GRAMMAR CONSTRAINS THE WAY WE TALK TO OURSELVES

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1.   Two types of self-talk

As Holmberg (2010) observes, when people talk to themselves, they can do so either with the use of *you* or *I*, as illustrated in (1).

(1)   Context: Martina is talking to herself
    a.   You are an idiot.
    b.   I am an idiot.

In this paper, we use the terms you-*centered self-talk* and I-*centered self-talk* to distinguish between these two types of self-talk. In addition, we use the term *typical conversation* to refer to a conversation between two distinct interlocutors.

We have two goals, one is empirical and the other theoretical. The empirical goal is to document some differences among *I*-centered self-talk, *you*-centered self-talk and typical conversations. The theoretical goal is to develop a syntactic analysis that accounts for the observed differences assuming the Interactional Spine Hypothesis (Wiltschko 2021). Specifically, we propose that *I*-centered self-talk is thinking out loud; hence there is no addressee. In contrast, *you*-centered self-talk is in essence having a conversation with oneself. That is, the person who is talking to themselves is simultaneously the speaker and the addressee. But unlike a typical conversation, *you*-centered self-talk does not involve turn-taking between the speaker and the addressee. We further propose that these qualitative differences are structurally represented: *I*-centered self-talk only has a position for the speaker, as in (2)a; *you*-centered self-talk has positions for both the speaker and the addressee, as in (2)b; and finally, a typical conversation includes an additional layer of structure which regulates turn-taking (X), as in (2)c.

(2)   a.   [Spkr [$_{CP}$…]]]   *I*-centered self-talk
       b.   [Adr [Spkr [$_{CP}$…]]]   *you*-centered self-talk
       c.   [X   [Adr [Spkr [$_{CP}$…]]]]   typical conversation

This paper is organized as follows: in section 2, we introduce the empirical differences between *I*-centered and *you*-centered self-talk. In section 3, we introduce our proposal regarding the syntactic representation of the speaker and addressee. In section 4, we develop an analysis that accounts for the empirical differences identified in section 2 using the structures introduced in section 3. In section 5, we extend the analysis to account for the differences between self-talk and conversations with others. Finally, in section 6, we conclude.

2. Empirical differences between the two types of self-talk

In this section we describe four empirical differences between *you*-centered and *I*-centered self-talk. To demonstrate these contrasts, we proceed as follows. We start by illustrating each phenomenon based on a typical conversation between two distinct interlocutors. We then show that in each case *you*-centered self-talk differs from *I*-centered self-talk. In three of the cases we discuss, *I*-centered self-talk is more restricted than *you*-centered self-talk. In the fourth case, it is *you*-centered self-talk which is more restricted. Interestingly, the same restriction also applies to a typical conversation, a fact that we address in section 5.

The first phenomenon we consider is the use of a vocative nominal. Vocatives are licit in *you*-centered self-talk but cannot occur in *I*-centered self-talk. Consider first the examples in (3) where Betsy is talking to Martina. Here the use of the vocative is well-formed, regardless of whether Betsy is talking about Martina (using the 2nd person pronoun) or about herself (using the 1st person pronoun).

(3)   Betsy to Martina:
    a.   **Martina**, **you**'re an idiot.
    b.   **Martina**, **I**'m an idiot.

Now consider what happens when Martina is talking to herself. In this case referring to herself with a 2nd person pronoun is possible in the presence of a vocative, as in (4)a. However, referring to herself with a 1st person pronoun is not possible in the presence of a vocative, as in (4)b.

(4)   Martina to herself:
    a.   **Martina**, **you**'re an idiot.
    b.   *__Martina__, **I**'m an idiot.

The contrast illustrated in (4) poses a non-trivial problem: in both examples, Martina is talking to herself. Hence, it cannot be the case that vocatives are simply ruled out in self-talk. Something else has to be responsible for the contrast in (4) and we argue below that it is the presence or absence of an explicitly represented addressee.

The second phenomenon that we attribute to the presence or absence of an explicit addressee concerns imperatives: like vocatives, they cannot be used in *I*-centered self-talk. Consider first the examples in (5). Imperatives always have a 2nd person subject, which is typically silent. The fact that the subject is necessarily 2nd person has consequences for the binding of direct objects. Specifically, when the direct object refers to the addressee, it is bound by the 2nd person subject and hence must be a reflexive pronoun, as in (5). In contrast, when the direct object refers to the speaker, it is not bound by the subject and hence must be a (non-reflexive) personal pronoun, as in 0.

(5)   Betsy to Martina:
    a. You_i/*pro*$_i$ stop putting **yourself**$_i$ down!
    b.   *You_i/*pro*$_i$ stop putting **you**$_i$ down!

(6) Betsy to Martina:
   a. *You$_i$/*pro*$_i$ stop putting **myself$_k$** down!
   b.   You$_i$/*pro*$_i$ stop putting **me$_k$** down!

Now consider what happens in self-talk. In this case only the 2nd person reflexive is licit, as in (7)a. As in regular imperatives, the non-reflexive 2nd person pronoun is ungrammatical, as in (7)b, suggesting that there is a 2nd person *pro* in subject position. In contrast to regular imperatives however, in self-talk a 1st person pronoun is ungrammatical, no matter whether it is realized as a reflexive or a (non-reflexive) personal pronoun, as in (7)c/d.

(7) Martina to herself:
   a.   You$_i$/*pro*$_i$ stop putting **yourself$_i$** down!
   b. *You$_i$/*pro*$_i$ stop putting **you$_i$** down!
   c. *You$_i$/*pro*$_i$ stop putting **myself$_i$** down!
   d. *You$_i$/*pro*$_i$ stop putting **me$_i$** down!

Note that the requirement for a 2nd person subject in an imperative makes it impossible to replace *you* with *I,* as shown in (8).

(8) Martina to herself:
   a. *I/*pro*$_i$ stop putting **myself$_i$** down!
   b. *I/*pro*$_i$ stop putting **me$_i$** down!

Taken together, these facts demonstrate that imperatives are impossible in *I*-centered self-talk: the recipient of a command cannot be realized as a 1st person reflexive or personal pronoun. Again, this is a non-trivial problem because in both types of self-talk one is giving a command to oneself. The observed restrictions follow straightforwardly from the assumption that *I*-centered self-talk lacks an explicitly represented addressee. The evidence suggests that an addressee is obligatory in the context of imperatives.

The third difference between the two types of self-talk concerns confirmationals, i.e., sentence final particles that are used to request confirmation from the addressee. We focus on the particle *huh*, which is used to request confirmation that the addressee has a certain belief. As shown in (9), in typical conversations, *huh* can be used by the speaker to request confirmation for their assumption that the addressee holds the belief expressed by the proposition. In (9)a, the belief to be confirmed is that the addressee should read *Moby Dick* and in (9)b the belief to be confirmed is that the speaker should read it. In both cases the speaker wants confirmation that the addressee believes the proposition to be true.

(9) Betsy to Martina:
   a. **You** should read *Moby Dick*, **huh**?
   b. **I** should read *Moby Dick*, **huh**?

Now consider what happens in self-talk. As illustrated in (10), the confirmational particle *huh* is possible in *you*-centered self-talk, but not in *I*-centered self-talk. In other words, one cannot use *I*-centered self-talk to ask for confirmation.

(10) Martina to herself:
     a.   **You** should read *Moby Dick*, **huh**?
     b.   ***I** should read *Moby Dick*, **huh**?

The impossibility of an addressee-oriented confirmational like *huh* in *I*-centered self-talk is a third non-trivial problem. While *I* cannot function as the recipient of the request for confirmation, *you* can, regardless of whether its referent is self or other. In self-talk one is always requesting confirmation from oneself. So why does it make a difference whether one uses a 1st or 2nd person pronoun? Again, we argue that this follows from the presence or absence of a dedicated addressee position.

Finally, we discuss a restriction on *you*-centered self-talk which involves verbs of cognition. This restriction was originally observed by Holmberg (2010) and is illustrated in (11).

(11) a.   *You can't believe your luck.
     b.   I can't believe my luck.

<div align="right">(Holmberg 2010: 59)</div>

According to Holmberg (2010: 60), the contrast in (11) indicates that "*you* can't refer to the self as an experiencer of feelings or holder of intentions or plans, either. Generalising, *you* can't refer to the self in assertions about the self's state of mind, including thoughts, feelings, and intentions; only *I* can." Significantly, this restriction also holds in typical conversations and hence, it is another case where *I*-centered self-talk differs from both *you*-centered self-talk and typical conversations. Observe that (11)a would be equally infelicitous in a typical conversation and that (11)b would be equally acceptable in this context. Unlike the three properties discussed above, however, (11) illustrates a restriction on *you*-centered self-talk (and typical conversations), rather than *I*-centered self-talk. Once again, the fact that there is a difference between *you*-centered and *I*-centered self-talk is non-trivial. This is because regardless of whether an individual uses *you*-centered or *I*-centered self-talk, they will have access to their own cognitive state. Why then should it matter whether they refer to themselves with a 1st or 2nd person pronoun? We argue below that this follows from the content of the addressee role. And since this addressee role is not represented in *I*-centered self-talk, the latter is exempt from this restriction.

We have now seen four differences between *I*-centered self-talk, on the one hand, and *you*-centered self-talk and typical conversations, on the other hand. These differences are summarized in **Table 1**.

Table 1. Empirical differences among modes of talking

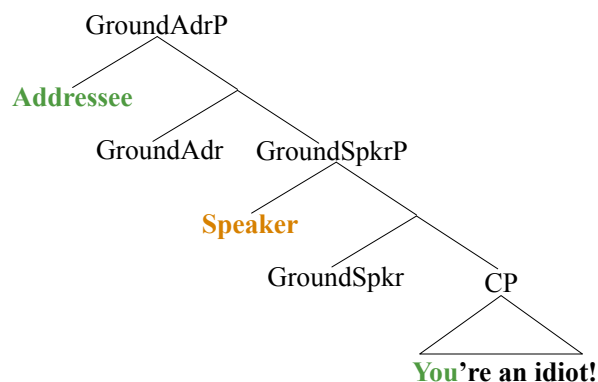|	*I*-centered self-talk	*You*-centered self talk	Typical conversation
Vocatives	✗	✓	✓
Imperatives	✗	✓	✓
huh	✗	✓	✓
Verbs of cognition	✓	✗	✗

In the remainder of this paper, we develop a a structural analysis which accounts for these facts.

## 3.   The two types of self-talk are structurally distinct

The essence of our proposal is that the addressee is present in the syntactic representation of *you*-centered self-talk but not *I*-centered self-talk. The assumption that the speaker and addressee are syntactically represented was first proposed by Ross (1970) and has been modified in different ways over the last few decades (Etxepare 1997, Speas & Tenny 2003, Haegeman & Hill 2013, Wiltschko & Heim 2016, Wiltschko 2021, *inter alia*). In this paper, we adopt Wiltschko & Heim's (2016) version, according to which addressee and speaker are analysed as specifiers of categories that they call Ground$_{Adr}$P and Ground$_{Spkr}$P, respectively (see also Wiltschko 2021). The label GroundP draws on Stalnaker's (1978, 2002) *common ground*, which refers to assumptions that the speaker and addressee share. It is also inspired by Clark and Schaefer's (1989) notion of *grounding*, which refers to the process whereby the speaker and addressee jointly establish a common ground. For Wiltschko and Heim (2016), Ground$_{Spkr}$P represents what the speaker believes and Ground$_{Adr}$P represents the speaker's assumptions about what the addressee believes. Thus, for these authors, common ground and grounding are only indirectly represented in the syntax.

Turning now to the representation of the two types of self-talk, we propose that *you*-centered self-talk has a complete grounding layer, as shown in (12)a. In other words, it contains the same grounding layer as an utterance in a typical conversation. In contrast, *I*-centered self-talk lacks the addressee-oriented GroundP and is thus structurally deficient, as shown in (12)b.

(12) a.   *you*-centered self-talk   b.   *I*-centered self-talk
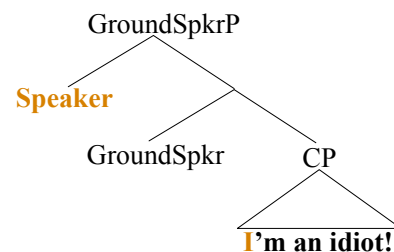
This proposal is intended to capture our intuition that *you*-centered self-talk is akin to a typical conversation whereas *I*-centered self-talk lacks this interactive aspect and is essentially thinking out loud.

There are two aspects of Wiltschko & Heim's (2016) syntactic representation of speaker and addressee that differ from other proposals in the literature. Our analysis of self-talk makes crucial use of these distinctive aspects of their proposal, and inasmuch as it is on the right track, it provides novel evidence for Wiltschko & Heim's (2016) interactional structure.

The first difference has to do with the hierarchical order of the participants. As shown in (12)a, following Wiltschko & Heim (2016), we assume that the addressee is higher than the speaker while in the proposals of Ross (1970), Speas and Tenny (2003), and others the speaker is higher than the addressee.[1] The second difference has to do with the category that the speaker and addressee roles are embedded in. While most other approaches take this structure to be a representation of the speech act (e.g., Speas & Tenny 2003), Wiltschko & Heim (2016) propose that it is a representation of the speaker's mental world and the speaker's beliefs about the addressee's mental world.

Both differences play an important role in our proposal regarding the structure of the two types of self-talk. Assuming that the addressee is higher than the speaker allows us to view *I*-centered self-talk as structurally deficient, as represented in (12)b: it lacks the topmost layer of the interactional structure. If the speaker were higher than the addressee, then it would be the lower projection which is missing. This would constitute a case of arbitrary truncation from the middle (Wurmbrand 2008, 2014). That is, there are several instances of phrases that lack categories at the root whereas truncation from the middle is arguably prohibited. Moreover, the assumption that the addressee in (12)a represents the speaker's assumptions about the addressee's set of beliefs will play an essential role in our analysis of the restriction on verbs of cognition.

4. Accounting for the empirical differences between the two types of self-talk

In this section, we present our analysis of the four empirical differences between the two types of self-talk described in section 2, using the proposal introduced in section 3.

4.1 The ban on vocatives in *I*-centered self-talk

Recall that vocatives are not possible in *I*-centered self-talk, as shown in (4), repeated from above.
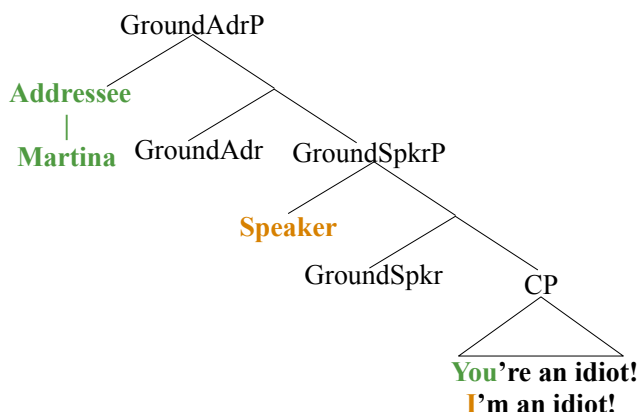
(4) Martina to herself:
    a.   **Martina**, **you** are an idiot.
   b.   *__Martina__, **I** am an idiot.

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[1] The first evidence that the addressee is higher than the speaker is due to Lam (2014) and is based on Cantonese sentence final particles. See Wiltschko (2021) for additional conceptual and empirical arguments in favor of this structure.

We adopt the analysis of vocatives in Ritter & Wiltschko (2020), according to which they occupy Spec,Ground$_{Adr}$P. This analysis captures the fact that vocative nominals name the addressee and serve various functions such as getting the addressee's attention or alerting the addressee that the content of the utterance is particularly relevant for them (Zwicky 1974). If vocatives are always in Spec,Ground$_{Adr}$P, this immediately predicts that they will only be possible in a structure that contains this position. It follows that vocatives may appear in *you*-centered self-talk but not in *I*-centered self-talk, as shown in (13).

(13) a. *you*-centered self-talk   b. *I*-centered self-talk
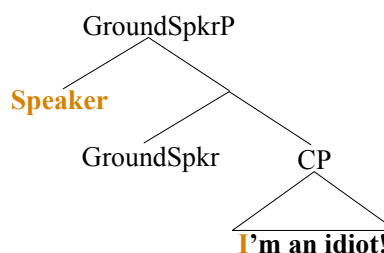
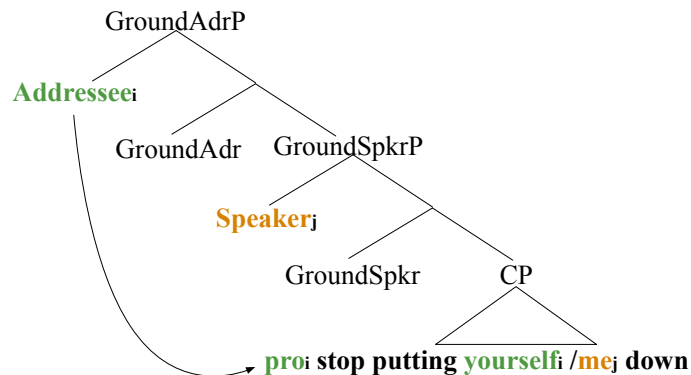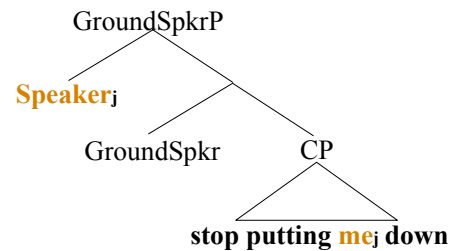## 4.2   The ban on imperatives in *I*-centered self-talk

We now turn to our account of the fact that imperatives are not possible in *I*-centered self-talk, as shown in (8), repeated from above.

(8)   Martina to herself:
   a.   *I/*pro*$_i$ stop putting **myself**$_i$ down!
   b.   *I/*pro*$_i$ stop putting **me**$_i$ down!

The impossibility of imperatives in *I*-centered self-talk cannot simply be due to the fact that one cannot give a command to oneself because imperatives are possible in *you*-centered self-talk. We suggest that the ungrammaticality of examples like (8) derives from the absence of Ground$_{Adr}$P in *I*-centered self-talk. In particular, we adopt the analysis of imperatives in Ritter (2018), according to which null subjects of imperatives must be coindexed with the addressee in Spec,Ground$_{Adr}$P. This analysis is intended to capture the fact that the subject of an imperative must be the addressee.

As with vocatives, we attribute the unavailability of imperatives in *I*-centered self-talk to the fact that there is no Spec,Ground$_{Adr}$P. In this case, the absence of this position means that there is no antecedent for the subject of the imperative.

(14) a. *you*-centered self-talk   b. *I-centered self-talk

GroundAdrP

Addresseeᵢ

GroundAdr GroundSpkrP

Speakerⱼ

GroundSpkr CP

proᵢ stop putting yourselfᵢ /meⱼ down

GroundSpkrP

Speakerⱼ

GroundSpkr CP

stop putting meⱼ down

4.3 The ban on addressee-oriented confirmationals in *I*-centered self-talk

Finally, recall that addressee-oriented confirmationals are not possible in *I*-centered self-talk, as shown in (10), repeated from above.

(10) Martina to herself:
    a. **You** should read *Moby Dick*, **huh**?
    b. ***I** should read *Moby Dick*, **huh**?

The impossibility of confirmationals like *huh* in *I*-centered self-talk cannot be due to a ban on requesting confirmation from oneself. We know this because *huh* is possible in *you*-centered self-talk. Once again we attribute the unavailability of material in *I*-centered self-talk to its structural deficiency: it lacks Ground$_{Adr}$P, which is the locus of the addressee-oriented confirmational (Wiltschko 2021). As Wiltschko shows, the speaker must have reason to believe that the utterance content is in the addressee's ground. This is compatible with the assumption that *huh* is in Ground$_{Adr}$P and not Ground$_{Spkr}$P.

This analysis predicts that in a typical conversation between two distinct interlocutors *huh* cannot be used if the speaker is certain that the proposition of the host sentence is true. This prediction is borne out, as shown in (15).

(15) Betsy to Martina:
    a. You had a bad dream last night, huh?
    b. I had a bad dream last night, (*huh?)

Given that an individual does not have direct access to the dreams of others, a speaker can use *huh* when asking for confirmation about the content of their addressee's dream but not about the content of their own dream. This accounts for the contrast in (15). Specifically, in (15)a, the speaker may have indirect evidence that the addressee had a bad dream (e.g., the addresse was tossing and turning all night) and is using *huh* to ask for confirmation of this belief. However, in (15)b, the speaker already has direct knowledge of their own dream
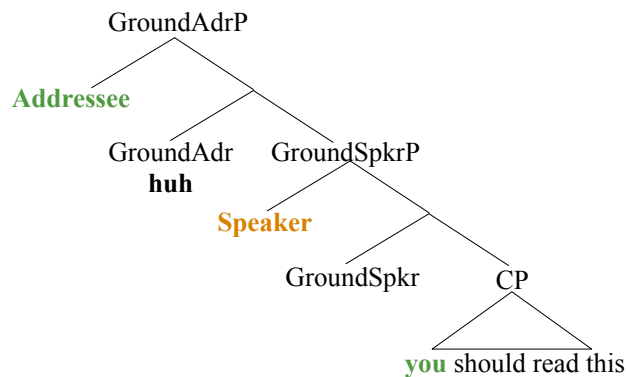
and hence, requesting confirmation with *huh* is ill-formed. All this suggests that *huh* is in Ground$_{Adr}$P.

We now turn to the question of whether *huh* is in the head of Ground$_{Adr}$P or in the specifier of this phrase. Wiltschko (2021) proposes that it is in the head position. Supporting evidence for this view comes from our analysis of vocatives. Specifically, if *huh* is in Spec,Ground$_{Adr}$P we predict that it will be in complementary distribution with vocatives, which also occupy this position. On the other hand, if *huh* is in the head of this phrase we predict that it can co-occur with a vocative. As shown in (16), *huh* can indeed co-occur with a vocative and hence we conclude that it occupies the head of Ground$_{Adr}$P. [2]

(16) Betsy to Martina:
    a.   **Martina**, you should read Moby Dick, **huh**?
    b.   **Martina**, you had a bad dream, **huh**?

As for the impossibility of addressee-oriented confirmationals in *I*-centered self-talk, this follows straightforwardly from our proposal that it is deficient in that it lacks Ground$_{Adr}$P. The contrast in the availability of *huh* in the two types of self-talk is schematized in (17).

(17) a.   *you*-centered self-talk   b.   *I*-centered self-talk

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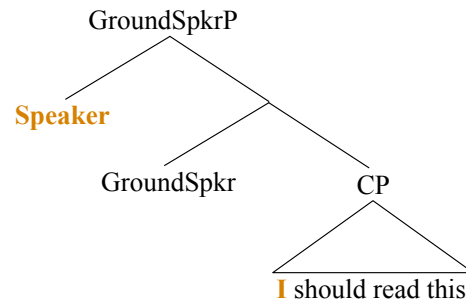
[2] Given the assumption that vocatives are in Spec,Ground$_{Adr}$P and *huh* is in the head of Ground$_{Adr}$P, we would expect the linear order to be as in i) and ii), contrary to fact.
    i)   *[$_{GroundAdrP}$ Martina huh … [$_{CP}$ you should read Moby Dick]]
    ii)   *[$_{GroundAdrP}$ Martina huh … [$_{CP}$ you had a bad dream]]
The data in (16) indicate, however, that the confirmational has to be utterance final. This would suggest that movement is required to derive the surface order. Reasonably, the propositional structure of the clause could move to the specifier position preceding *huh*. Haegeman (2014) has argued for precisely this analysis. However, this appears to be incompatible with our assumption that vocatives occupy this specifier position (Spec,Ground$_{Adr}$P). One possible solution would be to treat this as a case of *tucking in* in the sense of Richards (1997, 2001). Tucking in occurs when the potential landing site for movement is already occupied and as a consequence when the movement occurs, it is to a new position just below the unavailable site. Accordingly, the propositional structure would tuck in below the vocative. We leave the question as to whether an analysis along these lines is feasible to future research.

4.4   The ban on verbs of cognition in *you*-centered self-talk

Recall that verbs of cognition are impossible in *you*-centered self-talk, just as they are in typical conversations. This was illustrated with the data in (11), repeated below for convenience.

(11) a.   *You can't believe your luck.
      b.   I can't believe my luck.

(Holmberg 2010: 59)

Holmberg (2010:60) asserts that: "*you* can't refer to the self as holder of thoughts or beliefs, in self-talk…[because it is] a mindless self," and this is what he takes to underlie the contrast in (11). We agree that *you* cannot refer to the self as a holder of thoughts or beliefs, but not because it is a mindless self. Rather, the use of *you* signals the presence of an addressee whose mind is not accessible to the speaker. Thus, (11)a is ill-formed regardless of whether it is uttered in self-talk or in a typical conversation.

This alternative account is consistent with our view that Ground$_{Adr}$ is not a direct representation of the addressee's knowledge state (their ground) but is instead a representation of the speaker's assumptions about the addressee's knowledge state. This accounts for the fact that, unlike the constraints on *I*-centered self-talk, the constraint illustrated in (11) is not restricted to *you*-centered self-talk but is a general constraint on interactions between speaker and addressee. Thus, the use of *you* signals the presence of an inaccessible mind, irrespective of who that mind belongs to. In other words, both in *you*-centered self-talk and in a typical conversation, the speaker treats the addressee as an inaccessible mind and not as a mindless individual.

Holmberg (2010) further observes that it is possible to use *I* and *you* in the same sentence, even in self-talk, though the restriction just discussed equally applies to sentences of this type, as shown in (18) and (19).

(18) a.   **I** know you can do it.
      b.   ***You** know I can do it.

adapted from Holmberg (2010: 59f. (9), (13))

(19) a.   You're driving **me** mad.
      b.   *I'm driving **you** mad.

Holmberg (2010: 60 (15))

When these examples are instances of self-talk, we analyse them as *you*-centered self-talk, despite the presence of *I* (i.e., they contain Ground$_{Adr}$P). Like the examples in (11), they are subject to the restriction that the speaker does not have access to the addressee's mind. Thus, the subject of the verb of cognition must be *I* in (18) and similarly the object of the complex experiencer predicate must be *me* in (19). What this means is that, unlike the constraints on *I*-centered self-talk, the constraint on verbs of cognition and experience

is not structurally conditioned but rather derives from pragmatic restrictions on the use of these verbs. This correctly predicts that their well-formedness is highly sensitive to context. For example, (11)a is only ill-formed when it is presented as an assertion in the classic sense: that is, when the speaker knows the proposition, but the addressee does not. In contexts where (11)a is presented as something that the speaker infers from the addressee's behaviour or from hearsay, the use of (11)a improves, as shown in (20).

(20) a.   It looks like…
     b.   You are acting like…
     c.   It seems to me like…
     d.   I heard that…
           …you can't believe your luck.

This shows that the speaker can gain evidence from observation and communication about the addressee's mental state but cannot experience it directly. We hypothesize that the restrictions in (11) are grammatical reflexes of the impossibility for the speaker to access the addressee's mind. Specifically, speaker and addressee are distinct interactional roles that are represented as necessarily disjoint in reference.[3]

5.   Differences between self-talk and conversations with others

The goal of this paper is to describe differences between *I*-centered, *you*-centered self-talk, and typical conversations and to provide an analysis for these differences. Above, we proposed that the two modes of self-talk differ in that *I*-centered self-talk is thinking out loud whereas *you*-centered self-talk is a conversation with oneself. This difference, we argued, is structurally conditioned in that only in *you*-centered self-talk contains a syntactic position for the addressee (Spec,Ground$_{Adr}$P). In this section, we introduce a difference between self-talk and typical conversations and show that this difference is also structurally represented. In addition, we discuss methodological implications of our findings.

5.1   You-centered self-talk differs from conversations with others

If *you*-centered self-talk is indeed a conversation with oneself rather than simply thinking out loud, the question arises as to whether there are any differences between a conversation with oneself and a typical conversation with another individual. Here we show that there is at least one difference, and that this difference has to do with the use of rising intonation. More specifically, as shown in (21), in a typical conversation, wh-questions can be realized with either falling (↘) or rising (↗) intonation (Bolinger 1989, Bartels 1999).

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[3] This raises the question as to whether there is independent evidence for this disjointness condition. Significantly, there appears to be no language where self-talk is grammatically marked as such. In other words, there is no marker indicating that the speaker and addressee are identical. This suggests that there is no equivalent of reflexivization in the interactional domain. This is precisely what we would expect given the disjointness condition.

(21) Betsy to Martina:
    a.   What are you doing ↗
    b.   What are you doing ↘

Crucially, *you*-centered self-talk differs in this respect, as shown in (22): only falling intonation is possible when talking to oneself.

(22) Martina to herself:
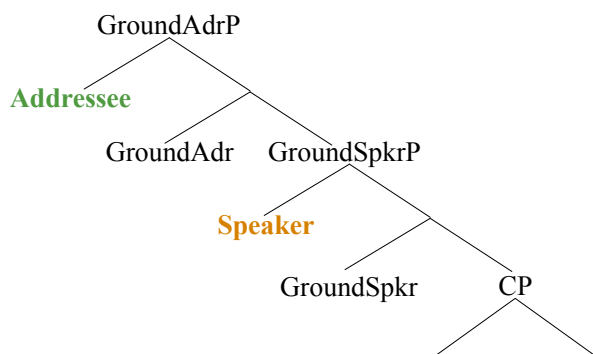   a.   *What are you doing ↗
    b.   What are you doing ↘

Even in typical conversations, rising intonation is less common than falling intonation on wh-questions (Hedberg et al. 2010). This is because wh-questions assert their presupposition, and assertion is the primary meaning of falling intonation (Bartels 1999).
    Following Wiltschko & Heim (2016), we assume that a rising intonational tune signals a request for a response by the addressee. As such, it occupies the head of Resp(onse)P, the highest category in the interactional structure. The function of RespP is to regulate turn-taking: its presence indicates that the utterance is used either to ask for a response or to provide one. Falling intonation, in contrast, is the default and hence, is not interpreted as a meaningful intonational tune. This is because it arises naturally due to the fact that during an utterance, pitch declines automatically with the decrease in subglottal air pressure (Cohen & Collier 1982). As such, it is compatible with the absence of RespP.
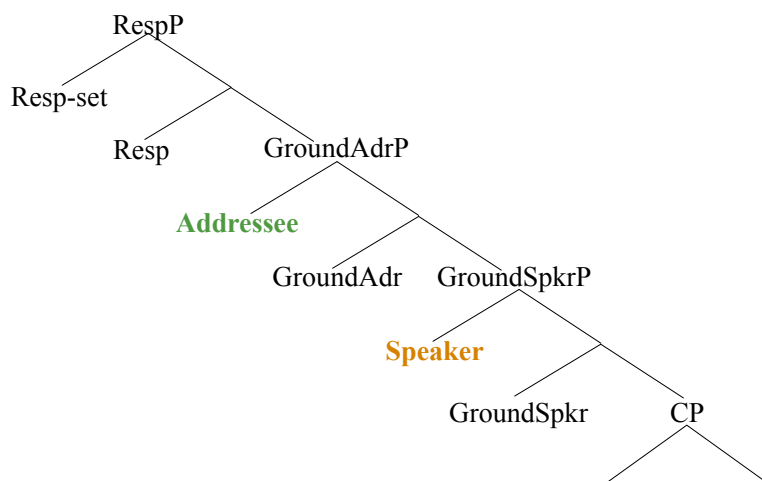   The impossibility of rising intonation in *you*-centered self-talk indicates that there is no turn-taking and hence no RespP. Thus, while in typical conversations, the addressee is an active participant, in *you*-centered self-talk they are not. In other words, in a typical conversation, the addressee is someone from whom the speaker can request a response and to whom they can offer a response. In contrast, in *you*-centered self-talk the addressee is not an active participant in the conversation. The speaker does not request or offer a response to themselves. This analysis is consistent with Holmberg's (2010: 57) observation that self-talk is always "one-way communication".
    What we are proposing is that *you*-centered self-talk is structurally deficient in that it always lacks RespP, which is available in typical conversations. And it is this structural deficiency which is responsible for the constraint on *you*-centered self-talk that was illustrated in (22). The two contrasting structures are schematized in (23).

(23) a.   you-centered self-talk

              GroundAdrP

 Addressee

          GroundAdr   GroundSpkrP

              Speaker

             GroundSpkr   CP

b.   typical conversation

```
                    RespP
                   /     \
            Resp-set       \
                  \         \
                  Resp    GroundAdrP
                         /          \
                  Addressee          \
                          \           \
                       GroundAdr   GroundSpkrP
                                  /           \
                           Speaker             \
                                  \             \
                               GroundSpkr       CP
                                                /\
                                               /__\
```

We thus conclude that there is a three-way contrast between *I*-centered self-talk, *you*-centered self-talk, and typical conversations. In the next subsection, we explore methodological implications of this finding.

5.2   Methodological implications

In this paper, we have argued that *I*-centered self-talk, *you*-centered self-talk, and typical conversations are structurally distinct: only typical conversations may contain all interactional categories (RespP, Ground$_{Adr}$P, and Ground$_{Spkr}$P), *you*-centered self-talk lacks RespP, and *I*-centered self-talk lacks both RespP and Ground$_{Adr}$P. These differences are summarized in Table 2.

Table 2. Differences among three modes of talking

	I-centered self-talk	*You*-centered self-talk	Typical conversation
Ground$_{Spkr}$P	✓	✓	✓
Ground$_{Adr}$P	✗	✓	✓
RespP	✗	✗	✓

These differences can be used to probe the category of interactional units of language, such as discourse particles and intonation. We have already seen that the addressee-oriented confirmational *huh* is disallowed in *I*-centered self-talk and that rising intonation is barred from all forms of self-talk. What this suggests is that restrictions on the distribution of different discourse particles and intonational tunes in self-talk can be used as a diagnostic for the presence or absence of a particular interactional category. In other words, the variation in the three modes of talking can inform our theories of grammar, much like data from acquisition and cross-linguistic variation.

6.   Conclusion

We conclude by summarizing the main points of our paper, highlighting the significance of our findings, and identifying avenues for future research. In this paper we explored two types of self-talk that were first discussed by Holmberg (2010) and which we called *I*-centered and *you*-centered self-talk. Our goals were to document and analyse differences between these modes of talking as well as to identify ways that both types of self-talk differ from typical conversations.

    We observed that *I*-centered self-talk is the most constrained mode of talking. Specifically, it does not allow for the use of vocatives, imperatives, or addressee-oriented confirmationals. We have argued that these properties derive from the fact that *I*-centered self-talk has a minimal interactional structure: there is only a speaker-oriented grounding category (Ground$_{Spkr}$P). This constitutes the smallest possible interactional structure. This analysis captures our insight that *I*-centered self-talk is essentially a form of thinking out loud.

    As for *you*-centered self-talk, it is compatible with vocatives, imperatives, and addressee-oriented confirmationals. Hence, we argued that its structural representation includes both a speaker- and an addressee-oriented grounding category (Ground$_{Spkr}$P and Ground$_{Adr}$P). Ground$_{Adr}$P hosts the elements that give rise to the observed contrast between *I*-centered and *you*-centered self-talk, namely vocatives, the antecedent for subjects of imperatives, and addressee-oriented confirmationals. The hypothesis that *you*-centered self-talk contains Ground$_{Adr}$P captures our insight that *you*-centered self-talk is not thinking out loud, but rather a conversation with oneself. Just as in a typical conversation, *you*-centered self-talk does not allow the addressee to be represented as a propositional attitude-holder or an experiencer. This follows from the fact that the speaker cannot directly access the content of the addressee's mind. The constraint on propositional attitude-holders indicates that Ground$_{Adr}$P constitutes the speaker's representation of the addressee's mental state and not the addressee's mental state itself. Grammar reflects this even when in the real world the speaker and the addressee are the same person, as in *you*-centered self-talk.

    However, *you*-centered self-talk differs from typical conversations in at least one way: rising intonation is not possible in *you*-centered self-talk. This is because it is a one-way communication. Structurally, this is reflected in the absence of RespP, the category responsible for regulating turn-taking between the interlocutors.

    The analysis of self-talk developed here offers novel evidence for the interactional structure and the particular hierarchical organization proposed in Wiltschko & Heim (2016) where the addressee-oriented category is structurally higher than the speaker-oriented one and there is additionally a category responsible for the regulation of turn-taking. As such, self-talk serves as a new methodological tool for probing interactional structure.

    There are several issues that remain to be explored in future research. First, as Holmberg (2010) observes, there appears to be significant inter-speaker variation in the use of the different modes of self-talk. What needs to be determined is the range of variation and its origins. More specifically, are there any grammatical considerations that enter into the choice between *I*-centered and *you*-centered self-talk?

Second, it appears that some examples of self-talk that are infelicitous are in fact reminiscent of language used by people diagnosed with schizophrenia (see Garret and Silva 2003 for examples). This raises the question as to what determines whether Ground$_{Adr}$P represents an addressee that is the same individual as the speaker or someone else. In the self-talk of typical developing (TD) individuals, a speaker is aware that they are engaging in self-talk, but is this awareness structurally represented and if so, how? We speculate that it is structurally represented by the presence or absence of a RespP because this is the category that introduces turn-taking roles (initiator and responder). By hypothesis, turn-taking requires two separate individuals. Consequently, RespP is impossible in the self-talk of TD individuals. Whether this hypothesis is on the right track has yet to be determined.

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