(Robert Silverberg, *Starborne*, 69, as cited in Ernst, 2001, p. 173, (4.53e))

A sequence of constructions, from heaviest to lightest, is provided to help us determine the relative weight (31). However, Ernst notes how "notoriously difficult" it is to examine the various factors that determine the weight (p. 227). Factors like prosodic length, stress, and focus are all contributing factors which cannot be easily quantified.

(31) Weight is determined by Category (CP>PP>DP>AP>AdvP with complement>AdvP without complement > Adv) (Adv = [+Lite] AdvP, Underlined phrases = [+Heavy], as first approximation)
Stress/Focus (more = heavier) (Ernst, 2001, p. 227, (5.61a))

In this section, I briefly summarized the arguments in Ernst (2001). He assumes that adverbials are adjuncts that attach freely but whose distribution in practice is limited by other restrictions. Among a number of factors that account for the adverbial distribution, we focused on reviewing Directionality Principles and Weight Theory. Specifically, we reviewed specific implications on adjoining to VP and other functional projection in regard to the direction. Also, we reviewed the Manner Rule, which explained the unambiguity of predicational adverbs in sentence-initial and final positions. Lastly, we discussed how Weight Theory might constrain adverbials of certain structure from occurring in sentence-internal positions.

2.3.2.2. Spec-F Analysis by Alexiadou (1997)

In this section, I will discuss the Spec-F analysis by Alexiadou (1997). The main idea that separates Alexiadou (1997) from the Scopal Theories by the likes of Ernst (2001) is that adverbials are not adjuncts: instead, they are specifiers. Alexiadou proposes the Adverbial Licensing Principle (p. 41).

(32) *Adverbial Licensing Principle*
Adverbs are licensed either as Specifiers of Functional Projections or via incorporation into the verbal head by the relevant (semantic) feature associated with the head
(Alexiadou, 1997, p. 41 (29))

While other studies have also proposed that adverbs are specifiers (Cinque, 1999), the key point of departure is that Alexiadou (1997) argues for the distinction between "complement-type" and "specifier-type" adverbs. It is argued that adverbs, in general, can be divided into one of these two groups. Complement-type adverbs are base-generated as a VP complement: they include "VP modifiers" like manner, completion, and aspectual adverbs as well as "time" and "location" adverbials (p. 7). They are licensed in the corresponding specifier position via movement. On the other hand, specifier-type adverbs are base-generated in the specifier position of function projections in the left periphery of the VP: these include "S(sentence) modifiers" like evaluative, conjunctive, speaker-oriented, modal, domain, and subject-oriented adverbs (p. 7).

Alexiadou's proposal that certain adverbials can move is in contention with other theories. For one, we discussed that one of Ernst's (2001) theoretical desiderata is that adverbials do not move (unless it is movement independent of their adjunct status). Chomsky (1995) also suggests that adverbials appearing in multiple positions is a result of base-adjunction instead of movement.

Inversely, it is argued by Alexiadou that adverbs generated in VP complement domain undergo "adverbial A-movement to a specifier position (p. 44)." The exact motivation varies by adverbs, which will be discussed later pertaining to manner adverbs and PTAs.

Another natural question that arises is how this movement is restricted to *certain* complement-types. Alexiadou (1997) observes that a "complex" adverbial is only possible in the sentence-final position, while a less complex structure – namely, a bare adverb – is accepted in the specifier position. Comparing clitic elements, strong pronouns, and weak pronouns (p. 45), it is argued that the "structural deficiency" of constituents plays a crucial role in the movement: "movement to the left is triggered by the need of the deficient element to recover its missing properties (p. 46)." Basically, this can be understood as parallel to Ernst's (2001) Weight Theory in the sense that they both speculate that the complexity of the structure of the adverbial is influential in determining its location in the syntax.

2.3.3. Locating Adverbials

In this section, we will pinpoint the behavior of manner adverbs and PTAs within syntax. For Ernst (2001), we will focus on the available sites of base-adjunction that are restricted primarily by Weight Theory and Directionality Principles. For Alexiadou (1997), we will focus on how both adverbial categories raise from VP complement to specifier position.

2.3.3.1. Base-adjunction sites based on Ernst (2001)

To begin with, let's look at what Ernst (2001) determines to be the base-adjunction sites for manner adverbs and PTAs. Let's start with English manner adverbs. We can identify two factors that are imperative in pinpointing their location: Manner Rule and Directionality Principles[8]. As briefly mentioned above, Ernst (2001) posits the Manner Rule which derives manner readings from predicational adverbs when placed below the *v*P. Additionally, we discussed above how predicationals (which manner adverbs are a part of) can only adjoin to the left when they appear above the VP: as a VP adjunct, they are obligated to right-adjoin by Directionality Principles.

With this in mind, let's consider the manner adverb *rudely* inside a simple sentence like *Matteo left*: linear ordering-wise, there are three possibilities, all with different semantic implications.

(33a) Rudely, Matteo left
'It was rude of Matteo to leave'

(33b) Matteo rudely left
i) 'The manner in which Matteo left was rude'
ii) 'It was rude of Matteo to leave'

(33c) Matteo left rudely
'The manner in which Matteo left was rude'

Notice how (33a) derives a clausal reading (specifically, the agent-oriented reading) whereas (33c) derives a manner reading. They are both unambiguous sentences. We discussed above how they can be accounted for by the Manner Rule: *rudely* in the former sentence is adjoined higher than *v*P, whereas *rudely* in the latter sentence is adjoined as a VP adjunct (recall that there cannot be a right-adjoining predicational adverb above VP). Then, how could we account for the ambiguous reading in (33b)?

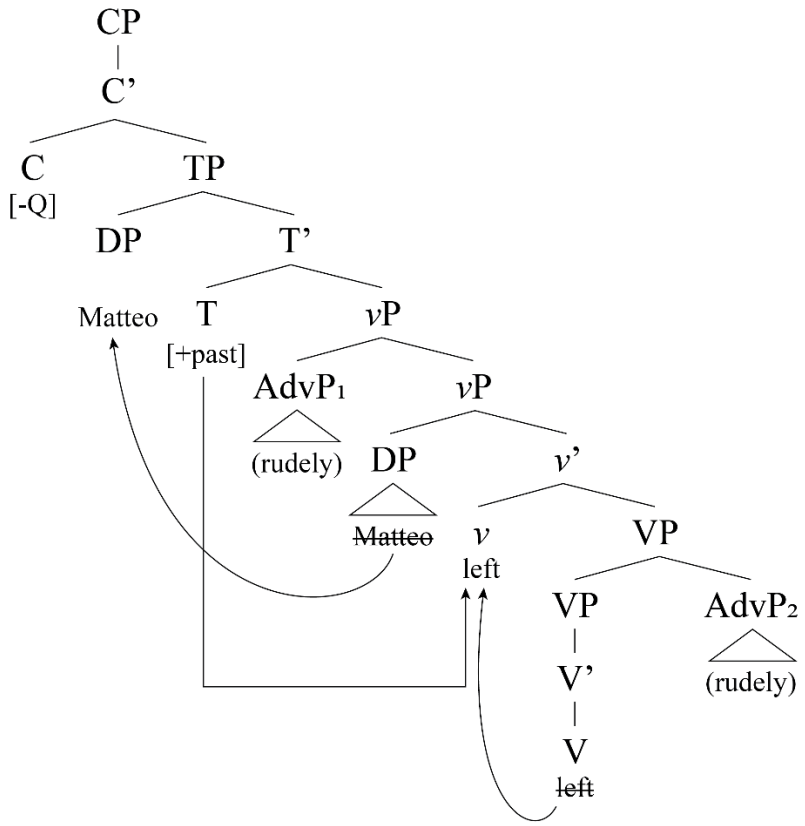
Ernst explains the ambiguity through positing that the two readings in (33b) represent two

[8] Weight Theory is disregarded pertaining to manner adverbs since they are usually bare adverbs, meaning that they are invisible to the restrictions enforced by Weight Theory.

different syntactic structures: the clausal reading is derived when the adverb is higher than *v*P but still lower than Spec,TP (which is where the subject is), while the manner reading is when the adverb is lower than *v*P but higher than VP, meaning that it's a *v*P adjunct.

In the examples above, we identified two possible base-adjunction sites for manner adverbs based on Ernst's (2001) proposal: the sentence-final position was represented as a right-adjoining VP adjunct, and the position between subject and verb as a left-adjoining *v*P adjunct. The base-adjunction sites above *v*P were disregarded based on the Manner Rule, since they would be given a clausal reading (thus no longer a manner adverb). The two positions are represented in the syntax tree below[9]:

(34)



Now, let's move onto Korean manner adverbs. In this section, I will focus on how Ernst's (2001) account can adequately explain the adverbial distribution in a head-final language. In identifying the base-adjunction positions, the congruency with the English manner adverb locations (*v*P and VP adjuncts) will

[9] Note that I assume the contents of the V head to raise to the *v* head based on Ernst (2001)

be an important factor.

Distribution-wise, Korean manner adverbs appear freely across the sentence, with the sentence-final position being the only position that is strongly banned. In previous literature, this was explained through scrambling (Lee, 2007): however, recall our assumption that adverbials are unable to scramble. With this in mind, let's first review how Directionality Principles might apply to Korean. Since Korean is a head-final language, all XPs are [-R]: thus, all adverbials are assumed to be left-adjoining.

(21b) Languages are parameterized for whether C-Dir is active or inactive:
If C-Dir is inactive, then all XPs are [−R] (…) (Ernst, 2001, p. 166, (4.40))

Similar to our treatment of English manner adverb, it is reasonable to use a mixture of Directionality Principles and Manner Rule to pinpoint the possible adjunction sites for Korean manner adverbs. A quick test indicates that a Korean predicational adverb *mengchenghakey* 'stupidly' receives different readings based on its position in the linear order, thus confirming the relevance of Manner Rule in Korean adverbial grammar.

(35a) Mengchenghakey na-nun yensel-ul sicak-ha-iss-ta
'It was stupid of me to start the speech'

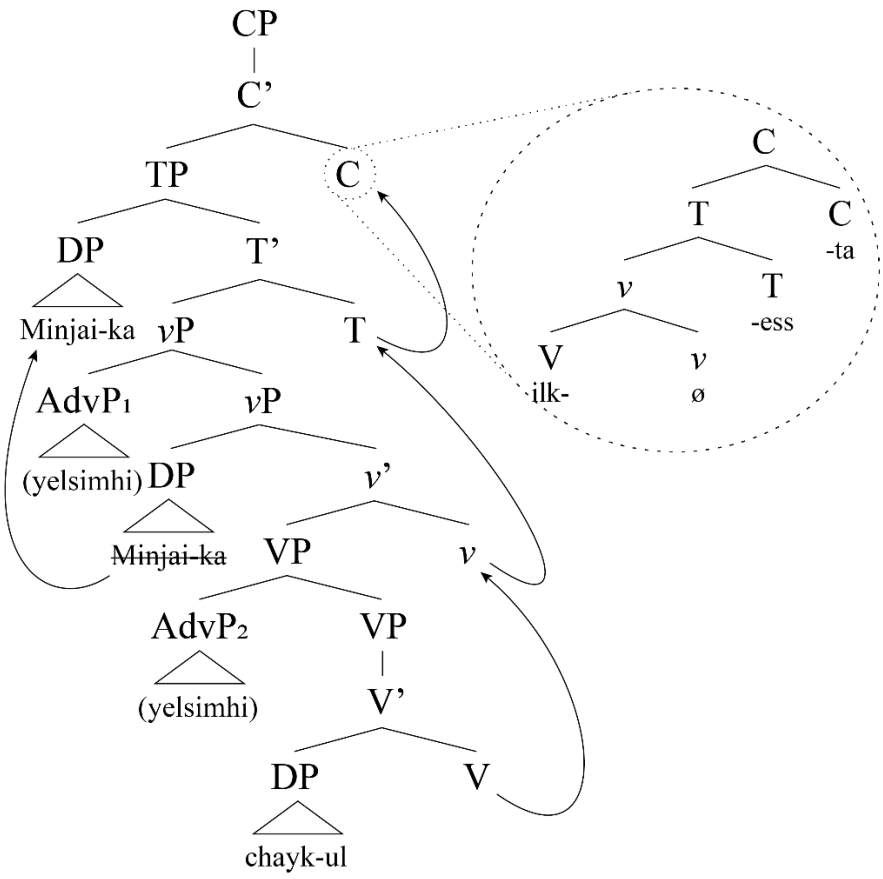
(35b) na-nun mengchenghakey yensel-ul sicak-ha-iss-ta
I-TOP stupidly speech-ACC start-DO-PAST-DECL
i) 'The manner in which I started the speech was stupid'
ii) 'It was stupid of me to start the speech.'

(35c) na-nun yensel-ul mengchenghakey sicak-ha-iss-ta
'The manner in which I started the speech was stupid'

Thus, we can posit that base-adjunction sites for manner adverbs are either left-adjoining *v*P adjunct or left-adjoining VP adjunct. For the ease of explanation, I have indicated these sites by inserting the manner adverb *yelsimhi* 'passionately' inside the sentence *Minjai-ka chayk-ul ilk-ess-ta* 'Minjai read a book.'

(36) Minjai-ka (yelsimhi) chayk-ul (yelsimhi) ilk-ess-ta
Minjai-NOM passionately book-ACC passionately read-PAST-DECL
'Minjai read a book passionately'

(37)



In the tree structure, it is depicted that the subject DP *Minjai-ka* is scrambling to Spec,TP position. This derives the correct position of the manner adverb following the subject. However, I have noted above an assumption that the EPP-feature is optional in Korean (Yim, 2004): under this assumption, let's imagine a sentence where the subject DP does not raise and stays in-situ in Spec,*v*P position. Then, a predicational adverb in the *v*P adjunct position will be linearized as sentence-initial, but with a manner reading based on Manner Rule, which is incongruent to our observation. Therefore, I will modify my assumption: EPP-feature is obligated to be satisfied by an argument of the verb (or both) in Korean.

Now, let's return to identifying the base-adjunction sites with the newly established assumption that scrambling of some kind *is* obligatory. To verify these base-adjunction sites, we should check whether it can account for the various linearization of subject, object, and adverbial (given that verbs do not scramble).

As the tree currently stands (37), it represents the word order S-Adv-O-V. However, through the

scrambling of the object DP as well, we can account for other word orders. The table below demonstrates each of the linearization as well as the scrambling movement that derives it (35).

(38)

Scrambling	Word order	Sentence
Subject DP → Spec,TP	S-Adv-O-V	Minjai-ka yelsimhi chayk-ul ilk-ess-ta
Object DP → Spec,TP	O-Adv-S-V	Chayk-ul yelsimhi Minjai-ka ilk-ess-ta
	O-S-Adv-V	Chayk-ul Minjai-ka yelsimhi ilk-ess-ta
Subject & Object DP → Spec,TP	S-O-Adv-V	Minjai-ka chayk-ul yelsimhi ilk-ess-ta

It is evidenced in the table that every possible order is accounted for except for the sentence-initial adverbials. While they receive clausal reading (instead of manner) and are thus irrelevant to our study, I want to highlight a tangential but notable observation involving the particle *-to*. In the sentence below, a *-to* particle is attached to the predicational adverb *mengchenghakey* 'stipudily.' Interestingly, the clausal reading is enforced contrary to our expectation that it is ambiguous (compare (35b) to (39)).

(39) na-nun mengchenghakey-to yensel-ul sicak-ha-iss-ta
I-TOP stupidly-to speech-ACC start-DO-PAST-DECL
'It was stupid of me to start the speech'

Mun (2019) reports how this is observable in adverbials with the *-hake* construction (*ttokttok-hake* 'cleverly', *mwulyey-hake* 'rudely') and others with *-ke* construction (*sulpukey* 'sadly', *aswuypkey* 'regretfully'). Kubota (2015) discusses a similar linguistic phenomenon in Japanese with the particle *-mo*: they argue that the particle transforms a manner adverb (VP adjunct) into the corresponding clausal adverb (T' adjunct), effectively refuting the Manner Rule by Ernst (2001)[10]. Note how this might explain the Korean data (39) with minimal modification: *the -to particle transforms a predicational adverb in vP adjunct position into T' adjunct position.*

[10] Kubota (2015) is refuting the Manner Rule in the sense that the manner reading is assumed to be the 'default' from which the clausal reading is derived.

(40) (Orokani) John-wa (orokani) odotta
stupidly John-TOP stupidly danced
'John danced stupidly' (Unambiguous; manner only)
(Kubota, 2015, p. 1021, ex. (2a) & (2b))

(41) (Orokani-mo) John-wa (orokani-mo) odotta
stupidly John-TOP stupidly danced
'Stupidly, John danced' (Unambiguous; clausal only)
(Kubota, 2015, p. 1021, ex. (3a) & (3b))

Before moving on, I want to bring to our attention another phenomenon that was observed in the pilot study. Here, we see that *culkupkey* 'joyfully' in the sentence-initial position results in weak grammaticality.

(42) (?Culkupkey/?Culkupkey,) na-nun ppang-ul kwu-ess-ta
joyfully I-TOP bread-ACC bake-PAST-DECL
?'Joyfully, I baked bread'

Why might this be? I suggest that the source might not be in syntax: syntactically, such proposed sentence-initial positions are licensed by [+Top] topic feature (Ernst, 2001). One possibility is that the verb adjacency is an operative feature: above, we see that the distance between *culkupkey* 'joyfully' and the berb *kwu-ess-ta* 'baked' is far, incurring high processing cost[11][12]. Why such "processing cost" is not an operative factor in English (where predicational adverbs can be sentence-initial without compromising the grammaticality) is an issue that I will leave open.

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[11] This is interesting because we assume that predicationals in sentence-initial positions are clausal: *culkupkey* is also considered to be agent-oriented, referring to "I" being joyful instead of the action of "baking". If we adopt this approach, it is evidence that sentence-initial predicationals are not always clausal.

[12] The adjacency in the surface structure seems to be an operative factor. Consider the following case of a topicalized predicational (evidenced by the topic marker *-nun*). Even if we assume that the adverb moves up to Spec,TopP due to [+Top], its most preferred position is lower in the structure, adjacent to the verb.

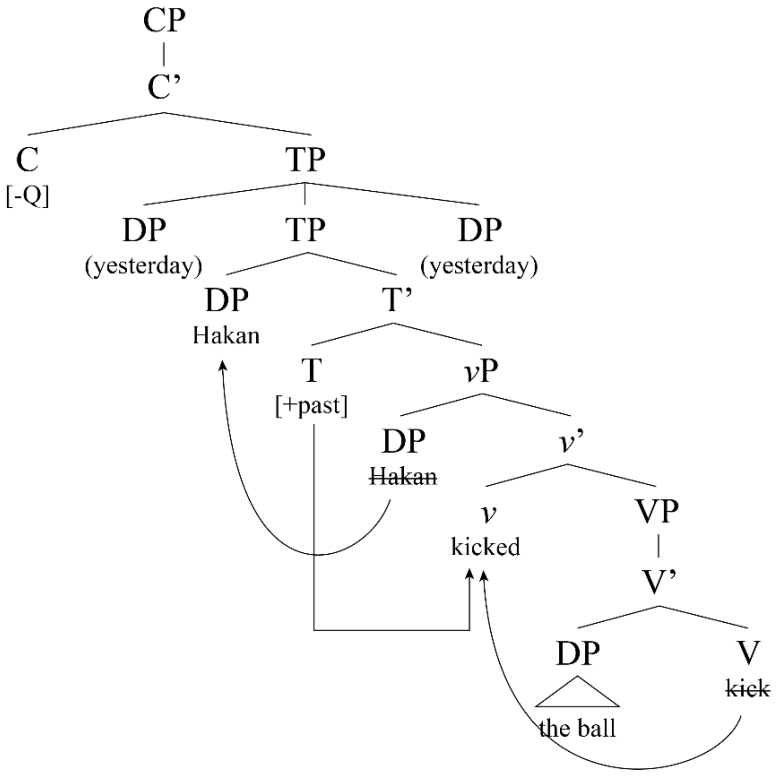
i) (*Culkupkey-nun) Minsoo-ka (*culkupkey-nun) swuyeng-ul (culkupkey-nun) hay-ss-ta
joyfully-TOP Minsoo-nom swim-ACC do-PAST-DECL
'Joyfully, Minsoo swam' (a contrastive reading is implied: it was done in a joyful manner but, say, not an elegant manner)

Now, let's move onto PTAs in English and Korean. Compared to manner adverbs, PTA are less complicated in nature. According to Ernst (2001), the scope-based system predicts that they can generate anywhere as high as the "left edge of TP" and as low as vP. However, it is the semantic compatibility, Directionality Principles and Weight Theory that limit their distribution in practice.

In English, Ernst (2001) explains that PTAs can freely adjoin as high as the left edge of TP and as low as the *v* head. This is due to the fact that they "[locate] an event as a whole in time without making any reference to the event's internal structure (p. 328)." However, PTAs are often derived from DP or PP constructions like *today, yesterday, last month*. Ernst (2001) clarifies that the actual distribution in the surface structure is restrained: for heavier expressions, they're usually barred from the AuxRange – between the subject and the verb in VO languages – which is stipulated by Weight Theory.

Based on this stipulation, the behavior of PTA is accurately captured if we posit it to be TP adjuncts (note that the effects of Weight Theory are argued to only apply within TP (Ernst, 2001, p. 248)). I posit that the sentence-initial PTA is a left-adjoining TP adjunct, and that the sentence-final PTA is a right-adjoining TP adjunct. Recall that Directionality Principles license both directions for adjunction to TP. Below is the representation of the sentence *Hakan kicked the ball* with *yesterday* appearing on both sides.

(43)



Let us move onto PTAs in Korean. Above, Directionality Principles assumed that all adverbials are left-adjoining in Korean. What we didn't discuss is grammatical weight: does Weight Theory apply to Korean like it applies to English? The answer is complicated: on one hand, we can observe the "heavy shift" in Korean – a phenomenon where "heavy" items are shifted towards a certain direction. Since the head-direction is the opposite, heavy constituents in Korean are seen shifting rightward (instead of leftward as seen in English). Below, (44) represents the canonical order, but (45) shows the preferred order with the heavy CP complement being preposed.

(44) Mary-ka [John-i acwu hayngbokhakey kyelhonsik-ul chile-ss-ta-ko]
Mary-NOM John-NOM very happily wedding-ACC hold-PAST-DECL-COMP

malhay-ss-ta
say-PAST-DECL
'Mary said that John very happily held the wedding'

(45) [John-i acwu hayngbokhakey kyelhonsik-ul chile-ss-ta-ko]$_k$ Mary-ka
John-NOM very happily wedding-ACC hold-PAST-DECL-COMP Mary-NOM

t_k malhay-ss-ta
say-PAST-DECL
'Mary said that John very happily held the wedding'

On the other hand, such movement is non-applicable for adverbials in the way that was formalized in Weight Theory by Ernst (2001): "sufficient weight licenses the C-complex feature [+Heavy] (p.172)," but "C-complex features only have an effect on linearization in head-initial languages (p. 174)."

This is accurately represented in how the DP adverbial *onul* 'today' is allowed to occur sentence-internally (whereas the English counterpart would have been assigned [+Heavy] and barred out of the AuxRange).

(46) (Onul) Chelswu-ka (onul) os-ul (onul) sa-ss-ta (*onul)
today -nom today clothes-acc today buy-past-decl today
'Today Chelswu bought clothes'

Now that we've established that Korean PTAs are not restricted by Weight Theory, let us identify their sites for base-adjunction. Recall that Ernst (2001) already posited that they generate between the left edge of TP and *v*P. Given our limited functional projection, TP adjunct and *v*P adjunct positions can be argued to be base-adjunction sites for Korean PTA. While one might argue against having two adjunction sites on the grounds of parsimony, it should be noted that our objective is *not* to identify the minimal number of

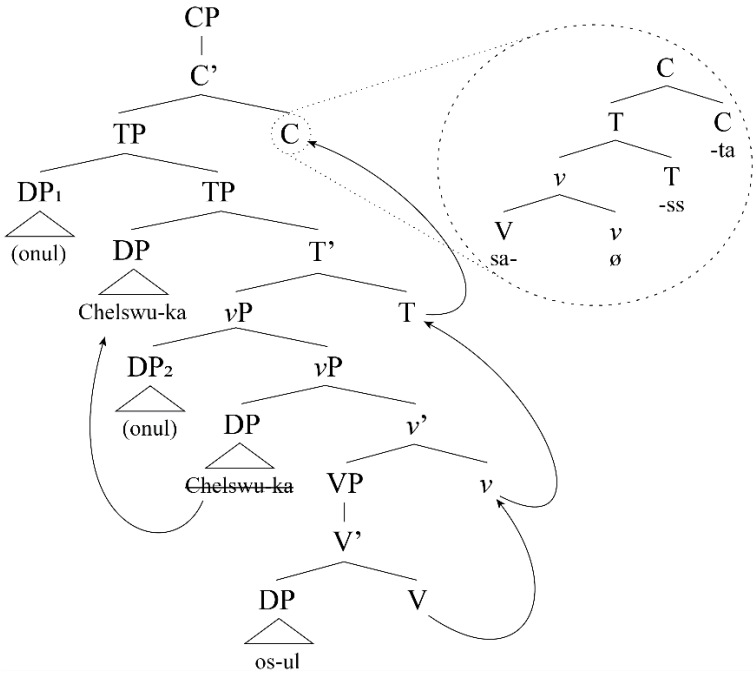
possible adjunction sites, but rather to identify all possibilities based on Ernst's (2001) primary assumption that adverbials freely adjoin.

Similar to how we treated Korean manner adverbs, let us verify that the word order variations of (46) can be accurately captured under the assumption that *onul* 'today' is either a TP adjunct or a *v*P adjunct. The tree diagram below demonstrates the case where the subject DP raises to Spec,TP (48).

(47)

Scrambling	PTA Location	Word order	Sentence
Subject DP (& Object DP) → Spec,TP	TP adjunct	Adv-S-O-V	onul Chelswu-ka os-ul sa-ss-ta
Object DP → Spec,TP	TP adjunct	Adv-O-S-V	onul os-ul Chelswu-ka sa-ss-ta
Subject DP → Spec,TP	*v*P adjunct	S-Adv-O-V	Chelswu-ka onul os-ul sa-ss-ta
Subject DP & Object DP → Spec,TP	*v*P adjunct	S-O-Adv-V	Chelswu-ka os-ul onul sa-ss-ta
Object DP & Subject DP → Spec,TP	*v*P adjunct	O-S-Adv-V	os-ul Chelswu-ka onul sa-ss-ta
Object DP → Spec,TP	*v*P adjunct	O-Adv-S-V	os-ul onul Chelswu-ka sa-ss-ta

(48)



2.3.3.2. Landing sites for movement based on Alexiadou (1997)

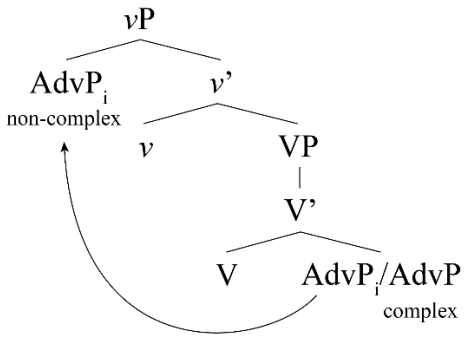
In this section, we will look at how Alexiadou (1997) accounts for manner adverbs and PTAs. As discussed above, Alexiadou posits that both adverb categories are complement-types, which means that they are base-generated as complements inside the VP and raises up to specifier positions. I will assume this for both English and Korean.

Let's start with manner adverbs. The claim that they are base-generated in the VP complex as a complement (as opposed to being base-generated as a specifier) is supported by a number of discoveries. Manner adverbs "correspond to usually optional complements of V (Alexiadou, 1997, p. 129)," which suggests that they appear VP-internally. The Thematic Hierarchy (Larson, 1988) identifies the oblique thematic roles like 'manner' and 'time' lower than 'agent' or 'theme,' which indicates that the manner adverbs (as well as temporal adverbs) appear low in the VP structure. Also, Alexiadou notes that they are parallel to DPs and that they front with the VP as seen in Spanish (p. 130).

Now, we should discuss the movement that derives it in its specifier position: specifically, it is imperative to identify the landing site and the triggering feature. By comparing the manner adverbs to aspectual adverbs that are assumed to base-generate in Spec,AspP, Alexiadou proposes that manner adverbs move to Spec,*v*P. She posits that a "manner feature" – a "morphological/semantic feature" – in the *v* head licenses the specifier location.

As for the movement, Alexiadou suggests a connection between the internal structure of an element and its leftward movement. She introduces the notion of "Structural Deficiency" where constituents are considered "weak/light" or "strong/heavy" based on their internal structure. Weak/light elements are composed of a "single terminal XP with no internal structure" like bare adverbs like *carefully*: strong/heavy elements are the opposite and thus include DP/PP/CP constructions of adverbials like *on a Monday* or *with a shovel*. Alexiadou remarks that such distinction plays a role in movement: bare adverbs are allowed to appear higher, while PPs cannot: similarly, weak pronouns in Icelandic shift to the left (Johnson, 1991), similar to particle shift in English and the behavior of French bare quantifiers (Cardinaletti & Starke, 1995, p. 20). Thus, it is argued that Spec,*v*P position is only derived for non-complex manner adverbs, whereas the complex adverbials stay in-situ. How the two types occupy different positions in the syntax is shown below:

(49)



Alexiadou explains that the movement of such non-complex constituents is required under the Linear Correspondence Axiom (LCA) by Kayne (1994). If a simple XP stays in-situ, it "cannot be linearly ordered by the LCA (p. 141)" which would cause a crash at PF. Thus, non-complex complements like bare manner adverbs must raise for the derivation to not crash. Then, how could we account for the sentence-final manner adverb? How do we explain – what seems to be – the optionality of this movement? Alexiadou notes that when manner adverbs appear sentence-finally, it is stressed (p. 134). Also, the VP domain is associated with focalized material (p. 142). While bare manner adverbs that are [-foc] obligatorily vacate the focus domain (VP), we can imagine that focalized adverbs are licensed it to stay in-situ despite their lack of complexity[13].

In summary, Alexiadou (1997) argues that manner adverbs are complement-types that base-generate as a V complement in the VP and raise to Spec,*v*P. This movement is required so that bare output conditions are not violated under the LCA. Under this idea, the English sentence (50a) is represented in the tree structure (51a); (50b) is represented in (51b)[14].

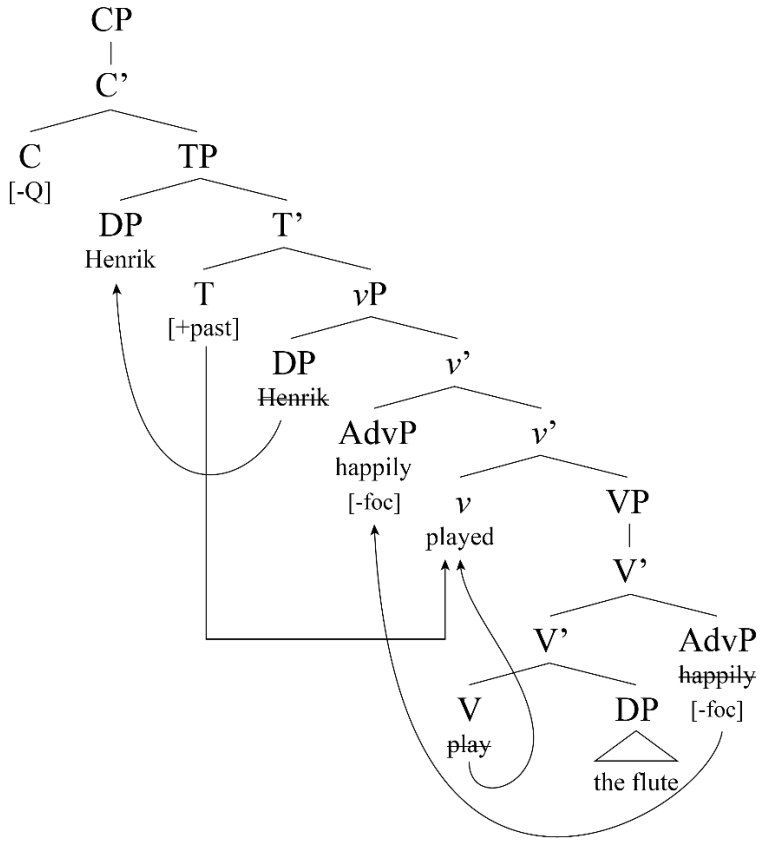
(50a) Henrik happily played the flute.

(50b) Hernik played the flute HAPPILY.

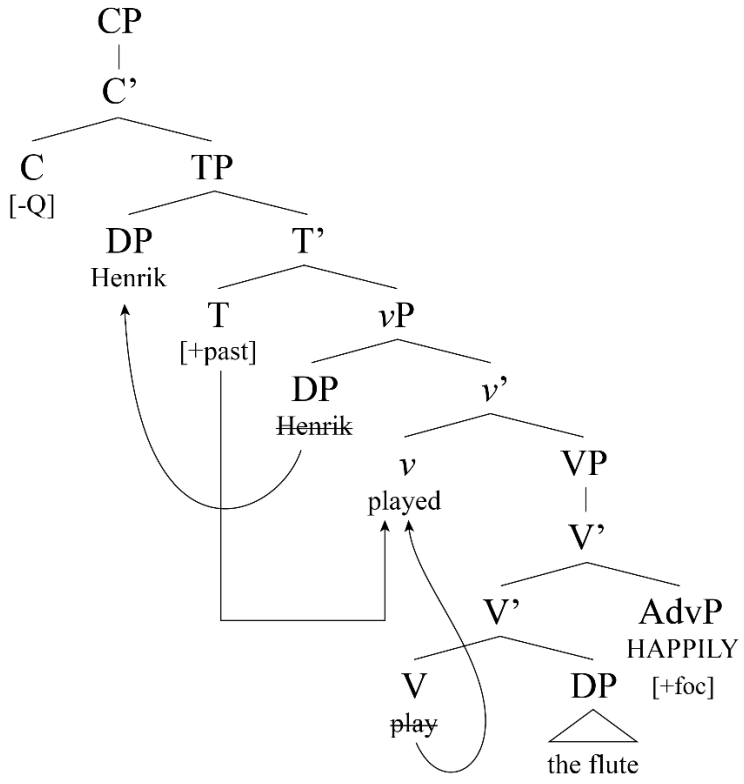
[13] It is unclear how the [+foc] feature would modify the internal structure of the AdvP and avoid it from resulting in a crash at PF. One possibility is that the [+foc] on the Adv head could license a functional projection on top of the AdvP, thus deriving a complex structure.

[14] One thing to note in the structure below is the treatment of the manner adverb in competition with the object DP as complement to the V head. I will assume the structure exhibited below, which was also assumed in Koronkiewicz (2022).

(51a)


CP
C'
C
[-Q]
TP
DP
Henrik
T'
T
[+past]
vP
DP
~~Henrik~~
v'
AdvP
happily
[-foc]
v'
v
played
VP
V'
V'
AdvP
~~happily~~
[-foc]
V
~~play~~
DP
the flute

(51b)


CP
C'
C
[-Q]
TP
DP
Henrik
T'
T
[+past]
vP
DP
~~Henrik~~
v'
v
played
VP
V'
V'
AdvP
HAPPILY
[+foc]
V
~~play~~
DP
the flute

In Korean, manner adverbs are also base-generated as complements in the VP domain and moved to Spec,*v*P position (Alexiadou already demonstrates her argument against data across different languages). The same structure seen in (37) will be assumed for the Korean sentence. One difference from its English counterpart is that the complement is to the left of the V head since Korean is a head-final language. Note that the scrambling of subject and object DPs will derive all the possible derivations.

Moving on, let's discuss PTAs in English and Korean based on Alexiadou's proposal. Just like manner adverbs, it is argued that PTAs are base-generated as V complements. Several bodies of work have argued for this treatment: Enç (1991) assumes that certain VPs contain a "time argument"; it is shown that an eventive verb can co-occur with a PTA but not a stative predicate, which is evidence for a VP-internal selection. The Thematic Hierarchy (Larson, 1988), as discussed above, posits 'time' role to be deeper inside VP than arguments.

Alexiadou remarks on compatibility relations between the PTA and T head (p. 106). Oher researchers have also suggested a close relation between the two (Hornstein, 1990; von Stechow, 1993). She suggests that PTA and T share a temporal feature [+temp]; the PTA moves to Spec,TP to get the feature checked. While adverbs are usually assumed to have no features to check, PTAs are regarded as "referential NPs" by Alexiadou in the sense that i) they can be bare lexical items and ii) the preposition is "semantically vacuous," merely assigning case to the NP/DP.

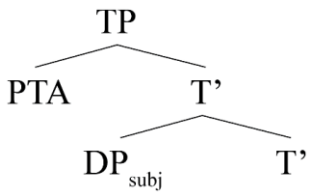
Alexiadou explains that all PTAs should move at some point in the derivation to Spec,TP because they are not "formally licensed" in their base-generated complement position. If so, how could we account for cases of post-verbal occurrence of PTA? The author argues that the movement can be either overt or covert: in the former case, it derives the adverbial in the TP specifier position: in the latter case, only the [+temp] feature moves to T head as the adverbial stays in-situ, deriving the post-verbal position.

However, this account is still problematic to some degree: as Alexiadou (1997) remarks, Spec,TP is assumed as the landing site for the subject by the Minimalist Program (Chomsky, 1995). She explains that Spec,TP is parameterized cross-linguistically so that it hosts subjects for certain languages (Celtic, Icelandic) and PTAs for others (Greek, Spanish). If we adopt this assumption, the PTA will move into Spec,TP in place of the subject DP in both Korean and English. On one hand, this eliminates the need to posit extra rules on why PTAs do not appear sentence-internally in English. On the other hand, it is questionable whether the EPP-feature can be satisfied by adverbials: Miyagawa (2001) explains that adverbial PPs – which many of the PTAs are – do not contain such a feature (p. 317). Another issue is with scrambling: if we posit that Spec,TP is parameterized for PTA in Korean, PTAs will block

scrambling as it occupies the landing site for scrambled constituents (which is not the case: see (46)).

Therefore, I will adopt the compromised version of Alexiadou (1997): in English, both subject DP and PTA can raise to Spec,TP, but the PTA must land at a higher specifier position to derive the linear ordering (52).

(52)



While this might seem sufficient to account for the sentence-initial occurrence of PTAs in English, Alexiadou clarifies the difference between cases where they are separated from the main clause by comma intonation (53) and cases where they're not (54).

(53) Kthes, o Janis agorase to aftokinito
Yesterday, the-John-NOM bought-3SG the-car-ACC
Yesterday, John bought the car (Alexiadou, 1997, p. 112, (73a))

(54) KTHES agorase o Janis to aftokinito (Alexiadou, 1997, p. 113, (73b))

It is explained that (53) is a case of "Left Dislocation," which implies that the adverbial was base-generated in sentence-initial position (instead of arriving there via movement). The adverbial *KTHES* 'yesterday' in (54) is semantically related to when the adverbial appears sentence-finally: Thus, it is taken to be derived via movement to Spec,TP that was discussed above.

In Korean, we can adopt a similar assumption where subject DP, object DP, and PTA can all raise to Spec,TP. In order to represent the relatively free word order, I will assume that there is no set order of the three constituents as adjuncts to the T'.

2.3.4. Edge Effect

Until now, we looked at how Ernst (2001) and Alexiadou (1997) propose different theories to account for the behavior of adverbials – specifically manner adverbs and PTAs. While different terms are used, both talk about the notion that the structure of the adverbial has some say in its distribution: in Ernst (2001), Weight Theory licenses the constituent with [+Heavy], effectively barring it from the AuxRange; in Alexiadou (1997), light manner adverbs raised to Spec,*v*P position to avoid a crash at PF under the LCA. In this section, I will present another theory that explains adverbial distribution based on its internal structure.

Haider (2000, 2004) reports Edge Effect, which is "the reflex of a constraint against post-head material in a phrase that serves as a pre-verbal adverbial constituent (Haider, 2004, p. 783)". It is caused by properties of head-initial structures, regardless of whether it is inside head-initial or head-final language. Observe the sentence below:

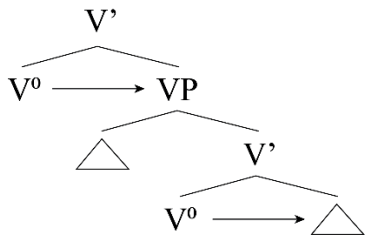
(55) Surely, he has [(more) often (*than anyone else)] rudely criticized her
(Haider, 2004, p. 783, (5a))

Note how the sentence is grammatical when *more* is attached to the adverbial *often* but ungrammatical when the construction *than anyone else* is attached. Haider (2004) explains this to be an instance of Edge Effect: it is incurred because the comparative construction is adjoining to the Adv head *often* to the right and serving as a "post-head material." He notes that this constraint is not based on the simple distinction of "simple vs phrasal" adverbial: we can see that modifiers like *more* can be attached to the adverb without triggering Edge Effect. This constraint is also not an adjacency constraint between the adverb and the verb, as *rudely* is allowed to intervene without resulting in ungrammaticality.

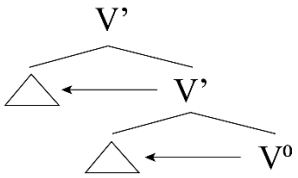
Haider focuses on the difference between head-initial and head-final constructions. The two structures below each represent a head-initial VP (56) and a head-final VP (57)[15].

[15] Haider (2004) argues that the fundamental difference between the head-initial and final VP is how they treat cases with more than one complement: head-initial VP requires VP-shell structure, whereas head-final VP consists of projection shells.

(56)



(57)



Haider notes how, in a head-final VP, any VP-internal phrase is dominated by the projection of the head. Thus, it is in the "canonical licensing domain" of the head. However, in a head-initial VP, the position preceding the head is not in the canonical licensing domain since heads license to the right. This is argued as the source of Edge Effect: since the pre-verbal adjunct position is not within licensing domain, "a particular, not fully-understood restriction becomes operative (Haider, 2004, p. 788)." Finally, Haider formalizes Edge Effect Constraint as seen below:

(58) Edge Effect Constraint:
in a head-initial structure, the head of the adjoined phrase must be adjacent to the node the phrase is adjoined to (Haider, 2004, p. 788)

Haider's constraint predicts the lack of Edge Effect for adverbials in a Korean sentence. Since Korean is a head-final language, the licensing direction inside the VP is to the left, meaning that the adjoined position is on the directionally licensed side. Therefore, Edge Effect is not incurred regardless of the structure of the pre-verbal adverbial. This prediction is proven true (see (9) and (10) above).

Let's compare this theory against Ernst (2001) who similarly posits a restriction for certain pre-verbal adverbials. Compared to Weight Theory (Ernst, 2001), Haider's (2004) account of Edge Effect is stipulative in the sense that it's adjunct-specific (and cannot be expanded to other types of structure). It's also too vague in its explanation of how or why the restriction is enforced. Nonetheless, I will test how the theory is (in)adequate in explaining the distribution of code-switched adverbials in Discussion section.

2.3.5. Case Adjacency Condition

In this section, I will provide yet another theory that posits a restriction for a specific distribution for adverbials, which is the position between verb and its object. Chomsky (1980) and Stowell (1981) propose that there is a strict condition of adjacency for case assignment between case assigner and the NP, the case assignee.

(59) *John read quickly the book

It is explained that the ungrammaticality above stems from the fact that the case assigner *read* is not adjacent to the assignee *the book* as they are separated by the adverb *quickly*. Therefore, this condition predicts that adverbial of any kind is disallowed in positions directly following the verb if there is a direct object DP.

This phenomenon is formalized through Case Assignment under Government. Note how this is only relevant to objects that are directly case-marked by a governing verb.

(60) Case Assignment under Government
In the configuration [α β ….] or [β α ….], α Case-marks β, where
(i) α governs β and
(ii) α is adjacent to β, and
(iii) α is [-N] (Stowell, 1981, p. 113, (18))

However, Stowell (1981) notes that the instantiation of the adjacency condition varies by language. Compare (61) and (62) where the Italian equivalent of the English sentence is grammatical despite there being an adverb *spesso* between the case assigner and assignee.

(61) *Mario reads often the books

(62) Mario legge spesso dei libri
Mario read.3sg.pres often det.masc.pl book.pl
‘Mario often reads books’ (Stowell, 1981, p. 114, (20b))

Interestingly, adverbials of other types (“time and place adverbials (Stowell, 1981, p. 114)”) and indirect object PPs in Italian are subject to the Adjacency condition.

(63) Mario ha letto un libro ieri
Mario have.3sg.pres read.ppart a book yesterday
‘Mario read a book yesterday’

(63') *Mario ha letto ieri un libro (Stowell, 1981, p. 114, (21a))

(64) ho dato dieci dollari a Paulo
have.1sg.pres give.ppart ten dollar.pl to Paulo
'I gave ten dollars to Paulo' (Stowell, 1981, p. 114, (22a))

(64') #*ho dato a Paulo dieci dollari (Stowell, 1981, p. 114, (22b))

Based on the Italian data, Stowell (1981) hypothesizes that manner adverbials are "invisible" for the purpose of case assignment. More specifically, he explains that "case assignment in Italian applies to an abstract representation of X'," the argument projection, "where only head and its arguments appear (p. 114)." Stowell shows more evidence that certain syntactic rules in Italian, like case, are only operative in the argument-projection. Thus, the Case Adjacency Condition is argued to be invariant in Universal Grammar.

Lee (1991) takes a slightly different approach by attributing the crosslinguistic differences to parameters: she argues that the Korean verb is parameterized to allow elements to occur between the case assigner and assignee, while the English verb is not.

Similar to Edge Effect by Haider (2004), the Adjacency Condition only accounts for a specific position for adverbials. The theory also seems lacking in its explanation for languages where this condition doesn't hold (or partially holds): take Italian, for example, where case is assumed to be assigned on the argument structure. While this accounts for the "invisibility" of manner adverbs, it is unclear why PTAs do not receive the same treatment (63'). Instead, other researchers have put forth a simpler proposal that it's V-to-T raising (or lack thereof) that determines the adverb position in relation to the verb (Camacho & Sánchez, 2017, Koronkiewicz, 2022). In Korean, a simpler explanation could be reached through scrambling.

Nonetheless, Case Adjacency Condition and its crosslinguistic instantiations will be discussed in the context of code-switching. Especially, we will later review Lee's (1991) argument on lexically oriented parametric approach to Adjacency Conditions in Korean/English code-switching.

2.3.6. Summary

In this section, I discussed adverbial-related assumptions and theories. First, I talked about the categorization of adverbials based on Ernst (2014) and clearly defined the two categories in question: manner adverbs and point-time adverbials. Then, I introduced the two schools of thoughts that posited adverbials as respectively adjuncts and specifiers. A more specific theory was selected from each school: Ernst (2001) and Alexiadou (1997). I then discussed the assumptions pertaining to manner adverbs and PTAs that the two scholars had made. The tables below summarize their respective arguments.

(65)

	Manner adverb		Point-time adverbial	
	ENG	KOR	ENG	KOR
Ernst (2001)	*v*P adjunct (left), VP adjunct (right)	*v*P adjunct (left), VP adjunct (left)	TP adjunct (left & right)	TP adjunct (left), *v*P adjunct (left)[16]

(66)

	Manner adverb		Point-time adverbial	
	ENG	KOR	ENG	KOR
Alexiadou (1997)	V complement, *v*P specifier (via movement)	V complement, *v*P specifier (via movement)	V complement, TP specifier (via movement)	V complement, TP specifier (via movement)

After we identified the locations of each adverbial type in Korean and English, I discussed Edge Effect Constraint and Case Adjacency Condition, which provided their own restriction for a specific adverbial distribution. It's important to note that these restrictions were based on the adverbial position in the surface structure rather than its location in the syntax.

[16] Comparing the base-adjunction sites for Korean and English PTA, it might seem illogical that only Korean PTAs are base-generated as *v*P adjuncts. I argue that this is not the case: English PTAs can also generate as *v*P adjuncts, but then are subject to restrictions enforced by Weight Theory. Since the English PTAs whose behavior this study is interested in are all heavy, it was impossible to identify this position as a possible adjunction site. A simple insertion of a light PTA like *now* proves this point:

i) I now pronounce you husband and wife.

2.4. Code-Switching

2.4.1. Introduction to Code-Switching

Code-switching is defined as "a concurrent use of more than one language in a conversation, commonly observed in bilingual speech (Shim, 2016, p. 1)." It has been argued that code-switching is a rule-governed practice, and many bodies of research have contributed to identifying and generalizing these rules (Poplack, 1988; Jake et al., 2002; MacSwan, 2005). In this section, I will focus on two theories: the Minimalist Approach by MacSwan (2005, 2008) and Matrix Language Frame Model by Jake et al. (2002)

To begin with, let's discuss the Minimalist Approach by MacSwan (2005, 2008) which has been in contention with the Matrix Language Frame Model through a sequence of papers. MacSwan's (2005) Minimalist Approach is based on the idea, traced back to Woolford (1983), that a sound code-switching theory should not appeal to code-switching-specific constraints or mechanisms. MacSwan argues that this is achieved by applying the same idea from the Minimalist Program (Chomsky, 1991): "elimination of all mechanisms that are not necessary and essential on conceptual grounds alone" for the pursuit of "simpler and more elegant accounts (p. 5)." This research program is formalized as below:

(67) Nothing constrains code switching apart from the requirements of the mixed grammars. (MacSwan, 2005, p. 69, (26))

Thus, MacSwan (2005) posits that "all the facts of code-switching may be explained just in terms of principles and requirements of the specific grammars used in each case (p. 69)." He explains that there is an advantage over past theories that assumed the parametric differences of computations (such as *Pro*-Drop Parameter for Spanish and Italian by Hyams (1986)): when the two computational systems clash in bilingual speech, they had to resort to "control structures" that mediated the conflict. Inversely, his Minimalist approach assumes the universal computational system and limits the crosslinguistic differences to lexical parameters. Therefore, MacSwan argues that the union of two lexicons can sufficiently account for the grammar for code-switching.

One important refinement is the PF Disjunction Theorem: MacSwan (2008) notes that unlike syntactic counterparts, phonological rules are ordered in relation to one another and that this order varies cross-linguistically. He explains that in bilingual speech, as lexical items from different languages come together, the phonological rules may not be met[17]. Thus, he posits the PF Disjunction Theorem which

[17] Imagine a case where a PF component P_1 contains a rule where R_1 precedes R_2 and a PF component P_2 contains a rule where R_1 follows R_2; the union of P_1 and P_2 will lead to a breakdown since there is no order relation for R_n.

rules out code-switching within a PF component, effectively banning the switching between a stem and an affix. The implications of this will be explored later.

Next, let's talk about the Matrix Language Frame model (hereby abbreviated as the MLF model). In this paper, I will focus on the iteration of the theory that is "recasted" within the Minimalist Program (Jake et al., 2002). The theory is based on the idea that in bilingual speech, the two languages do not participate equally: there is an asymmetry where one language "uniformly sets the morphosyntactic frame," and this frame is referred to as the Matrix Language (hereby abbreviated as ML) (Jake et al., 2002, p. 72). They explain how the ML "sets the frame" by the following principles: firstly, the Uniform Structure Principle posits that there is a "uniform abstract structure" for a given constituent in any language, and such structure of the ML is preferred in bilingual speech.

(68) The Uniform Structure Principle: A given constituent type in any language has a uniform abstract structure (…) In bilingual speech, the structures of the ML are always preferred … (Myers-Scotton, forthcoming, as cited in Jake et al., 2002, p. 72)

Jake et al. (2002) report of another asymmetry, which is that the language that is the source of ML provides the "frame-building system morphemes[18] in mixed constituents (constituents with elements from more than one language)" as well as the morphemes that are "critical in building larger constituents (p. 72)" like morphemes indicating case or agreement. They formalize these two ideas into two central hypotheses:

(69) Morpheme Order Principle: morphemes within a bilingual constituent follow the order of the ML (Jake et al., 2002, p. 73)

(70) System Morpheme Principle: system morphemes with "grammatical relations outside [the projections of] their head" come from the ML within a bilingual constituent (Myers-Scotton, 1993, p. 83, as cited in Jake et al., 2002, p. 73)

The advantage of the MLF model, according to Jake et al. (2002), is that it does not consign a significant portion of bilingual data to borrowing (instead of code-switching). Examine the following instance of a Finnish-English code-switching utterance. Here, *GREEN COSTUME-i-ssa* would not be regarded as an instance of code-switching by MacSwan (2005, 2008) under the PF Disjunction Theorem: instead,

[18] The term "frame-building system morphemes" can be understood as functional elements as opposed to "content morphemes" which are similar to lexical elements (Jake et al., 2002).

GREEN COSTUME would be treated as a borrowing, which the authors claim to be unlikely.

(71) Mä oon sii-nä GREEN COSTUME-i-ssa
I am it-inessive green costume-stem formant-innesive
'I am in that green costume'
(Halmari, 1997, p. 156, as cited in Jake et al., 2002, p. 77, (7b))

Conversely, the MLF model sufficiently accounts for (71) as a sound instance of code-switching. It also shows how an English N' like *GREEN COSTUME* can be inflected with ML (Finnish) morphemes, just like how a singly occurring English noun is treated in (72).

(72) Onks sulla vähän NAPKIN-eitä?
have.Q you.adessive some napkin-pl.partitive
'Do you have some napkins?'
(Halmari, 1997, p. 80, as cited in Jake et al., 2002, p. 77, (7a))

In line with the Minimalist Program, Jake et al. (2002) expand their theory by explaining how, within a given bilingual CP, only the ML provides uninterpretable features. They draw this hypothesis from the Spanish-English code-switching corpus: mixed DPs were favored (as opposed to a whole DP with English determiner and noun), and only Spanish determiners occurred with English nouns whereas no English determiners occurred with Spanish nouns.

The MLF model, however, is not without criticisms. In MacSwan (2008), the model is criticized for its lack of constraint for the phonological properties of the morphemes. Also, it has been rejected by some on the ground of principle of parsimony as the concept of the ML is like a "control structure" which is often disfavored in minimalist theories (Boeschoten and Huybregts, 1999; MacSwan, 2005, 2008). The debate around the validity of the MLF model will not be discussed any further.

In this section, we looked at two conflicting code-switching theories that are both based on the Minimalist Program. The Minimalist Approach by MacSwan (2005, 2008) can be characterized as almost constrainless, since it rejects any notion of "third-grammar" specific to code-switching. Instead, he argues that the grammar of code-switching is the union of the lexicon of the two languages involved. He introduces the PF Disjunction Theorem, which bans the switch within a single PF component.

Another theory was the MLF model by Jake et al. (2002). In their theory, there is an asymmetry to which two languages participate in code-switching, and they posit the morphosyntactic frame that the "dominating" language provides as the ML. The formalized principles outline that the ML provides the order for morphemes as well as the system morphemes that have "grammatical relations outside [the projections of] their head." They also expand the theory into features, proposing that the ML provides

uninterpretable features.

2.4.2. Adverbs & Code-Switching

In this section, we will look at the intersection between code-switching and adverbials. To begin with, Lee (1991) takes a Parametric approach to code-switching with an eye towards Korean/English code-switching. Based on Universal Grammar, they argue that a particular language doesn't decide the value of a certain parameter, but rather a lexical item. One parameter that is pertinent to our discussion of code-switched adverbs is the parameter for Case Adjacency, which was discussed above. As a reminder, (60ii) highlights the condition of adjacency between the case assigner and assignee.

(60) Case Assignment under Government
In the configuration [α β ….] or [β α ….], α Case-marks β, where
(i) α governs β and
(ii) α is adjacent to β, and
(iii) α is [-N] (Stowell, 1981, p. 113, (18))

However, Stowell (1981) notes how the condition might vary from one language to another. We discussed how, in Italian, manner adverbs were "transparent" in the sense that it could occur between a verb and its direct object without blocking case assignment. Lee (1991) notes that this is also the case for Korean where "certain elements such as non-argument adverbs or PPs can intervene between a verb and an object (p. 130)." Their study focuses on how the contrastive parameters on Adjacency Condition work in a code-switched sentence.

Lee (1991) considers how a non-argument adverb, either Korean or English, cannot intervene between an English verb and a Korean DP.

(73) I ate cenyek quickly.
dinner
'I quickly ate dinner' (Lee, 1991, p. 131, (6a))

(73') *I ate quickly cenyek (Lee, 1991, p. 131, (7a))

(74) I ate cenyek pali.
dinner quickly
'I quickly ate dinner' (Lee, 1991, p. 131, (6b))

(74') *I ate pali cenyek (Lee, 1991, p. 131, (7b))

In contrast, they show that either an English or a Korean adverb can appear between a Korean verb and an English object.

(75) na-nun DINNER-lul ppalli mek-ess-ta
I-top dinner-acc quickly eat-past-decl
'I quickly ate dinner'

(76) na-nun DINNER-lul QUICKLY mek-ess-ta
I-top dinner-acc quickly eat-past-decl
'I quickly ate dinner'

Based on the given data, Lee (1991) concludes that the language of the case assigner dictates if the Adjacency Condition is operative: in other words, whether or not an intervening element can occur between a case assigner and assignee. For (73') and (74'), the language of the case assigner is English, so the Case Adjacency condition is observed, consequently disallowing any element to appear between the verb and the direct object. On the other hand, the language of the case assigner in (75) and (76) is Korean: thus, the two sentences are deemed grammatical.

It is important to note that Lee (1991) assumes that the rules related to case assignment are associated with lexical items – in this case, verbs – instead of the languages themselves. Later, this lexically oriented parametric approach is expanded to account for head-directionality as well. They claim that "the case assigner is responsible for the direction of case-marking and case markers (p. 149)."

Next, I will discuss Koronkiewicz (2022) who explored the availability of adverb positions for Spanish/English code-switched sentences. Fundamentally, the position directly following the verb is disallowed in English but allowed in Spanish.

(77) Hannah (always) speaks (*always) English

(78) Juana (siempre) habla (siempre) español
Juana always speak.3sg.pres always Spanish
'Juana always speaks Spanish' (Koronkiewicz, 2022, p. 228, (2))

Koronkiewicz (2022) presupposes that both adverbs, *always* and *siempre* 'always', are both generated as left-adjoining VP adjunct. The asymmetry, as seen in (77) and (78), is attributed to the V-to-T raising. Languages can be categorized as "verb-raising" if they employ V-to-T movement or "non-raising" if there isn't. English is a non-raising language, so the verb *speak* remains in situ in the V head; instead, there is affix-lowering from the T head to derive the correct tense (Chomsky, 1981; Embick & Noyer, 2001). This derives the pre-verbal position and effectively disallows the post-verbal one (based on the assumption that adverbs are solely VP adjuncts). In Spanish, verb-raising is optional (Ayoun, 2005) – when the V head

habl- is raised to the T head, it results in the post-verbal adverb: when it doesn't raise, it results in the pre-verbal position[19].

Koronkiewicz (2022) aligns his study within the code-switching studies based on the Minimalist Program and assumes that approaches to code-switching should be no different than those to monolingual speech. Since past monolingual syntactic research (Camacho and Sánchez, 2017; Zagona, 2002) have tied adverbial to the finite verb, Koronkiewicz aims to test the implication that the finite verb will dictate the adverb position.

Methodology-wise, Spanish/English early bilinguals completed acceptability judgment test where they were presented with Spanish/English code-switched sentences containing a finite verb switched with an adverb. Four adverb pairs for four categories were tested: *always/siempre* for aspectual adverbs, *frequently/frecuentemente* for frequency adverbs, *completely/completamente* for completion adverbs, and *carefully/cuidadosamente* for manner adverbs. They were also tested in regard to monolingual sentences for Spanish and English.

The results from Koronkiewicz (2022) are summarized in a table below.

(79)

	English		Spanish		CS with English *v*		CS with Spanish *v*	
	Non-raising	Verb raising	Non-raising	Verb raising	Non-raising	Verb raising	Non-raising	Verb raising
always/ siempre	✓	*	✓	*	✓	*	✓	*
frequently/ freucuentemente	✓	*	✓	*	✓	*	✓	*
carefully/ cuidadosamente	✓	*	✓	✓	✓	✓	✓	*
completely/ completamente	✓	*	✓	✓	✓	✓	✓	*

(Koronkiewicz, 2022, p. 241, Table 4)

The monolingual English data is as expected: adverbs are required to be pre-verbal. For Spanish, only certain adverbs allowed for both verb-raising and non-raising. English adverbs occurring with Spanish verbs were restricted to pre-verbal positions. Spanish adverbs occurring with English verbs, on the other hand, were divided: while the manner and completion adverbs showed flexible positioning (allowing both pre-verbal and post-verbal positions), aspectual and frequency adverbs were restricted to the pre-verbal

[19] Another theory that explains the two positions for adverbs is by Camacho and Sánchez (2017): they argue that there is always verb-raising in Spanish, but the raising is a "copy" of the verb merged with T. The pre-verbal adverb is derived when a higher copy is spelled-out at PF. Inversely, the post-verbal adverb is when a lower copy is spelled-out.

position.

One of the most notable patterns across board is that the pre-verbal position is allowed for any variety of adverbs regardless of the mixing or the language(s). The author easily explains this by pointing to the fact that non-raising is permitted in both English and Spanish. Thus, the mixing of the two does not lead to violation from either grammar.

From the code-switching data, the language of the adverb seems to dictate the adverb order. This is opposite to the prediction above where the language of the finite verb dictates the adverb placement. In a sentence with a Spanish verb and an English adverb, the adverb mirrors its exclusively pre-verbal distribution in English: in a sentence with an English verb and a Spanish adverb, manner and completion adverbs mirror their 'freer' distribution in Spanish.[20]

So, how could this be explained? Why is the language of the verb, which was argued to dictate the pre-verbal/post-verbal restriction on monolingual adverbial distribution suddenly inadequate for code-switched data? Koronkiewicz suggests a number of possibilities: one possibility is that the generative approach to CS (a minimalist approach similar to what we saw in MacSwan (2005, 2008)) is inadequate. However, the MLF model (Jake et al., 2002) would not provide different predictions. Another possibility is that the Case Adjacency Condition might have impacted the grammaticality judgments (Stowell, 1981). Koronkiewicz remarks that this variable was not directly controlled in his study and mentions a study by Stadthagen-González et al. (2018) where "all the constituents within the domain of the (verb-complement) dependency contribute to the perceived (un)acceptability of the construction (p. 88)" in Spanish/English code-switching research. However, if this is the case, Koronkiewicz notes that the Adjacency Condition would not be the only factor, since there are instances of the code-switched adverb intervening between the verb and the direct object.

Finally, Koronkiewicz questions his assumption that adverbs are VP adjuncts: he turns towards Alexiadou's (1997) account of complement-type and specifier-type adverbials, which we already discussed above. According to Alexiadou, completion and manner adverbs (*completamente* "completely" and *cuidadosamente* "carefully") are complement-type: aspectual and frequency adverbs (*siempre* "always" and *freucuentemente* "frequently") are specifier-type. Koronkiewicz explains that this distinction captures their behavior in code-switching. The adverbs in the latter group are assumed to base generate as specifiers to AspP, which would accurately derive (and restrict) their pre-verbal position. On the other hand, completion and manner adverbs are complement-type adverbs, based generated in the

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[20] According to Koronkiewicz, this asymmetry across adverbial categories can be attributed to the limitation of only four adverbs being tested. It could also be the case that the categories that Zagona (2002) provides is inadequate for bilingual research.

complement position[21] with the option to raise to Spec,VoiceP. The former derives the post-verbal occurence and the latter the pre-verbal.

2.4.3. Korean/English-mixed adverbials

In this section, I will talk about Korean/English mixed adverbials which are adverbials that contain internal code-switching. I will focus on two specific constructions. The first construction is a mixed PP, which consists of P head in one language and DP complement in another language. In the pilot study, I tested the distribution of three mixed PPs: *ON swuyoil* 'on Wednesday'*, WEDNESDAY-ey,* and *LAST WEEK-ey*. They were inserted into the matrix sentence that matched the language of the P head[22]. Below, compare the distribution of *WEDNESDAY-ey* in a Korean matrix sentence (11) to the distribution of a fully Korean PTA *swuyoil-ey* 'on Wednesday' (11'):

(11) (WEDNESDAY-ey) na-nun (WEDNESDAY-ey) ppang-ul (WEDNESDAY-ey)
Wednesday-on I-TOP bread- ACC

kwu-ess-ta (*WEDNESDAY-ey)
bake-PAST-DECL
'I baked bread on Wednesday'

(11') (swuyoil-ey) na-nun (swuyoil-ey) ppang-ul (swuyoil-ey) kwu-ess-ta (*swuyoil-ey)

The mixed adverbial *WEDNESDAY-ey* mirrors the monolingual adverbial in its distribution. The same is seen when we compare the distribution of *LAST WEEK-ey* and *cebencwu-ey* '(during) last week.' What does this actually mean? In both of our theoretical accounts of Korean adverbial distribution (Ernst (2001)

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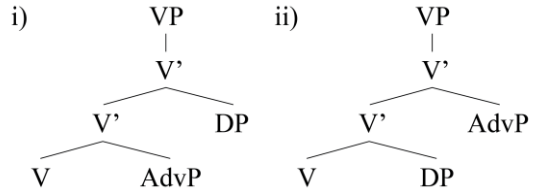
[21] Koronkiewicz (2012) derives the adverb position between the verb and the object by positing two possibilities in regard to the order in which the two complements are generated. i) derives Verb-Adverb-Object order whereas ii) derives Verb-Adverb-Object order.



[22] Therefore, *ON swuyoil* was inserted in an English matrix sentence, whereas *WEDNESDAY-ey* and *LAST WEEK-ey* were inserted in a Korean matrix sentence. This need for the language of the P head and the rest of the sentence to match can be easily explained through the MLF model (Myers-Scotton, 1993): it is assumed that the functional morphemes generally come from ML in code-switching utterances.

and Alexiadou (1997)), scrambling served a crucial role in deriving the distribution of adverbials. The comparison between (11) and (11') can be considered evidence to the argument that mixed PP adverbials do not incur any new restrictions in scrambling that isn't seen expected with a monolingual Korean PP adverbial. We will return to this issue when we discuss the apparent "blockage" to scrambling seen in sentences with other code-switched adverbials.

Such behavior of mixed PP adverbial is also observable in a construction consisted of an English P head and a Korean DP. Below, notice how the distribution of *ON swuyoil* 'on Wednesday' mirrors that of an English equivalent.

(80) (On *swuyoil*,/?On *swuyoil*) I (*on swuyoil) baked (*on swuyoil) bread (on swuyoil).

(80') (On Wednesday,/?On Wednesday) I (*on Wednesday) baked (*on Wednesday) bread (on Wednesday).

Moving on, there is another construction of a Korean/English mixed adverbial that can be commonly observed. It is constructed by combining an English adjective and a Korean adverbial derivational affix *hakey*[23]. Yoon (1992) shares an example of this mixed adverbial from their code-switching data from 20 Korean/English bilinguals.

(81) OFFICIAL-hakey palphyo an hay-ss-e
official-ADV.DER announce NEG do-PAST-DECL
'(They) didn't announce (it) officially' (Yoon, 1992, p. 439)

While these *hakey* constructions are not considered in the pilot study, it was reported by my consultants (Korean/English bilinguals) that they occur in a free distribution, matching that of a Korean adverbial.

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[23] Keen-eyed viewers might notice that the affix *-hakey* was briefly mentioned above: the adverb *mengchenghakey* 'stupidly' was a combination of *mengcheng-* combined with *-hakey*. However, note that *mengcheng* by itself cannot be used as an adjective: it must be accompanied by the light verb *hada* (or some inflectional derivation of it).

i) Ku-nun mengcheng-ha-da
he-TOP stupid-ha-DECL
'He is stupid'

ii) appa-uy mengcheng-ha-n kyeyhoyk
dad-GEN stupid-ha-ADJ.DER plan
'dad's stupid plan'

Note that the affix *-hakey* itself is composed of a light verb stem *ha-* and the adverbial derivational suffix *-key*. From a larger view of code-switching studies, it is an instance of "light verb construction," a strategy commonly recorded in bilingual speech (González-Vilbazo & López, 2011; Shim, 2016; Singh, 1985). In Korean/English code-switching, English verb, adjective, or noun combines with the inflected form of the light verb *hada* (Yoon, 1992, p. 440). Lee (1991) explains how the light verb determines the VO/OV word order even in a sentence with a mixed verb. Below, *PUT-hako* (*-hako* being an inflection of *hada* combined with a conjunction) "acts as a Korean verb[24]": thus, the DP complement and PP adjunct must all precede the verb.

(82) Meena, BASKET-aneyta ALL THE TOYS-lul ppali PUT-ha-ko
Meena basket-inside all the toys -acc quickly put-DO-and

cip-ey ka-ca
home go-PROPOS
'Meena, put all the toys in the basket quickly and go home' (Lee, 1991, p. 144, (20))

Returning to our discussion on adverbials, both constructions can be generalized in that the distribution of a mixed adverbial is dictated by the language of the functional morpheme (P head in mixed PP and the light verb stem in *-hakey* construction). This is in line with the MLF model (Myers-Scotton, 1993; Jake et al., 2002) that argue that functional morphemes are provided by the ML. Another explanation is through the concept of "relexification" (Appel & Muysken, 1987), a linguistic process in which "the vocabulary of a language is replaced by that of another language, while its grammatical structure (morphology, syntax, phonology) is maintained (p. 130, as cited in Yoon, 1992)."

Before moving on, let's briefly discuss theoretical accounts on the validity of mixed adverbials as instances of code-switching. In Yoon (1992), it was discovered that such mixed constructions (not only in mixed adverbials but in verbs and nominals) happen in a significant quantity (p. 439). Their data is presented as a counterargument to the "Free Morpheme Constraint" by Sankoff & Poplack (1981). Free Morpheme Constraint was proposed by Sankoff & Poplack following a series of empirical studies on Spanish/English bilingual speech:

[24] González-Vilbazo & López (2011) consider data from German/Spanish code-switching and how the Spanish light verb *hacer* enforces the VO word order even when the VP is realized in German (which is expected to pattern in OV when preceded by a modal or an auxiliary (p. 845)). This is accounted by assuming that the light verb is *v* which is a "phase head," thus controlling the grammatical properties of its phase (Chomsky, 2001).

(83) The Free Morpheme Constraint: a switch may not occur between a bound morpheme and a lexical form unless the latter has been phonologically integrated into the language of the bound morpheme. (Sankoff & Poplack, 1981, p. 5)

Yoon (1992) argues that instances such as (81) are counterexamples to FMC since morphemes of two different languages are bound to each other (given that they are not phonologically integrated). Recall that MacSwan (2005, 2008) introduced a similar constraint – the PF Disjunction Theorem, which bans the switch within a single PF component. MacSwan (2005) mentions himself how his theorem overlaps with the constraint by Sankoff & Poplack, but with "important differences." The PF Disjunction Theorem "predicts switching of phonological systems between a stem and an affix to be ill-formed, but only if the affix is attached presyntactically (p. 7)." In this view, cases like (81) are congruent to MacSwan's theorem.

3. PILOT STUDY

In this section, I will introduce the pilot study I conducted for Syntax II during the fall semester of 2024. I will first talk about the methods pertaining to the participants and the tasks. Then, I will share the results.

3.1. Methods

3.1.1. Participants

Participants were all fluent Korean/English bilinguals ($N = 10$) who received higher education (or were enrolled) in an institution based in the United States. Interestingly, their language practice skewed towards Korean than English: all of them reported that Korean was the language spoken by family at home: on average, they had spent more time in a Korean-speaking environment ($M = 16.25$ years; SD = 3.5 years) than in an English-speaking environment ($M = 6.05$ years; SD = 3.7 years): their self-reported proficiency was higher for Korean than English on average as well[25]. When asked about their experience around code-switching, they reported a higher average frequency of hearing someone else code-switch ($M = 2.9$) than code-switching themselves ($M = 2.3$)[26].

All participants provided informed consent at the onset of the survey. While I collected personal information like age, name, and gender, these questions were completely optional.

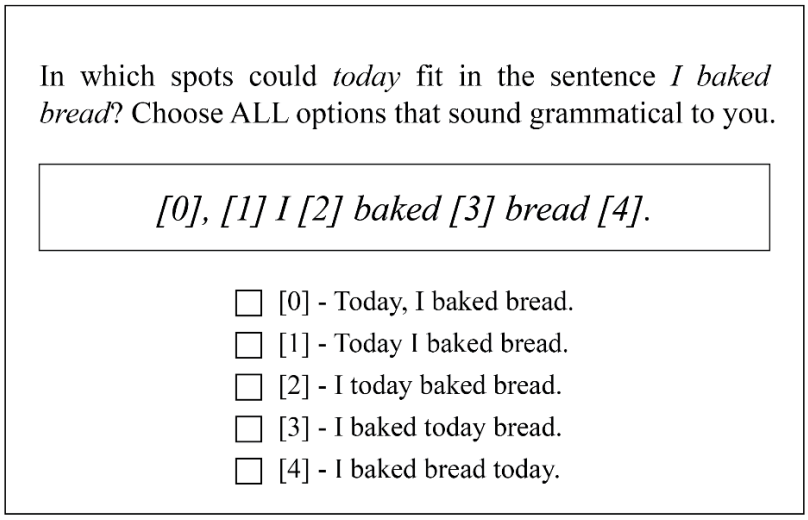
3.1.2. Task

Participants completed a grammaticality judgment task via an online survey in Google Forms. They were presented with a sentence was presented (either in Korean or English) where an adverbial (either in the same language as the sentence or not) was inserted into various positions. They were then asked to choose ALL grammatical positions for a given combination of sentence and adverbial. A sample task stimulus is presented below:

[25] All of above indicate that the participants weren't balanced bilinguals, which is an obvious limitation to the pilot study.

[26] The participants reported the frequency on a scale of 1-5 with 1 being 'never' and 5 being 'always'.

(84)



Throughout the survey, a total of six pairs of adverbials (along with three mixed adverbials) were tested. They consisted of three pairs of manner adverbs and three pairs of PTAs.

(85)

	English	Korean
Manner Adverb	carefully	cosimhi ‘carefully’
	joyfully	culkupkey ‘joyfully’
	very quickly	meywu ppalukey ‘very quickly’
PTA	today	onul ‘today’
	on Wednesday	swuyoil-ey ‘on Wednesday’
	last week	cebencwu-ey ‘(in) last week’
Mixed PP adverbial	*on swuyoil* ‘on Wednesday’ *Wednesday-ey* *last week-ey*	

Only a single pair of matrix sentences were used to test the insertion of the adverbials above. The sentences were purposefully chosen to avoid any unwanted semantic interactions with the adverbials.

(86) [0], [1] I [2] baked [3] bread [4].

(87) [0], [1] nanun [2] ppangul [3] kwuessta [4].

Also, the matrix sentences were chosen on the grounds that they didn't house a complicated verbal complex. This decision is motivated by the asymmetry in Korean/English verbal complex. In a sentence with rich auxiliary construction, English posits multiple functional heads that remain visible and separate in PF. In Korean, this is not the case: the verb is derived by attaching various affixes.

(88) I should have been baking cookies.

(89) na-nun cookie-lul kwup-ko iss-ess-eya han-ta.
I-TOP cookie-ACC bake-PROG exist-PAST-COMP DO-DECL
'I should have been baking cookies'

Note that in Korean, the verbal complex *kwup-ko iss-ess-eya han-ta* is not easily separable as the English counterpart *should have been baking*. This is evidenced by the fact that it is impermeable to most adverbials (one exception being negation).

(90) na-nun cookie-lul (cal) kwup-ko (*cal) iss-ess-eya (*cal) han-ta.

Let's return to the matrix sentences (86) & (87). The numbered slots – [0], [1], [2], [3], [4] – indicate the options where a given adverbial can be inserted into (84). It is important to note that two sentence-initial positions are specified: [0] is followed by a comma while [1] is not. The decision to separate the two is borne out of the prosodic difference between [0] and [1]. Some studies attribute different syntactic mechanisms to derive the two positions: Alexiadou (1997) posits that adverbials separated by comma are "left-dislocated" whereas other without comma are derived via movement (compare (53) and (54)).

However, it is unclear whether the prosodic contrast between the two would be properly understood by the participants. There is a high chance that the judgments separating [0] and [1] were borne out of orthographic knowledge.

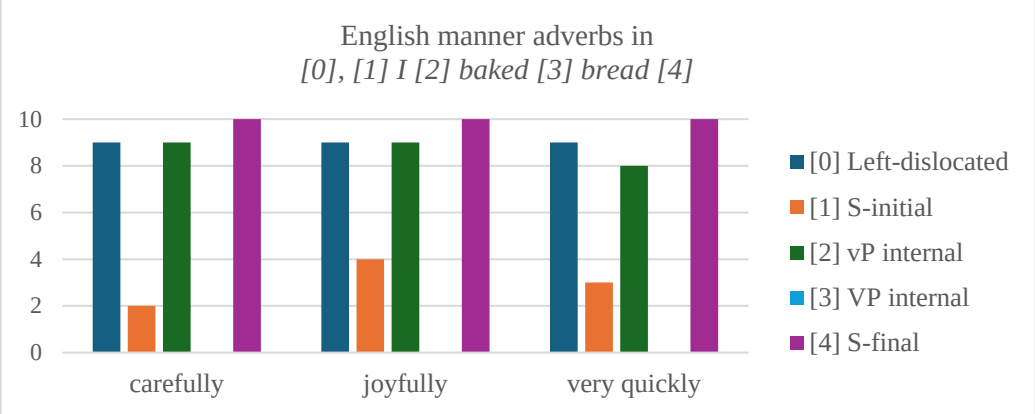
To summarize, the survey participants were presented with a sentence and an adverbial; they were then asked to choose ALL grammatical positions for the adverbial to grammatically occur in the sentence. They were tested for monolingual and code-switched combinations: in short, they were given English sentence with English adverbial, English sentence with Korean adverbial, Korean sentence with Korean adverbial, and Korean sentence with English adverbial. The unique pair of matrix sentences stayed consistent throughout the survey: three pairs of manner adverbs, three pairs of PTAs, and three mixed adverbials were tested.

3.2. Results

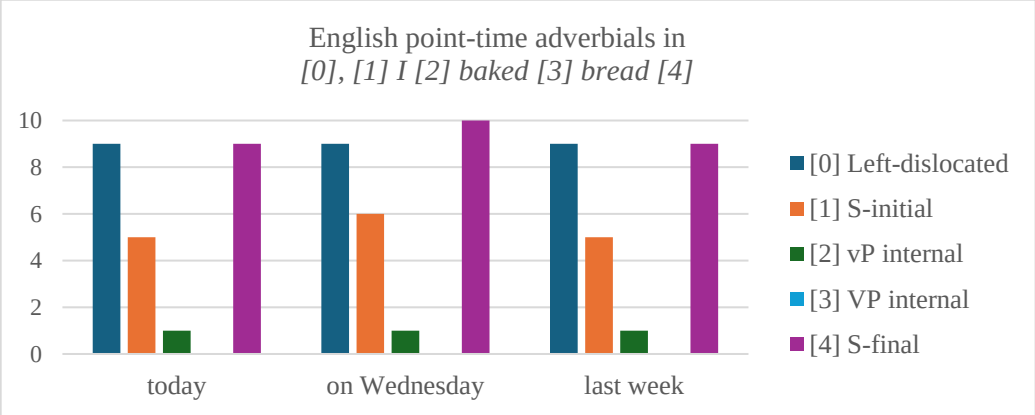
3.2.1. Monolingual context

In this section, I will present the adverbial distribution in monolingual English and Korean sentences. First, let us look at the distribution of English adverbial in English sentence. I've separated the results for English manner adverbs (91) and PTAs (91). Note that the language used to describe adverbial locations – "Left-dislocated," "S-initial," "vP internal," "VP internal," and "S-final" –sides with the analysis from neither Ernst (2001) nor Alexiadou (1997).

(91)



(92)

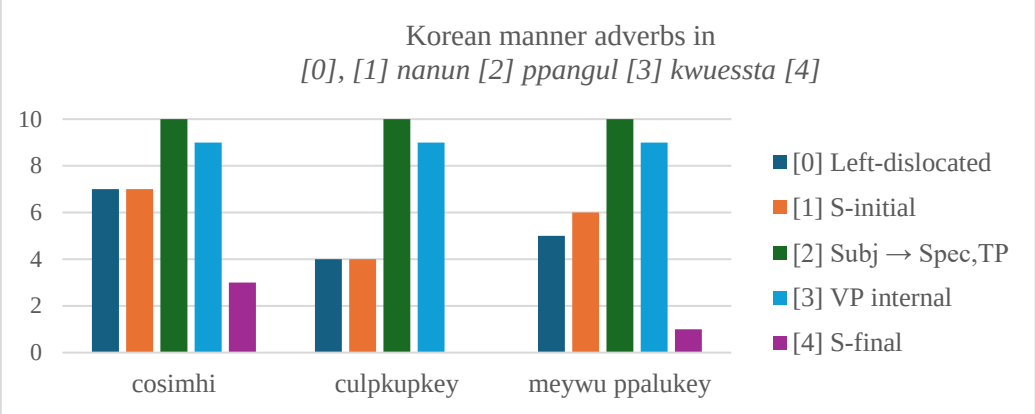


The most noticeable difference between the two categories is the *v*P internal position. While manner adverbs are judged grammatically in this position, PTAs are almost completely disallowed. This is expected: several researchers have explained this through Weight Theory (Ernst, 2001) and Edge Effect Constraint (Haider, 2004). Also, note how the VP internal position is banned for either category, which

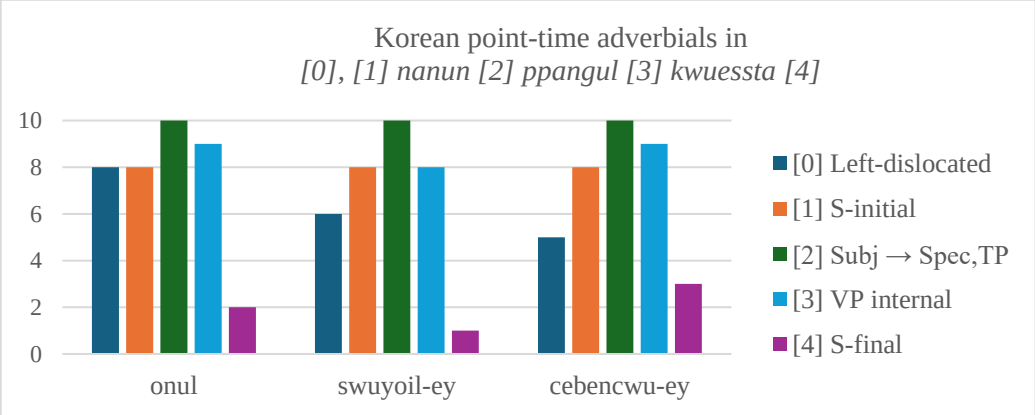
matches the description under Case Adjacency Condition (Stowell, 1981).

Next, let us examine the distribution of Korean manner adverbs (93) and PTAs (94) in Korean sentence. Again, each position is described through ambiguous descriptions that do not limit themselves to either school of thought.

(93)



(94)



Compared to the English counterpart, Korean adverbials enjoy a 'freer' distribution with the sentence-final position being an exception. This was explained above through scrambling as well as the inoperativeness of restrictions like Weight Theory, Edge Effect Constraint and Case Adjacency Condition in Korean grammar. By this logic, it is unexpected that the sentence-initial position shows weak grammaticality for manner adverbs. I suggested that this is related to the adjacency to the verb (the sentence-initial position naturally being distant from the sentence-final verb).

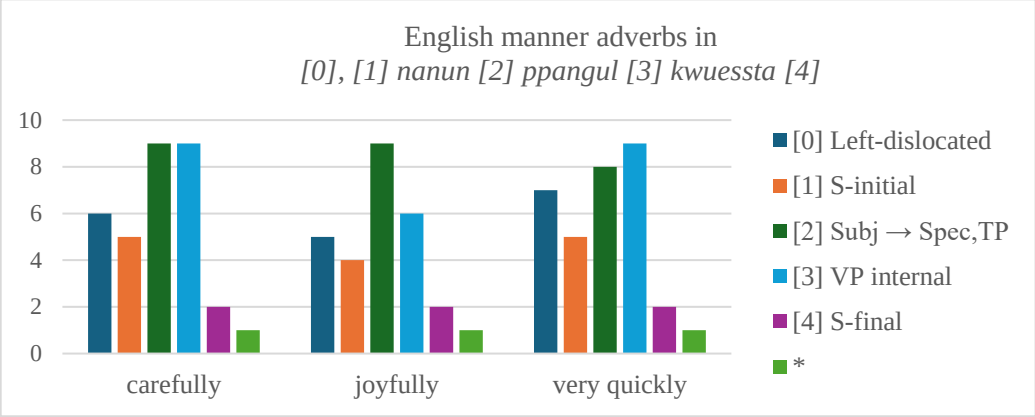
Another interesting observation is found in the two sentence-initial positions (left-dislocated vs S-initial). In the English data, we see that the left-dislocated position is significantly favored. In the

Korean data, the comma-less sentence-initial position is always equal to or more favored than the left-dislocated position. While interesting, I will not discuss this asymmetry further, as there is possibility that it's an issue related to orthography.

3.2.2. Code-Switching context

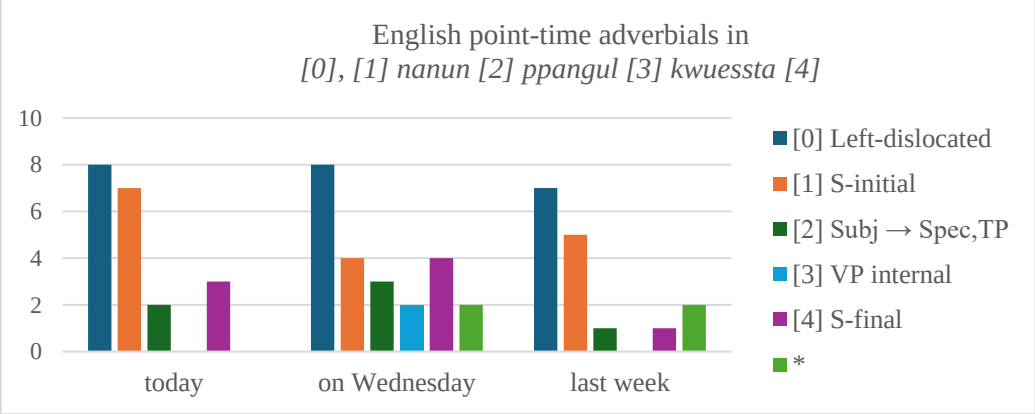
In this section, I will present the distribution of Korean/English code-switching adverbials: hence, these are cases in which English adverbial is inserted into Korean sentence, and Korean adverbial is inserted into English sentence. First, let us examine the distribution of English manner adverbs (95) and PTAs (96) in a Korean sentence. Syntactically, I assume that the code-switched adverbials are placed into the position that is licensed by the language of the matrix sentence (whether that be an adjunct or specifier position).

(95)



* It doesn't sound good in any of the given places

(96)

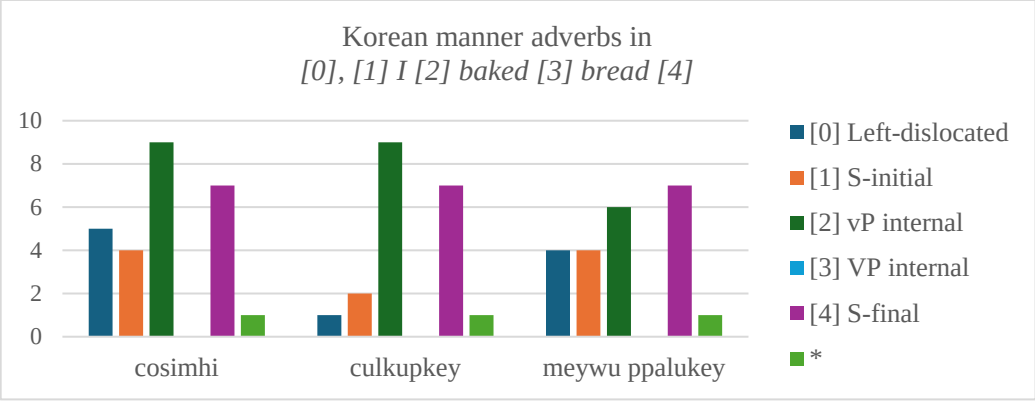


* It doesn't sound good in any of the given places

It is immediately noticeable that the sentence-internal positions heavily disfavor English PTAs but not English manner adverbs (the weak grammaticality of *joyfully in* VP internal position is curious but will not be discussed). This is unexpected under the assumption that the ML, the language of the matrix sentence, provides the frame for word order (Myers-Scotton, 1993): similar arguments argued that the language of the verb dictates adverb distribution (Camacho and Sánchez, 2017; Zagona, 2002). These theories do explain, however, why English adverbials are barred from the sentence-final position. The head-direction of ML, which is Korean, obligates the adverbial to precede the verb.

Now, let's look at the distribution of Korean manner adverbs (97) and PTAs (98) in an English sentence. Similarly, I assume that the Korean adverbials are inserted into the syntactic structure provided for monolingual English adverbials by the English matrix sentence.

(97)



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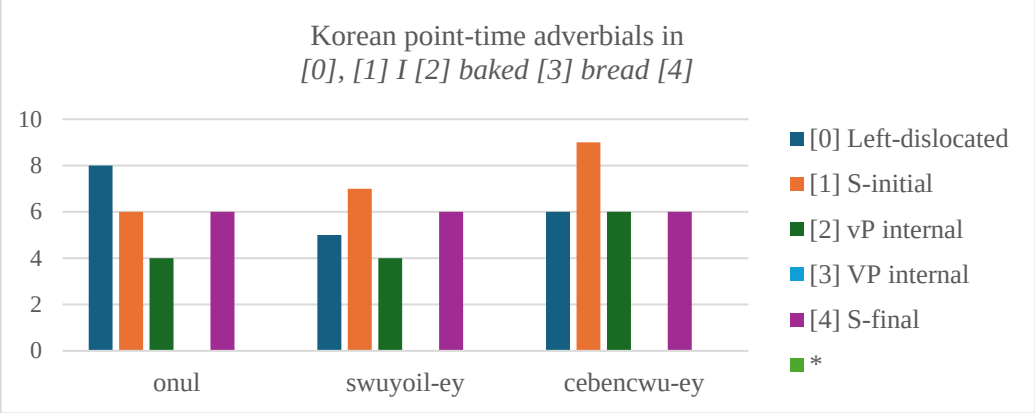
(98)



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Here, we see more pieces of evidence that ML, which is English, restricts adverbial distribution: the VP

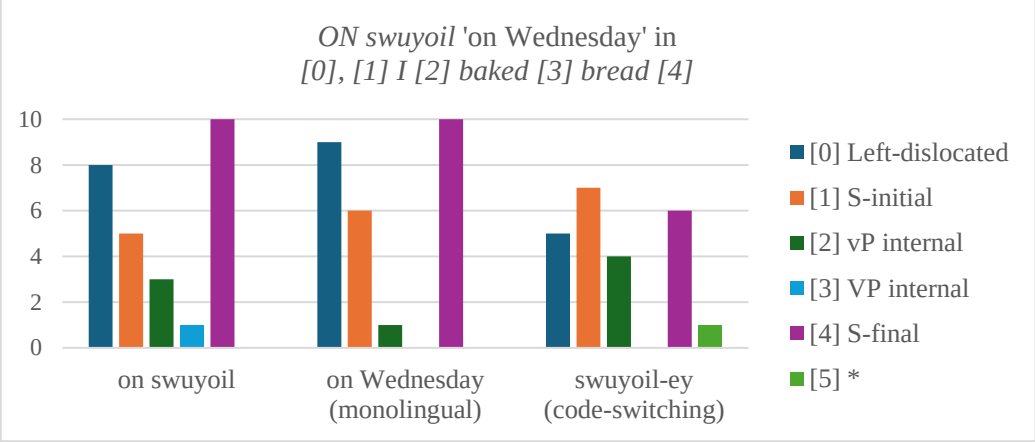
internal position is completely barred, following Case Adjacency Condition (Stowell, 1981). However, this explanation cannot explain the compromised grammaticality for the sentence-final adverbials: code-switched English adverbials are much less frequently accepted than their monolingual counterparts (91) & (92). This evidences the obvious fact that restrictions from both languages are operative in deciding the code-switched adverbial position. Similarly, we see how the *v*P internal position for Korean PTAs also shows weak grammaticality (98).

3.2.3. Mixed Adverbials

In this section, I will present the distribution of Korean/English mixed adverbials. To be more specific, three mixed adverbials were tested in the pilot study survey, all of which were mixed PP constructions: *ON swuyoil* 'on Wednesday', *WEDNESDAY-ey,* and *LAST WEEK-ey*. As discussed above, they were tested for insertion based on the language of the P head: thus, *ON swuyoil* was code-switched into an English matrix sentence whereas *WEDNESDAY-ey* and *LAST WEEK-ey* were code-switched into a Korean matrix sentence.

Below is the distribution of *ON swuyoil*. For the sake of comparison, it is accompanied by the distributions of *on Wednesday* and *swuyoil-ey* in the same English sentence.

(99)



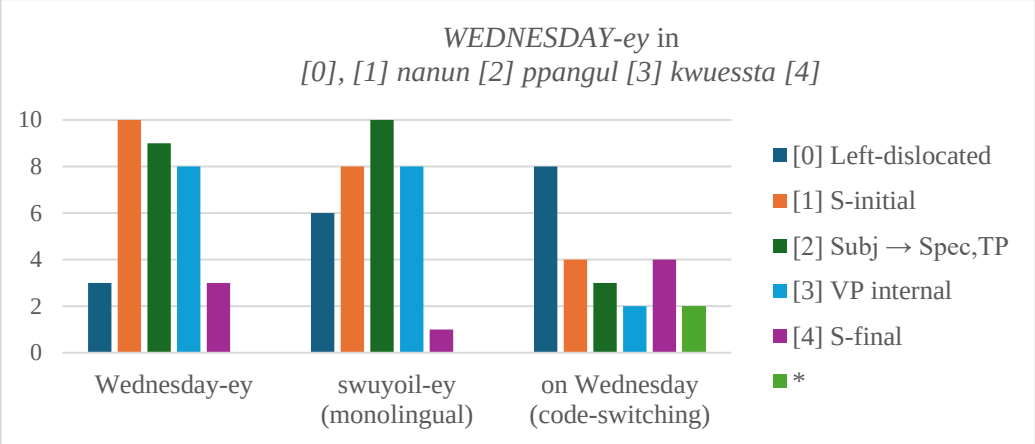
* It doesn't sound good in any of the given places

It is clear that the distribution of *ON swuyoil* mirrors that of the English PTA more than that of the Korean PTA. This is in line with the MLF model, because the ML that provided the functional morpheme (P head *on*) is more influential in determining the distribution.

Now, let's examine the distribution of *WEDNESDAY-ey* (100) and *LAST WEEK-ey* (101) in a Korean matrix sentence. Again, I will accompany the data with the distribution of the corresponding

monolingual adverbial (*swuyoil-ey* and *cebencwu-ey*) and the corresponding code-switched adverbial (*on Wednesday* and *last week*) all inserted into the same Korean sentence.

(100)



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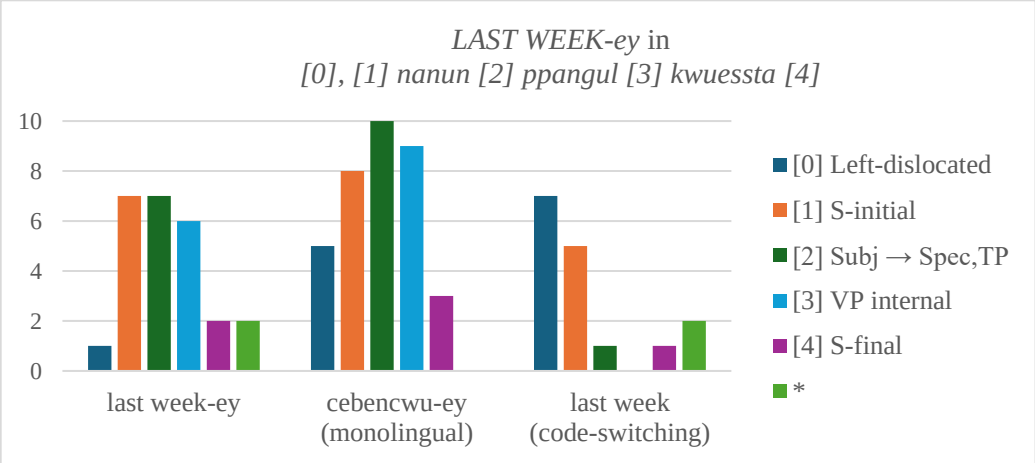
(101)



* It doesn't sound good in any of the given places

We see that the distribution of both mixed PPs mirrors that of the monolingual Korean adverbial. Similar to our explanation for *ON swuyoil*, we can posit that the ML (which is Korean in this case) is influential in determining the adverbial's position in the sentence.

In summary, the data from the distribution of three mixed adverbials indicate that they are treated, not as a case of code-switching, but as monolingual adverbials whose Korean lexical morphemes were merely replaced with English lexemes.

4. DISCUSSION

In this section, we will try to answer the two research questions that we identified in the Introduction section. Below, the two questions are presented as a reminder:

(12) a. Why does scrambling seem to be blocked for code-switched English adverbials in a Korean sentence?

b. How can we account for the contrastive distribution between the code-switched English 'manner' and 'temporal' adverbials in a Korean sentence using monolingual theories that restrict adverbial placement?

For the first sub-section, I will attempt to answer (12a) by discussing the intersection of scrambling and bilingual speech. For the second sub-section, I will review how adequately the theories on monolingual adverbials – Scopal Theory by Ernst (2001), Spec-F Analysis by Alexiadou (1997), Edge Effect Constraint by Haider (2004), and Case Adjacency Condition by Stowell (1981) and Lee (1991) – are able to account for the behavior of code-switched adverbials. Following the minimalist approach to code-switching undertaken by MacSwan (2005, 2008), I assume that these theories can accurately predict and explain code-switching grammar pertaining to adverbials without the need for a third, code-switching-specific grammar.

4.1. Code-Switching & Scrambling

Korean is a language with heavy scrambling where most constituents freely move around (Lee, 2007). We identified that this is integral in deriving the relatively 'free' adverbial distribution in Korean grammar (no matter which of Ernst (2001) or Alexiadou's (1997) structure we assume). This was verified in the pilot study where Korean adverbials occurred in most positions (excluding the sentence-final position and certain others) (93) & (94).

However, this was not the case for all code-switched English adverbial in Korean sentence: especially, code-switched English PTAs were heavily disfavored from sentence-internal positions (96). This was unexpected under the MLF model and similar theories that assume that the language of the verb determines the adverbial distribution (Camacho and Sánchez, 2017; Myers-Scotton, 1993; Zagona, 2002). The corollary prediction from these theories is that scrambling is allowed in sentences where Korean is ML and thus derives any adverbials in any position. Obviously, this is proven false: code-switched English PTAs cannot occur sentence-internally.

There are two possibilities: the first possibility is that scrambling is syntactically disallowed. In the background section, scrambling was identified as a syntactic movement where constituents move to Spec,TP position, motivated by EPP-features (Miyagawa, 2001). Under this assumption, adverbials were unable to scramble since they do not contain the necessary features. This is in contention with Lee's (2007) claim that "Korean scrambles non-arguments such as adverbs (p. 23)." However, Lee (2007) himself argues that only semantically complete constituents scramble: under Ernst's (2001) view that adverbials are functions that take arguments, they are semantically incomplete and thus unable to scramble. So, what we should be looking at is *not* the scrambling of adverbials, but the scrambling of the DP arguments over said adverbials.

Returning to our main question, we are then required to provide a syntactic account as to why scrambling is blocked *for DP arguments* in a sentence co-occurring with English code-switched PTA. One idea is that under Ernst (2001), Korean PTAs are posited as either TP adjunct or *v*P adjunct. If we assume that the code-switched English PTAs – for some reason – function as obstacles that block DP arguments from moving over them, it would effectively bar arguments from moving to Spec,TP. Thus, both possible adjunction sites will be above the arguments. There are a few problems: firstly, it is unclear why code-switched English PTAs would have such capability when code-switched English manner adverbs do not. Secondly, the natural outcome is that Spec,TP would be left empty, which violates the requirement that the EPP-feature must be satisfied.

Another idea is based on Alexiadou's (1997) account where the code-switched PTA raises to Spec,TP. She argued that Spec,TP is parameterized so that it hosts the subject DP in some languages and

the PTA in others. While this argument was rejected, we can imagine how parameterizing the Spec,TP could get us closer to explaining the scrambling being blocked. Let's assume that Spec,TP in Korean is parameterized to only accept PTAs: in a Korean sentence with a code-switched English PTA, the adverbial will occupy the position, thus barring scrambling for other constituents. However, this would also block scrambling even when a Korean PTA is inside a Korean sentence, which is obviously untrue. Also, the EPP-feature would not be able to be satisfied with this proposal.

Now, we should shift our attention to the possibility that scrambling is *not* syntactically disallowed. Then, we automatically assume that the ban on code-switched English PTAs appearing sentence-internally is motivated through an additional, non-syntactic restriction. What may this "additional, non-syntactic restriction" be? We saw that in a Korean sentence, the sentence-internal positions were allowed for monolingual Korean PTAs and mixed PPs (with a Korean P head). Thus, it is unlikely that this is a semantic restriction, as these adverbials share the same semantic content.

Instead, I suggest that this is an issue with interpretation: code-switched English PTAs are not fully "integrated" into the Korean matrix sentence, so it naturally results in difficulty in processing the meaning of a sentence, especially when certain elements are not in their basic word order. This is supported by the judgments by the consultants that, in an OSV word order (opposed from the "basic SOV" argued by Miyagawa (2001) (p. 297)), the sentence with a code-switched adverb is more infelicitous than one with a monolingual adverb.

(102) ppang-ul Minsoo-ka cosimhi mek-ess-ta
bread-ACC Minsoo-NOM carefully eat-PAST-DECL
'Minsoo carefully ate some bread'

(103) ?ppang-ul Minsoo-ka CAREFULLY mek-ess-ta

However, this leads to a false prediction that any and all code-switched adverbials cannot derive meaning when scrambled. Code-switched English manner adverbs were perceived as grammatical in positions that can only be explained by DP scrambling.

Instead of fully abandoning this account, we can modify it to naturally account for code-switched PTAs but not code-switched manner adverbs. A key to this is in the distribution of mixed adverbials (100) & (101): at first glance, the data seem like counterevidence against the argument that "code-switched elements are not fully integrated into the Korean matrix sentence." However, note that the code-switching for these constituents – *WEDNESDAY-ey* and *LAST WEEK-ey* – happens internally. The lexical morphemes are coming from the embedded language (English), and the functional morphemes from the matrix language (Korean). Combined, the mixed adverbial behaves like a fully Korean PP.

Several theories have accounted for this phenomenon through the MLF model (Myers-Scotton, 1993) and concepts like “relexification (Appel & Muysken, 1987).”

The issue in question is highlighted when we compare the distribution of a singly occurring code-switched PTA (*on Wednesday*) against a mixed PTA (*WEDNESDAY-ey*).

(104) (On Wednesday,/*Wednesday-ey,) (?On Wednesday/Wednesday-ey) na-nun (*on Wednesday/Wednesday-ey) ppang-ul (*on Wednesday/Wednesday-ey) mek-ess-ta (?on Wednesday/*Wednesday-ey)

We can observe the postposition *-ey* is playing an integral role in deriving the ‘free’ distribution of the adverbial *WEDNESDAY-ey*. In other words, we can posit that the postposition *-ey* is the source that allows DP arguments to scramble without resulting in interpretations that are too difficult to process, thus crashing the derivation at LF.

Thus, we can summarize the finding as the following: in a Korean sentence with code-switched English elements, scrambling can only occur in a sentence where the P in every PP is a Korean morpheme. Otherwise, the derivation will crash at LF. Note that this only restricts scrambling: code-switched PP adverbials can appear in their base-position, which correctly predicts the sentence-initial occurrence of *On Wednesday* in a Korean matrix sentence (96).

Despite its explanatory power, this explanation is problematic in certain aspects: it is highly stipulative, but it also contends that certain constituents behave differently in code-switching, appealing to the notion of “third grammar”in bilingual speech. We established in the background section how MacSwan’s (2005, 2008) Minimalist Approach is against this idea. Could there be a way to posit a more generalized theory, one that has already been proposed in monolingual Korean or English speech?

I argue that we can expand on this theory by taking into account the role of case markers in Korean scrambling. Similar to the postposition *-ey*, case markers in Korean attach to the end of a given constituent. It has been argued that case markers are optional, as they are sometimes dropped. In (105), the genitive case marker *-uy* is optional. In a code-switched utterance, the accusative case marker *-ul/-lul* is dropped (106).

(105) yocum pwusan(-uy) nalssi-nun etteh-supni-kka?
these.days Pusan(-GEN) weather-TOP how-SL-Q
‘These days what is Pusan’s weather like?’ (Kim & Sells, 2022, p. 400, (13))

(106) BOSS (ø) pwuru-myen …
boss (-ACC) call-if
'If (I) call (my) boss…' (Yoon, 1992, p. 441, (17))

However, others have suggested that overt case markers are required for scrambling. Lee (1991) argues that over case markers "trigger word order freedom (p. 54)," by which she refers to scrambling. It isn't hard to imagine why this is the case: if there is more than one argument in the same utterance, it would be difficult to process the desired interpretation without case markers. Observe the Korean sentences below: (107a) presents the base order of SOV. Note how the sentence is ungrammatical when the object *Yengswu* is scrambled to a sentence-initial position without an accusative case marker (107d).

(107a) Minswu-ka Yengswu-lul cohahan-ta
Minswu-NOM Yengswu-ACC like-DECL
'Minswu likes Yengswu'

(107b) Yengswu-lul Minswu-ka cohahan-ta

(107c) ?Minswu-ka Yengswu cohahan-ta

(107d) (?Yengswu**,**/*Yengswu) Minswu-ka cohahan-ta

(107e) *Minswu Yengswu cohahan-ta

Thus, I posit that overt case markers are required to allow scrambling in a sentence.

Let us return to our discussion of code-switched English PTAs. Above, we established that case markers are required for scrambling in Korean monolingual grammar. Also, the postposition *-ey* could be considered to be a locative case marker. Under these assumptions, I propose that for scrambling to occur in a sentence, every DP argument and DP/PP adverbial must have an overt[27] case marker (in both monolingual and bilingual contexts).

The advantages of this proposal are clear: first, it is no longer limited to a category of adverbials in a specific utterance environment. It is more generalized and thus less stipulative. Also, since it can account for both monolingual and code-switching contexts, there is no longer a need for "third grammar," thus in line with MacSwan's (2005, 2008) minimalist view. Furthermore, it can also explain why code-switched English manner adverbs do not behave as "obstacle" to scrambling: they are bare adverbs and are thus impervious to the rule presented above.

However, the proposal, as it stands, makes incorrect predictions: for one, it cannot account for

[27] This implies an overt *Korean* case marker. Thus, the English preposition *on* does not count.

PTAs in Korean that are DPs without an overt postposition (ex. *onul* ‘today’, *ecey* ‘yesterday’, *nayil* ‘tomorrow’). In fact, it is ungrammatical for these adverbials to be followed by a locative postposition. For the scope of this study, I will leave this issue open here.

4.2. Restricting Code-Switched Adverbials

In the previous section, we concluded that case markers are required on DP arguments and DP/PP adverbials for scrambling. This was assumed to be applicable to both monolingual and bilingual speech. In the scope of our study, this restriction is operative in sentences containing code-switched English PTAs but not English manner adverbs.

In this section, I will adopt the minimalist approach to code-switching by MacSwan (2005, 2008) and assume that the theories that accounted for monolingual adverbial distribution can account for the distribution of code-switched adverbials.

4.2.1. Ernst (2001)

In this section, I will review how the syntactic account in Ernst (2001) accounts for the distribution of code-switched adverbials in Korean/English bilingual speech. To recapitulate, Ernst (2001) assumes that adverbials are adjuncts whose distribution is restricted through lexicosemantic specifications, principles of semantic composition, Directionality Principles, and Weight Theory. In this study, we focused on the last two and identified the base-adjunction sites for manner adverbs and PTAs as below:

(108)

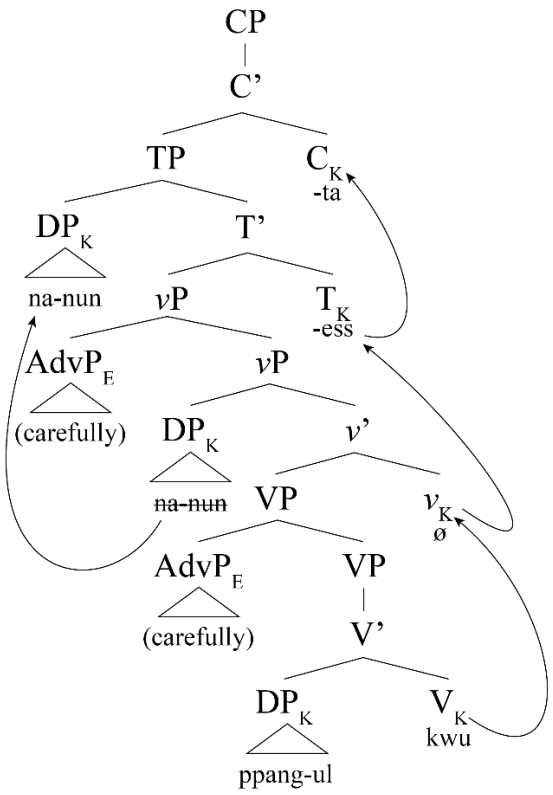
	Manner adverb		Point-time adverbial	
	ENG	KOR	ENG	KOR
Ernst (2001)	*v*P adjunct (left), VP adjunct (right)	*v*P adjunct (left), VP adjunct (left)	TP adjunct (left & right)	TP adjunct (left), *v*P adjunct (left)

Note that it is assumed that adverbials generally do not move except for cases like “wh-movement, topicalization, or prosodically motivated rearrangements.” In the discussion below, topicalization might be relevant in deriving the sentence-initial position: adverbials with [+Top] topic feature raise to the adjunct position of a higher projection like TopP.

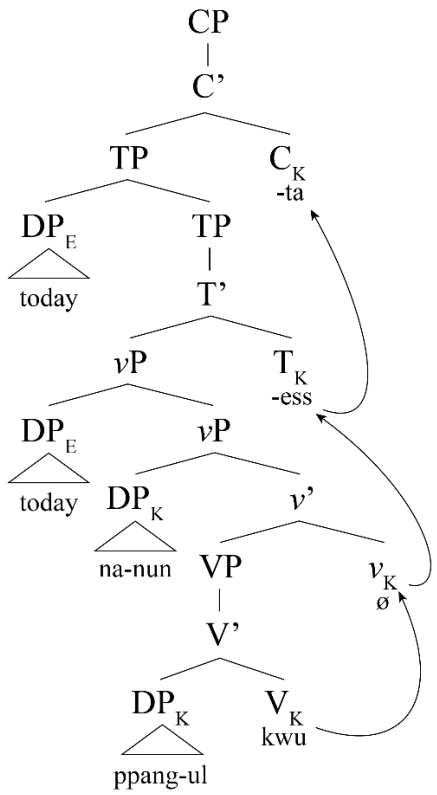
Now, based on these base-adjunction sites listed, let’s examine how the adverbial distribution can be accounted for in code-switching utterances. For the sake of explanation, *carefully* and *cosimhi* will represent the manner adverb category and *today* and *onul* the PTA category.

Below, I start by presenting the syntactic tree depicting the code-switched English adverbials inserted into a Korean matrix sentence (109) & (110). For the Korean subject DP *na-nun* ‘I (top)’, I will assume that the [+Top] feature licenses the topic marker *-nun* in-situ.

(109)



(110)



The two trees respectively represent the distribution of English manner adverb (left) and PTA (right) in a Korean matrix sentence. The structure of the agglutinative verb *kwu-ess-ta* is assumed to be the same as in (37).

The code-switching was accounted for by placing the code-switched element in a position where the equivalent in the matrix language is expected to appear. Conveniently, the base-adjunction sites assumed for each language were mostly consistent, only with minor changes in the direction of adjunction[28].

Let us examine how Ernst's (2001) theories hold against our discoveries from the pilot study based on the tree structures above. In the pilot study, code-switched English manner adverbs showed a 'free' distribution (only the sentence-initial positions being partially infelicitous). This is accurately captured in the structure above given that scrambling is allowed for DP arguments in (109) (since all of the DP arguments have overt case markers): if the subject DP moves to Spec,TP, it derives *carefully* between the subject and the object: if both the subject and the object move to Spec,TP, it derives *carefully*

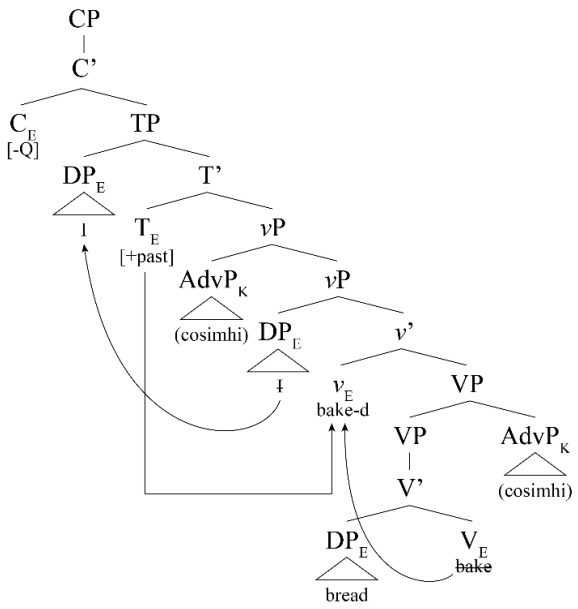
[28] According to Directionality Principles, it was assumed that every adjunct in Korean is left-adjoining (21b).

between the object and the verb. In the pilot study, code-switched English PTAs were restricted to the sentence-initial position. This is also accurately depicted in (110). It is restricted for the subject DP to scramble to Spec,TP over the adverbial since *today* does not contain an overt Korean case marker.

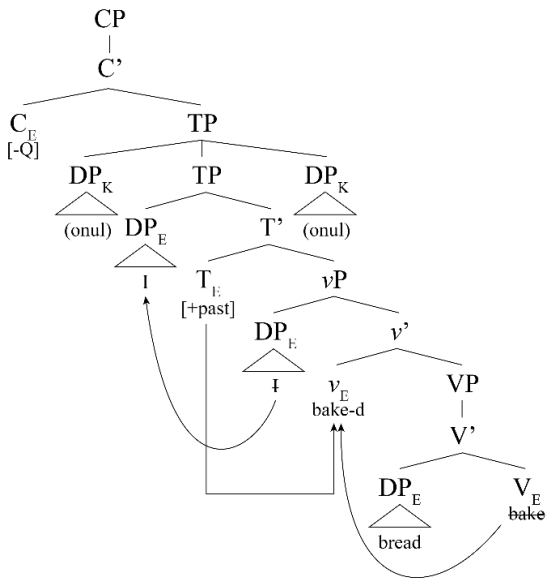
Additionally, it should be noted that the sentence-final ban for adverbs (of any kind) is effectively enforced since there is no site for adjunction to the right of the C head, which is where the agglutinative verb complex ends up.

Moving on, we will discuss the adverbial distribution of code-switched Korean adverbials in an English matrix sentence. Note that the trinary branching in (112) denotes an optionality that TP adjuncts can come in either direction.

(111)



(112)



The two trees respectively represent the distribution of Korean manner adverb (left) and PTA (right) in an English matrix sentence.

For the code-switched Korean manner adverbs, Ernst's (2001) account accurately represents the two most favored position: the sentence-internal position between the subject and the verb, and the sentence-final position.

Code-switched Korean PTAs, on the other hand, showed a weak grammaticality for this position. This is surprising because Ernst (2001) contends that English PTAs like *today* or *on Wednesday* are completely disallowed from this position on the grounds of Weight Theory. However, the structure in

(112) cannot account for the weak grammaticality syntactically, as there is no possible base-adjunction site below the subject in Spec,TP.

In summary, we tested the base-adjunction sites identified in Ernst (2001) against the code-switching data collected from the pilot study. For code-switched English adverbials, the structure accurately represented the distribution with the help of the scrambling restriction discussed above. For code-switched Korean adverbials, most of the data was accounted for, but the weak grammaticality of the Korean PTA between the subject and the verb could not be represented syntactically.

4.2.2. Alexiadou (1997)

In this section, we will examine how Alexiadou's (1997) analysis of adverbials can account for code-switched adverbials in Korean/English bilingual speech. To briefly recapitulate, the biggest point of departure in her theory from that of Ernst (2001) is the argument that adverbs are not adjuncts. Instead, they are licensed in the complement and specifier position. Alexiadou describes that there are two types of adverbials: complement-type – which base-generate as a V head complement – and specifier-type – which base-generate in the specifier position of a corresponding projection. Note that both manner adverbs and PTAs are complement-type adverbials: they are base-generated inside the VP as a complement of the V head but raise to specifier positions.

Below, I have organized more specific assumptions on manner adverbs and PTAs according to Alexiadou (1997):

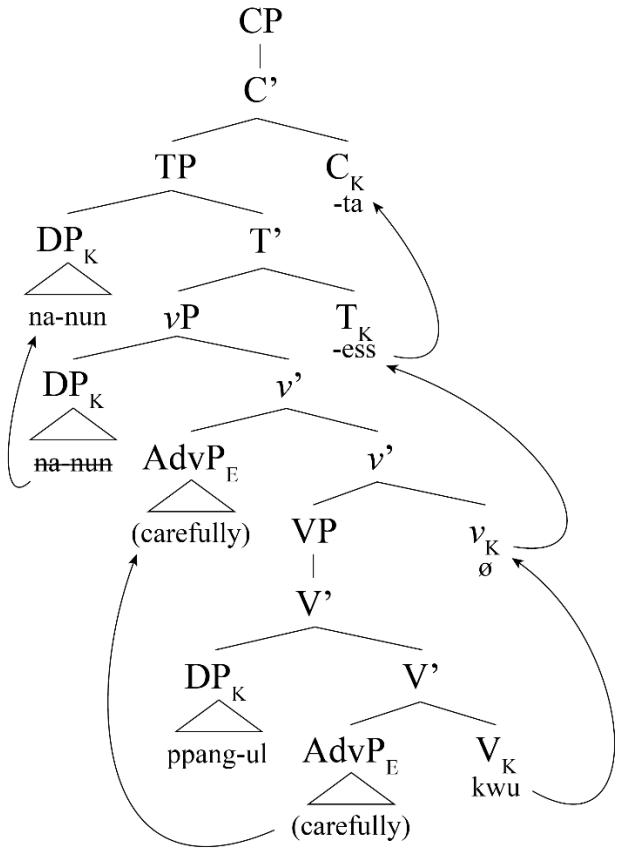
(113)

	Manner adverb		Point-time adverbial	
	ENG	KOR	ENG	KOR
Alexiadou (1997)	V complement, *v*P specifier (via movement)	V complement, *v*P specifier (via movement)	V complement, TP specifier (via movement)	V complement, TP specifier (via movement)

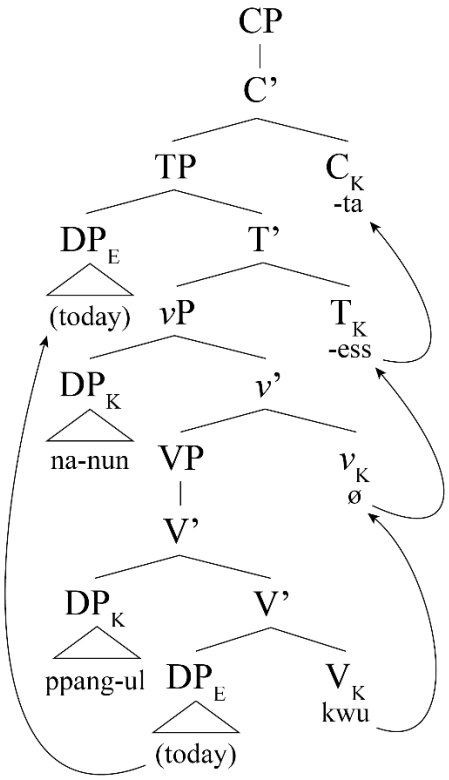
Now, let us discuss how adequately the syntactic structure can account for the distribution seen in code-switching data. Similar to our approach above, *carefully* and *cosimhi* will be shown in the syntax tree as representatives for manner adverbs: *today* and *onul* as representatives for PTAs.

To begin with, I present the syntactic structures that represent code-switched English adverb inside a Korean matrix sentence.

(114)



(115)



The two trees respectively represent the distribution of English manner adverb (left) and PTA (right) in a Korean matrix sentence.

Let us compare the distribution based on Alexiadou's (1997) structure above with the code-switching data. For the code-switched English manner adverbs, their sentence-internal is accurately represented. To be more precise, there are two possibilities to derive the position directly preceding the verb: one possibility is that the adverbial stays in-situ without raising to the Spec,*v*P position. While Alexiadou explains that "non-complex complements like bare manner adverbs must raise," a focus reading on the adverb – represented by a [+foc] feature – can license it to stay in-situ. Thus, we can assume that the *carefully* that directly precedes the verb has a focus reading. Another simpler option is through scrambling: since scrambling is not "blocked" by the occurrence of code-switched English manner adverbs, we can posit that the discussed position for the adverb is derived when both the subject and object DP raise to Spec,TP. I will move on by suggesting that the two options are operative in different sentences based on the reading.

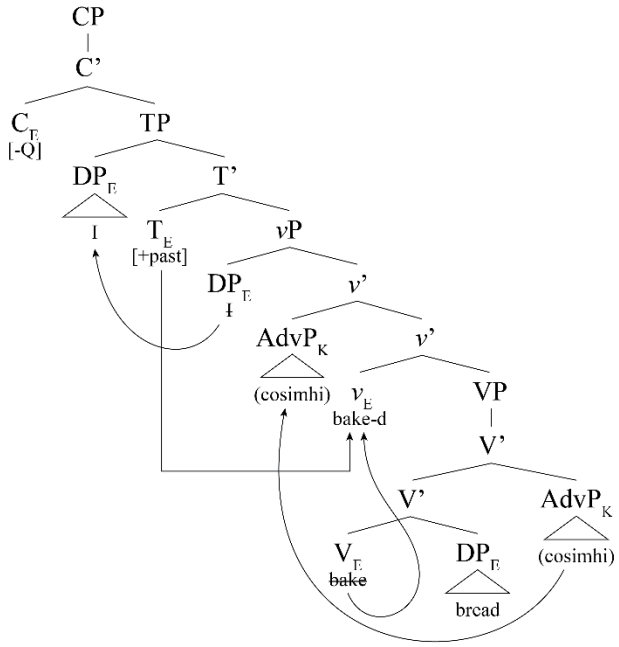
Code-switched English PTAs, on the other hand, were restricted to the sentence-initial position.

While this position is derived under the assumption that the PTA moves to Spec,TP, Alexiadou remarks on the possibility that this movement can occur covertly, in which case only the temporal feature moves to the T head and the adverbial stays in-situ. If we assume the same for (115), the structure falsely predicts the derivation of the PTA appearing sentence-internally. One solution is to posit that the optionality for a covert movement of temporal feature is parameterized on the T head (where the [+temp] feature is argued to be situated). In this way, we can argue that it is allowed in English but not in Korean, which would derive the correct linear order in both monolingual and bilingual contexts.

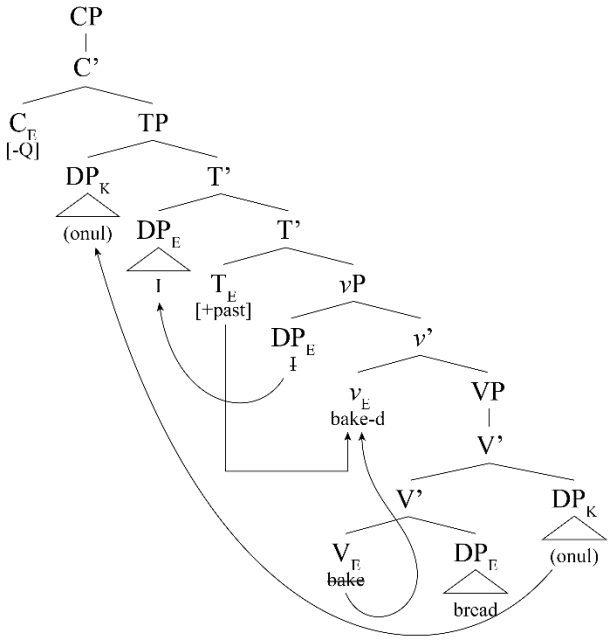
In addition, note that there is no possible landing site for movement (or a base-generated site) that would incorrectly derive the sentence-final position for adverbials.

Moving on, the base-generated positions and landing sites for code-switched Korean adverbials are depicted below based on Alexiadou (1997).

(116)



(117)

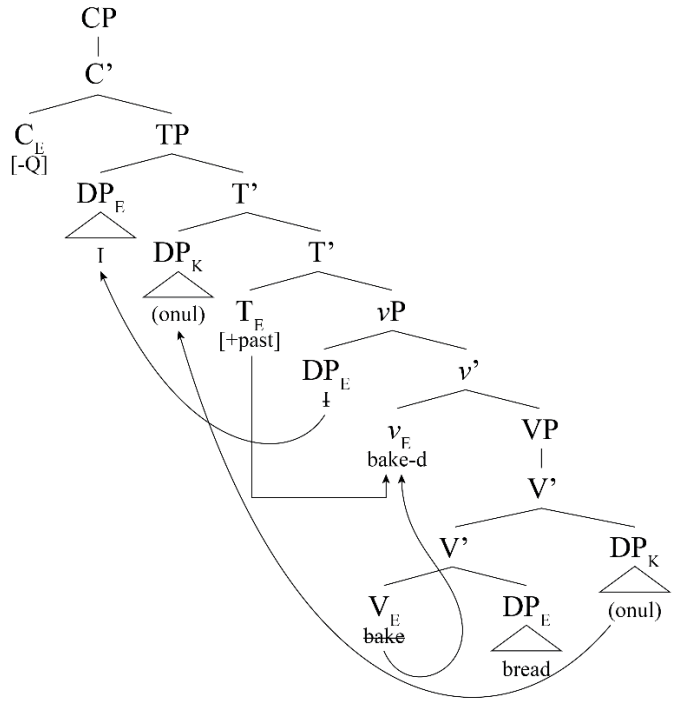


The two trees respectively represent the distribution of Korean manner adverb (left) and PTA (right) in an English matrix sentence.

Alexiadou's structure correctly accounts for the sentence-internal position (preceding the verb) and the sentence-final position that code-switched Korean manner adverbs appear the most in. Note how the sentence-final position would be derived if the adverb has a focus reading, thus allowing it to stay in-

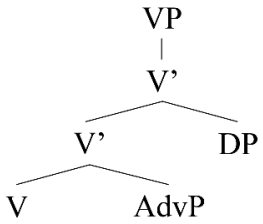
situ. As for the code-switched Korean PTAs, the structure in (117) correctly derives the sentence-initial and final positions. It also accounts for the weak grammaticality of the sentence-internal occurrence (preceding the verb) if we posit an alternate structure like below (117').

(117')



Compared to Ernst's (2001) analysis that was incapable of capturing this occurrence, Alexiadou's structure has a clear advantage. However, it is this structural flexibility that poses a problem for VP: in English, it is argued by many that it is impossible for an adverbial (of any kind) to appear between the verb and its object DP. However, if we posit the following structure for VP, Alexiadou's structure wrongly derives the verb-adverbial-object word order.

(118)



To avoid such cases, we would be required to bring in an additional constraint, such as the Case Adjacency Condition (Stowell, 1981) that bars any element between the case assigner (verb) and assignee

(direct object).

In summary, we tested how the structure outlined in Alexiadou (1997) can account for the distribution of code-switched adverbials. For code-switched English adverbials, the structure represented most of their distribution with accuracy (One issue that we encountered was PTA was allowed to stay inside the VP; I proposed that this option is parameterized cross-linguistically so that in a Korean sentence, the PTA is required to move to Spec,TP). For code-switched Korean adverbials, all of the distribution was accounted for. We viewed how this structure was capable of syntactically representing the sentence-internal occurrence of the code-switched PTA (which Ernst (2001) could not): however, this flexibility also led to deriving ungrammatical sentences, to which it was required to posit an additional constraint like the Case Adjacency Condition.

4.2.3. Edge Effect

In this section, we will look at how Edge Effect Constraint proposed in Haider (2004) can explain the adverbial distribution in code-switching context. As a reminder, I present the Edge Effect Constraint below:

(58) Edge Effect Constraint:
in a head-initial structure, the head of the adjoined phrase must be adjacent to the node the phrase is adjoined to (Haider, 2004, p. 788)

Edge Effect Constraint is Haider's (2004) attempt at explaining why phrasal adverbials like *on Wednesday* or *more often than twice a week* cannot appear between the subject and the verb. Essentially, it's his version of Weight Theory by Ernst (2001) or the explanation that "complex" constituents stay inside the VP by Alexiadou (1997). Pertaining to the scope of this study, Haider's argument can be summarized as follows: in a head-initial structure, the head of the constituent that acts as an adverbial must be adjacent to the phrase that it's adjoining to[29].

Edge Effect is only argued to appear in head-initial structure (note that it's *structure*, not *language*: this is to account for languages like German that shows both head-directionality). In head-final structure, the preverbal adjunction position is assumed to be within the licensing domain. Thus, it is expected that there is no Edge Effect in Korean. This prediction is proven true:

[29] Note that Haider (2004) presupposes that adverbials are adjuncts.

(119) na-nun (swuyoil-ey/cebencwu-ey) ppang-ul kwu-ess-ta

Let's examine cases where an English phrasal adverb[30] is inserted into a Korean matrix sentence. Since Korean is the ML that provides the structure, the preverbal adjunction position is within the licensing domain. Thus, it is expected that Edge Effect is not incurred. This prediction is proven false.

(120) na-nun (*TODAY/*ON WEDNESDAY/*LAST WEEK) ppang-ul kwu-ess-ta

Moving on, let us focus on the adverbial distribution in English matrix sentences. In English, Haider posits that the preverbal adjunction position is not within the structural licensing domain, resulting in the operation of "a particular, not fully-understood restriction." Thus, it disallows adverbials with any post-head material. This is observed in the pilot study.

(121) I (*today/*on Wednesday/*last week) baked bread

On the other hand, the manner adverbs are bare adverbs. Thus, Edge Effect is not incurred.

(122) I (carefully/joyfully/very quickly) baked bread

Now, let's look at cases in which a Korean PTA is inserted into an English matrix sentence. Korean is a head-final language, which means that the PTAs are also head-final. Under Haider's (2004) logic, Edge Effect should not incur when a code-switched Korean PTA is placed in the preverbal position in an English sentence. This prediction is partially correct, as the resulting sentence showed weak grammaticality.

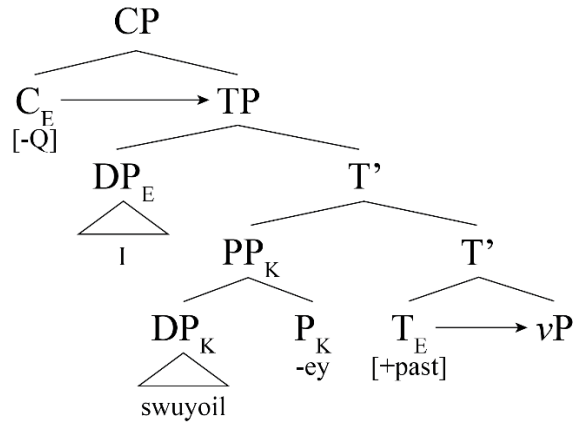
(123) I (?onul/?swuyoil-ey/?cebencwu-ey) baked bread

While not entirely grammatical, this piece of data can be seen as evidence that Edge Effect Constraint is operative to some extent in Korean/English bilingual grammar. The reduced grammaticality can be perhaps attributed to a pragmatic violation, implying that (123) is not counterevidence against Edge

[30] In (120) and below, I assume that *today* and *last week* are derived from DP constructions and that there is an overt D head: thus, *today* and *last week* are themselves "post-head material."

Effect. The structure below[31] demonstrates how *swuyoil-ey* avoids triggering Edge Effect despite not being in the canonical licensing domain: since *-ey* is the P head, and there is no post-head material. Observe how the P head is "adjacent to the node the phrase is adjoined to."

(124)



In summation, we focused on Edge Effect constraint by Haider (2004) and how it might interact with the contrastive head-directionality in Korean and English. In both Korean and English monolingual sentences, Edge Effect Constraint provided accurate predictions. However, the result varied for code-switched sentences. In a Korean sentence with a preverbal English PTA, it was expected that no Edge Effect is incurred: this was not the case[32]. In an English sentence with a preverbal Korean PTA, also no Edge Effect was expected: this was partially correct since the preverbal PTAs showed weak grammaticality. I end this section by suggesting that the weak grammaticality is not counterevidence against Edge Effect in code-switching context but a possibility that a different restriction (that was unaccounted for) might have been operative.

[31] Here, I modified Ernst's (2001) structure to syntactically account for a preverbal PTA (that is otherwise assumed to be TP adjunct) that is also an adjunct. The preverbal PTA is treated as an adjunct to the T', which was identified to be a valid point for adverbial adjunction in English (Ernst, 2001, p. 389).

[32] It is important to note the possibility that Edge Effect was not incurred, but a different restriction (pertinent to code-switching) became operative and resulted in ungrammaticality.

4.2.4. Case Adjacency Condition

In an English monolingual sentence with a verb and a direct object, it is readily observable that the position between the verb and the direct object is blocked. Stowell (1981) proposes that there is a strict condition of adjacency between case assigner and the case assignee. This was formalized through Case Assignment under Government where an element that is directly case-marked by another element (that is not a nominal) must be adjacent to each other.

(60) Case Assignment under Government
In the configuration [α β ….] or [β α ….], α Case-marks β, where
(i) α governs β and
(ii) α is adjacent to β, and
(iii) α is [-N] (Stowell, 1981, p. 113, (18))

However, it is quickly reported that this condition does not hold for certain adverbs in Italian (Stowell, 1981, p. 114). Also, we saw many times that in Korean, presumably through scrambling, such restriction is inapplicable. While Stowell (1981) explains the saliency in Italian data through positing a separate projection where case assignment happens, Lee (1991) posits a parametric variation to the verb in different languages: Korean verbs are parameterized to allow elements between the case assigner and assignee, whereas English verbs are not.

Based on their data on Korean/English code-switching, Lee (1991) explains how case assignment functions when two languages with different implications on Case Adjacency Condition are mixed in a single VP. She concludes that "whether an intervening element will occur or not between a case assigner and a case assignee is determined by the rule of the language from which the case assigner comes (p. 132)." In this section, I will compare how Lee's (1991) argument holds against the data from the distribution of code-switched adverbials.

To begin with, let's consider Korean matrix sentence with English code-switched adverbial. As discussed above, Korean verbs allow elements to intervene between the verb and its direct object: thus, we expect that English adverbials of any kind will appear in this position. While this was proven true for English manner adverbs[33], English PTAs were barred from this position. However, I suggest the possibility that this is influenced by a different restriction given that the position between the subject and the object also banned English PTAs. Since the two positions can be grouped as "sentence-internal," it is likely that a theory like Weight Theory or the account of complex vs non-complex constituents by

[33] Interestingly, *carefully* and *very quickly* was grammatical for most, whereas *joyfully* exhibited weak grammaticality.

Alexiadou (1997) can better explain this phenomenon.

Moving on, English matrix sentence is assumed to enforce the Case Adjacency Condition regardless of the language of the adverbial since the case-assigning verb is in English. Therefore, the corollary prediction is that the position directly following the verb is completely banned from any adverbials. This is proven true (In fact, it was not even allowed once).

In summary, we compared the data from the pilot study to Lee's (1991) assumption that the language of the verb dictates whether Case Adjacency Condition is enforced or not. For Korean matrix sentences with English adverbials, the prediction was partially correct: English manner adverbs were allowed to appear between the object and the verb, but English PTAs were not. However, I suggested that this might be the case of another – stronger – restriction being applied since both of the sentence-internal positions were blocked for PTAs and allowed for manner adverbs. For English matrix sentences with Korean adverbials, the prediction was proven true: regardless of their category, the adverbials were completely barred from occurring between the case assigner (verb) and assignee (object).

4.2.5. Summary

In the second sub-section of the Discussion section, we reviewed different theories that account for adverbial distribution in monolingual Korean/English sentences. Following the minimalist approach to code-switching undertaken by MacSwan (2005, 2008), I assumed that these theories have sufficient explanatory power to account for the distribution of code-switched adverbials.

Both Ernst (2001) and Alexiadou's (1997) analysis on the syntax of adverbials explained most of the restrictive distribution for code-switched adverbials. The assumption from the previous section that "every DP argument and DP/PP adverbial must have an overt case marker" for a sentence to scramble served an integral role in predicting the limited occurrences of code-switched PTAs.

However, there were still issues: the syntactic structure proposed by Ernst (2001) did not provide a base-adjunction site for a PTA below Spec,TP, thus failing to account for the code-switched Korean PTA directly following the subject. The structure from Alexiadou (1997), on the other hand, derived ungrammatical sentences: additional restrictions had to be applied, such as the stipulation that movement of PTA in Korean must be overt and enforcing Case Adjacency Condition.

Edge Effect Constraint proposed by Haider (2004) was compared against the data from the pilot study – in particular, the position preceding the VP (assuming that adverbials are adjuncts that adjoin higher than VP). Haider's constraint proved to be effective at explaining the weak grammaticality of Korean code-switched PTA in a preverbal position in an English matrix sentence. I suggested that while

this location was within the “canonical licensing domain,” it might be subject to certain pragmatic violations, which resulted in weak grammaticality.

Lastly, we discussed Case Adjacency Condition by Stowell (1981) and how Lee (1991) hypothesized that the language of the verb decides whether or not an intervening element between the case assigner and assignee is allowed. For Korean matrix sentence with English code-switched adverbial, this was only true for manner adverbials, leading me to suggest that a stronger restriction might also be in play. For English matrix sentence with Korean code-switched adverbial, the impermeability of the position between verb and object strongly supported the presence of Case Adjacency Condition.

5. LIMITATIONS AND CONCLUSION

Let's first discuss the limitations of the current work, especially pertaining to the pilot study section. Due to the design of the research, data were only derived from a comprehension task, not a production task: Koronkiewicz (2012) remarks the possibility that a receptive acceptance of a linguistic phenomenon does not represent that the participant will actually produce it (p. 242). In our case, the reported grammaticality of an adverbial in a certain position is not absolute proof that it is produced in an utterance.

On a similar note, Myers-Scotton & Jake (2013) differentiate "language switching studies" from code-switching studies. They argue that the latter deals with "strictly naturally-occurring data" and that the data from language switching studies "do not approximate naturally-occurring [code-switching] (p.2)." While my pilot study was not designed based on natural data, I will end this discussion by stating that similar instances of naturally occurring Korean/English code-switching data have been recorded in literature (Lee, 1991; Yoon, 1992).

Issues in the recruitment stage should also be noted: the participants of the pilot study were not balanced bilinguals in the sense that they were more proficient in Korean, spoke Korean at home, and had stayed longer in a Korean-speaking environment on average. In a future study, the ideal participants would be Korean/English bilinguals who acquired both languages at an early age (the age of language acquisition was also not recorded in the pilot study survey). In addition, bilingual language attitudes should also be recorded since it can affect code-switching acceptability judgments (Badiola et al., 2018). With the number of participants being so small ($N = 10$), it meant that participants could not be excluded. In an ideal setting, only the responses from those who are the most frequent users of code-switching would be selected and studied.

Going back to experimental design, the pilot study survey was limited in many ways. It lacked task training (to familiarize the participants with grammaticality judgment tests), or any form of buffer questions, or English/Korean proficiency measures (to prove their proficiency as bilinguals beyond the self-reported proficiency). In retrospect, the tasks themselves should have been designed differently: instead of a multiple choice question where participants indicate all possible word orders, it would be more informative to have them rate the acceptability of a given word order with a Likert-type scale.

Moving on from the limitations of pilot study, let us consider the possible avenues that this study can take. One way is to compare other adverbial categories: for example, frequency adverbs like *frequently* would result in a different distribution and be accounted for by the theories in a different manner (Alexiadou, (1997) for one, posits frequency adverbs to be specifier-type, meaning that they base-generate in Spec,AspP). Another possibility is to explore the distribution of adverbials in other types of bilingual speech. For example, looking at the adverbial distribution in German/English bilingual speech

might help us understand the relationship between head-directionality and adverbials, since certain clauses in German show opposing head-directions.

In conclusion, the current study provides important details regarding the distribution of adverbials in monolingual and bilingual speech for Korean and English. Based on the minimalist assumption that the grammar of code-switching can be accounted for by the union of the two grammars, I attempted to use the various theories on monolingual adverbial distribution to explain the distribution of code-switched adverbials in Korean/English bilingual speech. Certain behavior of adverbials that could not be explained syntactically was accounted for by positing a rule on functional morphemes on code-switched DP structures: this was later expanded to Korean case markers and their ability to allow scrambling in Korean sentences. While the importance of the functional morpheme in a code-switched PP aligned with the MLF model (Jake et al., 2002; Myers-Scotton, 1993), the capability of the rule to account for both monolingual and bilingual speech was more in line with the minimalist approach by MacSwan (2005, 2008).

In addition, this constraint was used to explain the restrictive distribution of adverbials through more syntactic accounts like Ernst (2001) and Alexiadou (1997) as well as more descriptive analyses like those of Haider (2004) and Lee (1991). Returning to the discussion of which language – the language of the verb or of the adverbial – dictates adverbial distribution, both were seen influential: while the verb (and the functional projections above) provide a syntactic structure for the adverbial to be inserted into (either by adjunction, movement, or base-generation in a head-specifier relationship), certain qualities of the adverbial (namely its headedness, weight, type of construction) are also imperative in deriving its final position.

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