EPISTEMIC AND GRADABLE MODALITY IN BRAZILIAN PORTUGUESE: A COMPARATIVE ANALYSIS OF 'PODER', 'DEVER' AND 'TER QUE'

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ABSTRACT: This paper presents a comparative analysis of the Brazilian Portuguese (BrP) modal auxiliaries 'poder', 'dever' and 'ter que' in order to map their semantics. Its aim is to describe the role each one of these modals plays in modal gradation while following the Kratzerian approach for the semantics of modals in natural language (KRATZER, 1981, 1991, 2010). The paper assumes that 'poder' is the prototypical verb of possibility, while 'dever' and 'ter que' differ semantically not only in terms of force, but also in terms of the disparate conversational backgrounds (CBg) against which they can be interpreted. The paper concludes that 'dever' and 'ter que' modals exhibit a strong tendency for specialization, in line with Pires de Oliveira and Scarduelli (2008). Moreover, 'dever' sounds "weaker" than 'ter que' and stronger than 'poder' because, we will argue, 'dever' is a non-dual upper-end degree modal, in line with Kratzer (2012).
KEYWORDS: Modality; possibility; probability; necessity.

INTRODUCTION

This paper presents a comparative analysis of the Brazilian Portuguese (BrP) modal auxiliaries 'poder', 'dever' and 'ter que' in order to map their semantics*. Its aim is to describe the role each one of these modals plays in modal gradation while following the Kratzerian approach for the semantics of modals in natural language (KRATZER, 1981, 1991, 2010). The paper assumes that 'poder' is the prototypical verb of possibility (PESSOTTO, 2011), which means that in a 'pode-p' sentence, 'p' is a possibility if 'non-p' is not a necessity, given a modal base 'f' and an ordering source 'g'. The paper then turns to 'dever' and 'ter que' and argues that both differ semantically not only in terms of force as argued in Pessotto and Pires de Oliveira (2011)), but also in terms of the disparate

conversational backgrounds (CBg) against which they can be interpreted. The main hypotheses are: (i) 'ter que' and 'dever' tend to split roles between root and epistemic meanings: 'ter que' expresses root modality, interacting with normative ordering sources to produce deontic, telelological and bouletic interpretations, and hardly combines with epistemic CBgs; on the other hand, 'dever' is preferred to expresses epistemic modality; (ii) 'dever' is not a necessity modal like 'ter que', but a kind of comparative possibility, in a Kratzerian fashion. The paper concludes that 'dever' and 'ter que' modals exhibit a strong tendency for specialization, in line with Pires de Oliveira and Scarduelli (2008). Moreover, 'dever' sounds "weaker" than 'ter que' and stronger than 'poder' because, I will argue, 'dever' is a non-dual upper-end degree modal, in line with Kratzer (2012).

In the first section, the paper will describe the intuitive meanings of 'poder', 'dever' and 'ter que'. In doing so, we will examine speakers' spontaneous usage of these expressions in regular speech. According to the Kratzerian framework modals have a common core, and the different meanings they convey arise from the different CBgs against which they are interpreted. CBgs, being contextual, are functions that map possible worlds to sets of propositions. Modal expressions are two-place predicates and take a CBg and a proposition as arguments. There are two CBgs involved in modal interpretation: the *modal base*, which is a function of worlds to a set of worlds, resulting in a set of propositions that will determine what kind of modality is conveyed; and the *ordering source*, which is a set of propositions that orders the worlds of the modal base according to a given ideal parameter. The ordering sources are responsible for setting the modal gradation and allow for the existence of modals without duals.

In Section 2, the paper will argue the first hypothesis, that: while 'dever' depends on evidence available in the world of evaluation to be properly interpreted, 'ter que' can be properly uttered in a context completely lacking in evidence. The paper will follow Kratzer (2010) in assuming that the epistemic CBg is composed of a particular body of facts that represent the *evidence of things* in the world of evaluation. It will argue that this is the case of 'dever', whose most natural use is to convey inference based on evidence in the world. On the other hand, the body of facts that compose root CBgs represent *informational content* in the world, not evidence. Those are also called "*normative*" CBgs. They can be *deontic*, representing the content of a body of laws or regulations; *teleological,* which represent the

content of a set of goals; and bouletic, which represent desires or wishes. The paper will argue this is the case for 'ter que'. [2]

In order to argue for the epistemic 'dever' the paper assumes that the *epistemic* and *evidential* categorizations are identical (KRATZER, 2012; von FINTEL & GILLIES, 2010; MATTHEWSON, 2004), meaning that all epistemic modals carry evidential meaning. Following this reasoning, the paper argues that 'dever' encodes an indirect evidence requirement, in line with the von Fintel and Gillies (2010) account for the epistemic 'might'. On the other hand, 'ter que' does not require indirect evidence, which means it can be properly uttered in the absence of evidence. Besides semantic analysis, the paper will briefly discuss data from syntax (FERREIRA, 2009) demonstrating that 'dever' does not scope under other functional verbs, and thus that this verb does not occupy the main verb position in verbal periphrasis. In turn, this evidence supports the argument that 'dever' tends to express epistemic modality, while 'ter que' does not.

Although 'dever' is preferred to express epistemic meaning (an inference based on evidence in the world), it could also be compatible with normative ordering sources and convey root modality. The examples analyzed follow the intuition that, when interpreted against the identical CBg, 'dever' sounds weaker than 'ter que' because 'dever' allows for comparing possibilities and expresses an inference about which is the *best* (or the most probable/desirable) outcome given the premises, while 'ter que' infers "the only possible outcome"[3]. Section 3 explores modal gradation among 'poder', 'dever' and 'ter que', and illustrates that 'dever' claims entail 'poder' claims and are entailed by 'ter que' claims in the same context. We will gather evidence for modal gradation by comparing BrP with languages in which grade non-dual modals have been reported (PETERSON, 2012; DEAL, 2010; MATTHEWSON et al, 2007; RULLMANN et al 2008) and explore Kratzer's proposal for modal gradation and how it relates to the idea of probability conveyed by 'dever' in epistemic

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[2] This paper remains neutral about the term 'circumstantial', as coined by Kratzer (1981). According to that author, the term 'circumstantial' is clearer than the term 'root', since the facts targeted by 'circumstantial' modal interpretation are 'inherent properties or circumstances of individuals or spatio-temporal locations'. On the other hand, in epistemic modality, the targeted facts might correspond to evidence of "whatever exists in the world". However, the distinction between these interpretations remains elusive, as "circumstances of individuals or spatio-temporal locations" could perfectly be a part of "whatever exists in a world". For simplicity's sake, the paper assumes the term 'root modals' applies to those modals that are compatible with normative conversational backgrounds and produce deontic, teleological, ability and bouletic interpretations. On the other hand, the paper assumes that epistemic modals are those whose interpretations depend on evidence available in the world of evaluation.

[3] This idea is in line with the intuition worked out in Fintel and Iatridou (2008) and Rubinstein (2012), where weak modals express 'what is best' and their semantics involve the interplay of two parameters of evaluation to be compared.

contexts and desirability conveyed by 'dever' in root contexts, thereby supporting the argument that 'dever' is a non-dual grade modal.

1. 'Poder', 'ter que' and 'dever': a morphosyntactic and semantic outline

1.1 Poder

Following the theoretical scenario described in the introduction, a 'poder-p' claim expresses that p is a possibility in a world w, given a modal base f and an ordering source g, if $\neg p$ is not a necessity in the world w given f and g. According to this definition, 'poder' can combine with either epistemic or root CBgs, as shown in the examples below:

(1) De acordo com a lei brasileira, o cidadão pode tirar carteira de motorista aos 18 anos de idade.

   Of accordance with the law brazilian, the citizen can take-INF card of driver to.the-PL 18 years of age.

   'According to Brazilian law, a citizen can obtain a driver's license from 18 years of age.'

(2) Para ir   de Porto Alegre a Florianópolis, você pode toma-r   um avião.

   To   go-INF of Porto Alegre to Florianópolis, you can   take-INF one plane.

   'To get from Porto Alegre to Florianópolis, you can take a plane.'

(3) A   Ana não atende   o telefone.   Ela pode ter   saí-do.

   The Ana not answer-3p the telephone. She can   have-INF left-PartPass.

   'Ana does not answer the phone. She may have gone out.'

(4) O   tempo   está abafado e há nuvens escuras   no céu. Pode ser que chov-a logo.

   The   weather is   stuffy and there.is clouds dark-Pl in.the sky. May be-INF that rain-3p-SUBJ soon.

   'The weather is stuffy and there are dark clouds in the sky. It may rain soon.'

The examples above demonstrate, respectively, deontic (1), teleological (2) and epistemic (3-4) uses of 'poder'. While in all these examples 'poder' is inflected in the third person present indicative, this verb has the complete paradigm of conjugation in root meanings, which means it can be inflected in all modes and tenses, including simple and compound tenses. Some examples are shown below:

(5) a. Aos 18 anos, Ana pode   tirar   a carteira de motorista.

    At 18 years, Ana can-PRES take-INF   the card   of driver.

  b. Aos 18 anos, Ana pôde   tirar   a   carteira de motorista.

    At 18 years, Ana can-PastPerf take-INF the card   of driver.

  c. Aos 18 anos, Ana podia   tirar   a carteira de motorista.

    At 18 years, Ana can-PastImpf take-INF   the card   of driver.

  d. Aos 18 anos, Ana vai   poder   tirar   a   carteira de motorista.

    At 18 years, Ana go-PRES can-INF take-INF the card   of driver.

  e. Aos 18 anos, Ana poder-á   tirar   a   carteira de motorista.

    At 18 years, Ana can-FUT take-INF the card   of driver.

  f. Ana está pode-ndo tir-ar a carteira de motorista.

Ana be-PRES can-PRES take-INF the card of driver.

  g. Ana poder-ia tir-ar carteira de motorista se tive-sse 18 anos.

Ana can-Cond take-INF card of driver if had-PerfSUBJ 18 years.

  h. Ana ia   pode-r tira-r   carteira de motorista se tive-sse   18 anos.

    Ana go-IMP can-INF take-INF   card   of driver   if had-SUBJ 18 years.

  i. Tomara   que a Ana poss-a   tirar   carteira de motorista.

    Hopefully that the Ana can-PRESSUBJ take-INF card   of driver.

  j. Quando a   Ana puder   tirar   carteira, ela vai   dirigir.

    When   the Ana can-FutSUBJ take-INF card,   she go-PRES drive-INF.

The examples above show that in a deontic context 'poder' can inflect in Indicative (5.a to 5.g) and Subjunctive (5.h to 5.j), simple (5.d, 5.f, 5.h) and compound tenses (5.a-c, 5.e, 5.g, 5.i, 5.j). Given this, it is important to note that in all compound tenses presented above (those formed by the periphrasis auxiliary verb – 'estar', 'ter' and 'ir'- plus 'poder' in sentences d, f and h) 'poder' conveys root modality. On the other hand, in simple tenses, whether 'poder' carries epistemic or root readings is indeterminate. Thus, in epistemic contexts the paradigm of 'poder' is more restrictive; the epistemic interpretation is disallowed in compound tenses, as shown below:

(6) a. *O   tempo   está abafado e   há   nuvens escuras. Vai poder[epist] /está podendo[epist] /tem podido[epist]   chove-r logo.

    *b. * The weather is   stuffy and there.is clouds dark-Pl. Go-PRES may-INF/be-PRES may-PRES rain-INF soon.*

This observation is important since it provides an important syntactic clue about why 'dever' is epistemic. Just like epistemic 'poder', 'dever' does not allow for compound tenses, since it does not scope under other functional heads. This issue will be reexamined in Section 2.

1.2 TER QUE[4]

Intuitively, the modal 'ter que' is preferred for root modalities and denotes "obligation". In other words, 'ter que-p' conveys that 'p' is the only possible outcome, given the premises provided by the context. Just like 'poder', 'ter que' has a complete conjugation paradigm: it can be inflected in indicative and subjunctive modes and in all tenses (simple and compound). When comparing the meaning of a 'ter que' claim with a 'poder' claim, we have the possibility-necessity pair predicted by modal Logic, where modal operators come in twos. The example below illustrates this:

Context: According to Brazilian law, citizens are allowed to vote at the age of 16 and obliged to vote at the age of 18.

(7) a. Ana tem 16 anos, ela pode   vota-r (true)
        Ana has 16 years, she can-PRES vote-INF
        'Ana is 16 years old, she can vote'
    b. Ana tem 16 anos, ela tem   que vota-r. (false)
        Ana has 16 years, she have that vote-INF.
        'Ana is 16 years old, she has to vote'.

(8) Ana tem 18 anos, ela #pode votar/tem que votar.[5]
        Ana has 18 years, she #can-PRES vote-INF/have that vote-INF.

Sentence 7 expresses that, according to the Brazilian law, as long as Ana is 16, she is allowed to vote, but she is not obliged to do so. On the other hand, Sentence 8 expresses that upon reaching the age of 18 years, Ana has the obligation to vote; a 'poder' claim is

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[4] 'Ter que' also has a 'ter de' variant. Syntactic issues concerning the combination between the verb 'ter' and the complementizer 'que' (or the proposition 'de' in the case of 'ter de') are beyond this paper's scope. For an account of the syntax of modals 'poder', 'dever' and 'ter que', see Ferreira (2009).
[5] The symbol '#' stands for "pragmatically inadequate".

pragmatically inappropriate for conveying this idea[6].

A "ter que-p" sentence conveys that p is the only plausible outcome given a set of premises, as demonstrated by the examples below:

Context: According to Brazilian laws, one can have a driver's license only from the age of 18.

(9) Para tirar   a carteira de motorista   no Brasil,   a pessoa tem que ter   18 anos.
     To take-INF   the card of driver   in.the Brasil, the person has that have-INF 18 years.
     'In order to have a driver's license in Brasil, one has to be 18 years old'.

Sentence (9) above is an example of the deontic 'ter que'. The sentence conveys that having reached 18 years of age is an indispensable prerequisite to applying for a driver's license. In other words, this sentence exemplifies deontic necessity. The example below, meanwhile, demonstrates a teleological context:

Context: Florianópolis is an island in the south of Brazil. There are two ways to get there: by car and by plane. The only way to get to Florianópolis by car is by crossing the bridge. Thus:

(10) Para chegar   a Florianópolis de carro, você tem que cruzar   a ponte.
     To arrive-INF to Florianópolis of car, you   have that cross-INF the bridge.
     'To get to Florianópolis by car, you have to cross the bridge.'

Sentence (10) exemplifies teleological necessity. Since crossing the bridge is the only way to get to the island by car, you have no choice but to do so: you 'tem que' to cross the bridge.

As shown above, 'ter que' can both adequately convey deontic and teleological contexts. Epistemic examples are provided below:

Context: John is observing the weather. There are signs of imminent rain: dark clouds in the sky, a strong wind, and lightning. John evaluates this evidence and concludes:

(11) [according to the evidence available]
     ? Tem que chover logo.

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[6] A 'ter que' claim entails a 'poder' claim, so 'poder' is inadequate in the example because it fails the Gricean maxim of Quantity (Grice, 1979).

Has that rain-INF soon.

'It has to rain soon.'

Sentence (11) intuitively conveys that, according to the evidence available, rain must be imminent. However, this sentence is imperfect: that rain is imminent is "too strong" of a statement if the statement is based solely on the evidence provided by the context. In other words, sentence (11) intuitively conveys more than an inference based only on evidence in the world. However, if we add an element of *telos* to the context, then the same sentence can be made perfect:

Context: John observes the weather. There are signs of imminent rain: dark clouds in the sky, strong wind, and lightning. *The harvest is threatened by the drought*. John evaluates those facts and concludes that:

(12) [in order to save the harvest]

Tem que chover logo.

Has that rain-INF soon.

'It has to rain soon.'

Example (12) indicates that the adequacy of the 'ter que' claim does not depend on the evidence available itself, but on the element of *telos* added to the context, which makes a teleological claim. A compelling argument can be made that it is possible to utter a 'ter que' claim if the speaker has no evidence at all, as long as that claim is interpreted against a root CBg. In the example below, it is clear that rain cannot result from the evidence available.

Context: John observes the weather. The air is dry. There are no clouds in the sky. There are no signs of rain. According to these observations, John utters:

(13) ? Tem que chove-r logo.

Has that rain-INF soon.

'It has to rain soon.'

Since there is no sign of rain in the sky, John cannot infer that it is going to rain. Why then would this sentence be adequate given the context? This paper argues that 'ter que' does not

mobilize an epistemic BG (since evidence is lacking) but a root one, more attuned to teleological or bouletic meaning. Sentence 13 can be improved through again adding *telos*, as in the example below:

Context: John observes the weather. The air is dry. There are no clouds in the sky. There are no sign of rain. *The harvest is threatened by drought*. According to these observations, John utters:

(14) *[in order to save the harvest]* (*telos*)

    Tem que chove-r logo.

     Has that rain-INF soon.

    'It has to rain soon.'

We will return to this subject in Section 2.

    Now, we turn to the verb 'dever', which is the preferred modal for expressing epistemic meaning and, as opposed to 'ter que', cannot properly be uttered in face of a lack of available evidence in the world of evaluation.

1.3 DEVER

As a modal, 'dever' differs from 'poder' and 'ter que' since 'dever' is a defective verb, i.e., it does not have a complete conjugation paradigm. What also distinguishes the verb from 'poder' and 'ter que', is that it is defective no matter what kind of modality a 'dever'-claim expresses. 'Dever' does not allow Indicative mode compound tenses, which indicates it cannot scope under other functional heads, as demonstrated below:[7]

Epistemic modality:

(15)   a. *Vai   deve-r   chove-r.

            Go-PRES deve-INF rain-INF

        b. *Está   deve-ndo chove-r.

            Be-PRES deve-GER rain-INF.

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[7] In 'dever' examples, in this paper I will keep the verb in Portuguese in the glosses. The paper will not commit to English translations, since 'dever' can be translated as any of 'might', 'should'/'ought to' or 'must', depending on context. This variation is attributable to the gradable nature of the verb, as will be discussed in section 3.

c. *Ia   deve-r   chove-r.

   Go-PastImpf deve-INF rain-INF.

d. *Tem devi-do   chove-r.

   Has deve-PastPart rain-INF.

Root modality:

(16)   a. * Quando completar   18 anos, o João vai   deve-r se apresenta-r ao serviço militar.

   When complete-3ps-FutSubj 18 years, the John go-PRESInd deve-INF self present-INF to.the service military.

b. *João tem 18 anos. Ele está deve-ndo/tem devi-do se apresenta-r ao serviço militar.

   John has 18 years. He is deve-PRES/has deve-PartPas self present-INF to.the service military.

c. *Se João tivesse   18 anos, ele ia   dev-er se apresent-ar

ao   serviço militar.[8]

   * If John have-PastSubj 18 years, he go-PastImpfInd dever-INF self present-INF to.the service military.

The Past Perfect (*pretérito perfeito*) form of the modal 'dever' also does not exist, since the modal 'dever' is a defective verb:

(17) a. *Deveu chov-er.

   Dever-PastPerf rain-INF

b. *Eu devi sa-ir mais cedo do trabalho.

   I dever-PastPerf leave-INF more early of.the work

c. *Ana deveu fic-ar em casa porque o pai dela mandou.

   Ana *dever-PastPerf stay-INF in house for.that the father of.she order-PastPerf*

d. *Eu devi cruz-ar a ponte para chegar em Florianópolis.

   I *dever-PastPerf cross-INF the bridge to arrive-INF in Florianópolis.*

It is possible to combine 'dever' in the present tense with a part perfect periphrasis, which

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[8] The meanings intended by (16.a) and (16.c) can be conveyed by the simple forms 'deverá' and 'deveria', respectively, although these forms are considered overly formal and are thus more rarely used in ordinary speech.

allows at most for epistemic interpretation, as shown in (18.a) bellow.

Context: We have just returned home from vacation, and see that our garden and porch are wet. Given that evidence, and since we don't have any automatic garden irrigation system, we infer that*:*

(18.a) Deve te-r chovido.

       Deve have-INF rain-PastPart

       'It *deve* have rained.'

The same effect can be witnessed with sentences (17.b) through (17.d): in those sentences, if 'deveu' is replaced for the periphrasis "deve ter + verb-INF", only the epistemic interpretation is available. Otherwise, if sentences (17.b) through (17.d) are meant to convey a root meaning, that meaning is adequately expressed only by 'ter que', as shown in (18.b-d) below:

(18) b. Eu tive que sa-ir mais cedo do trabalho.

       I have-PastPerf that leave-INF more early of.the work.

       'I had to leave work earlier.'

   c. Ana teve que fic-ar em casa porque o pai dela mandou.

       Ana have-PastPerf that stay-INF in house for.that the father of.she ordered.

       'Ana had to stay at home because her father said so.'

  d. Eu tive que cruz-ar a ponte para chegar em Florianópolis.

       I have-PastPerf that cross-INF the bridge to arrive in Florianópolis.

       'I had to cross the bridge to get to Florianópolis.'

The attribution of a meaning of necessity to 'dever' may follow from the verb's origin from the Latin word 'debere' (*to owe*). Moreover, when laws are written in BrP, they are written with 'dever':

(19) Para concorrerem a outros cargos, o Presidente da República, os Governadores de Estado e do Distrito Federal e os Prefeitos **devem** renunciar aos respectivos mandatos até seis meses antes do pleito.[9]

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*In order to be eligible for other positions, the President of the Republic, the Estates and the Federal District Governors and the Mayors **devem** to renounce their respective mandates up to six months before elections.*

Sentence (19) coveys that, according to a body of laws or rules (e.g., as contained in the Brazilian Constitution), wherever these laws are enforced, the candidates must renounce their current mandates in order to apply for new ones. Sentence 19 coveys that a candidate cannot be legally eligible if he does not first vacate his current office.

This scenario changes a bit in oral language, though, assuming that oral and written languages are disparate linguistic systems.[10] This paper aims to analyze daily speech, in which the favored readings of a 'dever' statement are epistemic (with inferences based on world evidence) and gradual, as demonstrated by the example below:

Context: Ana and Lia are going to a restaurant. Ana wants to drink whiskey. So, Ana asks if Lia knows whether the restaurant has whiskey. Lia answers:

(20) Deve te-r   (whiskey lá).

  Deve have-INF (whiskey there).

  'There must/should be' (whiskey there).

Sentence 20 could naturally be paraphrased as "Acho que tem" ("*I find it to have*"); "É provável que tenha" ("*it is probable that have*"). Such paraphrasing would convey that "given what is known about restaurants, if this restaurant is like normal restaurants, it should have whiskey". Meanwhile, the sentence conveys that it should not be overlooked that there is a possibility the restaurant does not have whiskey, since the conclusion that it should have whiskey is drawn from the fact that regularly restaurants have whiskey, but this might not be true for this specific restaurant. In other words, sentence (20) conveys that, given the available evidence, the best outcome from this body of evidence is that there is whiskey in that restaurant.

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[10] A discussion of the differences between such linguistic systems is beyond the scope of this paper. Nonetheless, one possible theory for considering 'dever' as the deontic necessity verb in written legislation is that only 'poder' and 'dever' occur in such statements. 'Ter que' does not appear in such written legislation at all, and so 'dever' shows up as the strongest modal in written law, because it does not compete with the other necessity verb. Admittedly, this theory deserves more elaborate evaluation, especially on the fact that the necessity meaning attributed to 'dever' in written statements influences its interpretation in general. For an elaborate discussion about the differences between written and spoken BrP, see Matos e Silva (2004).

In the next section, I will present evidence from semantic intuitive analysis, acquisition and syntax to endorse the hypothesis that 'dever' is epistemic, while 'ter que' is not. In doing so, I will employ the same examples used in Sections 1.2 and 1.3, and demonstrate how 'dever' and 'ter que' behave in the availability/absence of evidence in the world, in order to show that 'dever' is evidence-dependent while 'ter que' is not. The paper will briefly discuss the work of Lunguinho (manuscript) on modal acquisition, and how such work supports this hypothesis. Finally, the paper will analyze sentences in which 'dever' co-occurs with 'poder' and 'ter que' according to the syntactic analysis for modal auxiliaries provided by Ferreira (2009), in order to show that 'dever' always behaves as an epistemic modal in scope interaction with modals and other functional heads.

2. EPISTEMIC 'DEVER': EVIDENCE FROM INTUITION, ACQUISITION AND SYNTAX[11]

In contrast to 'ter que', 'dever' cannot be uttered without available evidence in the world. Consider the weather scenario from previous sections repeated below, in which a 'ter que' claim is not perfect, but a 'dever' claim is:

Context: John observes the weather. He notices signs of imminent rain: dark clouds in the sky, strong wind, and lightning. John evaluates this evidence and concludes:

(21) Deve chov-er logo.

    Deve rain-INF soon.

    'It deve to rain soon.'

(22) ? Tem que chov-er   logo.

    Has that rain-INF soon.

    'It must/has to rain soon.'

Context: John observes the weather. The air is dry. There are no clouds in the sky. There are no sign of rain. According to these observations, John utters:

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[11] There is relevant corpus analysis work showing that 'dever' is used epistemically. For example, Mello et. Al. (2010) have not found a single occurrence of deontic 'dever' in the C-ORAL-BRASIL, which gathers data from Minas Gerais BrP variant in about 15 hours of spontaneous speech records. Such quantitative works corroborate with the hypothesis and intuitions followed on this paper. In this paper, since there is a vast work on corpus analysis on that matter, I opted for an intuitive method of analysis.

(23) * Deve chov-er logo.

    Deve rain-INF soon.

    'It must/might rain soon.'

(24) ? Tem que chov-er logo.

    Has that rain-INF soon.

    'It has to rain soon.'

The 'deve' claim is perfectly uttered in the sentence (21) situation in which there is available evidence, while a 'ter que' claim (sentence 22) in that same scenario would not work so well. On the other hand, in the situation in which there is no evidence of rain (sentence 23), a 'deve' claim is totally ruled out, while 'ter que' still has a chance of making sense, so long as an element of *telos*, as shown in section 1.2, is added. The above examples show that 'ter que' does not convey an inference based on evidence, meaning that it is independent from CBg's built by evidence available in the world of evaluation. On the other hand, 'dever' depends on CBg's in order to make sense, indicating that indirect evidence is encoded in its meaning.

    The intuition that 'dever' is epistemic while 'ter que' is not is supported not only by the intuitive semantic analysis, but also by acquisition and syntax analyses. Lunguinho (manuscript) performs a longitudinal analysis of the development of modal verb usage by children aged 1 to 4 years, in their acquisition of BrP. His analysis verifies that young children first use deontic modals, and establishes the order in which each verb and its respective interpretations are employed by the children: The first modal to be used is the deontic 'poder', followed by the deontic 'ter que', and finally the epistemic 'dever', which appears around the age of 3, about at the same age as the epistemic 'poder'.

    Lunguinho does not verify the occurrence of a deontic 'dever' until the age of 4. According to the author, this might be because the deontic necessity reading is already active in 'ter que', so there is no need for another modal with the same meaning;[12] for this reason, 'dever' appears to fill the void for the epistemic interpretation of *probability* that is still missing in the children's grammar modal systems. Also, the author notes that there is no interpretation overlap in the analyzed children's systems, i.e., there is only one modal for each interpretation: deontic 'poder' (permission); deontic 'ter que' (obligation); epistemic 'dever' (probability) and epistemic 'poder' (possibility).

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[12] Lunguinho refers to the common assumption that 'dever' conveys necessity.

Moreover, considering there is a non-epistemic interpretation for 'dever', that interpretation would arise only after the age of 4, after the acquisition of the epistemic 'dever', according to Lunguinho's data. This theory would counterbalance the seemingly unanimous academic consensus that epistemic modals appear after non-epistemic ones[13].

Concerning the structure of the modals, Ferreira (2009) offers a syntactic analysis for auxiliary verbs in BrP based on functional heads hierarchy approach (CINQUE, 1999, 2006). According to such analysis, epistemic modals occupy upper positions in the syntactic hierarchy, while root modals tend to occupy lower positions. Sentences with more than one functional verb provide clues regarding the positions occupied by those verbs in the hierarchy. In Section 1.3, we saw that 'dever' differs from 'poder' and 'ter que', in that it is a defective verb which does not allow compound tenses, and does not scope under other auxiliary verbs like 'estar', 'ter' and 'ir'. The following examples show possible combinations of 'dever', 'poder' and 'ter que', with the verbs in Portuguese left in the glosses, so as not to over-commit to English translations. First, the example below demonstrates the scope relationship between 'poder' and 'ter que':

(25) a. A Ana **pode ter que** sa-ir mais cedo do trabalho.

    *The Ana **pode ter que** leave-INF more early of.the work.*

    'Ana may have to leave work earlier.'

  b. A Ana **tem que poder** sa-ir mais cedo do trabalho.

    *The Ana **tem que poder** leave-INF more early of.the work.*

    'Ana has to be allowed/to be able to leave work earlier.'

Both sentences make sense in BrP, although the positions each of the modals occupy produce different meanings. The only possible interpretation of sentence (25.a) denotes an epistemic 'poder' scoping over a root 'ter que': It is possible that Ana will be obliged to leave earlier. On the other hand, sentence (25.b) might convey, for instance, that for some reason, such as to pick up her children at school on time (teleological context), it is necessary that Ana be allowed to leave earlier. All other combinations are ruled out:

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[13] Another possible idea on this matter is that maybe a modal like 'dever' should not be analyzed in terms of epistemic or root interpretations, but only in terms of gradability, as expressed by notions of probability and desirability promoted by the ordering source. This possibility should be the subject of further research work. For more on notions of probability and desirability, please see: Portner, Kats and Rubinstein (2009) and Kratzer (2010).

(25') [given the available evidence]

a. A Ana **pode[epist] ter que[root]** sa-ir mais cedo do trabalho.

*The Ana **pode ter que** leave-INF more early of.the work.*

'Ana may have to leave work earlier.'

[in order to pick up her children at school]

b. A Ana **tem que[root] poder[root]** sa-ir mais cedo do trabalho.

*The Ana **tem que poder** leave-INF more early of.the work.*

'Ana must be allowed/able to leave work earlier.'

(25'') a. * A Ana tem que[root] poder[epist] sair mais cedo do trabalho.

b. * A Ana tem que[epist] poder[root] sair mais cedo do trabalho.

c. * A Ana tem que[epist] poder[epist] sair mais cedo do trabalho.

The examples show that 'poder' and 'ter que' set the expected scope relation: 'poder' can convey both epistemic and root meanings, it can scope under a root 'ter que' and convey root meaning (deontic in this case), and also scope above 'ter que' conveying an epistemic meaning. This paper argues that since 'ter que' hardly combines with epistemic CBg's, it will never scope above in an epistemic position.

(26) a. Depois de se recuper-ar da lesão, o jogador **deve poder** volt-ar a atu-ar no time.

*After of self recover-INF of.the lesion, the player **deve poder** return-INF to act-INF in.the team.*

b. * Depois de se recuper-ar de uma lesão, o jogador **pode dever** volt-ar a atu-ar no time.

*After of self recover-INF of a lesion, the player **pode dever** return-INF to act-INF in.the team.*

Sentence (26.a) conveys that, after recovering from a wound, it is probable that the player will be able to play again. In the sentence, an epistemic 'dever' scopes over a root 'poder' (ability), fulfilling the expected scope relation. On the other hand, sentence (26.b) is not acceptable, no matter what kind of modal interpretation is attributed to 'poder' and 'dever' in the sentence; 'dever' will always scope over 'poder'.

(27') Depois de se recuperar   da   lesão, o jogador **deve[epist] poder[root]** voltar a atuar.

    *After of self recover   of.the lesion, the player **deve**   **poder**   return to act.*

    'After recovering from the injury, the player might be able to play again.'

(27'') a. * Depois de se recuperar de uma lesão, o jogador **pode[epist] dever[epist]** voltar a atuar.

    *After of self recover of.the lesion, the player **pode[epist] dever[epist]** return to act.*

    b. * Depois de se recuperar de uma lesão, o jogador **pode[root] dever[epist]** voltar a atuar.

    c. * Depois de se recuperar de uma lesão, o jogador **pode[root] dever[root]** voltar a atuar.

    Now, observe the examples below, in which 'dever' interacts with 'ter que'.

(28)   a. Por causa   do   trânsito,   o João   **deve ter que** sa-ir   mais cedo de casa.

    For cause of.the traffic.jam, the john deve ter que leave-INF more early of house.

    'Because of the traffic jam, John *deve ter que* to leave home earlier.'

    b. * Por causa   do   trânsito,   o João   **tem que dever** sa-ir   mais cedo de casa.

    For cause of.the traffic.jam, the john tem que dever leave-INF more early of house.

    'Because of the traffic jam, John *tem que dever* to leave home earlier.'

Sentence (28.a) conveys that, because of the traffic jam, it is probable that John has to leave earlier. This demonstrates the expected scope interaction: from the evidence available, it is probable that it will be necessary for John to leave earlier. However, sentence (28.b), just like sentence (26.b), is not acceptable.

This paper's hypothesis, that 'dever' denotes epistemic modality, while 'ter que' does not, is supported by both the observation that it is impossible to scope under other auxiliaries, as well as by the Lunguinho data on acquisition. This analysis indicates, at minimum, a strong tendency for specialization.

However, it is prudent to note that we still find situations where 'dever' seems to convey root modality, and sounds 'weaker' than 'ter que' when compared against the same CBg. For instance, 'dever' could convey advice, or a weaker version of a 'ter que' order:

Context: Ana has argued with her mother and now she is feeling bad because of it. She talks about this to a friend, who absorbs all the information and, in order to make Ana feel better (teleological context), says:

(29)   a. Ana, você **deve** ped-ir   desculpas para sua mãe.

        Ana, you deve require-INF apologies to   your mother.

        'Ana, you *deve* to apologize with your mother.'

      b. Ana, você **tem que** ped-ir   desculpas para sua   mãe.

        Ana, you tem   que require-INF apologies to   your mother.

        'Ana, you *tem que* to apologize with your mother.'

Sentence (29.b) conveys a stronger meaning than sentence (29.a): It conveys that the only way for Ana to feel better about herself is to apologize to her mother. On the other hand, sentence (29.a) conveys what is desirable in that situation, 'what is best': Ana's friend is not giving an order, but is advising Ana that apologizing to her mother would be best in order for Ana to feel better[14]. In other words, a 'dever' claim allows for the comparison of alternate possibilities and does not rule out disfavored options: it would be best for Ana to apologize to her mother following the argument, but we will not overlook other possibilities.

      The weakness of 'dever' in comparison to 'ter que' in root contexts is the subject of the next section. The paper will turn to a comparison of the modal gradations provided by 'poder', 'dever' and 'ter que', and argue that 'dever' is a grade non-dual modal, which expresses some kind of comparative possibility existing between 'poder' and 'ter que' in modal gradation.

3. GRADUAL MODALITY IN BRP

Since we assume that modality is gradual, we should be able to assemble a gradation with the modals 'poder', 'dever' and 'ter que'. My aim in this section is to show that 'dever' is a gradual non-dual modal, which modal force is higher than 'poder' but lower than 'ter que'.

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[14] We are aware that might be discursive element that rules the choice between a weak and a strong claim. The hierarchy relation between the speaker and the hearer may also influence this choice. Those issues are to be explored in a further work.

3.1 ENTAILMENT RELATIONS

In the following examples, we apply a test[15] to detect modal weakness. First, one can negate a weaker modal with a strong modal without producing contradiction. Second, one can use a strong modal to reinforce a weak modal without producing redundancy. Let's see how our modals 'poder', 'dever' and 'ter que' behave in the examples bellow. I will not commit to English translations of the analyzed modals now. For a CBg, consider a scenario where social conventions are in play. Also keep in mind that all modals presented in the examples must be interpreted against the same CBg.

Context: Ana is the maid-of-honor at her best friend's wedding. As a maid-of-honor, it is expected from her that she behave well. Ana also loves champagne and there is a lot of it at the party.

(30)   a. Ana pode, mas não deve beber demais. /# Ana deve, mas não pode beber demais.

   Ana pode, but not deve drink-inf too.much./#Ana deve but not can drink-inf too.much.

      b. Não só pode, como deve se comportar. / # Não só deve, como pode se comportar.

      Not only can, as deve self behave. / #Not only deve, as can self behave.

The examples show that 'poder' can be negated and reinforced by 'dever' without contradiction or redundancy. The opposite does not hold, which indicates 'dever' expresses a modality stronger than possibility ('poder'). In other words, 'dever' claims entail 'poder' claims. The same entailment relation will hold between 'poder' and 'ter que':

(31) a. Pode, mas não tem que./ *Tem que, mas não pode.

      *Pode, but not tem que / *Tem que, but not pode.*

   b. Não só pode como tem que. / #Não só tem que como pode.

      Not only pode, as tem que. / #Not only tem que, as pode.

'Ter que' entails 'poder', but not otherwise. Reinforcing 'ter que' with 'poder' sounds pragmatically inappropriate.

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[15] Inspired in von Fintel & Iatridou (2008)

(32)   a. Deve, mas não tem que.

   b. #Tem que, mas não deve.

   c. Não só deve, como tem que.

   d. #Não só tem que, como deve.[16]

If 'dever' conveys a stronger claim than 'poder', should we call it a strong possibility? Or should we call it a weak necessity, given that it sounds weaker than 'ter que'? More than showing the entailment relation among 'poder', 'dever' and 'ter que', the examples above indicate that 'dever' works as a "dual" for 'poder' and also for 'ter que', which is a characteristic of modals without duals.

3.2 CROSSLINGUISTIC COMPARISON

According to Kratzer (2010), the gradual modality allows the existence of modals without duals. Evidence for modals without duals are found in languages like the Salish language St'át'imcets (RULLMANN, et al. 2008), Nez Perce[17] (DEAL, 2011), Gitksan[18] (PETERSON, 2012) among others. In those languages the modal system behaves differently from Kratzer's (1991, 2010) standard proposal for Indo-European languages: instead of having the modal force (possibility/necessity) determined by the lexicon and a variable conversational background provided by the context, modals in those languages have instead a variable modal force and a fixed conversational background.

For instance, the St'át'imcets modal *k'a,* reported by Rullmann et al (2008), is an epistemic modal used to convey an inference based on evidence. Important to note that the 'k'a' examples brought in Rullmann et al (2008) are translated to 'dever' in Portuguese. Here is example (5.c) from Rullmann et al (2008), reproduced as (33):

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[16] In the examples above, sentences b and d are good if both modals are interpreted each against different CBgs.

[17] The Nez Perce are a Native American people who live in the Pacific Northwest region of the United States, along the Columbia River Plateau.

[18] Gitksan people live along the Skeena River of northwestern British Columbia, Canada.

(33) *Context:* You have a headache that won't go away, so you go to the doctor. All the tests show negative. There is nothing wrong, so it must just be tension.

nilh   k'a   lh(el)-(t) -en-s -wa´ (7)-(a)   ptinus-em-sút
FOC   **INFER** from-DET-1SG.POSS-NOM-IMPF-DET   think-MID-OOC
'It must be from my worrying.'

Sentence above can be perfectly translated to BrP "Deve ser da minha preocupação".

Also the evidential '=ima' in Gitksan appears as an evidential-inferential (PETERSON, 2012), and can be translated to 'dever' in BrP. Take Peterson's (2012) example (17) reproduced here as (34):

Context: you're wondering where your friend is. You notice his rod and tackle box are not in their usual place.

(34) yukw=ima=hl   tim iixw-t
     PROG=MOD=CND   FUT fish-3

According to Peterson (2012), (34) can be translated as "He might be going fishing", "He must be going fishing", "He's probably going fishing", "He's likely going fishing", "He could be going fishing" and "Maybe he's going fishing". In BrP, according to the context given, the most probable translation is 'dever':

(34') Ele deve ter   ido   pescar.
    He deve have-INF go-PastPart fish-INF
    'He must have gone fishing.'

However, differently from '=ima', it is not likely that we would translate (34) using a possibility expression such like 'talvez' or "poder" (*maybe* or *could*, respectively), which indicates that a 'dever' claim covers the modal meaning from probability and on.

The three of the modals - St'át'imcets 'k'a', Gitksan '=ima' and BrP 'dever' - share some features: first, the 3 of them can be translated to English 'must' or 'might' and, second, they convey an inference based on evidence in the world. In that sense I assume that 'dever' is inferential, just like 'k'a' and =ima are. That cross-linguistic comparison is good evidence

to 'dever' as a gradual non-dual modal. However, I will not assume that 'dever' has a fixed conversational BG and variable force as claimed for St'at'imcets and Gitksan modals. I will argue that the modality expressed by 'dever' is context dependent. Moreover, it expresses a kind of 'comparative' possibility that conveys what is the best outcome according to the context. In what follows I will present Kratzer's (2010) discussion and try to figure out how it fits to the case of BrP modal system.

3.3 'DEVER' AS AN UPPER-END DEGREE MODAL

The aim of this section is to discuss some possibilities and raise some questions to account for the meaning of 'dever'. We will follow the discussion brought by Kratzer (2012) in which the author analyses different proposals for modals without duals. The first proposal discussed by Kratzer comes from the studies of North American native languages Giktsan, Nez perce and St'át'imcets (PETERSON, 2008; DEAL, 2010; RULLMANN et all, 2008, respectively), in which the difference between necessity and possibility modals is not lexicalized. According to Peterson (2008) and Deal (2010), Giktsan and Nez Perce modals are all possibility modals. Being weaker than a necessity modal, those possibility modals could be used to describe situations where in English, for example, one might use 'may' ('might') or 'must'. That is also an intuition for 'dever', which can also translate 'may', 'might' or 'must', depending on the context. On the other hand, according to Rullmann et al. (2008), modals in St'át'imcets are all necessity modals that can be contextually weakened by domain restrictions.

Now we will see how our reasoning to 'poder', 'dever' and 'ter que' fits the analysis referred by Kratzer (2012). In the previous sections we showed that 'poder' expresses possibility and 'ter que' expresses necessity. That means BrP lexicalizes the difference between necessity and possibility, being 'poder' and 'ter que' the dual pair possibility/necessity. That observation makes BrP different than those languages described by Peterson (2008), Deal (2010) and Rullmann et al. However, BrP also has 'dever' with an intermediate modal force, as shown by the entailment relations presented in Section 3.1. The meaning of 'dever' seems to range between the meaning of English 'may' ('might') and 'must', just like the authors described the modals in Giktsan, Nez Perce and St'át'imcets, and like we showed in the crosslinguistic comparison in Section 3.2.

Based on those analyses, we come up with some questions. Would BrP present a hybrid modal system, i.e., this language lexicalizes possibility and necessity just like the usual Indo-European languages, and also presents a modal without a dual in the North American native languages fashion? Those analyses do not discuss the possibility of a hybrid system, but also do not rule it out. If so, would 'dever' be a possibility modal that can be strengthened or a necessity modal that can be weakened? It depends. The modal force expressed by 'dever' is captured in terms of "weak" and "strong" when we compare 'dever' claims to 'poder' and 'ter que' claims. Being "stronger" than 'poder', 'dever' could be a strong possibility, while a "weak necessity"[19] when compared to 'ter que'. How to choose between those two options?

We now turn to an analysis that better agree with our intuitions about the meaning of 'dever'. According to the Kratzer:

> Rather than being a possibility modal or a collapsed possibility/necessity modal, a modal without a dual could also be a degree expression covering the upper end of a scale of degrees of probabilities or preferences. Such upper-end degree modals could correspond to notions like, "it is (somewhat) probable that", or, it is (somehow) desirable" (…) For epistemic degree modals admissible probabilities might range from, say, around 50% to 100%, for example. (KRATZER, 2012, p.46).

That description summarizes the intuitions we have for 'dever'.

Let's review those intuitions. Following the native speaker's intuition, 'dever' is more naturally paraphrased as "it is probable/desirable that". In other words, a 'deve-p' sentence expresses there is a great chance of p to be the case. In extreme cases, where the comparison with 'ter que' is not possible[20], 'dever' can be interpreted as a "duty" or "obligation", which indicates a preference for describing 'dever' a necessity rather than a possibility expression. According to Kratzer's analysis of the data in Rulmmann et al (2008), there is a clear preference for modals in St'át'imcets to describe necessary rather than possible, which is expected from upper-end degree modals once they cover the upper end degree of probabilities, say, from 50% and on.

Moreover, when considering 2 propositions p and q, 'deve-p' does not exclude the possibility of q: all it expresses is that p has better chances than q (recall the whiskey example

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[19] An analyses of 'dever' as a weak necessity is outlined in Pires de Oliveira e Scarduelli (2008) and in Pessotto e Pires de Oliveira (2011). The authors explore von Fintel and Iatridou (2008) proposal for weak necessity, which involves the contribution of imperfective morpheme. BrP presents such a morphology, and the contribution of the imperfective can also be a line of approach to account for modal weakness in this language. For a matter of space, and because we do not deal with the imperfective morpheme in this paper, we chose not to discuss von Fintel and Iatridou's proposal for weak necessity here. For more on that matter, see Pessotto (2015), in preparation.
[20] Here we consider cases like written body of laws (as mentioned in note 9), where 'dever' does not compete with the stronger modal 'ter que'.

in (20)), which requires comparing possibilities. Also, it seems to be possible to conjoint 'deve-p' and 'deve-q'. For instance, the following example is acceptable in BrP:

Context: John, the doorman, is a very responsible worker and never gets late. When something unforeseen happens, he calls his supervisor from his cell phone. Today, John is late for his shift and did not call his supervisor. The supervisor then utters:

(35) O João deve estar sem bateria no celular ou deve ter morrido!
The John deve to.be without battery in.the cellphone or deve to.have died!
'John might have ran out of battery on his phone or he might have died!'

However, the speaker's judgment about examples like (32) is not categorical[21]. Such inconsistency in judgment is also reported by Rullmann et. al. (2008) for St'át'imcets, which according to Kratzer (2012) indicates that such modals are not simple possibility modals, otherwise sentences like (32) would be as well accepted as a correlate with 'pode'.

4. FINAL REMARKS

The aim of this paper was to map the meanings of three modals in BrP – 'poder', 'dever' and 'ter que' - in order to determine against which CBgs they can be interpreted and their place in the modal gradation by comparing their intuitive meanings. We followed the Kratzerian approach for modality in natural language (Kratzer, 1991, 2012). First we demonstrated the different conversational backgrounds they can be interpreted against and, second, the entailment relations between them, which indicated the modal force they express.

In short, there seems to be a strong tendency of specialization, since 'dever' is preferred to express epistemic (evidential, inferential) modality, while 'ter que' is preferred

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[21] Some informally consulted speakers say the sentence would be better with only one "deve" ("O João deve estar sem bateria ou morreu") or with 'deve-p' in conjunction with 'pode-p' ("O João deve estar sem bateria ou pode ter morrido"). One possible line of account for this fact is Mosteller and Youtz (1990), where numerical averages of different people's opinions on quantitative meanings of 52 qualitative probabilistic expressions are tabulated. The tabulation covers a range from 'never' – to which was attributed a probability from 0.1 to 0.4 – to 'always' – to which was attributed a range from 99.6 to 99.8. Among the expressions that figure between the extremes are 'probable' and 'possible', with attributed probabilities from 64.7 to 77.7 and 7.5 to 50.2, respectively. Based on the equivalent meaning of epistemic 'dever' and 'probable', one could use Mosteller and Youtz (1990) data to support that 'dever' covers a range of probability from about 60 to 80, which does not overlap with 'possible' and does not reach close to 100 (which would be the range for 'necessity'). Such approach would serve to maintain the difference between 'dever' and 'ter que' (necessity) and also explain why (32) is not categorically accepted, but a sentence like 'deve-p or pode-p' is preferable: this is because their range of probability is compatible. Of course the quantification of 'dever' is still a matter of study.

for root modalities. We also showed some evidence from language acquisition (LUNGUINHO, manuscript) and syntax (FERREIRA, 2009) to support this idea. On this matter, a experimental study using questionaries applied to 50 BrP native speakers has been prepared in order to demonstrate empirically this tendency for specialization (see Pessotto (2015), in preparation).

In what concerns to the modal force, entailment relations show that 'dever' claims sound "stronger" than 'poder' claims, and "weaker" than 'ter que' claims, which suggests 'dever' is a modal without a dual, while 'poder' and 'ter que' figure as the traditional dual pair possibility/necessity. Moreover, 'dever' shows up as a gradual modal, which meaning can translate English 'may', 'might' or 'must', depending on the context. Such a "vague" behavior is similar to those modals described in North American native languages, which do not lexicalize the difference between possibility and necessity. The fact that BrP presents a dual pair possibility/necessity, namely, 'poder' and 'ter que', and also a gradual, 'dever', suggests that BrP modal system is a hybrid system that both lexicalizes the difference possibility/necessity ('poder'/'ter que') and also presents a non-dual modal ('dever'), which covers the upper end range of probabilities. An accurate quantification of the expression 'dever' is still a matter of further investigation.

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RESUMO: Este artigo apresenta uma análise comparativa dos auxiliares modais 'poder', 'dever' e 'ter que' com o objetivo de mapear sua semântica. O objetivo é descrever o papel que cada um desses modais tem na gradação modal, com base na proposta formal para semântica da modalidade em língua natural desenvolvida inicialmente por Kratzer (1981, 1991, 2012). Neste artigo assume-se que 'poder' é o verbo prototípico de possibilidade, enquanto 'dever' e 'ter que' diferem não somente em termos de força modal mas também em termos dos diferentes tipos de fundos conversacionais com que são compatíveis. Conclui-se que os modais 'dever' e 'ter que' exibem uma forte tendência a especialização, confirmando a análise de Pires de Oliveira and Scarduelli (2008). Além disso, 'dever' soa "mais fraco" do que 'ter que' e "mais forte" do que 'poder' porque, como vamos argumentar, 'dever' é um modal gradual sem dual que representa as escalas mais altas de probabilidade (upper-end), como os modais descritos em Kratzer (2012).
PALAVRAS-CHAVE: Modalidade; probabilidade; possibilidade; necessidade.