The interpretation of logophoric and ordinary pronouns in Ewe: an experimental study

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Abstract

This study examines the interpretation of logophoric and ordinary pronouns in Ewe. While the logophor *yè* is predicted to obligatorily refer to the attitude holder in indirect speech reports, the ordinary pronoun's reference pattern remains debated. Thirty-eight Ewe-speaking adults completed an acceptability judgment task evaluating pronoun usage in self and anti-self contexts for communicative (*say*) and mental (*think*) verbs. The findings align with the principle of Maximize Presupposition, assuming *yè* encodes a presupposition: *yè* is preferred when its presupposition is met, blocking the occurrence of the ordinary pronoun *é*. In turn, *é* is favored only where the presupposition of *yè* fails, though less robustly than *yè*.

1 Introduction

Several West-African languages are known to employ logophoric pronouns in indirect speech reports (e.g., clausal complements of verbs like *say*, *think*, a.o.) as special anaphoric elements which are used to denote the author of the speech or thought event referred to in the matrix clause. A typical case of logophoricity is that of Ewe (a Niger-Congo language of the Kwa group), in which the logophoric pronoun (henceforth LogP) *yè* occurs in the context of an attitude predicate and unambiguously refers to the attitude holder, as illustrated in (1a) (Clements 1975; Pearson 2015; Bimpeh 2023; Bimpeh et al. 2024, a.o.). Besides the logophoric pronoun, Ewe also has an ordinary pronoun (henceforth OrdP) *é*, which can also occur in – but it's not limited to – the context of an attitude predicate. However, there is a debate regarding the type of co-reference that OrdP admits. Some researchers observed that *é* must not refer to the attitude holder (Kofi in (1b)), but to some contextually salient individual other than the attitude holder (Clements 1975; Bimpeh 2023; Bimpeh et al. 2024). Conversely, Pearson (2015) reports on the possibility of OrdP referring to the attitude holder. This interpretation was noted by only two (out of five) speakers of the Mina dialect – an Ewe dialect spoken in Togo – who participated as consultants in Pearson's study.

(1) a. *Kofi*$_1$ *gblɔ be* ***yè***$_{1/*2}$ *dzo.*
Kofi say COMP **LogP** left
'Kofi said that he left.'

b. *Kofi*$_1$ *gblɔ be* ***é***$_{\%1/2}$ *dzo.*
Kofi say COMP **OrdP** left
'Kofi said that he left.'

In sum, while the co-reference possibilities of LogP are consistently reported to be restricted to the attitude holder, diverging observations have been made for OrdP. In this study, we aim to

clarify the disagreements using quantitative data. To our knowledge, this is the first experimental study investigating the interpretation of both LogP and OrdP in Ewe. In particular, we sought to determine (i) whether the co-referent possibilities of the LogP, *yè*, in Ewe are restricted to the attitude holder, and (ii) whether the OrdP, *é*, can or cannot co-refer with the attitude holder, as debated in the literature (Pearson 2015 vs. Clements 1975; Bimpeh 2023). If it turns out that (i) LogP obligatorily co-refers with the attitude holder and (ii) there is a disjointness effect between OrdP and the attitude holder, we can derive the pattern by the principle of Maximize Presupposition! (Heim 1991; Sauerland 2008).

(2) Maximize Presupposition! (MP): (adapted from Sauerland 2003)
Of two lexical items of the same complexity, where one has stronger presuppositions than the other but which lead to the same truth conditions in all contexts where both of their presuppositions are satisfied, the presuppositionally stronger item must be used whenever its presuppositions are contextually satisfied.

Following Bimpeh et al. (2024), we assume that LogP introduces a presupposition deriving the co-reference requirement with the attitude holder introduced by the matrix predicate. OrdP, however, acts like a standard 3rd person pronoun, thus it introduces no presupposition. Given (2), LogP is chosen over OrdP in contexts where its presupposition is met. In other words, Ewe speakers should generally prefer *yè* to refer to the attitude holder, while disprefer *é* in such contexts. With nothing else being said, OrdP *é* should, however, be able to refer to a contextually salient individual other than the attitude holder, as it is a pronoun after all. LogP *yè*, in contrast, cannot do so due to its presuppositional requirement (more details in section 4).

2 The study

2.1 Participants

Thirty-eight Ewe-speaking adults (21 females, 16 males, 1 neutral) participated in the study.[1] Adults' age ranged from 20 to 55 years (M= 29;5, SD= 11.2). Participants were recruited from the Volta region in Ghana. Following Ameka's (1991) division of Ewe into Northern (e.g., Ewedome) and Southern (e.g., Anlo, Tonu) dialects, our participants were distributed as follows: 15 spoke Northern dialects and 23 spoke Southern dialects. No participant was diagnosed with certified language and/or hearing difficulties at the moment of the testing. Additionally, we collected demographic information such as years of education and level of education via a questionnaire participants had to fill after the experiment.[2]

2.2 Materials and procedure

We conducted an acceptability judgment task (Marty, Chemla, and Sprouse 2020), presenting our participants with minimal pairs of test sentences (joint presentation) differing only in that one sentence had LogP and the other OrdP (4), and we asked them to judge such pairs against two types of contexts: self context and anti-self context. Abstractly, in a self context the attitude holder refers to themselves with the pronoun; in anti-self contexts, they refer to someone else. All contexts were presented in Ewe (but see (3) for English version).

[1] A total of 53 participants were recruited for the experiment. However, 15 of them were excluded for the following reasons: 8 participants declared to be not fully proficient in Ewe, 6 participants performed below chance on the filler items and 1 participant performed the task twice. All participants were Ewe-English bilinguals, as reported per the bilingual questionnaire they had to fill in after the experimental session. The study has been pre-registered at this link.

[2] Levels of education are based on the UNESCO International Standard Classification of Education (ISCED). All demographic information, including gender, age and spoken-dialect were collected via the questionnaire.

(3) **CONTEXTS:**
Common incipit: Sefa and Fafali are at home and decide to have a singing competition. In order to decide the winner they decide to record their voices. At the end of the competition Sefa hears one of the recordings. Then Sefa says:

a. **Self**: "What a beautiful voice! It must be Fafali's voice. In fact Fafali is very good at singing!" Then Sefa realizes that it is her own voice. So Sefa says "Oh no wait! But this is my voice! So I'm very good at singing, not Fafali!".

b. **Anti-self**: "What a beautiful voice! It must be my voice. In fact I'm very good at singing!" Then Sefa realizes that it is Fafali's voice. So Sefa says "Oh no wait! But this is Fafali's voice! So Fafali is very good at singing, not me!".

(4) **TEST SENTENCES:**

a. *Mɔ̃ɔ̀èbá la, Sefa gblɔ be* ***yè****-nyé hà-dzì-lá nyuie.*
In.end DEF, Sefa say COMP **LogP**-is song-sing-one.who great
'In the end, Sefa said that she is a great singer.'

b. *Mɔ̃ɔ̀èbá la, Sefa gblɔ be* ***é****-nyé hà-dzì-lá nyuie.*
In.end DEF, Sefa say COMP **OrdP**-is song-sing-one.who great
'In the end, Sefa said that she is a great singer.'

At the beginning of each context (as in (3) common incipit), two characters – the attitude holder (e.g., Sefa) and another character (e.g., Fafali) – were introduced. The story then depicted a scenario where both characters could plausibly be the referent of an action described in the narrative. Ultimately, only one of them was revealed as the true referent (this contextual information was encoded by the use of 'in the end' at the beginning of the test sentences). In the self attitude context (3a), the attitude holder – and crucially not the other character – turns out to be the only possible referent for the pronoun used in the scope of the attitude predicate in (4), while in the anti-self attitude context (3b) the second character – and crucially not the attitude holder – was the sole possible referent for the pronoun used in the scope of the attitude predicate in (4). Our contexts were either adapted from existing literature on attitude reports (Perry 1979; Kiemtoré 2022; Bimpeh 2023) or developed from scratch. Participants were asked to read each context and then rate both test sentences in (4) on a Likert scale (1-7 points), indicating their level of acceptance or rejection relative to the context. Half of the test sentences contained a verb entailing a communicative attitude – *gblɔ* 'say' – and the other half a verb entailing a mental attitude – *súsú* 'think'. Each participant saw a total of 18 items: 6 self contexts (3 with *say*, 3 with *think*), 6 anti-self contexts (3 with *say*, 3 with *think*) and 6 fillers. All items were presented in a randomized order, including the order of the test sentences. All contexts and test sentences were presented in Ewe. Two experimental lists were created: each list contained either the self or anti-self version of each context (e.g., (3a) was in list 1, (3b) was in list 2). Eighteen participants completed list 1, and twenty completed list 2. Each participant completed the task with an on-line version of the experiment. Before starting the experimental phase, participants went through a training phase to familiarize themselves with the task.

3 Results

To prevent scale biases, each participant's raw scores were transformed into z-scores prior to analysis (Sprouse and Aronoff 2013; Schütze 2016). Z-scores are normally distributed with a mean of 0 and a standard deviation of ±1: a positive score would indicate, at least generally,

that the sentence was acceptable, whereas a negative score would indicate unacceptability. Linear mixed-effects models were performed for each test sentence type (LogP and OrdP) using the z-scores as the dependent variable, contexts, verbs and lists as fixed effects, items and participants as random effects. An effect of contexts emerged for both LogP (Figure 1) and OrdP (Figure 2): logophoric pronouns were significantly preferred in self contexts ($X^2(1) = 47.34, p < .001$), while ordinary pronouns were slightly preferred in anti-self contexts ($X^2(1) = 4.12, p = .042$). Additionally, there was a marginally significant verb-by-contexts interaction in LogP ($X^2(1) = 3.76, p = .052$). This suggests that the judgments were slightly more polarized (acceptance of LogP in self contexts and rejection of LogP in anti-self contexts) with communicative verbs (*say*) than with mental verbs (*think*). No such effect was observed in OrdP ($X^2(1) = 0.53, p = .463$).

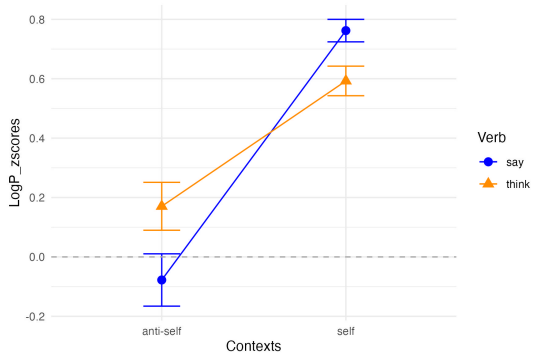

Figure 1: Z-scores of LogP in self and anti-self contexts for *say* and *think* verbs.

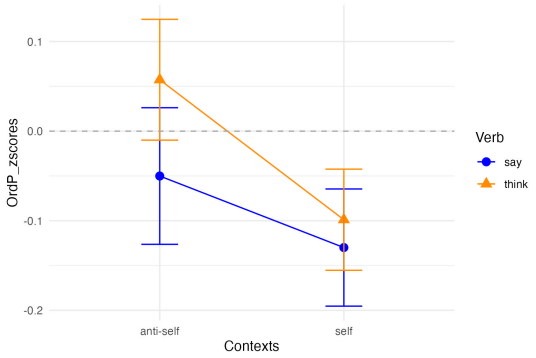

Figure 2: Z-scores of OrdP in self and anti-self contexts for *say* and *think* verbs.

When considering the potential impact of education level and years of education, a significant interaction was found between education level and contexts in LogP ($X^2(1) = 17.93, p < .001$). For OrdP a significant main effect of education level emerged ($X^2(1) = 6.51, p = .010$), together with a significant interaction between years of education and contexts ($X^2(1) = 5.92, p = .014$). These results indicate that (i) the higher the level of education, the more participants rejected LogP in the anti-self contexts and (ii) the higher the level and the number of years of education, the more participants accepted OrdP in the anti-self contexts and rejected them in the self ones. Finally, we checked for possible dialectal variations, but no effect emerged in our models, neither for LogP ($X^2(1) = 0.67, p = .412$) nor for OrdP ($X^2(1) = 0.01, p = .920$).

4 Discussion

Our results show that Ewe speakers display a strong preference for using the logophoric pronoun *yè* to indicate the attitude holder in self contexts, in line with previous literature (Clements 1975; Pearson 2015; Bimpeh et al. 2024; Bimpeh 2023). Concerning the interpretation of OrdP, our results confirmed the data by Clements (1975) and Bimpeh et al. (2024), in that *é* was dispreferred in self contexts (contra Pearson 2015).

These findings are consistent with the MP theory of LogPs (Bimpeh et al. 2024). We assume that the obligatory self reading of LogP is encoded as a presupposition, which in turn also derives the *de se* nature of logophoric pronouns which takes up the slot of a person feature. This presupposition is introduced by a pronominal feature Log, akin to person features. Formally, LogP consists of two elements in the syntax, one is a pronoun that denotes a variable, and the other is a morpho-syntactic feature Log: **LogP ≡ [Log [pro_i]]**. Bimpeh et al. (2024) implement this idea using the centered-world theory of Lewis (1979), according to which attitude ascriptions involve quantification over world-individual pairs. The Lewisian analysis of *de se* makes use

of the notion of a world's center, which is the individual who the attitude holder locates as themselves in the relevant worlds. Essentially, the LOG feature introduces a presupposition that makes the logophor as a whole denote the attitude holder's center.

The syntax of ORDP, on the other hand, is just like that of LOGP, except that LOG is replaced by a semantically-vacuous 3rd person feature[3]: **ORDP ≡ [3RD [pro_i]]**. If LOG is absent, so is its semantic contribution. In other words, ORDP is semantically unconstrained (apart from contextual recoverability). Because there are no semantic constraints on its denotation, ORDP is predicted to be compatible with a co-reference reading with the attitude holder. However, as we saw from our results, Ewe speakers systematically rejected ORDP in self contexts. If we couple the hypothesis that logophors introduce a *de se* co-reference presupposition with the competition idea as a case of MP (2), we can explain why ORDPs in Ewe are blocked in self contexts. In such contexts, both LOGP and ORDP are in principle possible candidates for the test sentences to yield a felicitous continuation; they are of the same complexity, lead to the same truth conditions, and thereby compete via MP. The test sentence including LOGP, however, is presuppositionally stronger, thereby blocking the occurrence of ORDP. Consequently, (2) indirectly predicts a disjointness effect of ORDPs in self contexts by an 'anti-presupposition' (Percus 2006). We should stress that 'complexity' in (2) refers to the number of nodes, not the number of (decomposed) person features. So while LOGP and ORDP are of the same syntactic complexity, the number of person subfeatures encoded in the morpho-syntactic component of the pronoun may vary. In other words, our MP based account of the disjointness effect of ORDP in self contexts has no bearing on the nature of the underlying person feature system (e.g., privative vs. binary, feature geometries, LOG features, etc.).

Although the general trend of our results confirms our main expectations, we also encountered some unexpected results, particularly regarding anti-self contexts. First, we need to account for the relative acceptability of LOGP in anti-self contexts, as shown in Figure 1. We speculate that this effect was not due to a failure in (the parsing of) MP, but rather as a consequence of the impact of participants' educational level. In fact, our results showed that a higher level of education was negatively related to the acceptance of LOGP in the anti-self contexts. We interpret this result as indicating that educational level could influence participants' judgments potentially making them more attuned to the complexity of the contexts presented. Consistent with previous literature, we propose that higher educational levels contribute to increased metalinguistic awareness, which may serve as a prerequisite for accurately interpreting linguistic contexts and assign linguistic judgments (Bialystok and Ryan 1985; Schütze 2016).

Second, the expected ORDP preference in anti-self contexts was attested, but not as pronounced as that observed in self contexts for LOGP. Again, our results showed how these findings were related to educational levels and years of education of the participants, in that the more education the speakers received, the more they tended to accept the ordinary pronoun as the referent of the attitude predicate in anti-self contexts. Nonetheless, level of education cannot explain why there was a relatively lower acceptance rate for ORDP overall compared to LOGP. One possible explanation is that ORDP, being the anti-presupposed alternative to LOGP, is more challenging to process in a joint presentation design. The processing of the 3rd person pronoun arises indirectly through a two-step process: first, participants consider the uniqueness presupposition of LOGP, and then subsequently they negate it. This approach aligns closely with the experimental data by Schneider et al. (2019) for definite and indefinite determiners. Additionally, this trend may be attributable to the fact that attitude reports with ORDP in embedded subject position are generally less frequent in the input than those with LOGP.[4]

Moreover, our analysis revealed a marginal effect related to attitude verbs in the context of LOGP: sentences with speech verbs (*say*) exhibited a clearer pattern than those with thought

[3]That is, it denotes the identity function.

[4]Abigail Anne Bimpeh and Anastasia Nuworsu, p.c.

verbs (*think*). While these results should be interpreted with caution due to the marginality of the statistical effects, it is still important to consider possible explanations for this pattern. We try to account for this finding on the basis of one (or a combination) of these two hypothesis: (i) Culy's (1994) hierarchy of attitude verbs, (ii) the diachronic nature of the complementizer in Ewe. Regarding (i) Culy suggests a hierarchy among attitude verbs based on the frequency of verbs allowing logophoric marking across languages, where speech verbs are most frequent, and perception verbs are the least frequent (speech > thought > knowledge > direct perception) (see also Bimpeh 2023 for a revised hierarchy of logophoric predicates in Ewe). This hierarchy reflects the perceived reliability of information, with speech verbs considered more objective and factual than thought or perception verbs (see also Koopman and Sportiche 1989 on this point). Speech can be heard or seen, while thought (of others) can only be inferred indirectly. Our data appears to support this hypothesis, indicating that information conveyed by *say* verbs is viewed as more objective and factual, making it easier to judge for our participants.

Concerning (ii), attitude verbs like *say* and *think* make use of the logophoric complementizer *be* in Ewe, which retains the semantic properties of *say* – even though it is often used (and generally glossed) as COMP, as shown in (4) (see Clements 1975; Lord 1993; Bimpeh 2023 on the diachronic interpretation of *be* in Ewe). In other words, *be* serves double duty: as a complementizer and as an element that still carries the force of the verb *say*.[5] This results in a reduplication of meaning in the *say* construction (*gblɔ* + *be* = 'say' + 'say'), unlike what we find in the *think* construction (*súsú* + *be* = 'think' + 'say'). We speculate that this makes the *say* construction in Ewe more transparent, and therefore easier to judge.[6]

Finally, no dialectal variations (Northern vs. Southern dialects of Ewe in Ghana's Volta region) were observed in our dataset, suggesting that Pearson's (2015) report of ORDP possibly referring to the attitude holder might be explained by the dialectal variety of Ewe spoken in Togo, which may not necessarily extend to the varieties of Ewe spoken in Ghana.

5 Conclusion

This study sheds light on the interpretation of logophoric and ordinary pronouns in Ewe, providing empirical support for theoretical claims about their reference patterns. Logophoric pronouns are strongly associated with the attitude holder in self contexts, while ordinary pronouns are dispreferred in these scenarios, consistent with predictions from the principle of Maximize Presupposition. The observed effects of educational background underscore the role of metalinguistic awareness in shaping linguistic judgments. Our findings also suggests a processing challenge associated with with anti-presuppositions triggered by ordinary pronouns. These insights contribute to a deeper understanding of pronoun interpretation in Ewe and its broader implications for the theoretical discussions about *de se* – and *de re* readings – in 'mistaken identity' scenarios.

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[5]Notice that *be* can serve as the main verb in *say* in sentences like (1a), in which case Clements (1975) argues that *gblɔ* is deleted by an optional rule.

[6]This aligns with findings from the acquisition literature showing that children often struggle to understand sentences with *think* well into their fourth year, while they acquire *say* verbs early on (De Villiers and Pyers 2002; Papafragou, Cassidy, and Gleitman 2007, a.m.o.).

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