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The Distribution and Use of *aahk*- Modality in Kainai Blackfoot

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Abstract

This study investigates the distribution and use of modality in Kainai Blackfoot in the presence of the morpheme *aahk*-. By using utterance in context tasks and judgement tasks, I elicited data from three native speakers. This study is limited to combinations of strong and weak modals of the epistemic and deontic type.

Modality that uses *aahk*- in Kainai Blackfoot consists of the combination of the morpheme *aahk*- and a second (optional) morpheme, which join as a single lexical item based on negation use and surface order. Kainai Blackfoot makes a four-way modal distinction. One distinction is between strong and weak modals and a second is made between epistemic and deontic type modals. However, the weak modals have a level of overlap and can be ambiguous.

1. Introduction

Kainai Blackfoot makes formal distinctions based on modal strength (necessity vs. possibility) and type (epistemic vs. deontic). One way that this is expressed is based on *aahk-* and its following morpheme. Frantz & Russell (2009) define the affix *aahk-* as “might/non-factive,” and Marshall (2012) references it as epistemic necessity. My data suggests that *aahk-* only expresses an epistemic possibility interpretation and I posit that Kainai Blackfoot makes a four-way modal distinction with regards to all four possibilities in its use of *aahk-* with a following morpheme within: necessity, possibility, epistemic, and deontic modality. However, epistemic possibility and deontic possibility have some overlap and can be ambiguous. By means of eliciting context sentences and judgement tasks from native speakers I will show that in Kainai Blackfoot *aahk-* makes a strong vs. weak distinction, as well as an epistemic vs. deontic type distinction. The breakdown of this paper is as follows. Section 2 discusses some background information about Kainai Blackfoot and the methodology used in this study. Section 3 shows my analysis of the data in the various contexts. Section 4 discusses judgement task sentences and the analysis of *aahk-*. Section 5 briefly compares Blackfoot modality with other languages. Section 6 concludes and provides direction for future research. The goal of this paper is to provide a description of the distribution and use of *aahk-* in Kainai Blackfoot, and to offer an analysis that gives some insight on its semantic content, which can lay the groundwork for the formal semantics of the *aahk-* morpheme.

2. Background information

2.1 *Kainai Blackfoot*⁷

Blackfoot is an endangered polysynthetic Algonquian language spoken in Alberta and Montana. According to Ethnologue,⁸ there are approximately 3,350 (2011 census) speakers of Blackfoot across 4 dialects. The Blackfoot data in this paper was collected in my fieldwork from three Kainai (Blood Tribe) consultants. It is important to note that this paper only focuses on Kainai Blackfoot, since other dialects of Blackfoot seem to convey modality differently (cp. Siksika *na* ‘epistemic modal marker’ Bliss & Ritter 2007).

2.2 *Transcriptions*

I use, where possible, the orthography developed by Donald Frantz (1978). The transcriptions use a four-line gloss made up of the pronunciation, a morpheme breakdown (based on Frantz (2009) and Frantz and Russell (1995)), a morpheme gloss, and the translation, followed by any notes including the context.

2.3 *Technical details*

The sessions were recorded on a Zoom H4n digital stereo recorder. I used the internal stereo microphones (set to 90 degree range for maximum isolation), the recording level was at 90 and the windsock was on the microphones. The recorder was on the field box on a table in the centre-front of the room; in the sessions the media podium and the lights

⁷ I would like to thank Issapoikoan, Ainootaa, and Ahstanskiaki for consulting with me and graciously providing the data used in this paper.

⁸ <http://www.ethnologue.com/language/bla>, Accessed March 31, 2013.

unfortunately had a buzz that could not be turned off, but it was far enough away that the noise floor was not too high.⁹

2.4 Methodology

Because this study is focused on whether Kainai Blackfoot makes some type of lexical distinction between modal strength and type, the majority of the elicited data is what Muehlbauer (2008) referred to as utterance-in-context tasks. These tasks primarily consisted of describing a situation to the consultants, presenting a sentence in English, and asking for a translation. Then the context was altered and the same English sentence was presented for translation. When modal strength was being tested in the altered context, then a word like *might* was replaced with a word such as *must*. For clarity, the contexts of each piece of data will be given when it is first introduced. An additional method of eliciting utterance-in-context was by using storyboard slides downloaded from Totem Field Storyboards (TFS Working Group 2011a, 2011b). This data was elicited by showing various images while reading a story, where the English text was not shown to the consultant. After a few read-throughs, I asked the consultant to use the pictures and to re-tell the story to me in Blackfoot. This was followed by a second (slide-by-slide) translation of the story to verify modal use. A third type of elicitation was via judgement tasks (Muehlbauer 2008). This task was accomplished in two different ways. First, by asking the consultants to re-translate their previously elicited data or to translate each other's data and then ask for the context that is required to understand the sentence. I also tried to see if certain sentences could be used in other situations. Secondly, I attempted to construct sentences where the order of certain morphemes were altered in order to examine modal surface order. This study will be limited to strong and weak epistemic and deontic modality. It is important to note that Blackfoot contains other morphemes that can express different modal types and strengths such as *noohk-* 'an opposition in truth values' (cp. Louie 2011), however, this study was limited only to morphemes that combine with *aahk-*.

2.5 Complications

As far as I can tell, no systematic work has yet been done on the modality of *aahk-*. This means the bulk of this research is entirely reliant on the data from my consultants. Secondly, possibly due to a failure to communicate the context on my part, certain judgement tasks provided inconclusive results from the speakers. This included certain negation constructions as well as quantifier scoping. For instance, the consultants asserted that there was no difference between the Blackfoot forms for 'every dog cannot kill a cat' and 'not every dog can kill a cat', and it was unclear whether this was because the two different contexts were not properly communicated, or whether the Blackfoot form truly had ambiguous scope. It was also difficult to tell whether the morpheme pairs should be glossed as a single item or not. Although I believe that the modals combining with *aahk-* form a single semantic item, I will gloss the data with the morphemes broken into separate parts for morphological reasons, and to be consistent with Frantz and Russell (1995). There was also a fair amount of elision in Issapoikoan's and, at times Ainootaa's, speech, making it entirely possible that *ohkott-* 'able' (a morpheme paired with *aahk-* in the data

⁹ The technical details were obtained through p.c. from Karsten Koch (2013).

presented below) should be read as *ohk-*, which Marshall (2012) references as a weak necessity modal. However, since the possible contrast is currently unclear, I will maintain *ohkott-* in the glosses and analysis.¹⁰

3. The distribution of *aahk-* in utterance-in-context tasks

3.1 *Aahk-* and its surrounding environment in specific contexts

The *aahk-* morpheme can either appear alone with the verb stem or followed by *ohkott-* (able), *oma-* (yet), or *sstsina-* (need) (Frantz and Russell 2009), as seen in table 1.

Blackfoot	Possibility	Necessity
Epistemic	aahk- + (ohkott)	aahk- + oma-
Deontic	aahk- + ohkott	aahk- + sstsina-

Table 1: Morphological realization of Blackfoot modality

The choice of the (optional) following morpheme is context dependent. Although there are other degrees of modal strength, in some languages, such as weak necessity (cp. *should* in English (Matthewson 2013)), I only elicited modal strength using the contexts of being either weak (possibility) or strong (necessity). The question of whether Blackfoot makes intermediate strength distinctions is left for future research. I define the epistemic type of modality as information where the speaker states their judgement with regards to the factual content of a proposition or context (Palmer 2001:8). I define the deontic type of modality as being based on law, permission, or obligation, which conforms to Nauze's (2009) proposal, who suggested a narrower scope of deontic modality. This degree of lexical distinction in type and strength is not the same in all languages, as will be discussed in section 5. I will now cover the modal contexts of possibility and necessity with regards to epistemic and deontic modality.

3.1 *Epistemic Possibility*

In a context where epistemic possibility is used, Kainai Blackfoot can either use *aahk-* alone or it can be followed by *ohkott-*.¹¹ When *aahk-* is used alone with the verb stem, I refer to this as a default use, since it is not affected by another modal. According to my consultants, there is no difference between *aahk-* and *aahp-*. I treat the variations as allomorphs of the same morpheme. The reason for the *aahk-* / *aahp-* alternation is unclear and no mention of *aahp-* is made by Franz & Russell (1995). For the purposes of this study, I will use *aahk-* as the basic form.

¹⁰ Any errors in the glosses are due to my own error and are not the fault of the consultants.

¹¹ I suspect that *ohkott-* is translated as 'able' in specific contexts, such as in certain epistemic possibility constructions, but a requirement in deontic possibility constructions. However, the exact usage of *ohkott-* is unclear at this time and requires further study.

- (1) maahpohtsissitapii ni soopatsis
 m-**aahk**-ohtsissitapii-(wa) ni soopatsis
 3SG-aahk-use-3SG¹² DEM chair
 ‘he might use the chair’

[Note: Denoting epistemic possibility.]

[Context: Two friends play a prank on someone and lock him in a room. The room has a chair inside and the locked door is made of glass. When the two friends are talking about how he will get out, the second friend, knowing that the person locked in the room is likely to use the chair, says “he might use the chair.”]

As shown in 1, *aahk*- can be used without any other morpheme between it and the verb stem. It is also acceptable to have *ohkott*- between *aahk*- and the verb stem, as seen in 2.

- (2) na imitaa aahkohtahkomimmii ni poosi¹³
 na imitaa-(wa) **aahk-ohkott**-(w)aakomimm-ii-(wa) ni poos-i
 DEM dog-3SG aahk-able-love-DIR-3SG DEM cat-4SG
 ‘the dog could love the cat / the dog could have loved the cat’

[Note: Denoting epistemic possibility.]

[Context: For the past week or so a man’s dog started being nice to the man’s cat, the dog even started sleeping beside the cat. Although the man is not certain, he still says to someone “the dog could love the cat.”]

The appearance of *aahk*- in an epistemic possibility reading was also evident in storyboard elicitations, as shown in 3.

- (3) saa maatsskini na poosa mahksskina
 saa maat-sskini na poos-a m-**aahk**-sskini-(wa)
 no NEG-know DEM cat-3SG 3-aahk-know-3SG
 “‘I don’t know where your mother is... but maybe the cat knows”

[Note: Denoting epistemic possibility.]

[Context: A mouse is going around asking different animals if they saw his mother, a raven being uncertain says “I don’t know where your mother is... but maybe the cat knows.”]

(Context from TFS Working Group 2011b)

¹² Abbreviations used in this paper:

1 = 1st Person 2 = 2nd Person 3 = 3rd Person 4 = Obviative
 SG = singular DEM = Demonstrative DIR = Direct Theme PERF = Perfective Aspect

¹³ It is important to note that the surface forms do not always map 1-to1 with the proposed morpheme breakdown. this may be due to allomorphy, dialectal variation, or perhaps there are other morphemes involved. The reasons are currently unclear and required further study.

3.2 Epistemic Necessity

In a context where epistemic necessity is elicited, Kainai Blackfoot always uses *aahk-* followed by *oma-* ‘yet’, as depicted in 4.

- (4) a. na imitaa aahkomwaakomimmii ni poosi
 na imitaa-(wa) **aahk-oma-**(w)aakomimm-ii-(wa) ni poos-i
 DEM dog-3SG aahk-yet-love-DIR-3SG DEM cat-4SG

‘the dog must love the cat’

[Note: Denoting epistemic necessity.]

[Context: For the past week or so a man’s dog started being nice to the man’s cat, the dog even started sleeping beside the cat. The man being absolutely sure of the dog’s feelings, due to his knowledge of the dog’s habits, says to someone “the dog must love the cat.”]

- b. aahkomwahtsissitapii ni soopatsis
 aahk-oma-ohtsissitapii-(wa) ni sooppatsis
 aahk-yet-use-3SG DEM chair

‘he must have used the chair’

[Note: Denoting epistemic necessity.]

[Context: Two friends play a prank on someone and lock him in a room. The room has a chair inside and the locked door is made of glass. When the two friends return they find the man gone, the glass door broken, and the chair in the hallway. One friend says to the other “he must have used the chair.”]

(5) Shows *aahk-oma-* in the presence of a perfective morpheme for surface order relations, which will be discussed further in section 4.

- (5) na imitaa (m)aahkomikaai’nitsii ni poosi
 na imitaa-(wa) m-**aahk-oma-**lkaa-i’nit-ii-(wa) ni poos-i
 DEM dog-3SG 3-aahk-yet-PERF-kill-DIR-3SG DEM cat-4SG

‘the dog must have killed the cat’

[Note: Denoting epistemic necessity. Also, Ainootaa, but not Issapoikoan, added a *m-* to the verb.]

[Context: The dog and cat have been fighting for a long time. At one point the dog comes into the room where the owner and house guest are at and the dog’s face is covered in blood. In a panic the owner says “the dog must have killed the cat.”]

3.3 Deontic Possibility

Similar to epistemic possibility, deontic possibility uses *aahk-* followed by *ohkott-*. However, unlike epistemic possibility, it does not appear without the second modal morpheme. This suggests that *aahk-* may have a default epistemic possibility reading and it is strengthened or altered in type based on the modal that follows it. Nonetheless, when *aahk-* is followed by *ohkott-* it is ambiguous in modal type, since it can be used both

epistemically and deontically, suggesting that Kainai Blackfoot does not always make a clear modal type distinction between weak modals. The example in 6 shows both modal types, where *ahkohtsi'nitsii* denotes the deontic possibility reading. *Maahkti'kainyop* could denote a deontic possibility reading, since it is permissible by law, however, based on the regularity of the morphology I suspect that *maahkti'kainyop* is epistemic possibility and the utterance is based on the speaker's knowledge of the law. But it is also possible that only the main clause requires the second morpheme.

- (6) na imitaa aahkohtsi'nitsii ni poosi (maahkiti'kainyop)
 na imitaa-(wa) **aahk-ohkott**-i'nit-ii-(wa) ni poos-i (m-**aahk**-iti'kainyop)
 DEM dog-3SG aahk-able-kill-DIR-3SG DEM cat-4SG (3-aahk-law(?))
 'the dog can kill the cat - it's possible under law'
 [Note: Denoting deontic possibility.]
 [Context: The cat killed the dog's brother, in a world where the dog is legally allowed to exact vengeance. Someone then says "the dog can kill the cat."]
 [The last word was added as an afterthought, meaning he is allowed under law. Possibly related to *iiyikoyaapiikoan* - lawyer.¹⁴]

7(a-b) Shows that the modal interpretations are not affected by person. 7a shows a modal with a 2SG subject and 7b shows a 1SG subject, and in both cases *aahk-ohkott* expresses deontic possibility.

- (7) a. kiaahkohkottamitapoo
 kit-**aahk-ohkott**-am-itapoo
 2SG-aahk-able-there-go
 'you can go there'
 [Note: Denoting deontic possibility, permission.]
 [Context: There is restricted access to a building, but someone in authority gives permission by saying "you can go there."]
- b. taahkotakomimmaa na imitaa
 t-**aahk-ohkott**-(w)aakomimm-ma na imitaa-(wa)
 1-aahk-able-love-3SG DEM dog.3SG
 'I can love the dog'
 [Note: Denoting deontic possibility, permission.]
 [Context: An owner just bought a dog and since it is now his he says "I can love the dog."]

3.4 Deontic Necessity

Similar to epistemic necessity, deontic necessity requires *aahk-* to be followed by a mandatory second morpheme, *sstsina-* 'need,' as in 8. Unlike the expression of possibility, the expression of necessity shows a clear distinction between epistemic and deontic readings, since there is no ambiguous overlap.

¹⁴ See Frantz & Russell (1995).

- (8) a. na imitaa aahksstsinaii'nitsii ni poosi
 na imitaa-(wa) **aahk-sstsina-i'**nit-ii-(wa) ni poos-i
 DEM dog-3SG aahk-need-kill-DIR-3SG DEM cat-4SG
 'the dog must kill the cat'
 [Note: Denoting deontic necessity, obligation.]
 [Context: A cat is going to take over the world. To stop the cat a decree was
 made that "the dog must kill the cat."]
- b. na imitaa aahkstsinaikomimmii ni poosi
 na imitaa-(wa) **aahk-sstsina-(w)**aakomimm-ii-(wa) ni poos-i
 DEM dog-3SG aahk-need-love-DIR-3SG DEM cat-4SG
 'the dog must love the cat'
 [Note: Denoting deontic necessity, obligation - in a world required by law.]
 [Context: A law is passed where dogs that do not love cats are killed.
 Therefore, someone says "the dog must love the cat."]

The example in 9 shows that these modal contrasts are not limited to stative verbs or animate nouns.

- (9) aistsiskakaikyop aahksstsinaiistsiini omi pokon
 ais-tsiskakaikyop-(wa) **aahk-sstsina-iksiini-(ma)** omi pokon-(yi)
 ??¹⁵-bat(baseball)-3SG aahk-need-touch-3 DEM ball-4SG
 'the (baseball) bat must hit the ball'
 [Note: Denoting deontic necessity.]
 [Context: By law to save his own life the baseball player must hit the ball, so
 someone says "the bat must hit the ball."]

3.5 Weather constructions

Weather constructions in Blackfoot are more ambiguous. Originally my consultants provided 10a when I offered the sentence "it might have rained". Because they used *oma-* I inquired as to the difference between 10a and 10b. When the two were compared the consultants agreed that 10a was a stronger statement than 10b.

¹⁵ The meaning of this morpheme is currently unclear. It looks like it might be a nominalization based on a verb form or (less-likely) a DEM.

- (10) a. aahkomsootaa
aahk-oma-sootaa
 aahk-yet-rain
 ‘it might/must have rained’
 [Note: Denoting epistemic possibility/necessity. Considered stronger than aahk-sootaa.]¹⁶
 [Context: Two people walk outside and see that the ground is wet and there are dark clouds in the sky. One says to the other “it might/must have rained.”]
- b. aahksootaa
aahk-sootaa
 aahk-rain
 ‘it might rain’
 [Note: Denoting epistemic possibility.]
 [Context: Two people walk outside and see a dark sky. One says to the other “it might rain.”]

4. Analysis and Judgement Tasks

This section consists of an analysis of the data from section 3 and combines it with judgement task data in order to better understand the surface order and morpho-syntactic relations of *aahk*-.

4.1 A four-way Distribution

Based on the above data in section 3, Kainai Blackfoot makes a definite strong/weak distinction. Weak modals use *aahk*- followed by (optionally for epistemic) the morpheme *ohkott*-. Weak modals can be ambiguous in modal type, since epistemic possibility can be expressed by *aahk-ohkott*-, just as deontic possibility requires. Strong modals do make a clear type distinction. Strong epistemic modality is expressed by *aahk-oma*-, while strong deontic modality is expressed by *aahk-sstsina*-. Therefore Blackfoot makes a four-way distinction in its modal use of *aahk*-, with a degree of overlap on the weak end of the spectrum.¹⁷

4.2 Double Modals in Kainai?

It would seem that modality using *aahk*- in Kainai Blackfoot is usually a combination of two morphemes. One possibility could be that Kainai Blackfoot is a double modal language similar to the ‘might could’ constructions of Southern United States English with two separate syntactic heads (Lewis 2012). However, with the occasional exception of *ohkott*- in certain contexts, my consultants always parsed and translated the sentences as a single unit. In fact, one of the consultants found the English translation of *aahk-sstsina*- as ‘might-need’ odd. Moreover the weak strength of the *aahk*- modal is completely lost in necessity constructions. For this analysis I suggest that Kainai Blackfoot modals form a combined

¹⁶ The difference between 10a and 10b may also be due to tense interpretations. However, this will be left to future study.

¹⁷ For an alternate view of *aahk*- as a strong epistemic modal see Marshall (2012).

semantic unit, which is in line with Di Paolo (1989), who argued that double modals constitute single lexical items. However, further testing is required to confirm whether Blackfoot is actually a double modal language.

4.3 Judgement Tasks, Negation and Surface Order

In addition to the utterance-in-context tasks, I presented various sentences to my consultants to judge their grammaticality. These judgement tasks were intended to identify any morpho-syntactic hierarchy. Previously shown in 5 (repeated here as 11a), modal morphemes precede the perfective aspect morpheme. The data in 11(b-c) shows that *aahk-* must always precede the second modal morpheme, which either suggests that the modals act as a single morpho-syntactic unit or that they have a strict morphological ordering.

- (11) a. na imitaa aahmohkomikaai'nitsii ni poosi
 na imitaa-(wa) (m)**aahk-oma**-lkaa-i'nit-ii-(wa) ni poos-i
 DEM dog-3SG (3)-aahk-yet-PERF-kill-DIR-3SG DEM cat-4SG
 'the dog must have killed the cat'
- b. * na imitaa ohkottaahkomimmii ni poosi
 na imitaa-(wa) **ohkott-aahk**-(w)aakomimm-ii-(wa) ni poos-i
 DEM dog-3SG able-aahk-love-DIR-3SG DEM cat-4SG
 'the dog could love the cat'
 [Note: Cannot reverse *aahk-* and *ohkott-*.]
- c. * na imitaa sstsinaahksii'nitsii ni poosi
 na imitaa-(wa) **sstsina-aahk**-i'nit-ii-(wa) ni poos-i
 DEM dog-3SG need-aahk-kill-DIR-3SG DEM cat-4SG
 'the dog must kill the cat'
 [Note: Cannot reverse *aahk-* and *sstsina-*.]

Additionally, the data in 12 shows that various negation morphemes can either precede or follow the modal pairs, but cannot appear between them. Blackfoot uses various negation morphemes, the choice of which is based on the morpho-syntactic structure.¹⁸

- (12) a. na imitaa maanaahkomwaahkominnii ni poosi
 na imitaa-(wa) **maat-aahk-oma**-(w)aakomimm-ii-(wa) ni poos-i
 DEM dog-3SG NEG-aahk-yet-love-DIR-3SG DEM cat-4SG
 'the dog must not love the cat'
 [Note: Denoting epistemic necessity. Inverse scope.]
 [Context: In a world where dogs never love cats, someone says "the dog must not love the cat."]

¹⁸ The difference in the negation morphemes is based on Frantz (2009:82-84), who claims that *maat-* is used only if no other prefix except person precedes it. Furthermore, he claims that negation can occur after *aahk-* in the form *sta'*. My consultants pronounce this other negation morpheme as *sa'*, but I maintain *sta'* for clarity.

- b. na imitaa maahkomsa'waahkominnii ni poosi
 na imitaa-(wa) **m-aahk-oma-sta'**-(w)aakomimm-ii-(wa) ni poos-i
 DEM dog-3SG 3SG-aahk-yet-neg-love-DIR-3SG DEM cat-4SG
 'the dog must not love the cat'
 [Note: Same context as (12a). Surface scope. The consultants preferred the structure in (12a) but did find this acceptable.]
- c. * na imitaa aahksta'omwaahkominnii ni poosi
 na imitaa-(wa) **aahk-sta'/maat-oma-**(w)aakomimm-ii-(wa) ni poos-i
 DEM dog-3SG aahk-yet-neg-love-DIR-3SG DEM cat-4SG
 'the dog must not love the cat'
 [Note: Cannot put NEG between the modals.]

There are other occurrences where negation appears after a modal as Frantz (2009:82-84) suggests, but there seems to be a preference for using *maat-* for negation among my consultants (for a detailed account of single modals with negation see Marshall 2012). Interestingly, the negation *sta'* appears not just after *aahk-* as Franz suggests (2009) but when two modal elements are present it appears after them both 12b. As 12c shows, I was not able to elicit negation between the modals. This might be due to the morpho-syntactic structure or because they act as a single lexical item. Based on the data from 11 and 12, it would seem that verbal morphology is expressed in the order shown in 13.

(13) Person_[NP] > NEG > Modal *aahk-* > (Second Modal) > (NEG) > PERF > Verb

4.4 The Structure of *aahk-*

I will assume Bliss & Ritter's (2007) analysis that Blackfoot is a tenseless language and there is no inherent tense. Blackfoot does not have an overt past tense marker and future tense requires the additional morpheme *(y)aak-* (Frantz 2009). Based on this and the data discussed above, I suggest that *aahk-* is part of an ordered pair, combining with a second modal morpheme, which joins as part of a split head and then merges with the phrase structure (similar to *noohk-* cp. Louie 2011). Once *aahk-* is combined with a second morpheme it merges between I' and vP, since modals occur after person in surface structure. I assume that modals head the category I(nflection) and the person marker moves to the specifier of IP. This is shown in 14.

- (14)
-
- (Adapted from Louie 2011:114)
- Where $Z \in \{\emptyset, \text{ohkott-}, \text{oma-}, \text{sstsina-}\}$

5. Comparing Blackfoot Modality

The contrasts in the expression of modality in Blackfoot are not unexpected in language. This section shows various modal contrasts in St'át'imcets, English, and Gitksan. This section is not intended to be a comprehensive comparison. It will only reference the general distinctions in possibility, necessity, epistemic, and deontic modality.

St'át'imcets (Lillooet Salish) only makes a modal type contrast but not a strength distinction. As seen in table 2, [ka] is used for deontic modality and [k'a] is used for epistemic modality (Matthewson 2005). I have shaded identical forms the same shade for clarity.

St'át'imcets	Possibility	Necessity
Epistemic	k'a	k'a
Deontic	ka	ka

Table 2: Morphological realization of St'át'imcets modality

English is the opposite to St'át'imcets. There is no distinction in any modal type, only in modal strength (Palmer 1990). If 15 were uttered it could be used for either the epistemic or deontic context. This is further illustrated in table 3.

- (15) 'John must be at home'
 Context 1: John light's are on and there is movement in the house (epistemic)
 Context 2: John is under house arrest (deontic)

English	Possibility	Necessity
Epistemic	can	must
Deontic	can	must

Table 3: Morphological realization of English modality

Interestingly, Gitksan (a Tsimshianic language) is the most similar to Blackfoot using a three-way modal contrast (Matthewson 2013). However, the inherent ambiguity is not within strength (possibility) modals, but within modal type, and also unlike Blackfoot, the ambiguity is complete. The modal *ima('a)* has no strength distinction, as shown in table 4.

Gitksan	Possibility	Necessity
Epistemic	anook	sgi
Deontic	ima('a)	ima('a)

Table 4: Morphological realization of Gitksan modality

Based on the various modal data above, a four-way contrast should not be unexpected. Each of languages discussed here handles the strength versus type contrast in a different way. Blackfoot demonstrates the most complex modal system of the languages discussed, as shown in table 1 (repeated below).

Blackfoot	Possibility	Necessity
Epistemic	aahk- + (ohkott)	aahk- + oma-
Deontic	aahk- + ohkott	aahk- + sstsina-

Table 1: Morphological realization of Blackfoot modality

Based on the four-way distinction, Blackfoot is not as context dependent as the other languages mentioned, since the context is realized lexically and not pragmatically.

6. Conclusion

Kainai Blackfoot does make distinctions in modal strength and type. It makes a four-way modal contrast between possibility, necessity, epistemic, and deontic modality, which can all be expressed with the morpheme *aahk-* combined with a possible secondary morpheme. The *aahk-* morpheme, when it surfaces alone, has a default epistemic possibility interpretation, but when combined with a second modal the strength and type of the modal can be altered. The first contrast is between strong and weak modals. The second is between the type of modals, distinguishing epistemic and deontic modality. The epistemic and deontic possibility constructions can share the *aahk-ohkott-* form, which can be ambiguous. The modals are found between I' and vP, which I base on their surface order with respect to the data, negation, and judgement tasks. The four-way contrast in modality suggests that Blackfoot does not rely on context to express modality, but does so lexically.

It is my hope that this study has laid the foundation for more in depth studies. In future studies I intend to investigate other types and strengths of modality (including intermediate levels), and also compare modals other than *aahk-*. I would also like to examine how temporal semantics relates to the modals, as well as the interaction of negation and scope. Importantly, the question of whether or not Blackfoot modals combine to form a single lexical item, remains to be seen and requires more research. Blackfoot has a very rich modal system and much can be learnt from further study.

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