Chapter 4

Epistemic comparatives and other expressions of speaker's uncertainty

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Our study endeavors to further our understanding of the ways the speaker's perspective is expressed in natural language. We analyze a rarely discussed construction, namely epistemic comparatives and their interaction with inferential indirect evidentials and epistemic modals. We show that epistemic comparatives are incompatible with inferential indirect evidentials, but are well-formed with epistemic modals. We base our discussion on data from Bulgarian and we also show that similar facts hold in Romanian, thus strengthening the empirical coverage. On the theoretical side, we claim that inferential indirect evidentials are structurally distinguished from epistemic modals. This accounts for their different behavior with epistemic comparatives, thus providing further support to accounts which take indirect evidentials and epistemic modals to be separate categories.

Keywords: epistemic comparatives, indirect evidentials, epistemic modals, inferentials, Bulgarian, Romanian

1 Introduction

Recent research on epistemic modality has brought to the fore a previously neglected construction, namely EPISTEMIC COMPARATIVES (hereafter ECs; von Fintel & Kratzer 2014; Herburger & Rubinstein 2014). We illustrate this phenomenon with the example in (1) from Bulgarian. In this sentence, the speaker conveys that she believes the state of affairs where Ivan is in the office to be more plausible than the state of affairs where Ivan is at home.

(1) Ivan po-skoro   e v ofisa otkolkoto vkušti.
     Ivan more-soon is in office than   home
     'According to the speaker, it is more plausible that Ivan is at work than at
     home.'   (Bulgarian)

We contribute to the rising interest in ECs by examining some previously un-
reported properties of these constructions. Starting from Bulgarian, we address
an interesting puzzle raised by the interaction of ECs with other expressions
of speaker's uncertainty. This puzzle concerns the difference between epistemic
modals and grammaticalized evidentials. ECs are not possible with inferential
grammaticalized evidentials, while they are well-formed with epistemic modals.
The sentence in (2) contains a present perfect, which in Bulgarian obtains an IN-
DIRECT EVIDENTIAL (IE) interpretation. The curious observation is that the EC is
not well-formed under the inferential reading of the indirect evidential.

(2) ?? Ivan bil   po-skoro   v offisa otkolkoto vkušti.
      Ivan be.PST.PTCP more-soon in office than   home
      Intended: 'Apparently, it is more plausible that Ivan is in the office than
      at home.'   (Bulgarian)

However, ECs seem to be possible with epistemic modals, as seen below:

(3) Ivan po-skoro   moje da e v ofisa otkolkoto vkušti.
     Ivan more-soon can   DA is in office than   home
     'It is more plausible that Ivan might be at work than at home.' (Bulgarian)

These facts are not restricted to Bulgarian. We show that similar patterns obtain
in yet another language that has ECs and grammaticalized evidentiality, namely
Romanian. Parallel observations from outside the Slavic family make available
a clearer perspective into the nature of ECs and evidentiality, highlighting the
cross-linguistic uniformity of these phenomena. We provide a comprehensive
analysis for both Bulgarian and Romanian.

   More precisely, we propose to explain the puzzle by arguing that the ill-formed-
ness of ECs with grammaticalized evidentials boils down to competition for the
same position. We build on a decompositional account of ECs (Herburger & Ru-
binstein 2014) and an analysis of the Assert operator as a degree relation (Green-
berg & Wolf 2018). We show that our proposal makes a number of correct predic-
tions, including the difference between inferential and hearsay evidentials when
combined with ECs.

   The paper is organized as follows: §2 provides some background on ECs and
evidentiality. §3 presents the core observation. §4 spells out our analysis of the

facts described in §3. §5 contains some concluding remarks and avenues for future research.

2 Background on epistemic comparatives

ECs compare two propositions with respect to the probabilities assigned (usually) by the speaker.[1,2] As we already mentioned, in the Bulgarian example in (1), the speaker communicates that she believes (or is committed to act as if she believes) the state of affairs where Ivan is in the office to be more plausible than the state of affairs where Ivan is at home.

One of the defining properties of ECs is that they employ a comparative form of a temporal adverb. A fuller definition of ECs should be in terms of their meaning and distribution. For reasons of space, we only mention this salient characteristic here and refer the readers to the works on ECs mentioned in this paper. (4) illustrates the Bulgarian *(po-)skoro* with its usual temporal meaning.[3]

(4) Toj dojde po-skoro   otkolkoto očakvah.
     he   came more-soon than   expected.1SG
     'He came sooner than I expected.'   (Bulgarian)

ECs have not been thoroughly investigated. There are four studies we are aware of: von Fintel & Kratzer (2014); Herburger & Rubinstein (2014); Goncharov (2014); Goncharov & Irimia (2018). von Fintel & Kratzer (2014) look at the properties of

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[1]Propositional comparatives can, in fact, be classified into three types: (i) metalinguistic comparatives, expressing appropriateness (Bresnan 1973; McCawley 1988; Embick 2007; Morzycki 2011; a.o.), (ii) preference comparatives, ranking choices (Giannakidou & Stavrou 2009; Giannakidou & Yoon 2011), and (iii) epistemic comparatives, ordering speaker's probabilities (von Fintel & Kratzer 2014; Herburger & Rubinstein 2014). There is no consensus in the literature on whether these three types of comparatives should be treated uniformly or not (see Morzycki 2011 for discussion). We stay away from this debate here, as we focus on ECs.

   (i)   a. She is more fit than slender.   (metalinguistic)
          b. I would rather die than marry him.   (preference)

[2]Relativization to the speaker is true only of unembedded ECs. When ECs are embedded under an attitude predicate, they are relativized to the attitude holder and when ECs occur in a question, they are relativized to the hearer, see Herburger & Rubinstein (2014: 562).

[3]How modal uses of temporal adverbs like *skoro* relate to their temporal uses is an important question. Although we do not address this issue here, we believe the diachronic account of the development of modal uses of adverbs like *skoro* (and *rather*) from their temporal uses presented in Gergel (2016) is on the right track.

ECs in German without attempting a formal analysis. Goncharov (2014) describes ECs in Russian. Herburger & Rubinstein (2014) use ECs to argue that possibility modals in German are not gradable. We believe the analysis proposed by Herburger & Rubinstein (2014) is on the right track. We modify it slightly in §4 to align it better with our assumptions. Goncharov & Irimia (2018) discuss the cross-linguistic variation of ECs, and provide an account for it.

In the next section we introduce the puzzle that is the focus of the present paper. The facts are based on novel data related to ECs in Bulgarian. We also show that similar facts obtain in Romanian. Although not a Slavic language, Romanian proves very useful for deepening our understanding of the Bulgarian facts and for making cross-linguistic generalizations. Romanian has ECs, as seen in (5a). Similarly to Bulgarian, this sentence is constructed with an adverb (*mai degrabă* 'more soon'), which also has a temporal meaning, illustrated in (5b).[4]

(5) a. Ion este mai degrabă   la birou decât acasă.
       Ion is   more ADV.early at office than home
       'According to the speaker, it is more plausible that Ion is in the office than at home.'

     b. Trebuie să   vii   mai degrabă.
        need   SBJV come.2SG more ADV.early
        'You need to come sooner.'   (Romanian)

Importantly, Romanian is part of the Balkan Sprachbund, just like Bulgarian. Thus, it exhibits several features that are characteristic to this geographical area, among which: (i) presence of suffixed definiteness; (ii) lack of sequence-of-tense phenomena; (iii) an analytic future constructed from the auxiliary *want* (see especially Tomić 2006a). Another feature that Bulgarian and Romanian share, which is most important for us here, is the existence of grammaticalized evidentiality. Looking at two languages – Bulgarian (Slavic) and Romanian (Romance) – in a typological contact situation can give us relevant hints into the nature of the phenomena discussed in this paper. In the next section we show that ECs are

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[4]ECs built from temporal adverbs can be absent in certain languages, for example present day English, as seen in (i). ECs with temporal adverbs existed in Middle/Early Modern English, as discussed in Gergel (2016). ECs formed as 'it is more likely to … than' arguably have similar meaning, but for the purposes of this paper we take them to be a different constructions.

(i)   * John is {sooner/more/rather} at work than at home.

not well-formed with grammaticalized indirect evidentials, under inferential interpretations. We use data from both Bulgarian and Romanian.

3 ECs and grammaticalized evidentials

Both Romanian and Bulgarian have verbal forms that express (indirect) evidentiality. We take the existence of these forms to support the claim that (indirect) evidentiality is grammaticalized in these languages.[5]

We provide two relevant examples in (6a) and (6b):

(6)   a.   Ivan bil   vkušti.
           Ivan be.PST.PTCP=EVID home
           'Apparently, Ivan is at home.'   (Bulgarian)

      b.   Ion o   fi acasă.
           Ion PRESMP be at.home
           'Apparently, Ion is at home.'   (Romanian)

As mentioned in the introduction and illustrated in (6a), the Bulgarian past participle can carry IE interpretations, see Jakobson (1956); Comrie (1976); Palmer (1986); Izvorski (1997); Alexiadou et al. (2003); Tomić (2006b); a.o. In Bulgarian, the present perfect is ambiguous. It can have a regular temporal interpretation or function as an evidential. The present perfect is formed from a present auxiliary and a past participle. With the 3rd person the auxiliary can be omitted. In such cases, the present perfect is unambiguously interpreted as evidential, see Izvorski (1997: fn. 7). In this paper, we use this strategy to rule out the temporal interpretation (*bil* is 3SG.PAST.PART).[6]

In the Romanian example in (6b), IE is conveyed by the presumptive mood (PRESMP), as discussed especially by Slave (1956); Coşeriu (1976); Reinheimer Râpeanu (2000); Squartini (2001); Irimia (2010; 2018); a.o.[7]

The puzzle we discuss in this paper is that ECs are not well-formed in sentences with IEs, whereas they are grammatical with modal auxiliaries.[8] Compare (7)

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[5]In this paper we make a distinction between grammaticalized evidentials and what we will later call phrasal/lexical evidentials. See §5 for some discussion.

[6]We are grateful to Roumyana Pancheva for clarifying this point.

[7]The Romanian presumptive form *o* 'PRESMP.3SG' is a modal auxiliary which shows ambiguity between a modal future reading and an evidential reading. The presumptive mood in Romanian can also be constructed from other modal auxiliaries, e.g. conditional, subjunctive.

[8]We limit our investigation to indirect evidentiality because it has been convincingly demonstrated that ECs are unacceptable with direct evidence, just like regular epistemic modals (see Herburger & Rubinstein 2014).

with (8):

(7) a. ?? Ivan bil   po-skoro   v offisa otkolkoto vkušti.
         Ivan be.PST.PTCP more-soon in office than   home
         Intended: 'Apparently, it is more plausible that Ivan is in the office
         than at home.'   (Bulgarian)

    b. ?? Ion o   fi mai degrabă   la birou decât acasă.
        Ion PRESMP.FUT be more ADV.early at office than home
        Intended: 'Apparently, it is more plausible that Ion is in the office
        than at home.'   (Romanian)

(8) a. Ivan po-skoro   moje da e v ofisa otkolkoto vkušti.
         Ivan more-soon can DA is in office than   home
         'It is more plausible that Ivan might be at work than at home.'
                                                             (Bulgarian)

    b. Ion poate fi   mai degrabă   la birou decât acasă.
        Ion can.3SG be.INF more ADV.early at office than home
        'It is more plausible that Ion might be in the office than at home.'
                                                             (Romanian)

One important observation is that the incongruence between the indirect eviden-
tial and the EC only affects the INFERENTIAL INDIRECT EVIDENTIALS (IIE).[9]

It is well known that indirect evidentials come in two broad categories: infer-
ential (the statement is based on the inference the speaker draws from available
evidence) and hearsay (the statement is based on somebody else's report). In Bul-
garian the present-perfect-as-an-evidential in (6a) is ambiguous. It can obtain
both inferential and hearsay readings (see especially Smirnova 2013; Koev 2017).
Ill-formedness only arises under the inferential reading. The hearsay interpreta-
tion ('based on what I heard, it is more plausible that Ivan is in the office than at
home') is not deviant.[10] The Romanian example in (7b) is not ambiguous. Hearsay
readings of the PRESMP are normally constructed from conditional morphology
on the auxiliary (e.g. *ar*=COND.3), see Irimia (2018).[11]

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[9]We are grateful to Roumyana Pancheva for the illuminating discussion on this point.

[10]Koev (2017: fn. 2) notes that the inferential reading of the present-perfect-evidential in Bulgar-
ian is more restricted than its hearsay reading. There is also speaker variation in this respect.
Therefore, speakers who only have the hearsay reading will not perceive the contrast we are
interested in.

[11]One way to disambiguate the hearsay readings from the conditional ones is by embedding
them under overt hearsay marking ('they say that'), as in the following example. Note that
this sentence also illustrates the phenomenon of evidential concord.

To summarize, the novel observation is that ECs are compatible with epistemic modals, but are deviant with grammaticalized IIEs. The observation is based on Bulgarian and Romanian, two languages which grammaticalize evidentials using the present perfect and the presumptive mood respectively.

4 Proposal

In a nutshell, our proposal is that *-er* in ECs and grammaticalized (inferential) evidentials are both degree modifiers of the (gradable) SPEECH ACT (SA) operator Assert. Thus, they computationally compete for the same position. Therefore, the deviance of the examples in (7) is similar to **John is more that tall*, in which *more* and *that* specify the degree of tallness. To flesh out our account we build on the insights in Greenberg & Wolf (2018), who propose that Assert contains a degree argument and thus has to compose with a degree modifier (similarly to gradable adjectives). We combine this insight with the idea in Davis et al. (2007) that evidentials reset the degree of credence of the speaker.

4.1 Preliminary remarks

We begin this subsection by discussing Greenberg & Wolf (2018) and then, spell-out some details of Herburger & Rubinstein's (2014) analysis of ECs, on which we build our account.

Greenberg & Wolf (2018) base their proposal on the idea that Assert is modi-fiable. The evidence they use comes from the difference in distribution between MODAL ADVERBS (MAdvs) and MODAL ADJECTIVES (MAdjs). It has been previously noticed in the literature that MAdvs and MAdjs differ in (at least) the following respects.

First, speaker orientation is stronger with MAdvs than MAdjs, as seen in the contrast between (9a) and (9b), cited from Greenberg & Wolf (2018).

(9)   a.   A: It is probable that they have run out of fuel.

         B: Whose opinion is this?

      b.   A: They have probably run out of fuel.

(i)   (Se spune că) Ion ar   fi fost la birou mai degrabă   decât acasă.
       SE says   that Ion COND=PRESMP.3 be been at office more ADV.early than home
       '(They say that) based on hearsay, it is more plausible that Ion was in the office rather than at home.'

B: # Whose opinion is this?

Second, only MAdjs are possible in the antecedent of conditionals that do not have an assertive force by themselves (e.g. Kratzer 1991), as shown in (10):

(10)   a.   # If John is possibly/probably/definitely in the office, I will call the office.

       b.   If it is possible/probable/certain that John is in the office, I will call the office. (Greenberg & Wolf 2018)

Finally, in confirmational tag-questions, *yes* picks up the content of the proposition when MAdv is used, see (11a). On the other hand, MAdj confirms the degree of credence, see (11b).

(11)   a.   A: John is possibly/probably/certainly in the office, eh?/right?
             B: Yes. (John is in the office.)

       b.   A: It's possible/probable/certain that John is in the office, eh?/right?
             B: Yes. (It's possible/probable/certain that John is in the office.)

Greenberg & Wolf (2018) use these differences to suggest that MAdvs function as Assert modifiers. To implement this idea compositionally they use the degree-semantics framework. More specifically, they propose the denotation of Assert in (12).[12]

In (12), informally speaking, CR_x is a measure function from propositions to degrees on the credence scale (see Herburger & Rubinstein 2014 and references cited there for some discussion). Additionally, we assume that 'x's credence in p' implies x's commitment to behave as if (x believes that) p. This is important for explaining the difference between IIE and hearsay.

(12) $[\![\text{Assert}_x]\!]^c = \lambda p \lambda d_d . \text{CR}_x(p) \geq d$
       where CR_x is a function that takes a proposition p and returns a degree to which x is committed to behave as if x believes that p

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[12] Greenberg & Wolf (2018) also propose a more complex denotation of Assert in terms of context update. Although we believe that their implementation of the gradable Assert is more adequate and can be easier incorporated into the existing SA and evidential systems, for the purpose of this paper we use a simplified denotation. This denotation is sufficient to demonstrate the interaction between ECs and IIE.

According to this system, simple sentences like (13a) have the LF in (13b), where the degree argument is saturated by a contextually set POS(itive) operator, defined in (13c). This is similar to the standard treatment of gradable adjectives in simple sentences like *John is tall* in degree-semantics (e.g. Kennedy & McNally 2005). (13d) computes the truth-conditions of (13a). (13a) is true iff there is a contextually set degree d such that the speaker has credence in the proposition that John is home at least to d.

(13) a. John is at home.
   b. LF: [[POS [Assert]] [John is at home]]
   c. $\llbracket\text{POS}\rrbracket^c = \lambda G\lambda p\exists d[d \geq \text{STANDARD}_c \land G(p)(d)]$
   d. $\left[[\llbracket\text{POS}\rrbracket^c (\llbracket\text{Assert}_x\rrbracket^c)](\llbracket\text{J. is at home}\rrbracket^c)\right] =$
      $= [[\lambda G\lambda p\exists d[d \geq \text{STANDARD}_c \land G(p)(d)]](\lambda p\lambda d \,.\, \text{CR}_x(p) \geq d)](\llbracket\text{J. is at home}\rrbracket^c) =$
      $= \exists d[d \geq \text{STANDARD}_c \land \text{CR}_x(\llbracket\text{J. is at home}\rrbracket^c) \geq d]$
      (where x = the speaker in c)

In more complex sentences with modal adverbs as in (14a), the degree argument of Assert is saturated by the MAdv. Informally, we take MAdvs to set degrees on the credence scale, e.g. *possibly p* holds iff $\text{CR}_x(p) > 0$, *probably p* holds iff $\text{CR}_x(p) > 0.5$, and *certainly p* holds iff $\text{CR}_x(p) > 0.98$, see also Greenberg & Wolf (2018) for a more formal discussion. (14a) has the LF in (14b). The denotation of *probably* is given in (14c) and the truth-conditions for (14a) in (14d). (14a) is true iff the degree of speaker's credence in the proposition that John is home is greater than 0.5 on the credence scale.

(14) a. John is probably at home.
   b. LF: [[probably [Assert]] [John is at home]]
   c. $\llbracket\text{probably}\rrbracket^c = \lambda G\lambda p\exists d[d > 0.5 \land G(p)(d)]$
   d. $[\llbracket\text{probably}\rrbracket^c (\llbracket\text{Assert}_x\rrbracket^c)](\llbracket\text{J. is at home}\rrbracket^c) =$
      $= [[\lambda G\lambda p\exists d[d > 0.5 \land G(p)(d)]](\lambda p\lambda d \,.\, \text{CR}_x(p) \geq d)] (\llbracket\text{J. is at home}\rrbracket^c)$
      $= \exists d[d > 0.5 \land \text{CR}_x (\llbracket\text{J. is at home}\rrbracket) \geq d]$
      (where x = the speaker in c)

A potential objection to the idea of gradable Assert could be that SA operators are not normally part of the compositional derivation and cannot be embedded. However, various contributions have shown that under certain conditions SA operators can be embedded, see Greenberg & Wolf (2018) for references.

Turning now to ECs, we follow the decompositional account of Herburger & Rubinstein (2014), who analyze German ECs of the type in (15). For Herburger & Rubinstein (2014) *eher* is decomposed into a comparative head *-er* with the regular denotation in (16a) and an epistemic component *eh-*, which they take to be a believe-type predicate with a degree argument, see (16b).

(15) Hans ist eher   auf der Arbeit als   zu Hause.
      Hans is sooner at   the work   than at home
      'According to the speaker, it is more plausible that Hans is at work than at home.'   (German)

(16) a. $[\![\text{-er}]\!] = \lambda P \lambda Q . \text{MAX}(Q) > \text{MAX}(P)$
      b. $[\![\text{eh-}]\!]^z = \lambda p \lambda d . z$ is d-ready to believe p
          (defined only if z doesn't have direct evidence for p)

According to this system, the example in (15) has the LF in (17a) and the truth-conditions in (17b). (16) and (17) are from Herburger & Rubinstein (2014: 564–565). With angle brackets ($\langle \ldots \rangle$), we signal the material that is not phonologically present.

(17) a. LF: [[-er [than ⟨eh- Hans is⟩ at home]] [eh- Hans is at work]]
      b. $[\![\text{-er}]\!]^z ([\![\text{than eh- Hans is at home}]\!]^z)([\![\text{eh- Hans is at work}]\!]^z) =$
          MAX($\lambda d . z$ is d-ready to believe that Hans is at work) > MAX($\lambda d . z$ is d-ready to believe that Hans is at home)
          where z is the speaker

Interesting support for the decompositional analysis of *eher* comes from the fact that in Austrian and Bavarian German there is a discourse particle *eh-* with a similar epistemic interpretation, see (18) from Herburger & Rubinstein (2014: ex.32). See also Zobel (2017) for a detailed investigation of *eher*.

(18) Das ist auf regionaler Ebene eh möglich.
      that is on regional   level   eh possible
      'That is anyways possible on a regional level.'   (Austrian German)

4.2 Analysis

We begin our analysis by discussing the interpretation of INFERENTIAL INDIRECT EVIDENTIALS (IIEs). We propose that they function as degree modifiers of Assert on a par with MAdvs (as discussed above). This claim is limited to IIEs; in this

paper, we remain agnostic with respect to other types of evidentials, apart from hearsay that, as we show below, are not modifiers of Assert. Furthermore, building on Davis et al. (2007), we assume that IIEs reset the threshold of the credence function from a contextually set value (set by POS) to the evidential value, see (19). This is illustrated for Romanian in (20). Bulgarian IIEs receive a similar account. For reasons of space, we provide only the LF and the truth-conditions.[13]

(19) $[\![\text{Evid}_{\text{IIE}}]\!]^c = \lambda G \lambda p \exists d[d = \mu^c(evid) \wedge G(p)(d)]$
      where μ maps the strength of evidence to a degree on the credence scale in c

(20) a. Ion o   fi acasă.
         Ion PRESMP=IIE be at.home
         'Apparently, Ion is at home.'   (Romanian)

      b. LF: [[Evid$_{\text{IIE}}$[Assert]] [Ion is at home]]

      c. $\exists d[d = \mu_c(evid) \wedge \text{CR}_x([\![\text{Ion is at home}]\!]) \geq d]$
         (where x = the speaker in c)

Our proposal for IIEs makes the immediate prediction that IIEs are incompatible with MAdvs, as they compete for the same position. This prediction is borne out for Romanian *posibil*, as shown in (21):

(21) ?? Ion (posibil) o   fi (posibil) acasă.
         Ion possibly PRESMP=IIE be (possibly) at.home
         Intended: 'Possibly, Ion is apparently at home.'   (Romanian)

We now account for the core observation, namely that ECs are incompatible with IIEs. We propose that the epistemic component in ECs, expressed by *eh-* in German (see the observations above) can be assimilated to Greenberg & Wolf's (2018) Assert. We generalize Herburger & Rubinstein's (2014) analysis of German to Bulgarian and Romanian and represent *eh-* abstractly as Epist below. Both Assert and Epist are gradable and both manipulate (usually) the speaker's degree of credence in the proposition expressed by the prejacent. There is, however, an important difference between the two: Epist is presuppositional, i.e. it is undefined if the speaker has direct evidence (see the discussion in Herburger & Rubinstein 2014).

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[13]We gloss over the mechanics of how the evidential meaning comes about and how the source of evidence is encoded. These details are orthogonal to the point made in this paper, but see the discussion in Koev (2017).

(22) $[\![\text{Epist}_x]\!]^c = \lambda p \lambda d \,.\, \text{CR}_x(p) \geq d$
      (defined only if x doesn't have direct evidence for p)

To simplify the computation of comparatives and make it parallel to modal adverbs, we slightly modify the structure advocated by Herburger & Rubinstein (2014) for eher-comparatives. We assume that EC in (23a) has the LF in (23b). We further assume that *-er* has the denotation in (23c), where the *than*–clause is a definite description of degrees (as assumed for gradable adjectives), see (23d). For reasons of space, we omit the details of how the meaning of the than-clause is obtained. The truth-conditions for (23a) (if defined) are given in (23e) and paraphrased in (23f). We show this using Bulgarian, but the same holds for Romanian.

(23) a. Ivan po-skoro   e v ofisa otkolkoto vkušti.
          Ivan more-soon is in office than   home
          'According to the speaker, it is more possible that Ivan is at work than at home.'   (Bulgarian)

      b. [[[-er [than ⟨Epist Ivan is⟩ at home]] Epist] [Ivan is in the office]]

      c. $[\![\text{-er}]\!] = \lambda d \lambda G \lambda p \exists d'[d' > d \wedge G(p)(d')]$

      d. $[\![\text{than Epist}_x \text{ Ivan is at home}]\!]^c = \text{MAX}(\{d : \text{CR}_x([\![\text{Ivan is at home}]\!]) \geq d\})$

      e. $[\![\text{-er}]\!]([\![\text{than Epist}_x \text{ Ivan is at home}]\!]^c) =$
          $= \lambda G \lambda p \exists d'[G(p)(d') \wedge \ d' > \text{MAX}(\{d : \text{CR}_x([\![\text{Ivan is at home}]\!]) \geq d\})]$
          $[\![\text{-er than Epist}_x \text{ Ivan is at home}]\!]^c([\![\text{Epist}_x]\!]^c) =$
          $= \lambda p \exists d'[\text{CR}_x(p) \geq d' \wedge d' > \text{MAX}(\{d : \text{CR}_x([\![\text{Ivan is at home}]\!]) \geq d\})]$
          $[\![\text{-er than Epist}_x \text{ Ivan is at home Epist}_x]\!]^c([\![\text{Ivan is in the office}]\!]^c) =$
          $= \exists d'[\text{CR}_x([\![\text{Ivan is in the office}]\!]) \geq d' \wedge d' > \text{MAX}(\{d : \text{CR}_x([\![\text{Ivan is at home}]\!]) \geq d\})]$

      f. In prose: There is a degree to which x believes Ivan is in the office is plausible and this degree is higher than the maximal degree to which x believes that Ivan is at home is plausible (where x is the speaker)

Given these assumptions, ECs are deviant with IIEs for the same reason *posibil* is deviant with IIEs in (21) above. That is to say, IIE competes with *-er* for the degree modifier position. (24b) shows a simplified LF for the ill-formed (24a) repeated from above (the underlined part shows the competition).

(24) a. * Ivan bil   po-skoro v ofisa otkolkoto vkušti.
          Ivan be.PST.PTCP more-soon in office than   home
          Intended: 'Apparently, it is more plausible that Ivan is in the office than at home.'   (Bulgarian)

    b.   LF: *[[{ [-er than ⟨Ivan is⟩ at home] / Evid } Epist] [Ivan is in the office]]

Our account also explains why hearsay evidentials are well-formed with ECs. Several researchers, among which Faller (2002) or Smirnova (2013) have pointed out that hearsay evidentials do not require the speaker's commitment. In our system, this can be implemented by saying that hearsay evidentials are not Epist/Assert modifiers. Therefore, they do not compete with *-er* in ECs for the degree modifier position.

    As epistemic modals are not degree modifiers of Epist/Assert, they are felicitous with ECs, see (25a) repeated from above and its simplified LF in (25b).[14] The same holds for Bulgarian in (26).

(25)   a.   Ion poate   fi   mai degrabă la birou decât acasă.
            Ion can-3SG be-INF more ADV.early at office than home
            'It is more plausible that Ion might be in the office than at home.'
            (Romanian)

    b.   LF: [[[-er than ⟨Ion be⟩ at home] Epist] [might [Ion be in the office]]]

(26)   Ivan po-skoro   moje da e v ofisa otkolkoto vkušti.
        Ivan more-soon can   DA is in office than   home
        'It is more plausible that Ivan might be at work than at home.' (Bulgarian)

Independent support for our proposal comes from the fact that ECs are also ill-formed with MAdvs. Recall that according to Greenberg & Wolf (2018), MAdvs are degree modifiers of the gradable Assert. Thus, they are expected to compete with *-er* in ECs, see (27).

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[14]Independent support for this comes from Irimia (2018) who has shown that there are important structural differences between the IIE reading and the non-IIE modal reading of Romanian PRESMP. Modal interpretations are obtained when the modal features are merged in Mod^0 and raised to T^0. IIE interpretations are obtained by the merge of features related to the speaker's deictic location 'now' in the Sentience projection in the CP layer above the modal in T^0. Note that according to this account IIE features are interpreted higher than modal features. One question would be why examples like (7b) are not well-formed under the future reading of the relevant morpheme. The situation with this auxiliary is more complex. First, not many speakers accept an interpretation of this morpheme which is purely future. For those speakers, though, for which the unmarked future reading is possible, no ill-formedness arises with EC. For the majority of the other speakers, the question is what type of epistemic future this auxiliary encodes that is distinct from both IIE, as well as from a more well-behaved future, but at the same time is also ill-formed with ECs. We leave this issue for further research, as the exact readings need further attention (see also Mihoc 2013).

(27) * Ion posibil   este la birou mai   degrabă decât acasă.
       Ion possibly is   at office more soon   than home
       Intended: 'According to the speaker, it is more plausible that Ion is
       possibly in the office rather than at home.'   (Romanian)

To summarize, by assimilating the epistemic component in ECs to gradable Assert (Greenberg & Wolf 2018), we derive the incompatibility of ECs and IIEs as a result of the competition for the degree modifier position. This proposal assumes that (some) evidentials function as degree modifiers. This correctly predicts the difference between inferential and hearsay indirect evidentials, assuming that the latter does not involve speaker's commitment. We, thus, identify three (overt) elements that can function as degree modifies for Epist/Assert: MAdvs, IIEs, and *-er* in ECs.

4.3 Predictions

Our account makes a number of correct predictions. The first prediction is that the IIE is compatible with regular comparatives. In regular comparatives, IIE scopes above *-er* and the structure is grammatical, as shown in (28a) for Romanian and in (28b) for Bulgarian. In (28a) and (28b), *-er* merges low as it compares degrees of tallness/happiness, rather than degrees of belief as in ECs. The simplified LF for (28a) and (28b) is illustrated in (28c).

(28) a. Ion o   fi mai înalt decât Maria.
         Ion PRESMP=IIE be more tall than Mary
         'Apparently, John is taller than Mary.'   (Romanian)

      b. Ivan bil   po-stastliv ot   Maria.
         Ivan be-PST.PTCP=IIE more-happy from Maria
         'Apparently, Ivan is happier than Maria.'   (Bulgarian)

      c. LF: [[Evid$_{IIE}$(Assert)] [[-er [than Mary is d-tall/happy]] [John is
         d'-tall/happy]]]

The second prediction is that IIE can co-occur with epistemic attitude predicates like 'believe'. This is illustrated in (29a) for Romanian and in (29b) for Bulgarian. We give the simplified LF for these examples in (29c).

(29) a. Ion o   fi crezând   toate minciunile.
         Ion PRESMP=IIE be believe.GER all   lie.the.PL
         'Apparently, Ion believes all the lies.'   (Romanian)

  b. Ivan bil   vjarval   na vsički l'ži.
     Ivan be.PST.PTCP=IIE believe.PFV on all   lies
     'Apparently, Ivan believes all the lies.'   (Bulgarian)

  c. [[Evid$_{IIE}$(Assert)] [Ion believes all the lies]]

These data support our account of the ill-formedness of ECs with IIEs. They also rule out alternative analyses according to which the deviance is due either to the incompatibility of evidentials and comparatives or to a potential conflict between evidentials and epistemic attitudes.

5 Concluding remarks and future research

We have analyzed some previously unnoticed facts related to epistemic modals and evidentials when they occur with epistemic comparatives in Bulgarian and Romanian. We showed that ECs are incompatible with IIEs and explained this pattern by claiming that the two categories compete for the same position. Given that the ill-formedness does not arise with epistemic modals, the data examined here argue for accounts under which inferential evidentials are separated from epistemic modals (Faller 2002, Aikhenvald 2014, Murray 2010; a.o.).

From a broader perspective, the observation presented in this paper and its account give rise to several questions. In the reminder of the conclusion we briefly touch on three of them, leaving the detailed investigation for future research.

First, one expectation is that ECs should be ill-formed with indirect evidentials across-the-board. However, there appear to be cases in which ECs are well-formed with expressions that could be analyzed as having evidential meaning.[15] We illustrate some examples below. In (30) and (31) we see that evidential-like adverbials like *vidimo* and *aparent* 'apparently' are well-formed with the EC.[16]

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[15]We thank Sergei Tatevosov for this observation.

[16]As expected, adverbials with hearsay semantics are well-formed, see below. Recall that hearsay evidentials are not Assert modifiers, thus do not compete with ECs.

  (i) Kazvat Ivan po-skoro   e v offisa otkolkoto vkušti
       they.say Ivan more-soon is in office than   home
       'As they say, Ivan is at work rather than at home.'   (Bulgarian)

  (ii) Cică   Ion este la birou mai degrabă decât acasă.
       they.say John is at office more soon   than home
       'As they say, John is in the office rather than at home.'   (Romanian)

(30) ? Vidimo, Ivan po-skoro moje da e v ofisa otkolkoto vkušti.
 apparently, van more-soon can DA is in office than home
 'It is more plausible that Ivan might be at work than at home.' (Bulgarian)

(31) Aparent, Ion este la birou mai degrabă decât acasă.
 apparently Ion is at office more soon than home
 'Apparently, Ion is in the office rather than at home.' (Romanian)

Examples of this type touch on an important issue, namely the difference between grammaticalized and phrasal evidentials. We take the former to be expressed by means of (inflectional) morphology on the verb. In the latter class we include adverbial evidentials (like *apparently*, etc.) and other phrasal units (like *in my opinion*, etc.), which have evidential semantics, see for example Aikhenvald 2014, a.o. We follow standard accounts for phrasal evidentials as having different syntax from grammaticalized evidentials (Faller 2002, Aikhenvald 2014; a.o.).Thus, the well-formedness of (30) and (31) is not problematic for our account, as lexical evidentials do not compete with *-er* for the ASSERT modifier position.

Second, we also observe that ECs can be embedded under expressions like *I guess*, etc, that are sometimes claimed to have evidential interpretations. Two examples from Romanian are given in (32).

(32) a. Bănuiesc că Ion este la birou mai degrabă decât acasă.
 guess.1.SG that Ion be.3SG at office more soon than home
 'I guess Ion is in the office rather than at home.'

 b. Cred că Ion este la birou mai degrabă decât acasă.
 think.1.SG that Ion be.3SG at office more soon than home
 'I believe Ion is in the office rather than at home.' (Romanian)

However, for cases like (32), there is independent evidence that they are biclausal (for example the presence of overt complementizers like *că* 'that'). Therefore, competition does not arise. It is also well known that ECs can be embedded under attitude predicates like *believe, hope*, etc. (see Herburger & Rubinstein 2014, as well as the discussion in footnote 2). We assume that the embedding under *I guess* is amenable to a parallel analysis.[17]

More surprisingly, embedding improves the ungrammaticality of grammaticalized evidentials with ECs. See the contrast in (33a) vs. (33b) and (33c) from

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[17]We thank an anonymous review for bringing to our attention Czech data that support the same conclusion. We are also grateful to another anonymous reviewer who pointed out to us the connection between embedding under *I guess* and attitude reports.

Romanian. This contrast deserves detailed attention and we leave it for further research.

(33) a. ?? Ion o   fi la birou mai degrabă decât acasă.
         Ion PRESM.3.SG be at office more soon   than home
         'I guess Ion is in the office rather than at home.'

     b. Bănuiesc că Ion o   fi la birou mai degrabă decât acasă.
         guess.1.SG that Ion PRESM.3.SG be at office more soon   than home
         'I guess Ion is in the office rather than at home.'

     c. Cred   că Ion o   fi la birou mai degrabă decât acasă.
         think.1.SG that Ion PRESM.3.SG be at office more soon   than home
         'I believe Ion is in the office rather than at home.'   (Romanian)

Finally, one of the anonymous reviewers makes the interesting observation that Polish ECs are impossible in negated future contexts. The same point can be made using Romanian data, as seen below:

(34) ?? Ion nu va fi la birou mai degrabă decât acasă.
       Ion not FUT be at office more soon   than home
       Intended: 'Ion will not be in the office rather than at home.' (Romanian)

In Bulgarian similar examples seem to be well-formed, see (35).

(35) Ivan ne šte da byde na rabota, a   po-skoro v kušti.
      Ivan not FUT DA be   at work   but more-soon at home
      'Ivan will not be at work rather than at home.'   (Bulgarian)

However, the future marker *šte* in Bulgarian has been shown to be a versatile category with various types of interpretations (Rivero & Simeonova 2014). Thus, more refined diagnostics are needed to settle this problem. We leave for further research a detailed account for this observation.

Abbreviations

ADV	adverb	INF	infinitive
COND	conditional	MAdv	modal adverbs
DA	modal particle	MAdjs	modal adjectives
EC	epistemic comparative	PFV	perfective
Epist	epistemic	PL	plural
Evid/*evid*	evidential	PRESMP	presumptive
FUT	future	SA	speech act
GER	gerund	PST	past
IE	indirect evidential	PTCP	participle
IIE	inferential indirect evidential	SBJV	subjunctive
		SG	singular

Acknowledgements

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