(Not) Shifting Together:
An Experimental Investigation of Korean Anaphors and Subjective Predicates

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1. Introduction

Certain linguistic expressions are sensitive to point-of-view (or perspective). These include subjective predicates (e.g. predicates of personal taste like *tasty* or *scary*), perspective-sensitive anaphors (e.g. Japanese *zibun*; *herself* in a picture-NP *a picture of herself*), evidentials, epithets (e.g. *the loser*), and epistemic modals (e.g. *might*). To interpret sentences containing these expressions, one needs information about whose perspective is being referenced; who the *perspectival center* is. In most declarative sentences, the perspectival center is, by default, the speaker. Thus, the subjective predicate *scary* in example (1) is naturally interpreted as expressing Kim's subjective evaluation of the movie. However, sometimes the perspectival center can shift away from the speaker. In some narrative contexts, for example, a character can be the perspectival center (see e.g. Kaiser (2015) for experimental data). Attitude verbs can also license perspective-shifting to the attitude holder (e.g. *Sam* in (2)).

(1) Kim says: "That movie was scary!" (2) Sam thinks that the movie was scary.

In the current work, we report a psycholinguistic study on Korean that investigates the interpretation of two types of perspective-sensitive items: perspective-sensitive anaphors and subjective predicates. We investigate whether and how interpretation of these two types of perspective-sensitive items is related. We build on prior work on English by Kaiser et al. (2009) who tested the interpretation of perspective-sensitive anaphors in picture-NP contexts, and Kaiser (2021) who looked at the relation between perspective-sensitive anaphors and subjective predicates in picture-NP contexts.

This paper has two main aims. Our first aim is to experimentally investigate the perspective-sensitivity of Korean anaphors (reflexives and pronouns) in picture-NPs. We test the simplex reflexive *caki*, the complex reflexive *caki-casin*, and the pronoun *ku(nye)*. The second aim is to explore the relationship between subjective predicates and perspective-sensitive anaphors, to see whether they are interpreted relative to the same perspectival center. In other words, do they 'shift together'?

In the rest of Section 1, we provide background on the perspective-sensitivity of subjective predicates and anaphors in English and Korean. In Section 2, we discuss perspectival 'Shift-Together,' i.e. the idea that multiple perspective-sensitive items in the same domain are anchored to the same perspectival center. Sections 3 and 4 present our experiment and results. Section 5 concludes.

1.1. Subjective predicates

Let's consider the first ingredient of the current study: subjective predicates. Subjective predicates express the subjective opinion of an opinion holder. The most studied examples of this class are predicates of personal taste (PPTs) such as *tasty, funny, exciting,* or *scary*. These predicates are often analyzed as making reference to an individual's (or group's) subjective perspective or experience. In prior theoretical work, their subjective nature has been formalized in different ways, including accounts making use of a judge parameter (e.g. Lasersohn 2005, 2009), truth-relativist accounts (e.g. MacFarlane

2014), and genericity-based accounts (e.g. Moltmann 2010; Pearson, 2013). Lasersohn's formalization of the judge parameter, for example, is schematized in (3).

(3) $[[fun]]^{c; w,t,j} = [\lambda x_e . x$ is fun for j in w at t])   (Lasersohn 2005)

The general intuition that encompasses many analyses of subjective predicates is that their meaning makes reference to the perspective of an opinion holder or 'judge.' (In this paper, we use the term 'judge' in an a-theoretic sense, without committing to a particular formalization.) In traditional analyses, it is typically posited that a judge is encoded in the semantics of these predicates as a variable, parameter, or an argument (e.g. Lasersohn 2005; Stephenson 2007). Some recent work, however, suggests that the intuition of 'judge dependence' can arise in a way that does not require that the identity of the opinion holder be determined for the calculation of the sentence meaning (e.g. Coppock 2018; Rudin & Beltrama 2019; Kennedy & Willer 2016). Although our main aim does not lie in assessing different accounts of subjective predicates, our findings are relevant for this debate. We return to this discussion in Section 5.

1.2. Perspective-sensitive anaphors in English

Let's now put aside subjective predicates for a moment and turn to the second ingredient of the current study: perspective-sensitive anaphors. This section summarizes findings from prior theoretical and experimental work about the perspective-sensitivity of English anaphors. Crosslinguistically, the interpretation of some anaphoric expressions is known to be sensitive to perspective, a phenomenon called logophoricity. For example, some West African languages like Ewe have a morphologically distinct class of 'pure' logophoric pronouns. The antecedent of logophoric pronouns is the individual "whose speech, thoughts, feelings, or general state of consciousness are reported" (Clements 1975: 141).

Although English does not possess a designated class of logophoric pronouns, prior work suggests that in certain contexts, English anaphors exhibit perspective-sensitivity. One such context is the possessorless picture-NP (PNP) context (ex.4, e.g. Jackendoff 1972, Chomsky 1986, Williams 1987, Pollard & Sag 1992, Reinhart & Reuland 1993, and many others). Kuno (1987), for example, notes that factors like point-of-view can influence whether a given referent can serve as the antecedent of a reflexive in a picture-NP. Native speaker judgments suggest that an antecedent that is the *source* of information – Mary in (4a), from Kuno (1987: 175) – can license use of a reflexive in a picture-NP. In contrast, when Mary is the *perceiver* of information (the one receiving the information), the sentence seems to sound worse (4b). Following Sells (1987), in the rest of this paper, we use the term 'source' to refer to the individual who is the intentional agent of the communication.

(4) a. John **heard** from Mary$_i$ about a damaging rumor about herself$_i$ that was going around.
    b. John **told** Mary$_i$ about a damaging rumor about $^{??}$herself$_i$ that was going around.

Thus, although English does not possess pure logophoric pronouns, reflexives' sensitivity to the source of information in picture-NPs resembles the behavior of specialized logophoric pronouns that refer to the source of reported speech/thought (e.g. Clements 1975, Sells 1987).

Pronouns in picture-NPs have also been observed to be perspective-sensitive. Consider the contrast in (5a, b) (from Reinhart & Reuland 1993, see also Jackendoff 1972; Chomsky 1986; Tenny 2003; and others). Example (5a), where the antecedent of the pronoun *him* is a perceiver of information is reported to sound better than (5b) where the antecedent is the source of information.

(5) a. Max$_j$ **heard** the story about him$_j$.
    b. * Max$_j$ **told** the story about him$_j$.

Tenny (2003) calls these short-distance pronouns (SDPs) and notes that "verbs that provide a sentient, perceiving antecedent are especially conducive to SDPs" (Tenny 2003: 14) and that "SDPs in representational contexts [...] are especially felicitous with perceiving subjects."

In sum, both reflexives and pronouns in picture-NPs appear to be sensitive to perspective-related factors. Reflexives exhibit a preference to be interpreted as referring to the source of information, the

one whose speech/thoughts are being expressed. Pronouns exhibit a preference for the perceiver of information, the one receiving the information.

However, often judgments of sentences like (4-5) are not entirely clear-cut. To verify the robustness of the intuitions about sources and perceivers, Kaiser et al. (2009) conducted a series of experiments to test whether reflexives in picture-NPs do indeed prefer sources of information while pronouns prefer perceivers. They tested sentences like (6) where picture-NPs contained a pronoun or a reflexive, and used *told* and *heard from* to manipulate whether the subject or object is the source or perceiver.

(6) Mary {told/heard from}Alison about the picture of {her/herself} on the wall.

In a series of experiments using a variety of methods, including visual-world eye-tracking and forced-choice questionnaires, Kaiser et al. showed that English reflexives and pronouns in picture-NPs are indeed sensitive to the source and perceiver respectively, and that this sensitivity can be detected very early on during real-time sentence processing. Specifically, the results show that the interpretation of reflexives in picture-NPs is guided by a strong structural subject preference and a weaker (but nevertheless significant) source preference. They also found that the interpretation of pronouns in picture-NPs is guided by a structural object preference and a strong perceiver preference. As a whole, these findings suggest that both reflexives and pronouns in picture-NPs are sensitive to non-syntactic factors related to the two perspectives inherent in a communicative event: the source (preferred by reflexives) and the perceiver (preferred by pronouns). Data from Dutch and German (Kaiser & Runner 2008) show that these patterns extend beyond English to other Germanic languages.

In the current work, we turn our attention to Korean, a non-Indo-European language with a wider array of anaphorical expressions. These include a long-distance reflexive (*caki*), a local reflexive which can potentially be bound long-distance (*caki-casin*), and pronouns that differ typologically from English pronouns. Thus, testing the interpretation of Korean anaphors in picture-NPs allows us to investigate (i) whether the source bias of reflexives transcends the long-distance vs. local reflexive distinction (a distinction that often parallels the exempt vs. core anaphor distinction), and (ii) whether the perceiver bias of pronouns extends even to elements that are not purely anaphoric (e.g. Korean pronouns that have demonstrative properties). We discuss the three anaphorical elements in the following subsections, before turning to the relation between anaphors and subjective predicates in Section 2.

1.3. Korean anaphors

This section provides background on Korean reflexives and pronouns. Korean has a rich anaphoric paradigm and thus provides a good testing ground for investigating whether and how different types of anaphors exhibit perspective-sensitivity. We discuss below the three different anaphorical forms that we tested in our experiment: the simplex reflexive *caki* (Section 1.3.1), the complex reflexive *caki-casin* (Section 1.3.2) and the pronoun *ku(nye)* (Section 1.3.3).

1.3.1. Reflexive caki

The simplex reflexive *caki* has been subject to much attention in the study of Korean anaphors. The consensus in the literature is that it is a long-distance anaphor which is not subject to locality restrictions. The example in (7) from Yoon (1989), for example, shows that the antecedent of *caki* can be the embedded subject *Mary* or the matrix subject *John*.

(7) John$_1$-i   Mary$_2$-ka   caki$_{1/2}$-lul   salangha-n-tako   sayngkakha-n-ta.
    John$_1$-NOM   Mary$_2$-NOM   self$_{1/2}$-ACC   love-PRES-COMP   think-PRES-DECL
    'John thinks that Mary loves self.'

Another property of *caki* is that it tends to be subject-oriented (e.g. Lee, 1973; Chang, 1977). Recently, however, it has been claimed that the subject orientation of *caki* is modulated by logophoric factors. In (8), for example, from Yoon (1989), the potential for *caki* to take the matrix indirect object as its antecedent depends on the choice of the matrix verb. Native speaker intuitions suggest that in (8a), when *malha-* 'say' is the matrix verb, only the matrix subject – which is the source of information – can

be the antecedent of *caki*. However, in (8b), when *tut-* 'hear' is the matrix verb and the matrix indirect object is the source of information, both the matrix subject and the matrix indirect object have the potential to serve as the antecedent of *caki*.

(8) a. John$_1$-i   Mary$_2$-eykey   caki$_{1/*2}$-ka   am-i-la-ko   malhayessta.
     John$_1$-NOM Mary$_2$-to   self$_{1/*2}$-NOM   cancer-be-DECL-COMP said
     'John said to Mary that self has cancer.'
   b. John$_1$-i   Mary$_2$-lopwute caki$_{1/2}$-ka   am-i-la-ko   tulessta.
     John$_1$-NOM   Mary$_2$-from   self$_{1/2}$-NOM   cancer-be-DECL-COMP heard
     'John heard from Mary that self has cancer.'

Han et al. (2015) report a visual-world eye-tracking study that investigated whether and how the subject orientation and the perspective-related verb effects are manifested during the real-time processing of *caki* in embedded subject position. (See also Han & Storoshenko 2012). Their results suggest that both a subject preference and a source preference are at play during the resolution of *caki*. Although this work focuses on *caki* in embedded subject position and did not look at picture-NP contexts, these patterns suggest that (echoing what we saw in English picture-NPs) being a source of information grants a special status with regard to reflexives. In our current study, we build on this finding and test whether *caki* is sensitive to subjecthood and source status in picture-NP contexts as well.

1.3.2. Reflexive caki-casin

As opposed to the simplex reflexive *caki*, the complex reflexive *caki-casin* has traditionally been analyzed as an anaphor that needs to be locally bound (e.g. Yoon 1989; Cole et al. 1990). Examples like (9) where the local subject is the only licit antecedent of *caki-casin* support this analysis.

(9) Chelswu$_1$-nun   Inho$_2$-ka   cakicasin$_{*1/2}$-ul   wenmangha-n-ta-ko
    Chelswu$_1$-TOP   Inho$_2$-NOM   self$_{*1/2}$-ACC   blame-PRES-DC-C
    sayngkakha-n-ta
    think-PRES-DC
    'Chelswu thinks Inho blames self.'   (Madigan 2015: 151)

Kim and Yoon (2009), however, provide experimental data to challenge traditional analyses that treat *caki-casin* as a strictly local anaphor by showing that *caki-casin* can indeed be bound long-distance when the antecedent carries a logophoric role such as SOURCE, SELF, or PIVOT. Ahn and Charnavel (2017) provide further experimental data to support the claim that logophoricity can license long-distance interpretations of *caki-casin*, exempting it from Condition A. Specifically, they show that *caki-casin* can be exempt from Condition A when anteceded by attitude holders or empathy loci. Although these prior findings do not speak specifically to the question of whether *caki-casin* has a preference for source antecedents in picture-NP contexts, they suggest it is sensitive to perspectival information. Our work, building on these findings about the long-distance binding potential of *caki-casin*, tests whether *caki-casin* is sensitive to a potential long-distance antecedent's status as a source (or perceiver) of information in picture-NP contexts.

1.3.3. 'Pronoun' ku(nye)

Korean is well-known to be a topic-drop languages that usually uses null forms to refer to third-person antecedents. However, in picture-NP constructions of the type that we tested (see ex.15 below), null pronouns are ungrammatical and the overt form *ku/kunye* (masc./fem.) is used instead. This form (which we will abbreviate as *ku(nye)*) is interesting because it has properties of both personal and demonstrative pronouns. For example, it is homophonous with a prenominal modifier that provides deictic/spatial information (*ku cha* 'that car (near you)'). Even the free-standing 'pronominal' use of *ku* has been analyzed as involving both pronominal/anaphoric and demonstrative properties (Kim & Han 2016). We test whether *ku* (and feminine *kunye*) replicate the perceiver bias observed with Indo-European personal pronouns in picture-NPs.

2. Shift Together
2.1. Prior work on Shift Together

Let us now consider whether there is any relationship between the interpretation of subjective predicates (e.g. *funny, scary*) and perspective-sensitive anaphora, given that both are sensitive to perspectival factors. It has been claimed that when multiple perspective-sensitive elements appear in the same domain, they must be bound to the same perspectival center. Bylinina, McCready, and Sudo (2014), for example, propose a "Shift Together" restriction for perspective-sensitive items, as in (10).

(10) *Shift Together for Perspective-sensitive items*: Perspective-sensitive items in the same 'domain' must refer to the same perspectival center.

According to Bylinina et al., perspective-sensitive elements in the same domain cannot shift independently: The perspectival center index can be shifted away from the speaker by the Π operator, which binds all perspective-sensitive elements in its scope to the *same* perspectival center. (Shift-together was originally proposed for indexicals by Anand & Nevins 2004, see also Deal 2020, Sundaresan 2021, inter alia). Examples like (11) from Bylinina et al. support the claim that multiple perspective-sensitive elements shift together. Here, *talented* and *foreigner* must both be anchored to the perspective of the speaker (11a) or John (11b). The mixed readings in (11c) or (11d) are infelicitous.

(11) John read a book by a talented foreigner.
    a. John read a book by an author who **I** think is talented and who is from a different country than **me**.
    b. …**John** thinks … from a different country than **John**.
    c. * …**I** think … from a different country than **John**.
    d. * …**John** thinks … from a different country than **me**.

Comparable examples are attested in other languages as well. In the following Japanese example (from Sells (1987), attributed to Kuno) containing the subjective predicate *itosii* 'beloved' and the perspective-sensitive reflexive *zibun*, *itosii* and *zibun* must both be anchored to *Takasi*. (12) is particularly informative for our purposes, as it shows a subjective predicate and a perspective-sensitive anaphor shifting together. A similar pattern obtains in French (ex.13, from Charnavel 2020). Here, the judge of the subjective predicate (*horrible, beautiful*) is the same individual as whoever the emphatic reflexive (*elle-même/lui-même*) refers to. Mixed perspectives are infelicitous.

(12) a. Takasi wa Taroo ni [itosii$_{Takasi}$ Yosiko ga zibun$_{Takasi}$ o
    Takasi Top Taroo DAT beloved$_{Takasi}$ Yosiko Subj self$_{Takasi}$ Obj
    nikundeiru koto] o hanasita.
    be-hating Comp Obj told
    'Takasi told Taroo that his beloved Yosiko hated him.'
    b. Taroo wa Takasi kara [itosii$_{Takasi}$ Yosiko ga zibun$_{Takasi}$ o
    Taroo Top Takasi from beloved$_{Takasi}$ Yosiko Subj self$_{Takasi}$ Obj
    nikundeiru to] kiita.
    be-hating Comp heard
    'Taroo heard from Takasi that his beloved Yosiko hated him.'

(13) *Loïc mistakes photos of Marie (taken from behind) for portraits of himself and finds them beautiful while Marie thinks they are horrible*
    a. Loïc pense que Marie espère que [les affreuses$_{Marie}$ photos d'elle-même$_{Marie}$/*lui-même$_{Loïc}$] vont se vendre.
    'Loïc thinks that Mary hopes that [the horrible$_{Marie}$ photos of herself$_{Marie}$/*himself$_{Loïc}$] will sell.'
    b. Loïc pense que Marie espère que [les beaux$_{Loïc}$ portraits de lui-même$_{Loïc}$/*d'elle-même$_{Marie}$] vont se vendre.
    'Loïc thinks that Mary hopes that [the beautiful$_{Loïc}$ portraits of himself$_{Loïc}$/*herself$_{Marie}$] will sell.'

On Charnavel's analysis, 'exempt' reflexives are bound by a pro_{log} generated by a logophoric operator OP$_{LOG}$, and with an exempt anaphor, "all perspectival elements of its domain must be evaluated from the first-personal perspective of its antecedent," due to the logophoric operator. In other words, all perspectival elements in the scope of the logophoric operator must shift together.

Recently, Kaiser (2021) conducted a series of experiments that investigated whether PPTs and perspective-sensitive anaphors in English picture-NPs shift together. Using sentences like (14) with picture-NPs, she tested whether (i) reflexives and pronouns and (ii) subjective predicates (in this case, PPTs) are anchored to the same perspectival center. The results show that reflexives in picture-NPs have a strong subject preference, modulated by a weaker source preference, while pronouns prefer perceivers, largely replicating Kaiser et al. (2009). As for subjective predicates, the results reveal a strong preference to interpret the *source* of information as the judge (attitude holder). Crucially, there is no clear evidence for the perspectival center of anaphors and subjective predicates showing Shift-Together behavior.

(14) a. Kate {told/heard from} Lisa about the funny photograph of {her/herself}.
    b. Kate {told/heard from} Lisa that there was a funny photograph of {her/herself} in the newspaper.

2.2. Aims of this work

We conducted an experiment on Korean investigating the interpretation of subjective predicates and anaphors in the same nominal domain. Our work has two main aims. First, we wanted to conduct a systematic experimental investigation into the perspective-sensitivity of *caki*, *caki-casin*, and *ku(nye)* in the same structure. Although there is prior work on the perspective-sensitivity of *caki* and *caki-casin*, to the best of our knowledge they have not been tested in the same experiment, on the same set of participants, or in picture-NP constructions. We also wanted to compare the perspective-sensitivity of reflexives to that of pronouns (*ku/kunye*). We use picture-NP contexts, which is a new empirical domain for testing the perspective-sensitivity of Korean anaphors. Second, our study tests whether Shift-Together holds between two perspective-sensitive elements in the same nominal domain: subjective predicates and perspective-sensitive anaphors. In light of conflicting crosslinguistic claims regarding Shift-Together, our results can help shed light on the crosslinguistic status of the Shift-Together principle.

3. Experiment
3.1. Participants, materials, and methods

We report data from 90 native Korean speakers who participated via the internet on Qualtrics (Provo, UT). We tested two-clause sentences with picture-NPs with *told* or *heard from* in the matrix clause (ex.15). Thus, we manipulated (i) whether the matrix subject or object is the source of information, by using *malhaycwu-ess-ta* 'told' and *tul-ess-ta* 'heard' and (ii) whether the picture-NP contains *caki, caki-casin*, or *ku(nye)* (2 x 3 design). We assume that the genitive-marked anaphor and the subjective predicate are in the same perspectival domain (see also ex.13 from Charnavel 2020).

(15) a. *Version with 'tell'*
Mina-ka	Senguni-hantey	sinmwun-ey	{caki/cakicasin/kunye}-uy
Mina-NOM	Senguni-to	newspaper-DAT	{refl/refl/pronoun}-GEN
mwusewun	sacin-i	iss-ta-ko	**malhaycwu-ess-ta**
scary	photograph-NOM exist-DECL-COMP		**tell-PAST-DECL**

   b. *Version with 'hear'*
Mina-ka	Senguni-hanteyse	sinmwun-ey	{caki/cakicasin/kunye}-uy
Mina-NOM	Senguni-from	newspaper-DAT	{refl/refl/pronoun}-GEN
mwusewun	sacin-i	iss-ta-ko	**tul-ess-ta**
scary	photograph-NOM exist-DECL-COMP		**hear-PAST-DECL**

'Mina {told/heard from} Sengun that there is a scary photograph of herself in the newspaper.'

We used 36 target items, each with a different subjective predicate and different names. Half of targets (18 items) contained positively-valenced predicates, and the other half (18 items) contained negatively-valenced predicates. Participants first saw a screen with only the critical sentence (displayed

in Hangul). Then they saw a screen with both the critical sentence and a question about who the anaphor refers to, with two answer choices ('who shown' question, ex.16a). After answering, participants moved onto a screen with the critical sentence and a 'whose opinion' question probing the interpretation of the subjective predicate, asking whose opinion it is that the photograph is [subjective adjective] (e.g. that the photograph is scary), with three answer choices (ex.16b). The critical sentence remained on the screen while participants answered the questions, so there was no memory burden. The experiment also contained 42 fillers, each of which was associated with one or two questions.

(16) a. '*Who shown' question*
    nwukwu-uy   sacin-i-nka-yo?
    who-GEN   photograph-COP-Q-HON?
    'Who is shown on the photograph?' *(answer choices: Mina Sengun)*
 b. '*Whose opinion' question*
    mwusewun   sacin-i-la-nun-kes-un   nwukwu-uy
    scary   photograph-COP-DECL-ADJ-NOML-TOP who-GEN
    uykyen-i-nka-yo?
    opinion-COP-Q-HON?
    'Whose opinion is it that the photograph is scary?' *(answer choices: Mina Sengun narrator)*

3.2. Predictions

First, let's consider predictions about anaphor resolution ('who shown' questions). Findings from Han et al. (2015) and Han & Storoshenko (2012) on the interpretation of *caki* lead us to expect that the interpretation of *caki* in picture-NPs will be guided by a subject preference and a source preference. If this prediction is on the right track, we predict that participants will prefer to choose the matrix subject as the antecedent of *caki*, but that the proportion of matrix object choices will be higher in the *hear* condition compared to the *tell* condition. If *caki-casin* is guided by the same constraints, we expect that the choice of the antecedent of *caki-casin* will also exhibit an overall subject preference modulated by a source preference. Finally, if the pronoun *ku(nye)* patterns like English pronouns, we expect that it will exhibit an object preference and perceiver preference. It could, however, be that *ku(nye)* does not pattern like English pronouns, perhaps due to its demonstrative properties.

Now, let us consider the predictions about the interpretation of subjective predicates ('whose opinion' questions.) If the pattern found by Kaiser (2021) for English extends to Korean, we predict that people will tend to interpret subjective predicates as having the source of information as the judge/attitude-holder. According to Kaiser (2021), the bias stems from the source being the one who is most likely to have access to the information to evaluate a photograph as funny, scary etc.

Finally, if the Shift Together constraint guides both subjective predicates and perspective-sensitive anaphors in picture-NPs, both expressions should refer to the same perspectival center. That is, the judge of the subjective predicate (e.g. whoever finds the photograph scary) and the antecedent of the anaphor (whoever is interpreted to be shown in the photograph) should be the same individual. However, if Shift Together does not apply to the interpretation of subjective predicates and perspective-sensitive anaphors, the judge of the subjective predicate and the antecedent of the anaphor can diverge.

4. Results
4.1. 'Who shown' questions (antecedent interpretation)

Fig.1 shows, for each of the three anaphoric forms, the proportion of trials on which the antecedent of the anaphor was interpreted as the subject (dark grey bars) or the object (lighter grey bars) of the matrix clause. In the pronoun conditions, in contrast to the English pronoun results of Kaiser et al. (2009), we see no object preference and no perceiver preference (no effect of verb, $z=1.5$, $p>0.1$). However, with reflexives, echoing the English patterns, we see a source preference. More specifically, as is clearly visible in Fig.1, the subject preference exhibited by *caki* and *caki-casin* is much stronger in the *tell* conditions (subject = source) than in the *hear* conditions (subject = perceiver) (*caki*: effect of verb type, $z=11.7$, $p<0.001$, *caki-casin*: effect of verb type, $z=12$, $p<0.001$; statistics computed using *glmer* in R).

4.2. 'Whose opinion' questions (judge identification)

Fig. 2 shows the proportion of responses in which the judge of the subjective predicate was interpreted as the subject vs. the object – e.g. who thinks that the photograph is scary? (There was only one narrator response out of the total 3240 responses, so we omit narrator responses from Fig.2.) As can be seen in the figure, there is an overall preference to interpret the source (subject with *tell* and object with *hear*) as the judge of the subjective predicate. Indeed, this pattern is especially clear when the source is also the subject (with *tell*). This overarching source preference is in line with our predictions based on the prior English results. Statistical analyses confirm that, with all three anaphoric forms, the proportion of trials where participants chose the subject as the judge of the subjective predicate is higher with *tell* (subject = source) than with *hear* (*caki*: main effect of verb type (z=9, p<0.001), *caki-casin*: main effect of verb type (z=6.3, p<0.001), *ku(nye):* main effect of verb type (z=12, p<0.001).
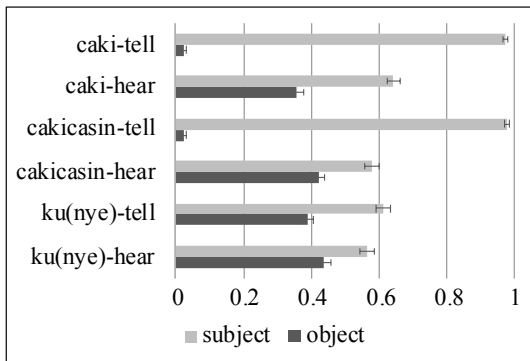
Figure 1. 'Who shown' responses (proportion of subject and object antecedent choices)
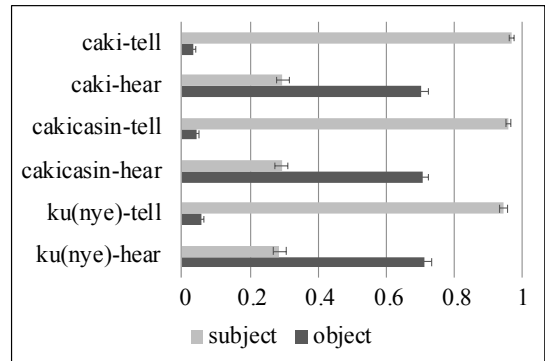
Figure 2. 'Whose opinion' responses (proportion of subject's opinion and object's opinion choices)

4.3. Shift-Together?

To see if the interpretation of perspective-sensitive anaphors (*caki, caki-casin*) and the identification of the judge of subjective predicates shift together, we now combine the two types of data. Figs. 3-4 combine the information from Figs. 1-2, with the pronoun data omitted (as Korean pronouns turned out to not be perspective-sensitive). The lengths of the bars show the proportion of source vs. perceiver interpretations for the reflexives, and thus match the lengths of the subject/object bars in Fig. 1. (Figs. 3-4 show antecedent choice in terms of source and perceiver, while Fig.1 shows antecedent choice in terms of subject and object.) The shading of the bars in Figs. 3-4 shows on what proportion of reflexive=source trials (Fig. 3) and reflexive=perceiver trials (Fig. 4) participants selected the source vs. the perceiver as the judge of the subjective predicate. If anaphors and subjective predicates shift together, in Fig. 3 all bars should be fully light grey and in Fig.4 all bars should be fully dark grey.
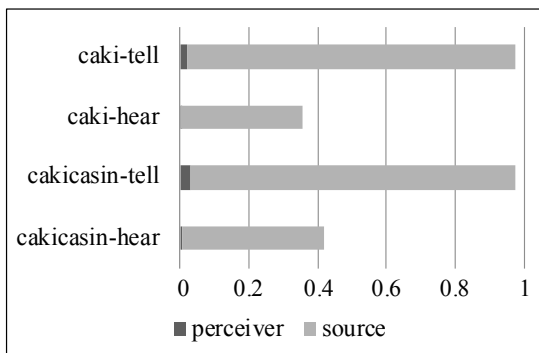

Figure 3. Who is the judge of the subjective predicate when the anaphor refers to the source?
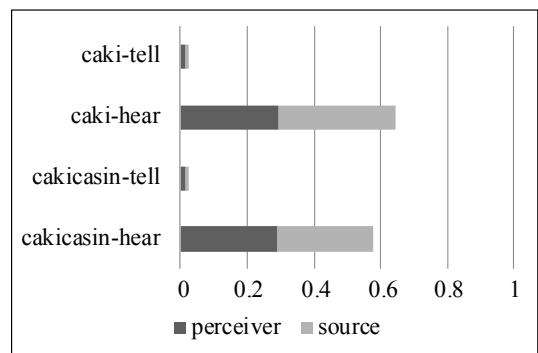

Figure 4. Who is the judge of the subjective predicate when the anaphor refers to the perceiver?

Fig. 3 shows that when participants chose the *source* as the antecedent of the reflexive, they mostly also chose the source as the judge of the subjective predicate. This is shown by all four bars in Fig. 3 being mostly light grey. Thus, judge identification and antecedent choice largely converge – as predicted by Shift-Together. However, Fig. 4 shows that when participants chose the *perceiver* as the antecedent of the reflexive, they did not consistently choose the perceiver as the judge of the subjective predicate. This is shown by all four bars in Fig. 4 being about half dark grey and half light grey. Thus, on trials in which the participants identified the perceiver as the antecedent of the reflexive, judge identification does not converge with antecedent identification – contrary to Shift-Together.

5. General Discussion

We investigated the interpretation of two types of perspective-sensitive elements in Korean: subjective predicates (e.g. *scary, funny*) and perspective-sensitive anaphors (e.g. *caki, caki-casin*). Our study had two main aims: (i) to investigate the perspective-sensitivity of different anaphors in Korean in picture-NPs (see also e.g. Kim & Yoon 2009, Han et al. 2015, Ahn & Charnavel 2017 for related work), and (ii) to test whether perspective-sensitive anaphors shift together with subjective predicates (see e.g. Bylinina et al. 2014, Sells 1987, Charnavel 2020 on Shift-Together in other languages).

We find that both the simplex reflexive *caki* and the complex reflexive *caki-casin* show a subject preference and a source preference, echoing findings for English reflexives (Kaiser et al. 2009, Kaiser 2021) as well as work on Korean (e.g. Han et al. 2015, Kim & Yoon 2009). Thus, our study adds evidence supporting the perspective-sensitive nature of *caki* and *caki-casin*. The fact that these two forms pattern similarly suggests that the source preference transcends the local vs. long-distance distinction, indicating that the source preference may be a core property of reflexive anaphors crosslinguistically.

The Korean pronoun data diverges strikingly from Indo-European languages. Unlike pronouns in English (e.g. Kaiser et al. 2009; Kaiser 2021) and in German and Dutch (Kaiser & Runner 2008), the pronoun *ku(nye)* does not show a perceiver preference. Thus, a perceiver preference may be conditional on an element's anaphoric status (e.g. maybe only occurs with pure pronominal anaphors, not with demonstratives). Korean pronouns' lack of perspective-sensitivity may be related to their demonstrative-like properties (Kim & Han 2016). We leave this as a future research direction.

As regards Shift-Together, our data does not support a strong version of Shift-Together that claims that all perspective-sensitive items in the same domain must be anchored to the same perspectival center. Instead, our results show a divergence between judge identification and antecedent resolution when the perceiver was chosen as the antecedent of the reflexive. Along with Kaiser's (2021) English findings, the current study poses a challenge to approaches where perspective shifts would be accomplished by a single high-level shifting operator. Although the experiment reported here is not designed to directly adjudicate between different formalizations of subjective predicates, it is worth noting that the absence of across-the-board Shift-Together effects that we observed is compatible with recent accounts of subjective predicates that do not posit a semantically encoded 'judge' element that could be manipulated by an operator (e.g. Coppock 2018; Rudin & Beltrama 2019; Kennedy & Willer 2016), since these accounts would not predict Shift-Together effects. Broadly speaking, we suggest that it may be worthwhile to consider finer-grained subtypes of perspective-sensitivity. Perhaps evaluative perspective-sensitivity and anaphoric perspective-sensitivity are subject to different types of interpretational mechanisms.

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Proceedings of the 39th West Coast Conference on Formal Linguistics

edited by Robert Autry,
Gabriela de la Cruz Sanchez,
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Ryan Smith, and Heidi Harley

Cascadilla Proceedings Project   Somerville, MA   2024