Morphological awareness in bilingual Inuktitut–English speakers from the perspective of relational spreading

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In this paper I put forward the idea of relational spreading to conceptualize morphological awareness in code-mixing bilinguals. This idea was developed in response to noting instances of incorporated English bases into Inuktitut words in original empirical data from Allen, Genesee, Fish & Crago (2009). Certain classes of verbal affixes, e.g. light verbs, require the incorporation of an element into the position of the base, but incorporations are not limited to nominals. The base itself is considered to be essential in Inuktitut, but it appears that the language also accepts base ellipsis. I propose that these conditions support the incorporation of English elements into Inuktitut verbal affixes and that speakers are likely aware of these conditions when code-mixing. I argue that during code-mixing, speakers match lemmas from one language with lexemes from another language. For bilingual speakers, the relations formed between lemmas and lexemes across languages contain morphological information such as whether or not the lemma of an Inuktitut base can be matched with an English lexeme.

1 Introduction

The standard assumption is that the left-most element of the Inuktitut word, the base, is essential (e.g. Swift & Allen, 2002; Sammons, 1993). Incorporations, abundant in Inuktitut word formation, are found in the left-most position. Incorporations can be defined as instances of a (usually bare) noun in close association with, or morphologically attached to a verb (Johns, 2007). The following data example is from Nowak (2009); the incorporated bare noun 'aiviq' is bold, the verbal affix –si is underlined.

(1) bare root

aiviq	-<u>si</u>	-liq	-ramnuk
walrus	-<u>come.across</u>	-begin	-1D.CAUS.INTR

'We two suddenly come across a walrus'

The majority of Inuktitut speakers today are bilingual, learning Inuktitut as their first language from birth and English as their second language, usually upon entering school (Allen, 2007). The data in Allen, Genesee, Fish & Crago's (2009) study show that bilingual speakers can incorporate English elements into Inuktitut utterances. The incorporated English element in (2), found in the left-most position, is in italics and the verbal affix –u is underlined (data from Allen et al., 2009).

(2) bare root

maani	-i	-gii	*goalie*	-u	-nia	-rama?
here	-be	-IMP.2SS		-be	-FUT	-CTG.1SS

'Can you be here so I can be the goalie?'

Observations of bilingual speakers incorporating both Inuktitut and English elements alike into Inuktitut verbal affixes pose interesting questions about speakers' morphological awareness. Morphological awareness can be understood as the knowledge or understanding of how words are created and how to apply this knowledge (e.g. Rice, Libben & Derwing, 2002; McBride-Chang et al., 2008). In this paper I argue that code-mixed incorporations in Inuktitut–English bilingual speech can be analyzed in terms of *relational spreading*, a proposed model of speech production that draws on the theoretical approach of relational morphology. Following Winford (2009), who states that code-mixing is the outcome of bilingual speakers' matching lemmas from one language with lexemes from another language, I propose that in the bilingual lexicon, lemmas and lexemes are stored in relational patterns across languages. I use the word *lemma* to refer to the semantic grammatical properties of words (without their sounds). The formed relations are used by speakers when creating code-mixed utterances.

This paper first presents a short introduction to Inuktitut, followed by a discussion of incorporations in general and the occurrence of English incorporations into Inuktitut words (Sections 2 and 3). In Section 4, I discuss morphological awareness of bilingual Inuktitut–English speakers based on my observations on code-mixed incorporations and base ellipsis. A presentation of selected literature on the bilingual lexicon and bilingual lexical access in section 5 will provide the basis for my proposal of *relational spreading*. In Section 6 I will apply this proposed model to English incorporations into Inuktitut utterances as an expression of morphological awareness in bilingual speakers.

2 Preliminaries

2.1 Inuktitut genetic and geographical information

Inuktitut is one dialect of the Inuit languages found across Canada's North. The Inuit languages are a sub-branch of the Eskimo language branch and part of the Eskimo-Aleut language family. Inuktitut is spoken in the Eastern Canadian Arctic. Of the estimated 35,000 speakers, the majority live in Nunavut and Nunavik. Inuktitut speakers are exposed to English through education, media, and community interactions. English monolinguals form a minority in Nunavut, where Inuktitut is the official language, and Inuktitut speakers switch to English when interacting with English speakers. There are now some indications of a stable bilingualism developing among Inuktitut speakers in Nunavut (Allen, 2007).

2.2 Inuktitut word structure

Inuktitut is a polysynthetic language with a rich morphology of affixation. The language is head-marking with SOV word order. Swift & Allen (2002) state that the minimal structure of verbs and nouns canonically consists of a base, followed by an inflectional ending. In principle, the word base is the lexical root of the word and is either a noun (or pronoun) or a verb. The base sits in the left-most position of the word. A minimum of one and up to six (Sammons, 1993) or eight (Crago & Allen, 1999) suffixes can be added to the base. The basic word structure in Inuktitut can be formulated as follows (Cook & Johns, 2009):

(3) [base (affixes) inflection]

Suffixation in Inuktitut expresses both lexical content and grammatical categories. There are over 400 word-internal morphemes and over 900 verbal and 100 nominal cross-referencing inflections (Crago & Allen, 1999).

2.3 Incorporations

Incorporations occur frequently in Inuktitut and are considered to be obligatory (Johns, 2009). Technically, a (bare) noun that is morphologically attached to or in close association with a verb constitutes an instance of (noun) incorporation. However, in Inuktitut, the incorporated element is not limited to a nominal (Johns, 2007; Nowak, 2009). The following data set from Nowak (2009)

illustrates four possible types of incorporated elements (in bold): (4) a bare root, (5) an inflected nominal complex, (6) a pronoun, and (7) a particle.

(4) bare root
aiviq -si -liq -ramnuk
walrus -come.across -begin -1D.CAUS.INTR
'We two suddenly come across a walrus'

(5) infl. nom. comp.
illu -**tinnut** -aq -tunga
house **-1P.POSS.TERM** -move -1S.INTR
'I arrived (at our) home' (= I went home)

(6) pronoun
asi -qaq -nngit -tuq
other -have.INTR -NEG -3S.INTR
'There was no other'

(7) particle
uattiaru -u -qqau -juq
a.little.while.ago -be -a.little.while.ago -3S.INTR
'It happened a little while ago (evidential)'

The incorporation of a particle in (7) appears to conflict with the previous statement that the base is either a noun (pronoun) or a verb. The explanation for this is that incorporations are not limited to nominals.

2.4 Verbal affix versus verb roots

In Inuktitut, both verb roots and verbal affixes exist. The element glossed as an English verb can be a verb root found in the position of the base (italics in 8) or a verbal affix in the position of the first suffixed element immediately following the base (underlined in 9). The data in (8) and (9) are from Cook & Johns (2009).

(8) verb root
hini -liq -nia -haaq -&unga
sleep -begin -future -about.to -APPOS.1S
'Just before I went to sleep'

(9) verbal affix
tuktu -qaq -nia -&a -'man
caribou -exist -future -expressive -CAUS.3S
'Because there might be caribou'

Verbal affixes appear to govern incorporation. They have been identified by Johns (2007) as a group of nine classes of light verbs. Johns (2009) proposes that these light verbs do not meet the requirement of a lexical root (i.e. base) as the left-most element in the word structure. Therefore, an element is incorporated that subsequently fills the otherwise vacant position of the base. Johns' argumentation is situated within the discussion around semantics in Inuktitut word formation. Nowak (2009) suggests that incorporated elements function as lexical arguments within the context of information management. Important for the analysis at hand is that light verbs depend on the pragmatic properties of the incorporated base in order to fully specify their intended meaning (Cook & Johns, 2009). In (9), the verbal affix (light verb) *–qaq* requires the incorporation of the base *tuktu* 'caribou' in order to convey the meaning 'might be caribou'. Nowak (2009) supports Johns' proposal by saying that "incorporated lexical items are strictly obligatory and are governed by the incorporating verbal affix."

In summary, we find that each incorporation in the data above occurs with a light verb: *-si* 'come.across' in (4), *-aq* 'move' in (5), *-qaq* 'have' in (6), and *-u* 'be' in (7). This confirms the importance of the base in the Inuktitut word. In the case of incorporations, the verbal affix, or light verb, requires the presence of the base in order to specify the meaning of the light verb. This inherent structural aspect of Inuktitut appears to also allow for English elements to fill the position of the base, as I will discuss in the following section.

3 Code-mixed incorporation (English–Inuktitut)

One topic of research on bilingual speech is the occurrence of elements of both languages within the same constituent uttered by a bilingual speaker. Different terminology and theoretical and methodological approaches are used to describe this phenomenon (e.g. Muysken, 2000; Winford, 2009). For the purposes of this paper, I will use the terms *bilingual word formation* and *code-mixing* interchangeably to refer to the phenomena of English elements being inserted or incorporated into Inuktitut utterances.

The majority of Inuktitut–English code-mixing instances observed by Allen et al. (2009) are noun insertions (60.2%), followed by verb insertions (31.5%). Based on Johns' (2007) list of light verbs, I have identified 17 instances of incorporations in the 100 code-mixed data samples provided by Allen et al. (17%). The following data set from Allen et al. represents a sample of incorporations of English bases. The incorporated English items are italicized, verbal affixes are underlined.

(10) bare root (N)

maani	-i	-gii	*goalie*	-u	-nia	-rama?
here	-be	-IMP.2SS		-be	-FUT	-CTG.1SS

'Can you be here so I can be the *goalie*?'

(11) bare root (V)

Share	-ruma	-vit?
	-want	-INTER.2SS

'Do you want to *share*?'

(12) infl. nom. comp.

Ball	-ti	-guma	-jait?
	-CAUS	-want	-PAR.2SS.3SO

'Do you want him to *play ball*?'

(13) adjective

nuja	-ti	*funny*	-u	-lir	-mata
hair	-ABS.2SPL		-be	-PRS	-CTG.3PS

'Your hair is *funny*'

The verbal affixes that incorporate the English elements are all light verbs, as per Johns (2007): *-u* 'be' (10 and 13), *-ruma* 'want' (11), *-guma* 'want' (12).

Muysken (2000) suggests that, in terms of insertions in code-mixed speech of bilinguals, agglutinative suffixes are non-selective and that the language of the base can be switched as long as the base "is equivalent in categorical status to an element from the language of the affix" (p. 76). The data in (4) to (7) and (10) to (13) indicate that Inuktitut verbal affixes don't restrict for what element they incorporate categorically (noun, verb, compound, particle, or adjective) or with regards to language (Inuktitut or English).

In the next section, I outline my assumptions on morphological awareness of bilingual Inuktitut–English speakers based on the above observations on code-mixed incorporations, as well as base ellipsis.

4 Aspects of morphological awareness

Morphological awareness refers to the knowledge or understanding of speakers of how words are created and how to apply this knowledge. Rice, Libben & Derwing (2002) have described morphological awareness in bilingual speakers of a polysynthetic language. Their study demonstrated awareness in bilingual Dene–English speakers to morphological constituents in Dene. Also, Muysken (2000) suggests that bilingual speakers *determine* [italics added] categorical status equivalence when code-mixing insertions with agglutinative suffixes. The results

from Rice et al. (2002) coupled with Muysken's suggestion (2000) indicate that bilingual Inuktitut–English speakers are likely aware of the requirement for light verbs to incorporate a base. When code-mixing, these bilingual speakers apply their knowledge by incorporating English bases into Inuktitut verbal affixes.

Another implication of speakers' morphological awareness of the character of verbal affixes and bases is indicated in a study by Swift and Allen (2002) on verb base ellipsis. Swift and Allen (2002) found that elliptical verb constructions, i.e. omissions of the base component in verbs, are an established phenomenon in Inuktitut conversational discourse. The authors state that their observation is significant, considering that the base is assumed to be an essential element of the Inuktitut word. Two examples are presented below (data from Swift & Allen, 2002); the omitted element is in [ ] in the gloss.

(14) Ø -qquuq -mmat
ZBASE -probably -CTG.3SS
'She probably [is coming]'

(15) ataata -it=lu Ø -niaq -gatta
father -ABS.2SS=and ZBASE -TODAY.FUT -CTG.1PS
'With your father we will [go out] today'

Swift & Allen (2002) state that the omitted element may be a base or a base with one or more postbases (i.e., affixes immediately following the base). The authors also observe that the remaining elliptical structures may not or did not begin with what they call derivational postbases. With the exception of *-qaq-* 'have', what Swift & Allen call derivational postbases closely resembles what Johns (2007) proposes as light verbs obligatorily requiring an incorporated base. My assumption then is that base omission before a postbase (affix) other than a light verb is possible, but base omission before a light verb, i.e. verbal affix, is not possible. Speakers appear to distinguish light verbs from other postbases in that light verbs always require that the left-most position be filled. This supports the above notion that speakers are aware of the requirement for light verbs to incorporate a lexical base.

The code-mixing data presented by Allen et al. (2009) shows that English elements only occurred in the left-most position of a word (incorporated or not), but never in a position where the English element would act as a light verb incorporating an Inuktitut element. Code-mixing speakers appear to treat Inuktitut light verbs as elements that can not be replaced by English verbs.

The implication of the above is that speakers appear to be aware that Inuktitut light verbs require a base, or that the left-most position must be filled. Speakers also appear to be aware that this requirement can be met by incorporating an element that completes the intended meaning of the light verb.

Finally, speakers appear to be aware that the light verb is not restricted to incorporating a (bare) Inuktitut noun, but accepts elements from different categories or languages. We may then ask how the morphological awareness of code-mixing bilingual speakers can be conceptualized in order to explain the above observations. I will next describe language processing and lexical access models that account for the use of both languages in code-mixed incorporations.

5 Bilingual lexicon & bilingual lexical access

One of the most influential ideas on speech production in psycholinguistics is the spreading activation model originally introduced by Collins and Loftus in 1975 (Costa, La Heij & Navarrete, 2006; see also Collins & Loftus, 1975). This model proposes that any representation spreads a proportion of its activation to other representations with which it is linked. Subsequent models based on this idea assume three layers of representation in speech production: conceptual (semantic), lexical, and sub-lexical (phonological) (Costa et al., 2006; see also Dell, 1986; Levelt, 1989; Caramazza, 1997). There is agreement among these theories that, within the conceptual level, activation of one concept spreads to multiple other related concepts and that the activation then spreads to the lexical level (Costa et al., 2006). The spreading of the activation between the lexical and sub-lexical representations is either discrete or cascading. Discrete spreading is restricted in that only the one selected lexical representation activates forward to respective sub-lexical representations. Cascading spreading occurs not only from the selected lexical representation, but also from co-activated lexical representations to their respective sub-lexical representation. All theories assume that the activation is fed forward (Costa et al., 2006), and it has been proposed that the activation may also be fed backward (Costa et al., 2006; see also Dell, 1989).

Costa et al. (2006) acknowledge that it is very likely that both languages are activated in parallel, at some level, in bilinguals when they mix codes. I agree that English incorporations into Inuktitut verbal affixes support a concept of parallel co-activation of both languages, as otherwise a “turn-off/on” switch of languages mid-word would be required. Also, I assume that both languages are always active to some degree and that the activation spread is cascading and not discrete. I also agree with Levelt (1993, in Winford, 2009, p. 295) that, at the conceptual level, the message is still preverbal. De Bot (in Winford, 2009, p. 295) suggests that one of the two languages will be selected to control speech output; I assume that the selection may occur anytime before the preverbal message has spread to the lexical representations of the two languages, but no later than that. The non-selected language continues to be active and engaged in the processing to some extent in parallel (de Bot, in Winford, 2009).

If bilingual speakers have access to both languages, what 'facilitates' their choice of one language over the other? Finkbeiner, Gollan & Caramazza (2006) suggest that theories on word production usually assume a process of competitive lexical access. From this assumption follows the prediction that, for monolinguals, the closer two lexical representations are in meaning, the more difficult it is to select the correct one. This however results in the so-called "hard problem" (quotations in original) in bilingual lexical access. In bilingual speech virtually every concept is associated with synonymous lexical nodes, yet bilinguals are able to make correct lexical selections without any difficulty. Finkbeiner et al. (2006) therefore propose that lexical selection is by threshold, not by competition as otherwise assumed. Their differential activation model suggests that the first node that reaches a threshold at an activation level will be the one that gets selected. Selection of the correct target language lexical node(s) is provided by increasing the rate of activation of the target language lexical nodes *relative* (my emphasis) to that of non-target language lexical nodes. Finkbeiner et al. propose that the bilingual speaker's intention to speak in one language and not the other modulates the rate at which the activation accrues over lexical nodes in the target and the non-target language. The authors conclude that language systems are not turned off/on or switched, but the intentions of the speaker may activate one language more strongly than the other. This suggests that both languages are active and that speakers choose which language will be the selected language for speech output, while the other language remains active. This in return supports my assumption stated above that activation is parallel and cascading, rather than discrete.

Speakers use specific criteria to make their choices in language. According to Meuter (2009), multilingual speakers strive towards optimizing their language performance and increasing efficiency continuously. Meuter (2009) also suggests that environmental cues are taken into consideration when negotiating language selection. Allen et al. (2009) observed that most inserted English nouns in code-mixed utterances have a commonly used Inuktitut equivalent and are not restricted to loan words. The authors also noted that the Inuktitut equivalent is typically more awkward than the monomorphemic English term, while inserted verbs are typically simple English verb roots. This indicates that – in incorporations – bilingual speakers, in order to optimize their performance, intentionally choose an English base to avoid Inuktitut equivalents.

It follows that speakers not only choose one or the other language, but also particular elements of either language when code-mixing. Winford (2009) uses an expanded psycholinguistic model to investigate underlying processes of language contact and bilingual speech. The model is based on Levelt's (1993) spreading activation model and adapted by de Bot (1992, 2001) to account for bilingual speech production. Significantly, the FORMULATOR (or lexical stage) is split into two 'aspects': the lexical selection drawing from lemmas in the lexicon, and

the phonological encoding drawing from lexemes or word forms from the lexicon. I conceptualize matching lemmas and lexemes to represent two aspects of the same 'instance' of a language item, like two sides of the same coin. Winford suggests that "substitution [of an element of one language by an element of another language] may be triggered by the fact that the lexemes in question are associated with the same semantic content, in other words, their lemmas overlap at the level of semantic form" (p. 296). Applied to the case of English base incorporations, an English lexeme is matched with an Inuktitut lemma.

To review, the speech production process suggested to facilitate English base incorporations so far is based on a spreading activation model. Starting with preverbal messages, representations spread in a cascading fashion. Depending on the speaker's intention and choice, one of the two languages activated is selected for speech output, while both languages continuously can be more or less activated relative to the other language. Substitutions may occur by matching the lemma of the selected language with the word form of the language more activated (relative to the other). The final piece to integrate is the speakers' morphological base awareness. More specifically, how can we conceptualize speakers' apparent knowledge about the requirements of a base in first position before an Inuktitut light verb? The proposal discussed in the next section draws on the idea of relational morphology and suggests that, in the bilingual lexicon, lemmas and lexemes of both languages form relations.

6 Relational spreading between lemmas and lexemes

As discussed earlier, the general assumption is that the base of the Inuktitut word is strictly required. Actual utterances from Inuktitut speakers suggest, however, that the base can be omitted, as long as the remaining structure does not begin with what appears to be a light verb. Before light verbs, the incorporation of a base is required and does not appear to be restricted to nominals. In code-mixed speech, Inuktitut appears to allow for incorporations of English bases into Inuktitut verbal affixes. From these observations I argue that, at least with incorporations, the requirement that the left-most position be filled with an element that qualifies as a base does not reside exclusively within the base itself, but is an inherent property of the base *in relation* to the occurrence of a light verb.

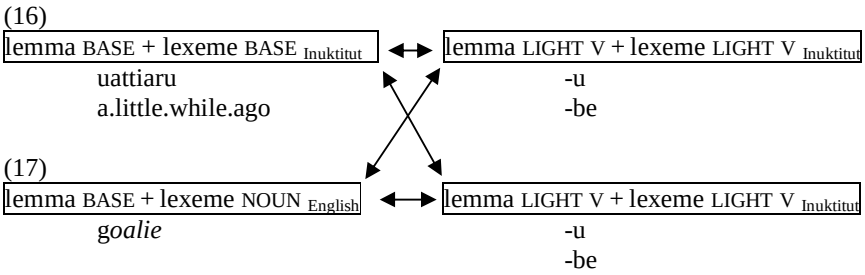
This proposition is in line with the concept of gradient morphology, as discussed by Hay & Baayen (2005). Hay & Baayen have reviewed research supporting the notion that relations between parts/elements are more important than parts/elements by themselves. The specific relation between bases and light verbs results in the required incorporation of a base (not restricted to nominals or Inuktitut elements) into a light verb. The concept of gradient morphology also

agrees largely with Blevins' word-based morphology (2006), which proposes that grammatical patterns, including their inherent relations, reside in actual word forms and that exemplary paradigms and principle part inventories contain word forms. According to Blevins, the paradigms and principles are not minimal in the sense that they are separable from the actual word form. The requirement for a base to fill the left-most position is not separable from either the base or the light verb, but resides in the actual word-form, i.e. the incorporation.

Relational and word-based approaches assume some sort of full-form storage or permanent lexical units. I suggest that the notion of relation can be extended and applied to the concept of lemmas and lexemes via the approach of *relational spreading*. If we assume that spreading activation is cascading (and possibly fed forward and backward), we can suggest that spreading occurs relationally between representations, including between lemmas and lexemes, and across languages. In the monolingual lexicon, lemmas will always match up with the word form of one language, effectively supporting Blevins' word-based morphology. In the bilingual lexicon, where both languages are activated in parallel, we can assume that relations will form between lemmas and lexemes of both languages.

Not all lemmas and lexemes can form relations though, as the possibility of actual relations to occur is rooted in the patterns of a language. Depending on the language selected for speech output and the activated language (relative to the second language), certain relations become available for speakers to intentionally choose from. In the situation where Inuktitut is selected, these relations include morphological knowledge that Inuktitut light verbs require a base to be incorporated and that the choice of base is not limited across categories or languages. Other relations contain the morphological knowledge that only an Inuktitut light verb can be a verbal affix incorporating a base.

The result of matches between lemmas and lexemes is a network of relations across languages. If we isolate the incorporations in the previously discussed data examples in (7) and (10), this can be formalized as follows (referring back to the metaphor that a lemma and lexeme constitute two sides of one coin, the symbol '+' represents where a lemma and a lexeme match; arrows indicate possible relations; the respective language is in subscript):



The allowed matching of the respective lemmas and lexemes is reflected in the relation between the light verb and the base. The lemma LIGHT VERB matched with the lexeme LIGHT VERB $_{\text{Inuktitut}}$ in (16) relates to the lemma BASE matched with the lexeme BASE $_{\text{Inuktitut}}$ just as well as it relates to the lemma BASE matched with the lexeme NOUN $_{\text{English}}$ in (17). For the left-most position to be filled, the light verb is not limited to incorporating a nominal or an Inuktitut element. That is, in (16) the particle '*uattiaru'* is incorporated while in (17) the English word 'goalie' is. On the other hand, the speech of bilingual Inuktitut–English speakers reveals that the Inuktitut light verb is never replaced by an English element. This means that the lemma LIGHT VERB does not appear to match with any form of lexeme VERB $_{\text{English}}$. With no substitutions in the form of *lemma LIGHT VERB matched with a lexeme VERB $_{\text{English}}$ existing, no subsequent relations are formed with a lemma BASE matched with a lexeme BASE $_{\text{Inuktitut}}$ or lexeme BASE $_{\text{English}}$.

7 Conclusion

Observations of incorporated English elements into Inuktitut verbal affixes have prompted this investigation into the morphological awareness of bilingual speakers. From a psycholinguistic perspective and rooted in the theoretical framework of relational morphology, I have proposed that through cascading spreading activation, or *relational spreading*, the lemmas and lexemes of both languages form relations across languages, and that these relations are available to speakers to make choices in language use when code-mixing. Empirical testing in a psycholinguistic setting is needed next to establish the validity of this proposal for further theoretical exploration.

References

Allen, S. (2007). The future of Inuktitut in the face of majority languages: Bilingualism or language shift? *Applied Psycholinguistics* 28, 515–536.

Allen, S., Genesee, F., Fish S. & Crago, M. (2009). Typological constraints on code-mixing in Inuktitut–English bilingual adults. In: M.A. Mahieu & N. Terris (Eds.), *Variations on polysynthesis*. Amsterdam and Philadelphia, PA: John Benjamins Publishing Co., 273–306.

Blevins, J.P. (2006). Word-based morphology. *J. of Linguistics* 42, 531–573.

Caramazza, A. (1997). How many levels of processing are there in lexical access? *Cognitive Neuropsychology* 14(1), 177–208.

Collins, A.M. & Loftus, E.F. (1975). A spreading-activation theory of semantic processing. *Psychological Review* 82(6), 407–428.

Cook, C. & Johns, A. (2009). Determining the semantics of Inuktitut postbases. In: M.A. Mahieu & N. Terris (Eds.), *Variations on polysynthesis.* Amsterdam and Philadelphia, PA: John Benjamins Publishing Co., 149–170.

Costa, A., La Heij, W. & Navarrete, E. (2006). The dynamics of bilingual lexical access. *Bilingualism: Language and Cognition* 9(2), 137–151.

Crago, M.B. & Allen, S.E.M. (1999). Acquiring Inuktitut. In: O.L. Taylor & L. Leonard (Eds.), *Language acquisition across North America*. San Diego, CA and London: Singular Publishing Group, Inc., 245–279.

Dell, G.S. (1986). A spreading-activation theory of retrieval in sentence production. *Psycholinguistic Review* 93(3), 283–321.

Finkbeiner, M., Gollan, T. & Caramazza, A. (2006). Lexical access in bilingual speakers: What's the (hard) problem? *Bilingualism: Language and Cognition* 9(2), 153–166.

Hay, J. & Baayen, R. (2005). Shifting paradigms: Gradient structure in morphology. *TRENDS in Cognitive Sciences* 9(7), 342–348.

Johns, A. (1999). On the lexical semantics of affixal 'want' in Inuktitut. *International Journal of American Linguistics* 65(2), 176–200.

Johns, A. (2007). Restricting noun incorporation: Root movement. *Natural Language & Linguistic Theory* 25, 535–576.

Johns, A. (2009). Additional facts about noun incorporation (in Inuktitut). *Lingua: International Review of General Linguistics* 119, 185–198.

Level, W.J.M. (1989). *Speaking: From intention to articulation*. Cambridge, MA: MIT Press.

McBride-Chang, C., Tardif, T., Cho, J.R., Shu, H., Fletcher, P. & Stokes, S.F. (2008). What's in a word? Morphological awareness and vocabulary knowledge in three languages. *Applied Psycholinguistics* 29, 437–462.

Meuter, R.F.I. (2009). Language selection and performance optimisation in multilinguals. In: L. Isurin, D. Winford & K. de Bot (Eds.), *Multidisciplinary approaches to code switching.* Amsterdam and Philadelphia, PA: John Benjamins Publishing Company, 28–51.

Muysken, P. (2000). *Bilingual speech: A typology of code-mixing*. United Kingdom: University Press, Cambridge.

Nowak, E. (2009). Arguments and information management in Inuktitut. In: M.A. Mahieu & N. Terris (Eds.), *Variations on polysynthesis.* Amsterdam and Philadelphia, PA: John Benjamins Publishing Company, 201–213.

Rice, S., Libben, G. & Derwing, B. (2002). Morphological representation in an endangered, polysynthetic language. *Brain and Language* 81, 473–486.

Sammons, S. (1993). A structural overview of Inuktitut. *Meta: Translators' Journal* 38(1), 11–17.

Swift, M. & Allen, S. (2002). Verb base ellipsis in Inuktitut conversational discourse. *International Journal of American Linguistics* 68(2), 33–56.

Winford, D. (2009). On the unity of contact phenomena and their underlying mechanisms: The case of borrowing. L. Isurin, D. Winford & K. de Bot (eds.), *Multidisciplinary approaches to code switching.* Amsterdam and Philadelphia, PA: John Benjamins Publishing Company, 279–305.

Appendix A

Abbreviations

All data are represented in the standard English alphabet, except '&' – voiceless, lateral fricative

1S	'first pers. singular'
1D	'first pers. dual'
1P	'first pers. plural'
1PS	'first pers. plural subject'
1SS	'first pers. singular subject'
2SS	'second pers. singular subject'
2DS	'second pers. dual subject'
2SO	'second pers. singular object'
3S	'third pers. singular'
3SS	'third pers. singular subject'
3PS	'third pers. plural subject'
3SO	'third pers. singualr object'
SG	'singular'
S	'subject'
O	'object'
ABS	'absolutive case'
ALL	'alliative case'
APPOS	'appositional mood'
CAUS	'causalis mood'
CTG	'contingent verbal modality'
ERG	'ergative case'
EXPL	'expletive'
FUT	'future'
IMP	'imperative verbal modalis'
INTER	'interrogative verbal modalis'
INTR	'intransitive; single argument'
MOD	'modalis case'
NEG	'negation'
PAR	'participative verbal modalis'
POL	'politeness marker'
POSS	'possessive'
PRS	'present tense'
TERM	'terminalis'
V_t	'transitive verb'
V_i	'intransitive verb'
ZBASE	'zero base'